



First year university students' reading strategies and comprehension: implications for academic reading support

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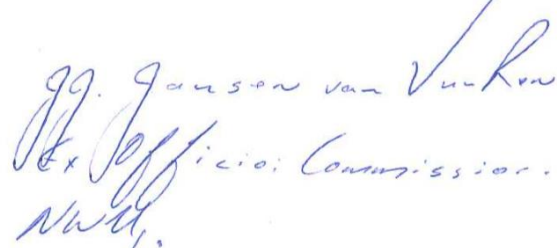

DECLARATION

I the undersigned, hereby declare that the work contained in this dissertation / thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature 

17 November 2017

Date


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Summary

In the South African context it seems that many students enter university without the required reading abilities. In the tertiary environment, these abilities are vital, especially in the first undergraduate year when most attrition occurs. The focus of this thesis is on first year students' reading comprehension and reading strategy use.

Reading strategies were part of the focus of this study as knowledge and application of reading strategies can be a powerful way to promote reading with comprehension. The reading comprehension theoretical framework of the RAND Corporation Reading Study Group (RAND Reading Study Group, 2002) theoretically grounds this study. According to this framework, reading comprehension is an interrelated process between the reader who is doing the comprehending, the text that is to be read and the task which has to be completed. This process occurs within a socio-cultural context. Knowledge of applicable literature about the reader, text, task and socio-cultural context, as well as the analyses of quantitative and qualitative findings on students' reading comprehension and reported reading strategy use, enabled the researcher to give recommendations in terms of academic reading support required at universities.

This mixed-methods study falls within a pragmatic paradigm. A convergent parallel mixed method research design was used. Quantitative data analyses and interpretations provided answers to two of the research questions namely the categories of reading strategies which the students reported using and the relationships between reading strategy use, reading comprehension and task achievement. Qualitative data analyses and interpretations provided insight into the third research question. This question concerned lecturers' and students' perceptions of students' reading abilities, prescribed academic texts and the tasks assigned by lecturers. The merging of the quantitative and qualitative findings enabled the researcher to present a holistic and contextual portrayal of the reading strategies and reading comprehension of the first year participants at University X. The merging was done by discussing a number of themes which emerged from the quantitative and qualitative analyses.

The core of the findings suggests that students rarely comply with prescribed academic reading. While lacking reading abilities are part of the problem, the findings indicated that the student alone cannot be blamed. Non-compliance with prescribed academic reading, the ineffective use of reading strategies and reading comprehension problems can be attributed to the different perceptions of students and lecturers, specifically perceptions about reading abilities, the prescribed academic text and the tasks assigned by lecturers. These reading challenges are also in part caused by a misalignment of critical factors in the learning environment namely learning

outcomes, the choice of texts, instructional design of the modules, the tasks to be completed, the role of the lecturer, the role of the student, and the use of technology.

The contribution of this study lies in the fairly comprehensive analysis of the reading strategy use and reading comprehension of first year students within seven different faculties of a university. Additionally, the analysis enabled the researcher to use a metaphor of cogs in a mechanism to highlight the academic reading support required at this university. A collaborative approach is needed to support the reading literacy skills of students in the disciplinary areas. The institutional management, faculty management structures and the lecturer are all stakeholders in students' success. For this reason these stakeholders must ensure that reading is a priority in the modules, and that the interconnectedness of the reader, the text, the task and the socio-cultural context, are continuously considered for the purpose of providing academic reading support in a disciplinary context.

Key terms: academic text; reading activity; reading abilities; reading comprehension; reading strategies; reading support

Opsomming

In die Suid-Afrikaanse konteks lyk dit of talle studente hulle voorgraadse studies aanpak sonder die nodige leesbegripvaardighede. In die tersiêre omgewing is hierdie vaardighede van kardinale belang. Die meeste studente staak hulle studie in die eerste jaar van tersiêre onderrig. Hierdie proefskrif handel oor eerstejaarstudente se vermoë om met begrip te lees en die leesstrategieë waarvan hulle gebruik maak.

Leesstrategieë het deel gevorm van die fokus van hierdie studie, omdat die kennis van hierdie strategieë en die gepaste implementering daarvan, lees met begrip kan bevorder. Die RAND Reading Study Group (2002) se teoretiese raamwerk dien as teoretiese begroning vir hierdie studie. Volgens hierdie raamwerk is lees met begrip 'n interafhanklike proses tussen die leser wat die leeswerk doen, die teks wat gelees word en die aktiwiteit waarvan leesbegrip deel uitmaak. Hierdie leesproses vind plaas binne 'n sosio-kulturele konteks. Kennis van toepaslike literatuur oor die leser, die teks, die taak en die sosio-kulturele konteks, was belangrik vir die interpretering van die kwantitatiewe en kwalitatiewe data en die daarstel van aanbevelings ten opsigte van leesondersteuning.

Hierdie gemengdemetodestudie ressorteer onder 'n pragmatiese paradigma. Die konvergentparallele gemengdemetodenavorsing is gebruik. Twee van die navorsingsvrae is deur kwantitatiewe data-analises en interpretasies beantwoord. Hierdie vrae behels die kategorieë van leesstrategieë wat die studentedeelnemers gemeld het hulle gebruik, en die verhoudings tussen die gebruik van leesstrategieë, leesbegrip en taakprestasie. Deur kwalitatiewe data-analises en interpretasies, is insig verkry oor die laaste navorsingsvraag. Hierdie vraag is gemoeid met die persepsies van dosente en studente oor studente se leesbegripvaardighede, voorgeskrewe akademiese tekste en die take wat binne die bepaalde modules voltooi moes word. 'n Aantal temas het gefigureer uit die kombinasie van die kwantitatiewe en kwalitatiewe bevindings. Dit het die navorser in staat gestel om aanbevelings te maak oor hoe die leesvaardighede van studente aan 'n universiteit ondersteun moet word.

Die kern van die bevindings bepaal dat studente selde die voorgeskrewe akademiese leesmateriaal bemeester. Alhoewel 'n gebrek aan die nodige leesvermoëns deel is van die probleem, toon die bevindings aan dat nie slegs die student vir die probleem blameer kan word nie. Die gebrek aan die nakoming van die vereistes van voorgeskrewe leesmateriaal, die oneffektiewe gebruik van leesstrategieë en leesbegripprobleme kan toegeskryf word aan die verskillende persepsies van studente en dosente; spesifiek die persepsies oor leesvermoëns, die voorgeskrewe akademiese materiaal en die taak wat deur die dosente toegeken is. Hierdie leesuitdagings word ook deels veroorsaak deur die misbelyning van kritiese faktore in die

leeromgewing, soos leeruitkomste, voorgeskrewe akademiese materiaal, onderrigontwerp van die modules, die taak wat voltooi moet word, die rol van die dosent, die rol van die student en die gebruik van tegnologie.

Die bydrae van hierdie studie is die uitgebreide analise van die gebruik van leesstrategieë en leesbegrip van eerstejaarstudente in sewe verskillende fakulteite van 'n bepaalde universiteit. Daarbenewens het die analise die navorser in staat gestel om 'n metafoer te gebruik om rolspele aspekte in leesondersteuning aan 'n universiteit, uit te lig. 'n Samewerkende benadering is nodig om die leesvaardighede van studente in die verskillende dissiplines te bevorder. Die institusionele bestuur, die fakulteitbestuurstrukture, dosente en studente is almal aandeelhouers in studente se sukses. Hierdie aandeelhouers moet daarom verseker dat lees as prioriteit beskou word in modules, en dat die onderlinge verbondenheid van die leser, die teks, die taak en die sosiokulturele konteks deurgaans in ag geneem word vir die doel om akademiese leesondersteuning in bepaalde dissiplines te bied.

Sleuteltermes

akademiese teks; leesaktiwiteite; leesbegripvaardighede; leesbegrip; leesstrategieë; leesondersteuning

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CHAPTER 1: CONTEXTUALISATION AND PROBLEM STATEMENT

1.1 Introduction

Reading with comprehension is undoubtedly an ability which all university students need to be competent in. Lecturers expect students to read academic texts to gain knowledge and the hope is that students will themselves be intrinsically motivated to read. Yet, it seems as though reading a textbook or academic article in depth is the very last thing a student looking for information would do. To uncover some of the reasons behind students' apparent reluctance or inability to read academic texts, and how their reading comprehension abilities can be supported, this study focussed on first year students' reading strategies and comprehension.

The aim of this chapter is to firstly clarify terminology used in this study. Thereafter, university students' reading strategy use and comprehension are contextualised. The motivation for this study as well as the problem statement stems from this contextualisation. Secondly, the research questions and hypotheses are formulated, followed by an explanation of the research methodology of the empirical investigation. The chapter concludes with a brief overview of the coming chapters of this research study.

1.2 Terminology clarification

Disciplinary context: In this study, this umbrella term refers to the knowledge environment of a certain discipline. Lecturers, as disciplinary experts, and students studying the discipline are role players in this environment and part of the "disciplinary discourse community" (Bernstein, 1999:165).

Disciplinary lecturers: All lecturers involved in teaching disciplinary content. This excludes academic literacy lecturers who do not teach disciplinary content but academic literacy skills.

Discourses: "A mode of organising knowledge, ideas, or experience that is rooted in language and its concrete contexts" (Merriam-Webster online dictionary, 2017).

First language: "The language first learned, also referred to as the home language or mother tongue" (Lightbown & Spada, 2006:199).

General academic vocabulary: "Words which are used across content areas, have abstract definitions, and are a challenge to master" (Townsend, 2009:242). Examples of general academic

vocabulary are *context*, *evaluate*, *integrate* and *predict* (Baumann & Graves, 2010:10).

Lecturer: The teacher at a higher education institution.

Module: A course or subject a student is enrolled in. Each study year a number of modules is prescribed to be taken over the course of six months (one semester) or a year (two semesters). A student attains a degree or qualification when he/she has successfully completed all the prescribed modules of that degree.

Module outcomes: The aims or goals a student has to achieve to complete a module. These module outcomes are usually assessed by means of a task such as an assignment or test.

Reading comprehension: "The process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (RAND Reading Study Group, 2002:11).

Reading strategies: "Deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings of text" (Afflerbach *et al.*, 2008:368).

Slides: The "pages" of a visual representation of the content of a lecture, compiled in the Microsoft Office program, PowerPoint. The slides typically represent the main points of the lecture, and information under headings is usually presented in bullet-point format with keywords only. Slides are primarily presented in class but could also be made available in notes format, by using the "hand-out" function of PowerPoint.

Socio-cultural context: The interactions between individuals and groups, and the particular types of knowledge, ways of speaking, styles, meanings, dispositions and world views as well as shared practises of groups or an organisation that inform certain aspects (Margolis *et al.*, 2001:8). In this study the aspects are reading strategies and reading comprehension of first year students.

Student: A person enrolled at university.

Task achievement: The marks or score awarded to a student after the completion of a task such as an assignment or test.

Technical vocabulary: “Words that relate specifically to each content-area subject or topic” (Nel *et al.*, 2004:96). Examples of technical vocabulary are *gluon* and *transposon* in natural science (Kagan, 2009:6).

1.3 Language contextualisation: Background of the study

This study was conducted at a campus of a university in South Africa. For ethical reasons, this university will be referred to as University X. Students at this campus come from diverse backgrounds and speak different first languages. Table 1.1 indicates the number of enrolled first year students as on 17 April 2017 and their different first languages.

Table 1.1: First language distribution of first year students on a campus of University X

Enrolment Count	First language	2017
Afr/Eng		283
Afrikaans		3165
Chichewa		1
English		458
French		4
German		9
Gujerati		1
Korean		2
Ndebele		6
Sepedi		108
Other		8
Portuguese		4

Enrolment Count	First language	2017
Sesotho		172
Shona		12
isiSwati		27
Swazi		8
Swedish		3
XiTsonga		40
Setswana		427
Unknown		3
TshiVenda		22
isiXhosa		99
Zulu		63
Other African language		22
Grand Total		4 947

(North-West University, 2017:1)

Even though students speak these different first languages, lectures at a campus of this university are conducted in either Afrikaans or English. There are also translation services at this university where a class can be conducted in Afrikaans and then translated into English or vice versa. The Translation Unit of the university is responsible for providing a suitable translator if requested by lecturers. Translation occurs simultaneously during class as needed by the students. They make use of a translation device with which they can hear the translator. Material such as Microsoft Office PowerPoint presentations and class notes designed by lecturers are also available in Afrikaans and English and both languages appear on every exam paper. The prescribed academic material such as textbooks and scholarly articles for the different modules are, however, generally speaking mostly written in English. According to Mwaniki (2014:202), English

is an important language of scientific reporting and due to the internationalisation of South African universities, students engage mostly with English academic text.

Linguistic diversity at higher education institutions is an example of a worldwide phenomenon. Mokhtari and Sheorey (2002:2) report about projected increases in cultural and linguistic diversity in university classrooms and the need lecturers have and will have in future for teaching students how to read academic materials efficiently and effectively. Irrespective of first language, all students enrolled at University X have to be able to read and comprehend English academic texts over the course of their studies, in order to achieve the learning outcomes of the different modules so as to obtain a tertiary qualification. This study does not focus on the influence of students' first languages on their reading of English text. The focus is on their perceived use of reading strategies and their reading comprehension abilities when reading academic text written in English.

1.4 Problem statement and motivation

The retention and success of tertiary students is a concern all over the globe (Zepke & Leach, 2005:46; Visser & Van Zyl, 2013:330). In South Africa it is critical as a higher education qualification is in demand. In a newspaper article, Janse van Rensburg (2016:7) reports that the University of Johannesburg received 92 000 applications by hopeful matriculants, while only having space for 10 500. The University of Pretoria (UP) found themselves in a similar situation. This university had to turn away 29 500 potential students. It thus seems essential that those who do get accepted into university complete their degrees successfully and timeously. Unfortunately, this is not the case. Throughput rates at South African universities are disturbingly low (McLoughlin & Dwolatzky, 2014:585; Styan, 2014:12; Van Dyk, 2011:489). Only one in four students at contact tertiary institutions graduate in regulation time and it is estimated that as many as 55% will never graduate (Scott *et al.*, 2007:12; Styan, 2014:15). According to research findings by Scott *et al.* (2007:28), "...the greatest attrition occurs at the end of the first year of study". Enabling the academic success of first year students, is therefore an important area for research (Rusznyak *et al.*, 2017:208).

There are several reasons for high attrition rates at the end of the first year. One being first year students' low level of competency in the language of teaching and learning – even among those who have the potential to excel academically (Berndt *et al.*, 2014:29; Pretorius, 2002a:192; Pretorius, 2002b:95; Van Dyk, 2011:488; Weideman, 2003:56; Weideman & Van Rensburg, 2002:158). This low level of competency in language in the higher education setting is also referred to as academic literacy deficiencies (Van Dyk *et al.*, 2013:355).

According to researchers, reading lies at the heart of academic language competence (Bharuthram, 2012:205; Boakye *et al.*, 2014:174; Van Dyk *et al.*, 2013:355; Weideman & Van Rensburg, 2002:158). According to Pretorius (2000:46), “(r)eading is not simply an additional tool that students need at tertiary level – it constitutes the very process whereby learning occurs”. In a higher education setting, students are expected to read academic texts, usually written in English, and comprehend these in such a way that they have increased their knowledge. It is assumed that first year students are able to accomplish this. This assumption gives students and lecturers a false sense of security.

Reading with comprehension is a serious problem at South African universities, often overlooked until some way into academic courses. This is due to the fact that reading per se is not assessed, but the outputs of reading in the form of tasks are assessed (Bharuthram, 2012:205, 210; Nel *et al.*, 2004:95; Pretorius, 2000:36; Pretorius, 2002a:170; Pretorius, 2005:812). There are many variables that affect reading with comprehension. The reader with his/her knowledge about reading strategies, the features of the text as well as the tasks the reader needs to complete about the read text are three important variables whose interaction has been proven to affect comprehension (RAND Reading Study Group, 2002:11).

A student’s first year at a tertiary institution is a critical time. As reading stands central to academic literacy and research has proven that academic literacy deficiencies can be a major cause of poor throughput rates (Berndt *et al.*, 2014:29; Pretorius, 2002a:192; Pretorius, 2002b:95; Van Dyk, 2011:488; Weideman, 2003:56; Weideman & Van Rensburg, 2002:158), it can be deduced that better reading skills, specifically reading English academic texts with comprehension, might hold the key to helping students achieve module outcomes. Achieving these outcomes can then have a positive effect on the overall academic success of first year undergraduate students which could possibly play a role in increasing throughput rates.

According to Mokhtari and Reichard (2002:249), “recent trends within the domain of reading comprehension have led to an increasing emphasis on the role of metacognitive awareness of one’s cognitive and motivational processes while reading.” When a reader is metacognitively aware, it means he or she is able to monitor and manage reading processes while they are taking place. One way a reader can manage his or her own reading process, is by the use of reading strategies to facilitate reading comprehension and overcome comprehension problems (Garner, 1987:50; Tercanlioglu, 2004:563). Researchers have indeed identified a positive relationship between reading strategy use and reading with comprehension (Afflerbach *et al.*, 2013:441; Carrell *et al.*, 1998:97; Li & Kaur, 2014:1; Mokhtari & Reichard, 2002:249; Mokhtari & Sheorey, 2002:6; Sixiang *et al.*, 2014:69).

Students with poor knowledge of reading strategies, often select ineffective and inefficient strategies with little strategic intent (Tercanlioglu, 2004:568). This can be compared to digging a hole with a broom. The wrong reading strategy will take more time and effort and have little effect, leaving the reader strained by the effort and disheartened by the result. For this reason, reading strategies can and should be learnt (Mokhtari & Reichard, 2002:250). When a reader has knowledge of a variety of reading strategies that can be used, as well as when, where and how the strategies should be implemented, he/she can select the right reading strategy or strategies for the text they need to comprehend. In other words, a reader can choose the right tool for the job at hand. Knowledge and application of reading strategies can be a powerful way to promote reading with comprehension (Mokhtari & Sheorey, 2002:6), which will in turn help students to achieve module outcomes. This can better their task achievement which might ultimately have a positive impact on successful course completion and, therefore, throughput figures. It is much quicker and easier to dig a hole with a shovel, than with a broom.

1.5 Literature review

Reading lies at the heart of academic language competence. It is appropriate to put reading in a higher education setting under the magnifying glass, as reading deficiencies often result in academic failure which is pertinent during and after the first year of study (Bharuthram, 2012:205; Boakye *et al.*, 2014:174; Scott *et al.*, 2007:28; Van Dyk *et al.*, 2013:355). Reading is defined as a cognitive-linguistic activity encompassing several other skills (Pretorius, 2002a:170). Two main components are commonly distinguished: decoding and comprehension. The first involves the translation of written signs and symbols into language. The second, comprehension, refers to “the overall understanding process whereby meaning is assigned to the whole text” (Pretorius, 2002a:170). Although comprehension cannot happen without decoding, decoding does not automatically lead to comprehension.

It is noteworthy that reading comprehension is not the purpose of reading but the output of reading. The reading and understanding of a text is a process that cannot be seen, and so, measuring reading comprehension is challenging. To determine if reading comprehension occurred, an assessment of some sort is needed, for example asking specific questions about content and purpose. According to Pearson and Hamm (2005:14), these assessments “are little more than the residue of the comprehension process itself”. They continue that scholars use this “residue” to learn more about the reading comprehension process.

In a tertiary context, knowledge of the reading comprehension process is of vital importance. Taraban *et al.* (2000:284) state that: "In terms of cognitive processing, college reading is quite

demanding considering the sheer amount, the range of topics, and the variety in the tasks". Without proper comprehension, students would be unable to analyse, critique, evaluate and synthesise information from various academic sources (Bharuthram, 2012:206; Taraban *et al.*, 2000:284). Research findings revealed a "robust relationship" between comprehension and academic performance (Pretorius, 2005:790). Good reading ability does not necessarily predict good academic performance but weak reading ability characterises students with poor academic achievement. According to Pretorius (2002a:192), there are many university students displaying such poor reading ability. They read well below their maturational level and unless their reading problems are addressed, they will continue to underperform academically.

An empirically grounded theoretical framework is needed to describe the reading comprehension process in order to better understand its complexity. Reading is an interactive process that occurs between different variables. The following theoretical framework indicates the variables whose interaction affects reading comprehension within a given socio-cultural context (cf. Figure 1.1) (RAND Reading Study Group, 2002:12).

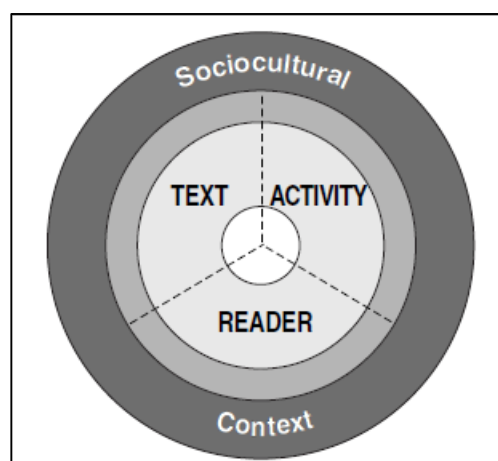


Figure 1.1: Theoretical framework of reading comprehension

Through reading, undergraduate tertiary students continuously have to learn, understand and remember (Pretorius, 2000:46). The theoretical framework (Figure 1.1) is directly applicable to this process as it brings to light the interrelated variables involved in reading with comprehension. The three variables are: (1) the reader, (2) text and (3) activity. Reading always happens within a socio-cultural context. This refers to the environment in which readers live and read. This environment can never be left out of the picture as it represents how a discourse community interprets the world and transmits information (RAND Reading Study Group, 2002:11).

The reader is the first variable under investigation (cf. Figure 2.1). "The reader brings to the act of reading his or her cognitive capabilities (attention, memory, critical analytic ability, inferencing,

visualization); motivation (a purpose for reading, interest in the content, self-efficacy as a reader); knowledge (vocabulary and topic knowledge, linguistic and discourse knowledge, knowledge of comprehension strategies); and experiences” (RAND Reading Study Group, 2002:xiii). In this study, the reader is a first year student. The focus of this study is the reader’s knowledge of reading strategies as becoming more metacognitively aware of the reading process is an important step in improving reading with comprehension (Van Dyk *et al.*, 2013:364; Wichadee, 2014:60).

“Reading strategies are deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words, and construct meanings of text” (Afflerbach *et al.*, 2008:368). This definition is similar to the one given by Anderson (1991:460) who claims that reading strategies are “cautions and cognitive measures adopted by the reader for acquiring, storing and amending new information”. Reading strategies have become an important research area because they reveal how readers interact with text as well as what the relationship is between the use of reading strategies and improved reading comprehension (Alsheikh & Mokhtari, 2011:151; Carrell *et al.*, 1998:97; Mokhtari & Reichard, 2002:249; Mokhtari & Sheorey, 2002:2; Tercanlioglu, 2004:564).

The text is another important variable. “Texts can be difficult or easy, depending on factors inherent in the text (such as the text features), on the relationship between the text and the knowledge and abilities of the reader, and on the activities in which the reader is engaged” (RAND Reading Study Group, 2002:14). This study looked at the textbook, academic peer reviewed articles, PowerPoint presentations and notes as text, as prescribed and used by lecturers and students of University X.

Reading activity is also a variable which influences reading comprehension. “Reading does not occur in a vacuum. It is done for a purpose, to achieve some end. Activity refers to this dimension of reading. A reading activity involves one or more purposes, some operations to process the text at hand, and the consequences of performing the activity” (RAND Reading Study Group, 2002:15). In an undergraduate higher education setting, reading activities take a variety of forms, differing among lecturers, programmes and faculties. These activities are always part of an assessment such as a test, assignment or presentation. An activity in a sociology module for example, may be a case study in a test. In a business management module, the activity might entail a short quiz. In a law module, the activity may be a group discussion as the first step of a group assignment. In this study the term “task” will be used as a collective term for all the different activities which students complete as part of assessment within the context of the different modules.

Through the use of reading strategies, the metacognitive awareness of students' reading processes can be enhanced. This in turn could enhance reading with comprehension as students are able to monitor and manage their understanding of what, why and how they are reading. As is clear from Figure 1.1, reading with comprehension is influenced by the interaction between the reader himself/herself, the text and the activity within a socio-cultural context. When the nature of the effect of these variables on reading comprehension is known, as well as what reading strategies students use, recommendations can be made in terms of academic reading support required at universities.

1.6 Research questions

This study aimed to address the following research questions:

- What categories of reading strategies do first year undergraduate students report applying while reading academic texts in a higher education setting?
- What is the relationship between students' reading strategy use, reading comprehension and task achievement?
- How do lecturers and students themselves perceive first year undergraduate students' reading abilities, prescribed academic texts and tasks assigned by lecturers?

1.7 Hypotheses

The following hypotheses were formulated for this study:

H₀: There is no relationship between the reading strategy use, reading comprehension and the task achievement of first year students within a higher education setting.

H₁: There is a relationship between the reading strategy use, reading comprehension and the task achievement of first year students within a higher education setting.

1.8 Purpose of the study

The purpose of this study is to:

- identify the categories of reading strategies that first year undergraduate students report applying while reading academic texts in a higher education setting;
- clarify the relationship between students' reading strategy use, reading comprehension and task achievement;
- determine how lecturers and students themselves perceive students' reading abilities, prescribed academic texts and tasks assigned by lecturers and the implications of these perceptions for academic reading;
- give recommendations in terms of academic reading support required at universities.

1.9 Methodology

1.9.1 Literature review

To trace relevant and recent sources for purposes of the literature review, the data reference bases EBSCOHost, RSAT, SABINET and NEXUS were utilised to search for the following key terms: South African throughput rates, universal throughput rates, academic literacy, tertiary/undergraduate/university, reading, reading strategies, metacognitive awareness, read-to-learn, reading with comprehension (cf. section 4.2). The researcher mostly made use of peer reviewed journal articles. The reason for this was that it enabled the researcher to access recent scientific studies on reading strategies and reading comprehension in the undergraduate context. It is generally accepted that studies published within the last five years are considered recent. The researcher initially limited her search to articles published from 2010 up to 2015 as this study commenced in 2015. During the course of the study, new journal articles were also included up to 2017. The time frame was later expanded to include articles published prior to 2010, as the researcher identified useful articles from the reference lists of applicable articles published after 2010. Only articles written in English were considered. A number of chapters from edited publications were also included in the literature review as well as one conference proceeding.

1.9.2 Empirical investigation

1.9.2.1 Research paradigm

All scientific research is conducted within a way of viewing one's research material. This way of viewing or assumptions about the world is the research paradigm (De Vos *et al.*, 2011:41; Firestone, 1987:16). The roots of quantitative and qualitative approaches extend into different philosophical research paradigms, namely that of respectively post positivism and constructivism (Creswell, 2003:6, 18). The difference in philosophical paradigms raised the question whether the research problem of this study should be addressed exclusively by a single research approach or by both approaches.

The research problem, accompanying research questions and hypotheses are of a multifaceted nature. For this reason both quantitative and qualitative approaches were selected for this study. The combination of research approaches led to the adoption of a pragmatic position to conduct the research (Creswell, 2003:11, 12) (cf. section 4.3.1). Pragmatism has been considered the best philosophical foundation for justifying the combination of different methods within one study (Maree, 2007:263). Pragmatists believe that the truth is "what works" best for understanding a particular research problem. A major argument of *pragmatism* is that quantitative and qualitative methods are compatible. Thus, a pragmatic approach offers a practical, "middle ground" orientation in relation to the post positivism paradigm of quantitative research and interpretivism which is the paradigm of qualitative research (Johnson & Onwuegbuzie, 2004:17). According to

Creswell (2003:12), "...pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as to different forms of data collection and analysis."

1.9.2.2 Research approach

The nature and complexity of the research problem and research questions, called for both a quantitative as well as a qualitative research approach (cf. section 3.3.2).

Quantitative research aims to objectively measure variables in some numerical way (Firestone, 1987:16; Leedy & Ormrod, 2005:97; Maree, 2007:145). Quantitative research is seen as deductive where the researcher tests hypotheses with data. Description, explanation and prediction are the most common research objectives in this type of research. The nature of observation in quantitative research is an attempt to study behaviour under controlled conditions. Variables are measured with structured and validated measuring instruments to collect data, which is analysed by means of statistical computer programmes. These programmes determine statistical relationships between variables where after a quantitative report is compiled which includes different numbers, calculations and results of statistical importance in order to accept or reject the stated hypotheses (Johnson & Christensen, 2010; Leedy & Ormrod, 2005:98).

Qualitative research aims to obtain, analyse and understand rich descriptive data pertaining to a specific subject or context (Maree, 2007:50). This research approach is concerned with understanding the processes and the social and cultural contexts which underlie behavioural patterns. Qualitative approaches focus on phenomena that occur in natural settings as well as studying these phenomena in all their complexity (Leedy & Ormrod, 2005:133). This approach is ideal to address the "why" questions of a study. Qualitative research is not simply the analysis of a few open-ended questions and quotes from transcripts, but delves deeper into the understandings of the perceptions, views, values and attitudes of the participants.

A quantitative approach fits this study as numerical data about perceived reading strategy use were obtained from a sample of a population, in this case a randomly selected group of first year undergraduate students. Numerical data of the results of reading strategies, reading comprehension tests as well as task achievement were also used in a statistical analysis to determine the nature of the relationship between reading strategies, reading comprehension ability and task achievement. A qualitative approach is also applicable as narrative data (by means of semi-structured interviews, focus groups and document analysis) were obtained about reading abilities, academic texts in English and the activities given within modules.

As both a quantitative and a qualitative approach were needed in this study, a mixed method research design was used.

1.9.2.3 Research design

A mixed method research design was used in this study. This design draws from the strengths of quantitative and qualitative approaches. According to Maree (2007:261), the combination results in richer and more reliable research results. The combination will also ensure that findings are not a single reflection of a specific method and will enable the achievement of broader and more in-depth results to avoid insubstantial evidence (Denzin & Lincoln, 2005:722).

The purpose of the mixed method design in the context of this study was to collect numerical data about the use of reading strategies, results of reading comprehension tests and task achievement (quantitative), as well as to collect descriptive/narrative data from students and lecturers about students' reading abilities, the nature of the prescribed academic texts in English and the tasks given (qualitative). This increased the validity of the research by the convergence of the data from the different methods as mixed methods research is regarded as a form of triangulation (Rocco *et al.*, 2003:22, 23). Four procedural considerations were considered: level of interaction between strands, the priority of the strands, timing, and mixing. A convergent parallel mixed method research design was best suited for this study. Consult Chapter 3, section 3.3.3 for a detailed discussion of the attributes of the design as well as the developed research model (cf. Figure 3.1).

1.9.2.4 Sampling

A population is the totality of persons with which the research problem is concerned (Maree, 2007:147). In this study the population is first year undergraduate students in a higher education setting, specifically first year on-campus undergraduate students. Time and cost considerations make it very difficult to include all first year on-campus students at University X. Therefore, a smaller number of students was selected to make the study feasible. The researcher made use of stratified random sampling as a quantitative sampling procedure and key informant sampling as well as purposive sampling as qualitative sampling procedures. The strata in this study are seven different faculties at the university. For a detailed discussion of the sampling techniques used, please see section 3.3.4 and Figure 3.2.

As stated, seven faculties of the university were used in this study. From each faculty, one programme was chosen (e.g., BEd), and within this programme two modules were identified. The lecturers responsible for the modules voluntarily participated, which added to a total of fourteen lecturers who participated in this study, two per faculty. Through purposive sampling, a group of

students enrolled in each of the seven programmes were selected and of the group a number of students voluntarily agreed to participate. The final number of participants totalled 558 students from seven different faculties. (cf. section 3.3.4 for a breakdown of the number of participants per faculty).

1.9.2.5 Data collection methods

As this study made use of a convergent parallel mixed method research design, quantitative as well as qualitative methods were used for data collection.

1.9.2.5.1 Quantitative methods

“Quantitative data-collection methods often employ measuring instruments” (De Vos *et al.*, 2011:171). A questionnaire was one of the measuring instruments used in this study. The collection of reading comprehension data as well as task achievement data also formed part of the quantitative methods. For a complete discussion of the quantitative methods refer to section 3.3.5.1.

i) Questionnaires: This study made use of The Survey of Reading Strategies Questionnaire (SORS) as a measuring instrument. This instrument measures three broad categories of reading strategies, namely global reading strategies, support strategies and problem solving reading strategies (cf. section 3.3.5.1). The method of group administration of the SORS was used whereby a group of respondents enrolled in the same programme within a faculty, completed the questionnaire (Maree, 2007:157).

ii) Reading comprehension: The reading comprehension abilities of the first year students was measured by means of a computer based reading and language programme called Readers are Leaders. This programme was developed by the South African educational software company Four Blind Mice. With this software, the reading comprehension abilities of students are measured through dynamic comprehension exercises assessed in English (Readers are Leaders, 2015). This programme is used within the Academic Services Department of University X. It forms part of the compulsory reading assessment of first year students in three academic literacy modules (AGLA121/AGLE 121/FIAP172).

iii) Task achievement: Task achievement was measured by attaining three or four marks per participant (i.e., summative assessment). Two modules were selected from a single programme for each faculty and so marks were collected per participant per module. Some of the marks were for selected tasks done throughout the semester and two of the marks were the final participation

mark the participant achieved in two modules. For a discussion on what a participation mark entails, refer to section 3.3.5.1.

1.9.2.5.2 Reliability and validity of quantitative methods

The SORS instrument is valid and reliable as it was field-tested extensively with diverse student populations and was found to have well-established psychometric properties including validity and reliability data (Alpha = .93) (Alsheikh & Mokhtari, 2011:153). Cronbach alpha coefficients were also calculated for this study (cf. section 3.3.5.1).

The Readers are Leaders programme has content and face validity. It appears to measure reading comprehension and reading speed as readers (i.e., students) have to read passages and answer questions about the passages while the time they take to do so, is measured (cf. section 3.3.5.1). It has not gone through a rigorous analysis process and the reliability of the Readers are Leaders programme has not been statistically determined.

With regard to task achievement, each of the fourteen lecturers responsible for the modules selected for this study, set up the different tasks which formed part of the participation mark for the module. According to Brown (2001:16), “validity in educational assessment is a matter of judgement...” It is up to the lecturer who created the task to ensure that the criteria of the task match the intended learning outcomes. It can be assumed that the responsible lecturer would go to great lengths to ensure that the criteria of the task did indeed match learning outcomes and for that reason tasks at the university are typically moderated internally and sometimes also externally.

Brown (2001:16) continues to contextualise reliability in educational assessment as the “...consistency of marking against the criteria provided.” All tasks used in this study had either a rubric or memorandum to ensure marking consistency which increased the reliability of the tasks (cf. section 4.3.5.1).

1.9.2.5.3 Qualitative methods

In addition to the quantitative data collection methods, qualitative data collection methods in the form of interviews, focus group discussions and document analysis were also used in this study. For a complete discussion of the qualitative methods, see section 3.3.5.2.

i) Interviews: In this study, recorded semi-structured interviews were undertaken with the fourteen lecturer participants. They were all responsible for the content and development of a first-year module in a specific programme within a faculty (i.e., two lecturers per faculty

responsible for two different modules). Through the interviews, data were collected about the reading abilities of the students as well as the perceived readability and use of textbooks and other academic materials prescribed to first year students. Information was also obtained about the tasks the first year students had to complete in the identified modules, more specifically the format and structure of the task(s).

ii) Focus group interviews: Seven recorded focus group interviews were conducted in this study with a group of willing first year students, all enrolled in the same programme, from each of the seven faculties. The groups ranged from five to nine participants. The purpose of the focus group interviews was to gain information about and examples of the type of texts that students need to read in a certain module. The focus group interviews also provided the researcher with the opportunity to record the students' opinions about their own reading abilities, their thoughts on the prescribed academic materials and the format and structure of one or two tasks they had to complete in the specific modules.

iii) Document analysis

Document analysis is a systematic procedure for reviewing or evaluating documents, both printed and electronic (e.g., computer-based and Internet-transmitted) material. Like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008:65). The following faculty-specific documents were collected for analysis in this study:

- Chapters from academic textbooks
- Peer-reviewed journal articles
- A document reporting on a South African court case
- Lecturer notes made available to students
- PowerPoint presentations created by lecturers
- Specifications of tasks and the rubrics with which the tasks were marked
- Tests and their memoranda

Excerpts from the textbooks, articles and the court case were analysed with the Coh-Metrix Common Core Text Ease and Readability Assessor (T.E.R.A.). This is an online tool available for research purposes on the internet. It analyses texts not only on surface difficulty, but on multiple characteristics and multiple levels. See section 3.3.7.2 for a detailed discussion of T.E.R.A.

The document analyses of the selected tasks were completed by means of the Umalusi typology (cf. section 3.3.7.2). This instrument enabled the researcher to determine the cognitive levels involved in each task as well as the difficulty levels of the tasks or questions.

1.9.2.5.4 *Trustworthiness*

The aim of trustworthiness in a qualitative inquiry is to support the argument that the inquiry's findings are "worth paying attention to" (Lincoln & Guba, 1985:290). Both the semi-structured interviews and the focus group interviews are data collection methods included in this study to gather data about the type of text that first year students read and the nature of the tasks students need to complete in a module to achieve the outcomes of that module. These two methods provided the researcher with information from the lecturer's perspective as well as the first year student's perspective. Involving both parties in this study enhances the trustworthiness of the data. Paper trails were also kept and the research methods were also audited by a competent peer.

1.9.2.6 Data collection procedure

Data collection was conducted in the following manner (cf. section 4.3.6):

i) Questionnaires: The first year students who agreed to take part in the study, completed the SORS at a time and venue that suited both the students, lecturers involved and the researcher, over a time period of two months. Students made use of an official multiple-choice answer sheet. The researcher clarified questions when students were uncertain.

ii) Reading comprehension: Five hundred and fifty of the five hundred and fifty eight students who participated in this study completed the compulsory reading comprehension assessment on the educational computer software programme, Readers are Leaders. They did so at the reading laboratory on the campus. The software programme provided a report of the reading comprehension ability of each student.

iii) Task achievement: The marks of one or two tasks as well as the participation mark was attained for each module, per participant. So for each participant, task marks and a participation mark were obtained for module A and module B from the lecturers as well as the administrative office of each faculty.

iv) Semi-structured interviews: Fourteen lecturers were interviewed, two per faculty. A single interview took place at the office of each of the lecturers at a convenient time. The interviews were recorded for data analysis purposes and conducted according to a semi-structured interview schedule. This schedule specified predetermined questions and sequences for the interviewer.

v) Focus group interviews: Focus group interviews were held with five to eight first year students from the same faculty. Purposive sampling was applied by grouping students to gather information about prescribed texts and activities for two modules they were all enrolled in. Students of the same faculty were homogeneous in this aspect as they had to attend the same classes conducted by the same lecturers. The focus group interviews took place at a suitable venue at a convenient time for the interviewer as well as the selected group of first year students.

vi) Document analysis

Documents were collected during the semi-structured interviews, as part of the interview focussed on the type of academic material prescribed for the selected modules as well as the assigned tasks.

1.9.2.7 Data analysis

Quantitative and qualitative data analyses were done in this study (see Figure 4.1):

1.9.2.7.1 Quantitative analysis

i) Questionnaires: Scoring of the SORS was completed by transferring the scores obtained for each strategy to the scoring sheet which accompanied the instrument. Once individual scores were recorded, a total score for the entire instrument was calculated, as well as for each of the three strategy subscales: global reading strategies, cognitive strategies and support strategies. These scores were then interpreted using the interpretation key provided (Mokhtari & Sheorey, 2002:4). “The usage levels provides a convenient standard for interpretation of the score averages” (Magogwe, 2013:6).

The information obtained from the SORS, was captured on computer and descriptive statistics were used to organise and summarise the data in a meaningful way (De Vos *et al.*, 2011:251; Leedy & Ormrod, 2005:289; Maree, 2007:183).

ii) Reading comprehension and task achievement: The Pearson product moment correlation is the most widely used statistic for determining whether two or more variables are in some way associated (Leedy & Ormrod, 2005:265; Maree, 2007:234). This statistic was used to determine the nature of the relationship between perceived reading strategy use, reading comprehension and task achievement. An effect size was also calculated to measure the magnitude of the correlation being tested (Maree, 2007:211). Cohen’s effect size r was used to determine if a practically significant correlation exists between the variables of reading strategy use, reading comprehension and task achievement (Cohen, 1988:26). The following scale was used for r -values:

Small effect: 0.1

Medium effect: 0.3 and also observable with the naked eye

Large effect: ≥ 0.5 and also practically significant

The gathered data from the questionnaire (SORS) were statistically computed by means of the STATISTICA (StatSoft Inc., 2016) and SAS (SAS Institute Inc., 2016) computer software programs to obtain related scores for the purpose of quantitative interpretation. A three-stage statistical procedure was followed (cf. section 3.3.7.1).

1.9.2.7.2 Qualitative analysis

Semi-structured interviews, focus group interviews and document analysis: The questions of the semi-structured interviews and focus group interviews as well as the applicable content within the documents (faculty-specific) was analysed by means of content analysis. “Content analysis is an inductive and iterative process where we look for similarities and differences in text that would corroborate or disconfirm theory” (Maree, 2007:101). The qualitative content analysis involved the following procedures applicable to the semi-structured interviews and the focus group interviews:

- Data were recorded by means of note taking and audio recording of responses.
- Responses from the interviews and focus groups were transcribed verbatim.
- The responses were analysed by making use of a coding process.

Coding is a process by means of which large quantities of data are broken up into smaller segments (Maree, 2007:105). The aim of coding is to look for themes and patterns that reappear in a single interview, focus group interview or among various interviews and focus group interviews. The coding process enabled the researcher to analyse and interpret the data. After the analyses and interpretations, themes emanated from the categories of the socio-cultural context, the reader, the text and the task (cf. section 3.3.7.2).

1.9.2.8 Ethical considerations

Before commencing the study, the researcher received ethical clearance from University X. Basic ethical principles were adhered to in this study.

1.10 Division of chapters

This study is organised into five chapters. Chapter 1 discussed the background context, purpose, problem statement and a brief review of the literature relating to reading strategies and reading comprehension. A theoretical framework and literature review is presented in Chapter 2. Chapter

3 outlines the research methodology and design of the study including the research paradigm, the research approach and design, participant sampling, data collection methods and procedures, data analysis procedures, reliability, validity and trustworthiness of the procedures. The quantitative and qualitative results of the study are presented in Chapter 4. Chapter 5 presents the merging of the findings and recommendations for academic reading support. Limitations of the study, recommendations for future research and the contribution of the study is also included in this final chapter.

1.11 Summary

Reading with comprehension is a fundamental skill at university. Reading strategies may be the key to enhancing reading with comprehension, which can have a positive influence on a student's task achievement at university. This chapter emphasised the research problem and purpose of this study. A brief overview of the research methodology was given to contextualise the empirical component of the research. The next chapter presents the theoretical framework and literature review.

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

Inadequate reading comprehension is a world-wide problem within the teaching and learning sphere (Goldman *et al.*, 2016:220). In the South African context it has been known for a number of years that many learners who pass through the education system, exit with insufficient reading comprehension skills (Berndt *et al.*, 2014:30; Bharuthram & Clarence, 2015:43; Pretorius, 2002a:174; Van Dyk *et al.*, 2013:353). For the few fortunate enough to enter higher education, comprehending academic text often represents a mine-field through which they struggle, unequipped and uncertain of what to do about this problem (Bharuthram, 2012:211; Boakye *et al.*, 2014:174; MacMillan, 2014:943; Pretorius, 2005:811; Schoenbach *et al.*, 2012:5; Taraban *et al.*, 2000:284). Reading strategies may be part of the solution as they fall within the metacognitive domain of reading comprehension and have been proven to be a teachable means to the end of understanding texts (Livingston *et al.*, 2015:1; Springer *et al.*, 2014:300).

The goal of this chapter is to identify central issues involved in reading strategy use and reading comprehension of first year students. A purposive sample coverage approach was taken in selecting literature for this chapter (Cooper, 1988:111). A theoretical framework is selected to uncover the relationships between variables including reading strategies that affect reading comprehension. The framework and the literature related to it, are discussed in one comprehensive section. As this chapter is organised around the theoretical framework, it has a conceptual format (Cooper, 1988:112).

2.2 Theoretical framework and literature review

Rosenblatt (1994:1057) defined a theoretical framework as “an abstraction or generalized pattern devised in order to think about a subject.” In this study, the theoretical framework was the point of departure. Not only as a pattern to think about reading strategies and reading comprehension, but also to “identify variables to be investigated and the possible relationship between them” (Tracey & Morrow, 2017:256).

The reading comprehension theoretical framework of the RAND Reading Study Group (2002) was suitable to theoretically ground this study (cf. Figure 1.1). The study group recognised that there were sizable gaps in the knowledge base of various reading comprehension frameworks. This made it difficult to determine which was better and how these frameworks fit together (RAND Reading Study Group, 2002:2). In an attempt to fill the gap in the knowledge base of the various frameworks, the RAND Reading Study Group (2002:x) defined reading comprehension and developed their own reading comprehension theoretical framework.

“We define reading comprehension as the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (RAND Reading Study Group, 2002:11). With this definition it is clear that the study group views the cognitive process of reading comprehension through a constructivist lens. According to Tracey and Morrow (2017:55), the constructivist view of reading emphasises that the reader actively constructs knowledge.

The study group’s definition of reading comprehension seems to include crucial elements of this complex process, such as the *extraction* and *construction* of meaning through *interaction* with text (Kieffer *et al.*, 2016:437; Livingston *et al.*, 2015:2; Wixson, 2017:77). The study group, furthermore, came to the conclusion that the text alone cannot be the determinant of reading comprehension and that comprehension can be conceptualised as the combination of three variables, namely “(t)he reader who is doing the comprehending, the text that is to be comprehended and the activity in which comprehension is a part.” These three variables occur within a socio-cultural context that influences and is influenced by the three variables (RAND Reading Study Group, 2002:11) (cf. Figure 1.1).

The value of this theoretical framework is that it clearly indicates that reading comprehension is the product of the interaction of variables and that each of these variables, both individually and in combination with each other, has implications for reading support (Woolley, 2011:21). Other research published since 2011 also used this theoretical framework, namely Catts and Kamhi (2017), Griffiths *et al.* (2011), Valencia *et al.* (2014), Wallach and Ocampo (2017) and Woolley (2011). A possible reason for its applicability in the different studies is its simple representation of a complex process and, in the words of Catts and Kamhi (2017:74), its “fluidness”. The researcher is of the opinion that this fluidness refers to the applicability of the framework in different contexts.

The RAND theoretical framework (2002) is suitable to explicate the conceptual foundations of this study, as the three variables are clearly distinguishable in the context of reading comprehension of first year university students. Firstly, from a constructivist viewpoint, without the students, or readers, there would be no comprehension. Secondly, in the university context reading is learning, and prescribed academic texts feature in each module. Thirdly, students are expected to complete tasks, often closely tied to reading in each of their modules and all this happens within a context which influences and is influenced by the reader, the text and the task.

Reading strategies have been positively related to reading comprehension (Bharithram, 2012:206; Duke *et al.*, 2011:64; Mokhtari & Sheory, 2002:6; Pretorius, 2000:46). For this reason first year students' reading strategies were also studied. A reader brings knowledge of reading strategies to the act of reading (RAND Reading Study Group, 2002:xiii). Therefore, reading strategies are part and parcel of the reader variable in the theoretical framework.

The theoretical framework is discussed and combined with a literature review relating to the core aspects of the framework. Firstly, the socio-cultural context is discussed. Thereafter follows a section on the reader. Then a discussion on the text is presented. The chapter concludes with a section on the task.

2.2.1 The socio-cultural context

This section firstly, describes the term socio-cultural. Thereafter, a review of literature is presented concerning the socio-cultural context of the university as an organisation and the individual student enrolled at the university. Then follows three subsections, the first is a review of literature about transitional challenges first year students and their lecturers face with specific examples from the disciplines of engineering, mathematics and humanities. The second section sheds some light on the role of the lecturer as a determiner of the instructional context and the third section reviews the influence of the digital environment on students' academic reading skills.

The term social, commonly refers to interactions between individuals and groups. Vygotsky (1980:24) is one of the prominent researchers who claimed that social interactions have an influence on learning. The term culture can be defined in a number of ways (Merriam-Webster online dictionary, 2017). Firstly it includes "the integrated pattern of human knowledge, belief and behaviour that depends upon the capacity for learning and transmitting knowledge for future generations". Culture is also "customary beliefs, social forms and material traits of a racial, religious or social group" and lastly culture can also refer to a "set of shared attitudes, values, goals and practices characteristic of an organisation." The term socio-cultural is thus a combination of the term social, referring to interactions, and culture which, depending on the context, may refer to amongst others, the pattern of human knowledge, customary beliefs of a certain group or the shared practises of an organisation.

In layman's terms, the socio-cultural context refers to "...everything going on outside the classroom which might impact upon learning outcomes" (Haggis, 2009:380). As the focus of this study is reading strategies and reading comprehension in a tertiary context, this statement can be rephrased as everything going on outside the lecture hall which impact upon reading strategies, reading comprehension and the attainment of module outcomes. According to

Margolis et al. (2001:8), “everything going on” includes different aspects such as the organisational culture and the dispositions and world views of individuals and groups involved.

Kahu (2013:766) divided the aspects of a tertiary socio-cultural context into two groups. One group was the socio-cultural aspects of the university. He included university culture, policies, the curriculum, assessment and discipline in this group. The other group was socio-cultural aspects of the student. These included previous knowledge, beliefs, background, support, family structure and “lifeload” (Kahu, 2013:766; Stauffacher et al., 2006:258). Kahu (2013:766) used the term “lifeload” to refer to the sum of all life pressures a student experiences. An example of these pressures might be the pressure to excel academically in order to qualify for a bursary.

Devlin (2013) researched the socio-cultural context of an Australian university and its influence on the tertiary success of students. Although the focus of the research was students’ overall tertiary success and not explicitly reading comprehension, her findings are applicable in terms of the socio-cultural challenges facing students and universities.

Research conducted on student success, is generally done by researching the individual student (Devlin, 2013:943). By researching the student, the assumption is made that academic success in a tertiary environment is the responsibility of a student. It seems as though universities expect students to reach all academic outcomes irrespective of the unique nature of his/her background, support, family structure, “lifeload”, previous knowledge and beliefs. Devlin (2013:941) continues that the expectations universities have of their students are usually unspoken or tacit and inherent in norms and discourses of the institution. Lawrence (2005:247) used the term implicit to describe these expectations and Williams (2005:157) referred to unexamined assumptions. These assumptions “...lie in insufficient recognition of the university as a cultural community with sub-cultures, each with its own discourse” (Williams, 2005:157). In this phrase, discourse refers to “a socio-culturally distinctive and integrated way of thinking, acting, interacting, talking, and valuing connected with a particular social identity...” (Gee, 1992:33). In the university context, a faculty is an example of such a sub-culture and the social identity of the faculty would involve a particular discipline such as Engineering or Education.

Lecturers as the employees of the university and members of these sub-cultures, get accustomed to the cultural discourse of the university, as well as the discourse of the discipline that they function in. That might be one of the reasons why these assumptions become tacit (Williams, 2005:157). Lawrence (2005:248) makes the following statement about lecturers’ implicit expectations:

The potential 'blame' that is attached to students, who are considered 'deficient' or 'underprepared' by teaching staff immersed in discourses, can be questioned. Staff need to accept their responsibilities in relation to their roles as educators and communicators. In fulfilling these roles it becomes the teachers' responsibility to make their discourses explicit. Academics need to explain the rules and to make explicit the hidden curriculum, the implicit expectations as well as the expected (but not stated) behaviours intrinsic to achieving success in their discipline.

When this is not the case, it poses challenges for students entering the tertiary environment.

A simple example of such a tacit expectation is evident in an instruction such as "write an essay on.." which should be interpreted as "type an essay on.." as tasks at university are expected to be typed and not handwritten. If a student is not aware of the implicit expectation, he/she will not complete the task correctly. The lecturer might reason that the student was too lazy to type the assignment or that he/she does not know how a computer works, when in fact the student did not complete the assignment correctly due to implicit expectations of the instruction.

The university as an organisation and its lecturers should be conscious of aspects of the students' socio-cultural context. Lawrence (2005:247) highlights the following: "Students might not have the entry knowledge assumed by their faculty, they might have lacking language abilities, might not know how to deal with the different text types such as textbooks or PowerPoint slides and their cultural practises might also cause disadvantages." It is paramount to note that students do not enter university with an assumed pre-knowledge (knowledge in place) which may not always be of the kind, quantity or quality assumed. Amongst other aspects, their knowledge, reading comprehension abilities, and culture differ and that should be taken into account in teaching and learning.

The RAND Reading Study Group (2002:xvi, 16) identified two main aspects of the socio-cultural context: the environments in which individuals live and function, as well as the context of instruction. In the socio-cultural context of the first year participants of this study, the transition from the school environment in which they functioned for twelve years, to the new university environment in which they need to function is an important aspect of the socio-cultural context. The transition between these two environments entails challenges which are discussed in section 2.2.1.1. The role of the lecturer as a determiner of the disciplinary instructional context is elaborated on in section 2.2.1.2. The first year student also typically spends time in the digital

environment and section 2.2.1.3 looks at the digital environment as an aspect of the socio-cultural context of first year students.

2.2.1.1 Transitional challenges of students in disciplinary instructional contexts

It is no surprise that the schooling of students is generally blamed for their under preparedness for higher education (Bharuthram, 2012:209; Scott, 2009:30; Van Dyk *et al.*, 2013:353). While the influence of problems of the South African school system cannot be denied, this section focuses on the discrepancy between what is expected of learners at school in terms of learning and the expectations of students at university. This section reviews selected studies about transitional challenges of first year students in disciplinary instructional contexts.

The context of instruction shapes the reader's purpose for reading and operations (RAND Reading Study Group, 2002:16). According to Kahu (2013:766), the context of instruction is part of the socio-cultural context of the university. Upon entering university, students transition from the school instructional context, into the instructional context of various disciplines. Within higher education the disciplinary fields of study can be broadly divided into natural sciences, social sciences and humanities (Kagan, 2009:2; Krishna, 1964:515). With this division in mind, this section includes a review of studies conducted within two of the three disciplinary fields, namely natural science, specifically engineering and mathematics, and humanities. Natural science and humanities are quite different in terms of their primary interests (Kagan, 2009:4), and so studies from these two disciplinary fields were included to present disciplinary transitional challenges in a tertiary context.

Firstly, Gibbon and Jandrell (2010) conducted research on the transitional challenges of first year engineering students in a South African context. The reason for their research was the failure rate of engineering students. They note that part of the problem is the transition from a procedural learning environment to a conceptual learning environment. These researchers state that school is a procedural learning environment (Gibbon & Jandrell, 2010:2). Procedural knowledge entails that learners know how to do a task and they master this mainly by rote learning. University is a conceptual learning environment. These researchers describe conceptual knowledge, as knowledge of relationships between items of knowledge (2010:2). Thus, first year students must make a shift from rote learning procedural knowledge, to understanding conceptual knowledge. At university, the understanding of conceptual knowledge is expected to happen through independent reading (Rusznyak *et al.*, 2017:210).

Gibbon and Jandrell (2010:3, 7) are of the opinion that it is the responsibility of the lecturers teaching first year modules, to “change the mind-set of students” so that they can adapt to the culture of learning conceptual knowledge in the discipline they are enrolled in. This culture of learning includes reading and understanding academic texts. These researchers describe the first year students as “raw material” which needs changing into what the system requires (Gibbon & Jandrell, 2010:7). This comment is an example of a viewpoint held by lecturers. It is clear from the description “raw material” that the socio-cultural contexts of their first year students are not taken into account and that they are seen almost as objects to be moulded according to the “system” which might refer to the university in general or specifically the engineering faculty. If one takes research conducted from a socio-cultural perspective into account, it is clear that first year students are not raw material, and that many aspects of their socio-cultural context such as background knowledge or “lifeload” might influence how students function in an academic environment, which includes their reading comprehension skills.

Gibbon and Jandrell (2010:3) report that while they consider the students as objects to be changed, the faculty also implemented certain measures to try and decrease the failure rates. One of these measures was the inclusion of an English literature module in the first year of the engineering degree. The purpose for the inclusion of English literature, was to improve the literacy of the students and their critical thinking (Gibbon & Jandrell, 2010:3). Other changes to engineering modules were also done, and while the researchers documented higher engineering module averages, they did not specifically research the influence of the English literature module on the improvements.

The action of including an English literature module in an engineering programme, is an example of a trend whereby the responsibility of supporting students’ academic literacy skills such as their reading abilities, is placed on lecturers teaching more language-orientated modules such as English literature. Nist (2005:786) points out that practises such as this are narrow minded, as it only addresses cognitive and linguistic factors. Part of the problem might be the “mismatch” of students coming from a procedural learning environment who need to adapt to a conceptual learning environment. This mismatch “...implicates lecturers much more radically in the learning process because it requires that they reframe their assumptions and address issues of their own practice before they can expect the radical reframing they require of students” (Nist, 2005:786).

Furthermore, disciplinary lecturers do “...view high levels of reading comprehension as a prerequisite to a student’s success” (RAND Reading Study Group, 2002:10), but it seems as though they regard themselves as “off the hook” in terms of reading instruction. According

to Niven (2005:786), lecturers such as those from the engineering faculty, "...do not regard themselves as involved with teaching reading" and this is clearly illustrated by the inclusion of an English literature module into an engineering course. This is not an accountable viewpoint as studies emphasised that content and reading skills in a specific discipline cannot be separated (Bharuthram & Clarence, 2015:53; Flippo, 2011:399; Joliffe & Harl, 2008:616; Shanahan & Shanahan, 2008:52; Shanahan & Shanahan, 2012:14).

Secondly, research on the transitional problems of students within the field of mathematics was reviewed. This field falls within natural sciences. Tall (1997) and Hong *et al.* (2009) studied some of the transitional problems of students entering this tertiary discipline. Within the mathematics discipline for example, learners at school have to understand "...how mathematical ideas are carried out.." and in the tertiary environment, students have to understand "...why mathematical ideas work" (Hong *et al.*, 2009:878). As Tall (1997:19) remarks "(d)on't just do mathematics, think about it".

Transitional challenges have implications for the reading strategies students use when reading their textbooks. If a student read a mathematical textbook with procedural knowledge in mind, he/she would skim and scan the textbook, focussing on the examples of calculations, when in fact, the passages before and after a calculation had to be read to understand not only how to do the calculation, but why the calculation should be done in a certain way. It seems as though this expectation is tacit and students do not receive specific instruction in this regard. The conclusion of the study is that lecturers and teachers have a role to play in aiding students to move from procedural knowledge to conceptual knowledge in the field of mathematics. This implies professional development in this regard (Hong *et al.*, 2009:888).

Thirdly, Niven (2005) and Weller (2010) conducted research on the transition of first year students from school to the tertiary disciplines of humanities in general. In the South African context, the disciplines of humanities are typically concerned with the knowledge of understanding and explaining human experiences in its totality (NWU, 2017). According to Weller (2010:87), "...the act of reading underpins the epistemology of the field" and good reading comprehension skills are "a default requirement". Teaching-learning activities within curriculums in humanities are often concerned with developing students' critical literacy. This means students should demonstrate "... the capacity to read texts closely and interpretatively" (Weller, 2010:87). Niven (2005:778) reached a similar conclusion. He states that within humanities, students are known to "read for a degree" and critical reading skills are central to the discipline's value. Yet, how students are inducted into this discipline and what they need to do to develop

into such critical readers are “...less well articulated” (Weller, 2010:88). This researcher comments that students are left to their own devices with regard to their reading comprehension skills as there are no deliberate lecturer interventions specifically focused on reading comprehension.

In her study within the context of humanities, Weller (2010:89) studied lecturers and students’ conceptions of reading and how each of these two groups approach reading for class. She found that there is tension between how lecturers and students understand academic reading. For lecturers, academic reading is of an interrelated nature, as they consciously make connections (Weller, 2010:93, 102). Lecturers are able to distance themselves from how they view the world in order to be open to an author’s point of view. Students on the other hand, do not view reading with comprehension as interrelated, but as one dimensional, where they either have to adopt or reject what they read (Weller, 2010:99, 102). What also stood out is that students find it important that the text they read is in line with their personal world view and they are only able to make connections between the text and their own experience. “Students perceive text as an aesthetic object that contains an author’s meaning waiting to be apprehended by the reader” (Weller, 2010:102). This statement indicates that students struggle with viewing academic reading as interrelated and with making the connections with aspects other than their own experiences.

Although this research was conducted in a certain institution with what Weller calls “a small number of participants” (Weller, 2010:89), the results are suggestive of a possible area of concern in the wider field of humanities. Upon entering tertiary institutions, students enrolled in humanity disciplines, are expected to be able to critically read and reflect on texts. This expectation is based on the outcomes that should have been achieved at Grade 12. However, their perception of what academic reading entails, and their lecturers’ perspectives are not aligned. It seems that students do not receive guidance in this regard. Weller (2010:89) notes that students struggling with reading are sent for non-discipline specific support and she suggests that this kind of support is not optimal. This supports the findings stated earlier, that disciplinary content and reading support cannot be separated (Bharuthram & Clarence, 2015:53; Flippo, 2011:399; Joliffe & Harl, 2008:616; Shanahan & Shanahan, 2008:52; Shanahan & Shanahan, 2012:14).

2.2.1.2 The role of the lecturer in the disciplinary instructional context

Within the disciplinary instructional context, the lecturer is like a conductor, orchestrating the teaching and learning activities of his/her module. The focus of this study is on reading strategies and reading comprehension and thus this section reviews findings of research conducted on the role of the lecturer specifically in terms of this focus.

According to Bernstein (1999:165), each discipline has a certain “gaze”; a certain way of viewing knowledge with a particular focus. This “gaze” unites researchers as a discourse community. Schoenbach *et al.* (2012:40) refer to “habits of mind” characteristic of a particular discipline. Lecturers themselves have these habits of mind with which they engage in their discipline. Lecturers also need to impart this “gaze” onto their students by making certain choices in the disciplinary instructional context (Bharuthram & Clarence, 2015:51). Lecturers usually have the freedom to choose the prescribed texts for their module and also design reading activities and other assessment.

Lecturers should put thought into the choice of texts and reading they assign.

How lecturers conceive, integrate and utilise assigned reading... does affect how students respond and take responsibility for practice (Brost & Bradley, 2006:101).

For this reason, assigned reading should be carefully planned, integrated and utilised (Del Principe & Ihara, 2016:230). This will impact the willingness of students to do the required reading. Berry *et al.* (2010:37) found that if students understood exactly what they had to read and why, they were more willing to comply. Their survey asked what would motivate students to read the textbook. Forty seven percent of the of the 264 financial undergraduates indicated that they would be more motivated to read if the lecturers told them exactly what was important to read. Aagaard *et al.* (2014:135-140) reported similar findings. They studied the type of lecturer behaviour that encourages students to engage with their textbooks. One hundred and five students participated in their study from different disciplines in different year groups. Students indicated that they would read prescribed texts if they were to get credit for it, if the text was used in class and if the size of the task was “shorter”.

Unfortunately, it seems as though lecturers are not as focussed on the reading comprehension skills of their students, as they are on the content of their discipline (Flippo, 2011:398). According to Wallach and Ocampo (2017:102), this should be the other way around. They remarked that reading comprehension “is pushed to another level” when reading disciplinary texts. As stated, this has to do with the conceptual knowledge students have to gain from reading as well as “...the sheer amount, the range of topics and the variety of the tasks” (Taraban *et al.*, 2000:284).

Two possible reasons why disciplinary lecturers seem reluctant to spend time on teaching disciplinary reading are “...their content-heavy modules” (Joliffe & Harl, 2008:615) and their inability to explicitly articulate the reading strategies they use when reading discipline specific academic texts. Bharuthram and Clarence (2015:43) attribute this to lecturers’ reading strategies being “common sense” to them. Joliffe and Harl (2008:614) state that a

disciplinary context of instruction that fosters reading comprehension, depends on lecturers who explicitly explain to students how the text to be read relates to valued aims of learning; shows clearly how the text reading should be manifested in tasks; and demonstrate specifically how students should read the disciplinary texts (Joliffe & Harl, 2008:614).

In conclusion, the transition from the school environment to the tertiary environment involves "...a transition to different types of reading, different amounts of reading and different approaches to success with reading" (Joliffe & Harl, 2008:615). Scott (2009) argues strongly that universities and especially lecturers in South Africa will have to identify how they can help students to overcome these transitional challenges.

Academic reading is the key to the scholarly door that enables students not only to gain knowledge, but to become a part of discourse communities (Bharuthram & Clarence, 2015:53). However, the transition from the high school environment to the tertiary environment in South Africa seems to be problematic. When these transitional challenges are recognised, it should have an effect on the lecturer's choice of prescribed text, the reading tasks and assessment as well as the way the students are instructed and supported in the tertiary environment.

2.2.1.3 The influence of the digital environment

The term digital environment includes all digital technologies and platforms that students engage with daily, for example the internet and social media such as Facebook. Digital technologies include combinations of sound, print and images. In the lives of many students, the digital environment forms part of the socio-cultural context within which reading comprehension occurs (Woolley, 2011:21). As stated by Park and Kim (2017:63), the digital environment "permeates our lives" and as a result, also permeates how and why students read. A brief review of positive and negative influences of the digital environment on academic reading is presented in this section.

Texts students interact with most enthusiastically are technology based (Joliffe & Harl, 2008:612; Schoenbach *et al.*, 2012:10). This statement is supported by Singer and Alexander (2017:2), who state that "all signs point to a growing presence of digital reading in the lives of students and their teachers." This growing presence has implications. If one looks at the implications of the digital environment in terms of gains, the availability of information is one of the most prominent. According to Copeland *et al.* (2016:30), the digital environment makes vast amounts of information readily available. Electronic platforms such as databases and search engines, enable the student to locate information quickly (Podolsky & Soiferman, 2014:9). Wolf and Barzillai (2009:32) stipulate that digital technologies emphasise information processing, flexible

multitasking, quick modes of communication and endless digital entertainment. Added to this are the facts that in a digital environment, students as readers “...can generate their own constructions of texts and offer critical responses that need not adhere to the sanctioned judgements of literary experts” (Lang, 2012:2). This gives the reader a sense of power in the digital environment as he/she can be an author or a critic. All that is needed is a device with connection to the internet. These might be some of the reasons why students are enthusiastic about texts within this environment (Birkerts, 2006:27).

The readily available and continuously updated information also empower students with a global perspective on current issues (Birkerts, 2006:27). As information about climate change is available in the digital environment from all over the world, the student can use these different points of view to inform his/her own. With the vast array of informative videos available on a digital platform such as YouTube, students are able to broaden their knowledge about different topics and situations (Birkerts, 2006:27). In the digital environment, students also have access to new tools such as applications and become part of online communities (Park & Kim, 2017:64).

The consequences of the digital environment can also be looked at in terms of losses (Birkerts, 2006:27), more specifically losses in terms of reading strategy use. Miall (2012:204) describes the actions of a reader when reading a text in the digital environment:

I may need to click the mouse to scroll down the current text window; I must choose a link or click a button to move from this window to the next; the menu of options at the top of the screen provides other actions; the hypertext may open up a graphic: either I examine then dismiss it in order to proceed, or the graphic provides a site for interaction.

As is clear from this description, the nature of the digital content causes students to do large amounts of “browsing reading” and not necessarily delve deep into texts. Schoenback *et al.* (2012:10) point out that students lack attention, persistence and confidence for reading longer text in depth. This is because they are continuously distracted by the dynamic nature of information in the digital environment, as amongst others, advertisements appear or the student is notified about a social media event (Copeland *et al.*, 2016:30; Fox *et al.*, cited by Copeland *et al.*, 2016:31; Wolf & Barzillai, 2009:32). These mentioned distractions reinforce rapid attention shifts to such an extent, that the students struggle to focus their attention to a single text. The student “...become(s) a surfer looking for satisfaction down an endless chain of links, rather than finding it in the window opened up by the text itself” (Miall, 2012:205). As “surfers”, Park and Kim (2017:64) found that students waste time navigating different websites and this causes them to lose the thread of the topic they were searching for.

The digital environment also decreases opportunities for students to learn disciplinary specific vocabulary (Snow, 2010:452). The majority of texts in the digital environment do not seem to include many features of academic language such as “a high density of information-bearing words” (Snow, 2010:450). Thus, by spending time reading in this environment, it decreases access to “good models of academic language” which includes general academic and technical vocabulary (cf. section 2.2.2.3). Thus, students have less opportunity to acquire academic vocabulary.

Furthermore, the technologies of entertainment take up time which once belonged to the book. It is not only difficult to make time for reading, habits needed for reading on screen make it harder to “engage the single-focus requirement of reading” (Birkerts, 2006:201). Aberšek and Aberšek (2013:93) found that digital reading behaviours such as “...skim reading, scanning and speed reading are leading to lower comprehension”. Readers are looking for shorter paragraphs and small bits of text.

The influence of the digital environment cannot be ignored. From the reviewed studies it was clear that digital technologies are possibly changing the way students read. Engaging in academic reading that is neither particularly easy nor very interesting seems to be juxtaposed against entertaining reading in a digital context and it seems as though the digital environment influences the academic reading of students.

2.2.2 The reader

From a constructivist perspective the reader actively constructs knowledge and is thus central to the process of reading comprehension. In this section the focus is on the reader’s cognitive capacities brought to the act of reading (RAND Reading Study Group, 2002:11). The introduction of this section provides a brief overview of the undergraduate reader in terms of reading experiences and reading abilities. Then follows a discussion on three of the reader’s cognitive capacity resources needed for the process of reading comprehension.

Some of the reading experiences of undergraduate students have been recorded by research. It seems as though many undergraduate students are experiencing reading at university as frustrating (Pretorius, 2002a:171; Schoenbach *et al.*, 2012:5). Research findings also point to the fact that undergraduate students experience uncertainty about their own reading abilities. They are uncertain if they fully understand what they are reading. Some findings point to the fact that students seem to be satisfied with only understanding the gist of a text, and so they think their reading abilities adequately meet tertiary expectations (Kwon & Linderholm, 2015:159; Nist & Simpson, 2002:4; Pressley *et al.*, 1997:8; Pretorius, 2005:799).

Reading stamina and reading speed are two of the many reading abilities of undergraduate readers. Springer *et al.* (2014:304) found that undergraduate readers lack reading stamina. These researchers define reading stamina as "...the ability to maintain reading effort over time without support". It is crucial for reading at an undergraduate level as the reading load at university is such that without reading stamina, students may feel frustrated, anxious and discouraged.

Reading speed is most frequently measured by determining the number of words read per minute. The primary function of reading is comprehension and although reading speed is not a direct measure of comprehension, research has proven it to be a strong predictor of reading abilities (Skinner *et al.*, 2009:1044). Bell (2001:2) notes that different reading purposes require different reading speeds and that reading speed without comprehension is worthless. In the tertiary context, students have to adjust their reading speed to read academic text with comprehension for learning to take place. There is also often a large amount of reading to be done in the different modules such as the reading of scholarly articles as well as chapters from textbooks in a few days, and so a slow reading speed could cause time constraints and demotivate the reader.

There seem to be different opinions about the suggested reading speed most beneficial for undergraduate students. Taylor (1965:193) stipulates that undergraduate students need to be able to read 280 words per minute and understand 70% of what they read. At University X, the required level of reading is 220 words per minute with 80% comprehension (Meihuizen, 2017:4). Kwon and Linderholm (2015:161) conversely found in their study that "...reading speed does not always align with reading ability". The reader can use successful strategic reading to understand what is being read, even if it is at a slower pace. In support of these findings, the research of Pretorius (2000:45) indicates that the reading speed of undergraduate students in a South African context can be slower than 280 words per minute. According to her research, a reading speed of at least 150-180 words per minute is advantageous for undergraduate students in a South African context.

Cognitive capacity can be defined as "the limited pool of energy, resources or fuel by which some cognitive processes are mobilized and maintained" (Johnston & Heinz, 1978:422). In the context of this study, the focus is on the resources needed for the cognitive process of reading comprehension (cf. section 2.2). These cognitive capacity resources include the knowledge of reading strategies, vocabulary knowledge and reading motivation. True to the theoretical framework (cf. Figure 1.1), these resources are not static, but are influenced by the text being read, the reading activity and the socio-cultural context. The focus of section 2.2.2.1 is the

reader's knowledge and use of reading strategies, section 2.2.2.2 is concerned with reading motivation and section 2.2.2.3 looks at the knowledge of vocabulary.

2.2.2.1 Knowledge and use of reading strategies

The value of reading strategies in the context of undergraduate academic reading, lies in the fact that reading strategies have been proven to positively impact reading comprehension, and that reading strategies can be taught (Aberšek & Aberšek, 2013:104; Aflah, 2017:21; Alsheikh & Mokhtari, 2011:151; Carrell *et al.*, 1998:97; Mokhtari & Reichard, 2002:249; Mokhtari & Sheorey, 2002:2; Pretorius, 2000:46; Quiroz, 2014:8; Springer *et al.*, 2014:300-301; Tercanlioglu, 2004:564; Van Kraayenoord, 2010:285). This section firstly defines reading strategies. Thereafter the difference between comprehension strategies and reading strategies is indicated, and reading strategies are defined. This is followed by an overview of reading strategy classification. This section concludes with a discussion of the instruction of reading strategies.

The field of reading strategies has its origin in the work of Flavell (1979), who is considered the father of metacognition. According to Van Kraayenoord (2010:278), Flavell's research "provided understandings about a reader's reflective processes." Simplistically explained, metacognition is thinking about how you think and being able to regulate your thinking. In the field of reading comprehension, metacognition means thinking about how you read and being able to regulate your reading (Aflah, 2017:11, 13). In this definition, the two components of metacognition can be distinguished namely knowledge about cognition, also known as metacognitive knowledge and the regulation of cognition, often termed self-regulation (Van Kraayenoord, 2010:278).

Flavell (1979:906) states that metacognitive knowledge plays an important role in reading comprehension. Metacognitive knowledge includes knowledge about yourself as the reader, the task and the strategies to be used to complete the task (Flavell, 1979:906, 907; Aflah, 2017:14). This is where reading or comprehension strategies fit in. They are part of readers' metacognitive knowledge which can be used in the completion of a reading activity.

According to Tercanlioglu (2004:562-563), there is a lack of consensus about the definition of reading strategies. From reviewing selected literature, it became clear that there was not only a lack of consensus about the definition of reading strategies, but also confusion of the terms reading strategies and comprehension strategies. Aberšek and Aberšek (2013:104), Block and Duffy (2008:21), Duke and Pearson (2002:212-222), Duke *et al.* (2011:64), and Holschuh and Aultman (2009:131) are some of the researchers who use the term comprehension strategies, while Taraban *et al.* (2000:285), Van Kraayenoord (2010:280,289) and Winch *et al.* (2012:90-91)

use the term reading strategies and comprehension strategies interchangeably. It is of importance to clarify the two terms.

“Comprehension strategies include both building background knowledge and reading comprehension strategies” (Aberšek & Aberšek, 2013:104). From this definition it seems as though comprehension strategies encompass reading strategies as well as prior knowledge. According to Holschuh and Aultman (2009:1131), the use of comprehension strategies leads to self-regulated learners and Winch *et al.* (2012:93) discussed SQ3R (survey, question, read, recite, review) as an example of a comprehension strategy. The main difference seems to lie in the research context in which these two terms are used. Reading strategies seem to be used in a reading comprehension context while the term comprehension strategies seem to be used in a study context. This difference is, however, not clearly distinguishable as learning could also take place from reading a text with comprehension. This study set out to learn more about how students read and if they understand what they are reading. The majority of literature with a similar purpose used the term reading strategies. Hence this term will also be used in this study as opposed to the term comprehension strategies.

Reading strategies can be defined as “mental plans, techniques, and actions taken while reading academic materials” (Mokhtari & Sheory, 2002:2). Afflerbach *et al.* (2008:368) define reading strategies in more detail as “deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words, and construct meanings of text”. The purpose of these plans or attempts is to help the reader solve any problems in terms of understanding what is being read, during the reading process (Mokhtari & Reichard, 2002:249).

Partly due to the lack of consensus about the definition of reading strategies, the literature available on tertiary students’ reading strategy use differs to such an extent that presenting an overview of reading strategy use by undergraduate students was challenging. Not only were the studies reviewed conducted in different disciplines and age groups, but the purpose of the used strategies that the studies looked into, were, among others, reading, comprehension, learning, language learning, studying or understanding. Often, the main focus of studies which included reading or comprehension strategies were English language learning studies which looked into how strategies enabled the student to learn English to such an extent that he/she could use the language in an academic context. Thus, an overview of reading strategy use by tertiary students was not included in this literature review as there were major discrepancies in terms of terminology, reading/comprehension strategy use, the purpose of the reading strategy use and the context of the studies.

Many different reading strategies have been recommended as significant to aid reading comprehension. Brown (cited by Van Kraayenoord, 2010:285) included for example, “clarifying the purposes of reading; identifying the important elements of the message; focussing on the main content; monitoring ongoing activities to determine whether comprehension is occurring; reviewing and self-questioning to determine whether goals are being achieved; making corrections when comprehension failures are detected; and recovering from disruptions and distractions.” Pressley and Afflerbach (cited by Iyitoglu & Aydin, 2015:3) list monitoring and evaluating reading processes and materials; setting goals before reading; paying attention to text structure; reading at a flexible speed; and stopping to reread. Skilled readers also make predictions before they read and after they have read, they make summaries and draw inferences. Lists of strategies such as these lead to the categorisation of reading strategies. According to Quiroz (2014:2), categorisation aids the investigation of the reading strategies to discover how strategies impact on reading comprehension.

Some researchers categorise the strategies according to the different stages of the reading process, namely pre-reading, while-reading and after-reading strategies (Paris *et al.*, 1996:634; Winch *et al.*, 2012:43). According to Li and Kaur (2014:3), this categorisation has drawbacks as some strategies are used multiple times during the different stages. Reading strategies can also be categorised as either being cognitive, or metacognitive (Boakye *et al.*, 2014:184; O’Malley & Chamot, as cited by Li and Kaur, 2014:3). Cognitive reading strategies are specified where the material to be read is manipulated while metacognitive strategies are more general as they address specific reading activities. This categorisation is not clear, as metacognitive reading strategies are used to regulate the cognitive reading strategies. An example of a cognitive reading strategy is adjusting reading speed and an example of a metacognitive reading strategy is determining how to strategically proceed (Li & Kaur, 2014:4). This categorisation is vague, as the strategies belonging to the metacognitive group can be difficult to understand and execute on a practical level.

Mokhtari and Reichard (2002) conducted in-depth research on reading strategies which stem from a taxonomy of strategies by Pressley and Afflerbach (1995:105). Mokhtari and Reichard (2002:252) developed the Metacognitive awareness of reading strategies inventory (MARSII) in which they categorised reading strategies according to their function. The categorisation of reading strategies in MARSII was a result of theoretical considerations and an analysis of the thirty items of their survey. The analysis yielded three factors or categories, which were named according to the main function of the strategies in each category. The three categories are global reading strategies, support reading strategies and problem solving reading strategies (Mokhtari & Reichard, 2002:252-253). Global reading strategies include all strategies used to monitor and

manage reading such as previewing a text and taking an overall view of the text. Support reading strategies involve using outside aids to help comprehend what has been read, for example taking notes and summarising. Problem solving strategies are the category of all reading strategies used to solve problems while reading a difficult text for example guessing the meaning of unknown words and rereading the text.

The use of the MARSII lead to further refinement and the development of the Survey Of Reading Strategies (SORS) instrument developed by Mokhtari and Sheory (2002). The SORS was used in this study (cf. section 2.3.2; Addendum A). When a student as a reader and the lecturer has an idea which group of strategies or individual strategies students perceive to use the most or the least, it could inform practise. The lecturer could identify which of the individual strategies are useful in the discipline and then teach and model the use of the strategies in the disciplinary context.

Teaching applicable reading strategies should be part of instructing students how disciplinary texts should be read. Knowledge of reading strategies is not only part of the student's (reader's) cognitive capacity, but they are also part of the lecturer's cognitive capacity. Lecturers as disciplinary experts, use reading strategies "to engage in the work of the discipline" (Shanahan & Shanahan, 2012:8). These researchers state that because differences exist in different disciplines, the reading strategies employed to comprehend disciplinary texts also differ. "Historians study past events to examine the sources, scientists analyse to exact evidence and logic, mathematicians focus on the implications of a set of truths and literature explores fictional or imaginal representations of human relations" (Shanahan & Shanahan, 2012:12; Shanahan & Shanahan, 2008:51). Hence, lecturers as determiners of the disciplinary instructional context should be conscious of the fact that they use different reading strategies than novices in their fields and different reading strategies than experts in other fields. As lecturers, they are responsible to teach their students how to use reading strategies so that they too, can effectively "engage in the work of the discipline" (Shanahan & Shanahan, 2012:8).

Reading strategy instruction and use are necessary to improve comprehension (Van Kraayenoord, 2010:284; RAND Reading Study Group, 2002:32). However, if the taught strategies "are not closely linked with knowledge and understanding in a content area, students are unlikely to learn the strategies fully, may not perceive the strategies as valuable tools and are less likely to use them in new learning situations with new text" (RAND Reading Study Group, 2002:39). Brost and Bradley (2006:107) echo this sentiment in their own findings. They state that reading strategies have been recommended by researchers without clearly indicating how the strategies

should be integrated in modules where the focus is not reading skills but disciplinary content. In the disciplinary instructional context, reading strategy instruction and use should therefore be closely linked to disciplinary content.

Finally, “learning and implementing reading strategies...enable not only a more efficient use of time but also an easier and more sustained period of reading” (Şen, 2009:2301). The knowledge and use of reading strategies can furthermore also provide “motivational advantage” for readers (Afflerbach *et al.*, 2008:370). These researchers state that readers who make use of reading strategies “feel confident that they can monitor and improve their own reading so they have both knowledge and motivation to succeed.” So, the knowledge and use of reading strategies may have a positive impact on reading comprehension as well as reading motivation. The next section reviews further findings on reading motivation in the context of undergraduate students.

2.2.2.2 Reading motivation

During the review of literature concerning undergraduate students and reading comprehension, a number of studies investigated why students are reluctant to read prescribed academic texts. The prevalence of available literature on students not reading their textbooks, lead to the inclusion of this section on reading motivation. The section firstly defines reading motivation. Thereafter, a review is presented of studies concerned with undergraduate students’ apparent lack of reading motivation.

Motivation can be defined as “the natural human capacity to direct energy in the pursuit of a goal” (Ginsberg, 2005:218). Reading motivation can be understood as the capacity to direct energy in the pursuit of the process and outcomes of reading (Boakye *et al.*, 2014:177). Research indicates that motivation is paramount in reading comprehension. The “will and the thrill” is just as important as the skill (Duke *et al.*, 2011:61). Motivation is a multi-dimensional construct which can be divided into two main categories: intrinsic and extrinsic motivation (Boakye *et al.*, 2014:177; McGeown *et al.*, 2012:310; Reiss, 2012:152).

Caldwell (2008:222) states that intrinsic motivation stems from the reader himself/herself and can be defined as “doing something for its own sake” (Reiss, 2012:152). Intrinsic motivation has been proven to be beneficial in reading and highly predicts text comprehension (Becker *et al.*, 2010:774; Boakye *et al.*, 2014:177). When a reader is intrinsically motivated to read, he/she will spend more time and effort into fully comprehending the text (Becker *et al.*, 2010:781). Vos (2014:20) summarises different types of intrinsic reading motivation, based on the work of Sweet and Guthrie (1996): Readers read if they feel personally involved in the text and can associate with the text; readers read because they are inquisitive; they consider the reading of the text as

a challenge; and they enjoy the social aspects of reading where they can take part in discussions on a text. Intrinsically motivated readers are good readers because they read more than others and are able to read challenging texts because of their perseverance (Vos, 2014:20).

Extrinsic motivation does not stem from the reader himself/herself, but from external factors (Caldwell, 2008:222). Extrinsic motivation is when a reader is motivated to read by the possibility of receiving something (Ryan & Deci, cited by McGeown *et al.*, 2012:310). According to Vos (2014:20), types of extrinsic motivation can include material gifts such as prizes or money; special treatment for example to take part in a certain activity; marks; and verbal praise. In the tertiary context, not many of these mentioned examples are common practise. A lecturer would not usually reward students with prizes or special treatment. Marks usually extrinsically motivate students and they would ideally read in order to complete a reading activity for which they receive marks (Lane & Hayes, 2015:22). Students have been documented to prefer a variety of frequent reading tasks with clear instructions such as writing tests about the read content, quizzes and worksheets (Aagaard *et al.*, 2014:133; Starcher & Proffitt, 2011:399). Apart from tasks, students also reported that they would be motivated to read if advanced organisers were available to guide their note-taking while reading and if they used the textbook in class (Aagaard *et al.*, 2014:133; Pecorari *et al.*, 2012:250).

While the relationship between intrinsic motivation and reading comprehension has been well established, the same cannot be said for extrinsic motivation and reading comprehension. "Some studies suggest that extrinsic motivation is negatively associated with reading skill...however, others find no significant association between these two constructs. Other studies suggest that extrinsic motivation may even be beneficial" (McGeown *et al.*, 2012:310).

Unlike the first nine grades of school, a tertiary education is not compulsory, and so enrolled students are expected to *want* to learn. In the undergraduate context, it is assumed that the student is intrinsically motivated to complete all the prescribed modules for which he/she is enrolled, so that a degree can be obtained. As stated previously, reading is learning in a tertiary context (cf. section 1.4), so students should ideally be intrinsically motivated to read their prescribed academic texts. Yet, research suggests the opposite. According to Starcher and Proffitt (2011:397), a very small percentage of students actually read the prescribed academic texts.

Students seem unmotivated to read academic texts (Berry *et al.*, 2010; Birkerts, 2006; Brost & Bradley, 2006; Joliffe & Harl, 2008; Pretorius, 2005). Joliffe and Harl (2008:611) analysed a two-week reading diary of twenty four randomly selected students. The researchers found that

students were reading, but they were not reading prescribed texts. Students commented that their prescribed reading was “uninspiring, dull and painfully required.” Birkerts (2006:17-19) observed something similar. When his students had to read academic texts, he described their reactions as “ill-tempered apathy”.

Joliffe and Harl (2008:599) further found that students are not motivated to read to prepare for class. This was also the conclusion of a study by Berry *et al.* (2010). These researchers investigated textbook usage of 264 undergraduate students enrolled in finance courses. They came to the conclusion that students knew it was important to read, they knew their lecturer expected them to read and also knew reading would positively impact their marks, yet most students did not do the required textbook reading.

Participants in the research of Berry *et al.* (2010:38) noted that a lack of time was the main reason why they did not read their textbooks. Students seemed to rush through their prescribed reading to complete tasks as quickly as possible so that they can go onto what interests them (Pretorius, 2005:801; Joliffe & Harl, 2008:611). Time constraints was also one of the reasons documented by Starcher and Proffitt (2011:397) in their summary of reading motivation studies.

Brost and Bradley (2006:102) studied the influence that poor reading comprehension skills had on reading motivation. They contrast the issue of unpreparedness with that of noncompliance. These researchers argue that when students have poor reading skills, they can be labelled as unprepared for the reading to be done. Students choosing not to read can be labelled as noncompliant. The result of this unpreparedness and noncompliance is depicted in Figure 2.1. In this cycle, noncompliance leads to unpreparedness and vice versa. A student in this cycle will not be able to improve his/her reading comprehension abilities, as the student does not make use of academic reading opportunities.

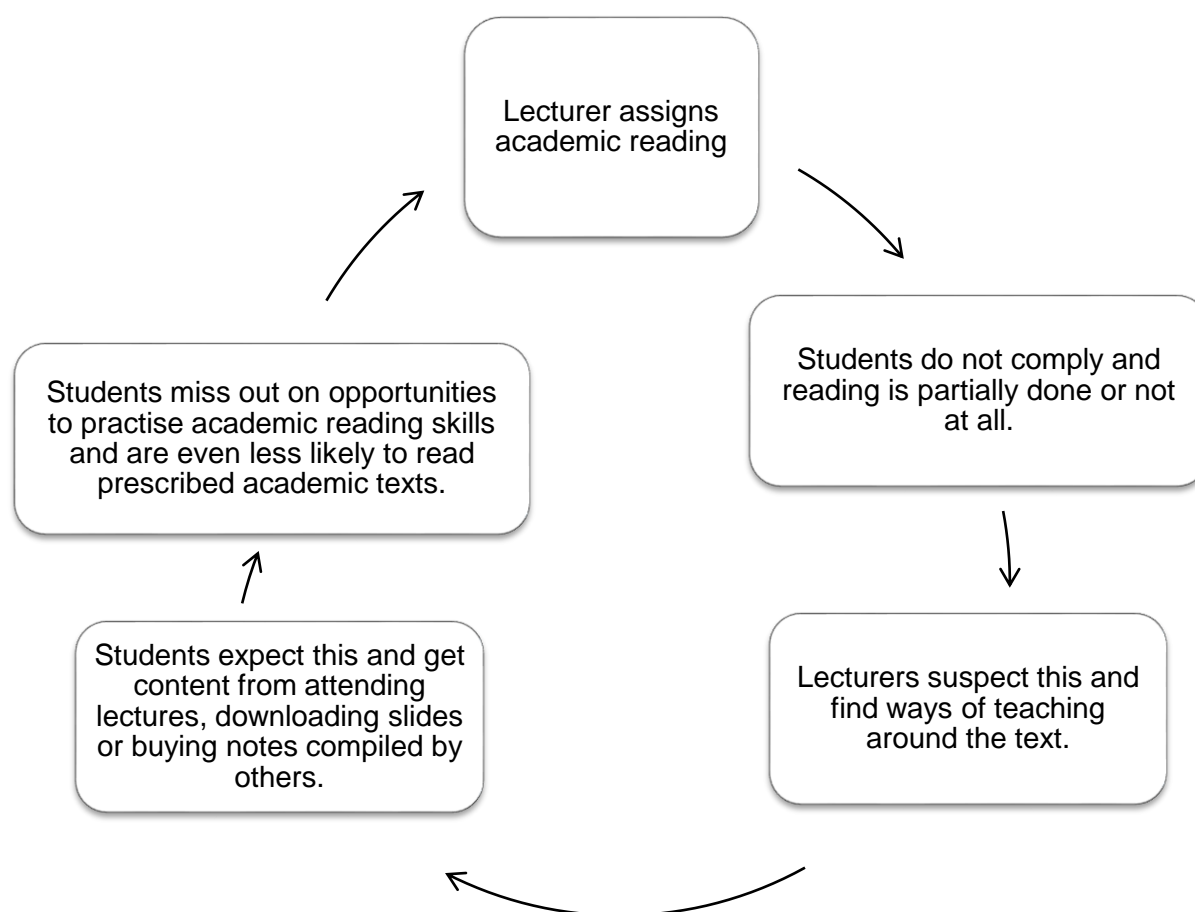


Figure 2.1: **Negative cycle of students not reading prescribed academic texts**

As Figure 2.1 shows, lecturers often assign reading. As Brost and Bradley (2006:107) found in their study with twelve participants enrolled in a single module, some students do not complete the assigned reading because of poor reading abilities. Their poor reading abilities cause them not to be motivated to read, but because they do not even try, they never put themselves into a position where they can improve their reading abilities, no matter how hard it is to do so. In turn, lecturers seem to be used to the fact that students do not complete their assigned reading, and they teach around the text, providing students with supplementary material such as lecture notes (Del Principe & Ihara, 2016:230; Schoenbach *et al.*, 2012:9). Students expect this and they find other ways to get the needed content (Schoenbach *et al.*, 2012:5). So, the students miss out on opportunities to practise their academic reading skills, and this makes them even less likely to complete assigned reading in the future. Although these findings were from a study with only twelve participants, they indicate an occurrence that possibly applies to a wider context.

At university it is expected from students to direct energy in the pursuit of understanding what they read to gain disciplinary knowledge. When they are intrinsically motivated to do so, it benefits their reading comprehension as they display the needed perseverance to read until they understand the full meaning of the text. However, the students do not seem to be intrinsically

motivated to read their prescribed academic text. The assessments designed by lecturers are there to help the students reach the module outcomes and are often also extrinsic motivation for students to read the prescribed text as they can receive a mark for the assessment. Unfortunately, if one looks at the findings of the studies mentioned, it seems as though not even marks can motivate students to read their textbooks. As part of the negative cycle (cf. Figure 2.1), they find alternative ways (such as bought notes) to gain the necessary content so that they are still able to complete the reading activity without reading the text. It is uncertain if the extrinsic motivation of students to read academic texts with comprehension will be “long lasting” if they are not intrinsically motivated to do so in the first place (Sani & Chik, 2011:36).

2.2.2.3 Vocabulary knowledge

“Academic language is designed to be concise, precise, and authoritative. To achieve these goals, it uses sophisticated words and complex grammatical constructions that can disrupt reading comprehension and block learning” (Snow, 2010:450). The focus of this section is on these “sophisticated words”, also known as academic vocabulary.

“In order to comprehend a text, ...students must be able to recognize at least 90-95% of the words and know what they mean” (Nel & Nel, 2009:3). Without vocabulary knowledge, reading comprehension would be impossible, especially in the tertiary context (Scarcella, 2003:13). This section firstly defines vocabulary knowledge, followed by a discussion on the breadth and depth of vocabulary. Then follows a review of literature on the roles of students and lecturers in terms of vocabulary acquisition.

The term vocabulary knowledge in a reading context refers to the knowledge a reader has of the words he/she is reading. According to Francis and Simpson (2009:97), it is important to elaborate on what exactly is meant by knowing a word. When a word is known, the reader has “full and flexible knowledge” of that word (Stahl, cited by Francis & Simpson, 2009:98). This means the reader understands the core meaning of the word as well as how the meaning changes in different contexts. Characteristics, synonyms and antonyms are examples of this “fullness” of knowledge, and being able to use words in various situations is an example of the “flexibility” of the knowledge.

For the undergraduate student as reader, vocabulary knowledge has “...a substantial impact on reading comprehension” (McNamara *et al.*, 2014:72). Binder *et al.* (2017:340) came to the same conclusion and determined that the breadth and depth of vocabulary is important in this context. Breadth of vocabulary or vocabulary size, refers to the words the reader understands, and depth of vocabulary refers to how well the words are understood (Nizonkiza, 2016:169). According to

Vermeer (2001:217), breadth and depth are closely linked and “the greater one’s vocabulary, the deeper one’s vocabulary knowledge, and vice versa”. Tests such as the Vocabulary Levels Test and the Vocabulary Size Test have enabled researchers to determine that undergraduate students need a minimal threshold of 4 000 to 5 000 word families and an optimal threshold of 8 000 word families to unassistedly read and comprehend more than 90% of a text* (Nizonkiza, 2016:171).¹ A word family comprises of “a base word and all its inflected and derived forms (Scheepers, 2016:55), for example the word *access*, has *accessed*, *accesses*, *accessibility*, *accessible*, *accessing*, *inaccessible* as family members.

It seems as though both students and lecturers are in a position to facilitate students’ gain of “full and flexible” vocabulary knowledge. Stahl *et al.* (1992:4) state that upon entering university, students need to understand that “the fundamental avenue for academic success is the ability to quickly expand their vocabulary”. This expansion entails more than rote memorization of a definition, but the contextual understanding of a word. The question is however, if students’ realisation of the importance of vocabulary is something that will happen spontaneously, or if the lecturers should bring it to their attention.

Scott and Nagy (2009:115) describe a students’ effort to gain vocabulary knowledge in terms of an investment. “Students will make the required effort to the extent that they believe the investment is worthwhile”. In other words, when a student repeatedly comes across an unknown term in the textbook and he/she suspects that the understanding of the term might aid him/her in the understanding of a range of concepts, the student may take the effort to look up the word in a dictionary. This is an example of a strategy to find the meaning of unknown words. Another strategy is using contextual clues to discover a word’s meaning. According to research, strategies such as these contribute to students’ reading comprehension (Binder *et al.*, 2017:335; Francis & Simpson, 2009:97; Ma & Lin, 2015:1; Scott & Nagy, 2009:115).

In terms of gaining vocabulary knowledge, lecturers should provide students with experiences involving vocabulary, mainly by drawing on prescribed academic texts such as textbooks (Francis & Simpson, 2009:106; Stahl *et al.*, 1992:4). This vocabulary includes general words such as “already”, “general academic vocabulary used by scholars” such as “assert” and subject specific terminology such as “fulcrum” (Scarcella, 2003:14; Stahl *et al.*, 1992:4). “General academic vocabulary is used to refer to words that appear in texts across several disciplines or academic

¹ It is recognised that the relationship between vocabulary and comprehension is complex (Nel *et al.*, 2004:96) and that there are a number of variables which influence reading comprehension. The inclusion of the mentioned research findings, was merely to give an indication of the vocabulary breadth needed by first- year students.

domains” (Baumann & Graves, 2010:6). These researchers provide more examples of general academic vocabulary such as *context*, *evaluate*, *integrate* and *predict* (Baumann & Graves, 2010:10). With regard to general vocabulary, students as readers need to be attentive to how a context can influence the meaning of a word, for example “the predicate *fall*... has four distinct meanings in each of the four expressions: temperatures *fall*, prices *fall*, apples *fall*, and spirits *fall*” (Kagan, 2009:7). When temperatures fall, they become lower in degree. When prices fall, the consumer saves money as items cost less. When apples fall, they descend freely by the force of gravity and when spirits fall, it refers to individuals whose emotions change from being happy to sad. As is clear in these examples, the context determined the meaning of the word fall.

Subject specific terminology can also be referred to as technical vocabulary (Nel *et al.*, 2004:96; Scarcella, 2003:14). These researchers define this term as “words that relate specifically to each content-area subject or topic”. They further emphasise that students need technical vocabulary to be able to read disciplinary texts with comprehension. Kagan (2009:6) provides examples of such technical vocabulary: in the natural science discipline, *gluon* and *transposon*; in the social science discipline, *attribution error* and *gross domestic product*; and in the discipline of humanities, *antinomy* and *historical era*. When a student has “full and flexible” knowledge of general academic vocabulary as well as technical vocabulary, it will have a positive effect on his/her reading comprehension (Beck *et al.*, 1982:520; Binder *et al.*, 2017:333; Ma & Lin, 2015:1; RAND Reading Study Group, 2002:35).

In the light of the positive effect vocabulary knowledge can have on reading comprehension, Francis and Simpson (2009:111-113) gleaned a number of guidelines for vocabulary instruction in the tertiary context, inferred from vocabulary research. The first three of these guidelines are summarised as they are part of the instructional context applicable to this study. Firstly, students should not only be taught new words, but a variety of independent-word learning strategies. This would enable them to broaden their academic vocabularies without depending on a lecturer. Secondly, vocabulary should be taught in the context of the applicable discipline, as this enables the student to integrate knowledge with what he/she already knows. Students gain more vocabulary knowledge if the new words are part of an authentic task within the disciplinary context. Students should see that the unknown words are useful as opposed to being part of a list to be memorised. Thirdly, students should have an active and informed role in the vocabulary learning process. An example is students generating novel contexts for a newly acquired word or taking part in a discussion on misconceptions about the meaning of a word.

The undergraduate student needs breadth and depth of vocabulary to be able to read prescribed academic text independently. Knowledge of general academic vocabulary used across

disciplines is important, as well as technical vocabulary which is more specific to students' disciplinary discourse. It is the responsibility of the student to realise that something must be done about unknown words encountered in academic texts. If a student is able to discover how unknown words could become part of his/her breadth and depth of vocabulary knowledge, it would be beneficial to his/her reading comprehension. The lecturer should be conscious of the importance of students gaining both general academic vocabulary and technical vocabulary and should aid students in these attempts.

2.2.3 The text

“Assigned reading from textbooks or elsewhere is a pervasive feature of university studies and is a source of student learning alongside lectures and coursework” (Pecorari *et al.*, 2012:235). As is clear from the statement, academic text is an important variable in the context of reading comprehension (cf. Figure 1.1). Academic texts include textbooks, scholarly work such as peer-reviewed journal articles and other discipline specific texts such as court cases. These prescribed academic texts contain the content students need to master in the different modules at university. This mastering entails that students need to read these texts with comprehension as part of the requirements to achieve the module outcomes (Brown, 2008:240; Pressley *et al.*, 1997:2; Pecorari *et al.*, 2012:235; Ryan, 2006:135;). The introduction of this section firstly indicates the value of academic texts in the undergraduate context and discusses text readability. Thereafter follows two sub-sections. Section 2.2.3.1 presents literature on the textbook and section 2.2.3.2 on notes as text.

Academic text is a valuable resource in the tertiary context (Ryan, 2006:135). It is common practice that lecturers continuously refer to the text that they prescribed during the course of a semester. Specific page numbers of the prescribed academic text are usually included in the study guide of a module, corresponding with the module outcomes. The following image from Van der Merwe (2017:23) is an example of such references in a study guide:

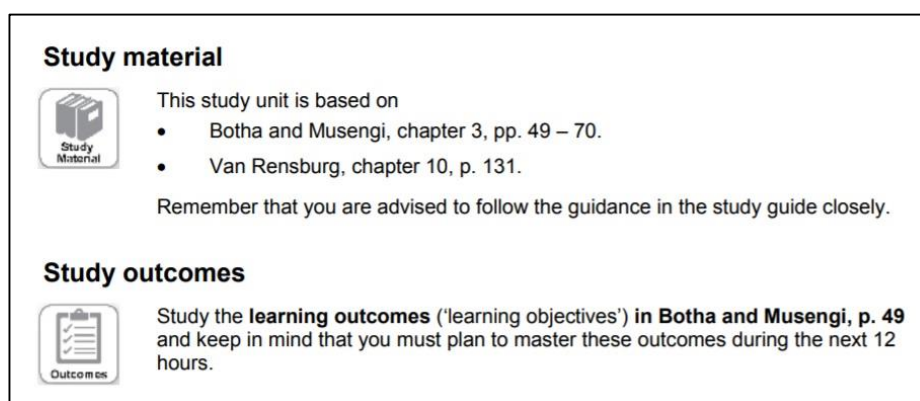


Figure 2.2: Textbook page references within a study guide

Although the primary use of academic text is to present content to the reader, it is also valuable, because it is "...a source of exposure to academic discourse" (Pecorari *et al.*, 2012:244). It might be argued that the academic text is not the only source of information needed in a module as a student could also obtain information from attending lectures. However, if a student acquires information from attending lectures without reading the prescribed academic text, he/she loses out on opportunities to engage with the written disciplinary discourse. As the spoken language consists of a different set of characteristics than written discourse, the information obtained from listening to a lecture cannot be compared to the interaction with the written discourse of the discipline (Pecorari *et al.*, 2012:245). As Shenkman (cited by Ryan, 2006:135) states, "(t)he more we read in a given content area, the better we become at understanding and extracting information from that content area."

Academic texts are "packed with concepts and technical vocabulary that they (students) need to understand fully" (Francis & Simpson, 2009:97). Moreover, Hermida (2009:24) emphasises that the authors of academic texts, especially journal articles assume that their readers are familiar with "concepts, principles and debates of the discipline", which is not always the case. These statements indicate some of the reasons behind the assumption that academic texts are difficult. However, a text itself cannot be deemed easy or difficult as it is but one of the variables of reading comprehension (cf. Figure 1.1). Rather, a text can be readable or less so for a particular group of readers for a certain purpose in a certain context.

Text readability is the degree to which a reader finds a text compelling and comprehensible (Berndt *et al.*, 2014:32). This readability stems from educators' need to match reader ability with text difficulties, which lead to the development of readability formulas (Rush, 1985:274). Readability formulas are used to predict sentence-level understanding and how long it would take to read a passage (McNamara *et al.*, 2014:78). According to Valencia *et al.* (2014:273), these readability formulas "...can only ever tell part of the story." The limitation of the readability formulae lies in the assumption that the difficulty of a given text lies completely within the text itself, when in fact there are many other factors that can also play a role (Toumu'a, 2012:41). McNamara *et al.* (2014:11) share this viewpoint and illustrate it by situating readability formulas within three perspectives.

Texts can be scaled by using the analytical scheme of text categories, the scheme of text dimensions or the scheme of text levels (McNamara *et al.*, 2014:11). Text categories are also known as genres, whereby texts are traditionally categorised as being narrative, expository, persuasive or descriptive (McNamara *et al.*, 2014:12). Each of these categories has sub-

categories building into a hierarchy. Text dimensions refer to the scaling of texts by a single dimension of text difficulty such as word frequency or length and readability. This is the analytical scheme used by readability formulas. Pitler and Nenkova (2008:187) list the Flesch-Kinkaid, Automated Readability Index, Gunning Fog, SMOG and Coleman-Liau as readability formulas that have been developed "...based on the link between word frequency or length and readability." The Flesch-Kinkaid in particular, uses the average number of syllables per word to estimate vocabulary difficulty and the average number of words per sentence to estimate the syntactic difficulty (McNamara *et al.*, 2014:13; Pitler & Nenkova, 2008:187).

Text levels is the third scheme which refers to the multiple levels present during the reading comprehension process. These levels include amongst other things the genre, syntax, vocabulary and cohesion. According to McNamara *et al.* (2014:14), the analytical scheme of text levels is "the most promising approach" to scaling text as it considers multiple interconnected levels of text characteristics like vocabulary load, linguistic style and genre and not just the genre or a single text dimension such as word and sentence length. The Coh-Metrix Common Core Text Ease and Readability Assessor (T.E.R.A.) is an online tool based on the text level analytical scheme. This tool was designed to analyse the readability of texts (Graesser *et al.*, 2011:223). This tool was used in this study to determine the readability of prescribed academic texts as it does not solely focus on the surface difficulty of sentences and words but on the multiple levels of the text (cf. section 4.3.7). Thus, it gives a clear indication of which characteristic of the text makes the text readable or less so.

The next two sections present information found in literature on two types of text, namely the prescribed academic textbook and notes. The textbook was selected because it seems to be the type of academic text most often prescribed by lecturers. Notes as text was selected because of the observed habit at University X where students used notes as text to study from. These notes are either compiled by students or lecturers. The notes often take the form of MS PowerPoint slide show hand outs.

2.2.3.1 The prescribed academic textbook

Textbooks are "powerful tools" for the transmission of ideas (Littlejohn, 2011:190). Their power lies in the fact that "(m)ost textbooks seek to offer a first approach to new knowledge within an area of specialization as part of their communicative purpose" (Cademártori *et al.*, cited by Parodi, 2014:66). Due to this "first approach to new knowledge", it is a general occurrence that one of the prescribed texts in a module, is an academic textbook (Aagaard *et al.*, 2014:132; Berndt *et al.*, 2014:31; Berry *et al.*, 2010:31). Brown (2008:240) notes that textbooks "play a crucial role in defining the type of content and the type of learning activities that are credible" in a module.

Berry *et al.* (2010:32-34) summarised different studies that investigated textbook use in the university context. None of the studies were done on the same group of participants or in the same discipline, but it seems as though all studies report that students do not consider the textbook as crucial for learning as they do attending lectures and making use of class notes. Also students read textbooks infrequently and most studies reviewed by Berry *et al.* (2010:32-34) conclude with a need for ways in which lecturers can increase the number of students who comply with prescribed reading tasks. Del Principe and Ihara (2016:242) came to a similar conclusion during their research. They note that they "...almost never saw a student read their textbook in a way or to an extent that justified the price and weight of the book itself".

There are many reasons for the discrepancy between the textbook as a "powerful tool" and the fact that students seem to disregard it. Pressley *et al.* (1997:12) researched shortcomings of textbooks as one of the reasons. These researchers found that textbooks' design hamper reading comprehension and suggest that the modification of textbooks might make them easier to read and understand. From research findings, they recommend that sentences and paragraphs need restructuring so that the interrelated ideas come to the fore. The inclusion of organisers such as summary statements could also help the reader recognise the main idea, and illustrations which overlap with the meaning of the text could also aid comprehension. Regardless of these research-based recommendations, Pressley *et al.* (1997:12) note that publishers are not committed to modifying the textbooks as they are "much more concerned with covering content specified as mandatory on adoption lists or covered in competing textbooks than with producing understandable text."

Furthermore, the discrepancy between the value of textbooks and their actual use by students varies between disciplines. Pecorari *et al.* (2012) conducted research on undergraduate student practices and attitudes towards reading. One thousand two hundred undergraduate students from three Swedish universities took part in their research. The undergraduate students were enrolled in different disciplines namely engineering, humanities, natural sciences, social sciences and health care (Pecorari *et al.*, 2012:239). Students from the different disciplines judged textbooks differently (Pecorari *et al.*, 2012:242-243). An example of this is the engineering students who gave their textbooks low ratings for readability, but high ratings for content. Conversely, humanity students were of the opinion that their textbooks were readable, but not visually appealing. The research also includes statistics on the use of textbooks across the disciplines and it seems as though the health and engineering students use their textbooks less than the humanities, social science and natural science students (Pecorari *et al.*, 2012:243-244). Many possible variables are listed as reasons for the varied usage.

Although the findings of this research cannot be generalised to all disciplines at universities, it does suggest that there is variation in the importance and use of textbooks in different disciplines. In disciplines like engineering, there may be a “greater overlap” between lecture content and the textbook, as both deal with declarative knowledge (Pecorari *et al.*, 2012:244). This entails that a student can get most of the content from attending a lecture and so he/she regards the textbook as supplementary and not the primary source of information. In disciplines like humanities and social sciences, the knowledge can be described as being more interrogative and so the students need to read the text to gain insight and form their own opinions (Pecorari *et al.*, 2012:244). Thus, the student regards the textbook as the primary source of information and so, important to read.

The purpose of textbooks in the undergraduate context is often to introduce students to new knowledge. Even though lecturers use and prescribe textbooks, it seems as though students are not that convinced of their importance. There are different reasons why students do not seem to use textbooks the way the authors intended. One possibility might be that the structure of the textbook limits instead of enhances reading comprehension, for example there might be a lack of summary statements which would hamper the identification of the main idea, or the textbook might lack visual aids such as diagrams and illustrations. Another possibility is whether or not the textbook is the primary source of information. When lecturers make the content of the textbook available elsewhere, the textbook loses its importance (Pecorari *et al.*, 2012:244).

2.2.3.2 Notes as text

Note-taking is the primary means of creating a record of information presented in lectures (Pressley *et al.*, 1997:3; Van Meter *et al.*, 1994:323). Ideally, students would attend a lecture, make notes during the lecture and use the notes to supplement information from their textbooks to achieve a certain outcome (Armbruster, 2009:230; Bharuthram, 2012:210; Boyle *et al.* 2015:189). In reality, students seem to use notes not to supplement the textbook, but in the place of the textbook (Schoenbach *et al.*, 2012:5). These notes can be compiled by the reader, or a practise at University X is also to buy notes compiled by a peer. Notes are often advertised at lecture halls, and the compiler of the notes stays anonymous. Figure 2.3 is an example of such an advertisement, taken from a wall at University X:



Figure 2.3: Notes advertisement

This advertisement is for notes for a second year Law module. The notes are advertised as summaries of ten chapters (chapter 9 to chapter 19). The compiler of the notes states that the main ideas of the court cases are well and thoroughly emphasised in a summarised fashion, and that the total number of pages of the notes is less than 20. By including this description, the compiler illustrates that he/she is aware of students' preferences for short summaries, as opposed to reading the court cases and discussions thereof in the textbook. The cost of the notes in an electronic format is R80, and in black and white hard copies, R100. When compared to the cost of a textbook which usually exceeds R300, the R80 or R100 can possibly be considered value for money by the students. One of the downsides of bought notes like these, is that there is no guarantee that the notes contain the information needed for a test or exam. Thus, the R80 or R100 may be a waste of money. The advertisement ends with a cell phone number which the potential buyer has to call to make arrangements for payment and delivery.

Students using their own or bought notes in place of the textbook are in danger of missing important information as the notes and slides are merely a reduced representation of the knowledge students need to acquire in a discipline (Rusznyak *et al.*, 2017:210). Research also indicates that most students do not take very effective class notes (Armbruster, 2009:243). During the ethnographic interview study by Van Meter *et al.* (1994:328) they found that students attributed their difficulty in taking effective notes to lecturers who present content too fast, are vague in their explanations or present the content in a disorganised fashion. Students also find it difficult to make notes when the lecturer does not signal important information by, for example,

repetition or inclusion on the PowerPoint presentation. The fact that students are blaming lecturers for not being able to take effective notes, suggests that students might want to write everything down as they consider class notes as a crucial source of information. The question can be asked if students would still consider making effective notes crucial if the textbook was their primary source of information, and the lecture notes supplementary.

From literature it seems as though students do not take time to read their textbooks. They also seem to be without effective notes and this leaves them at a severe disadvantage. Not only are notes reduced representations of the content of a lecture, but as Armbruster (2009:243) and Van Meter (1994:328) found, students are unable to compile these reduced representations effectively. Some students might not compile their own notes and rather get hold of notes compiled by a peer. This is also not to a student's advantage. Van Meter *et al.* (1994:323) have researched this phenomenon and found that there has been little evidence of learning gains from using someone else's notes. In addition, notes as reduced representations are not written in the academic discourse of the discipline. Thus, when a student only reads the notes as text, he/she does not engage with the written academic discourse (Pecorari *et al.*, 2012:244). This places the student at a further disadvantage when he/she has to produce written output in the form of a task.

As many students struggle with taking effective class notes, Armbruster (2009:243) recommends that lecturers provide lecture notes or generate summaries to help students comprehend the content. An example of lecturer notes is included in Appendix X. Jackson *et al.* (2011:405) found that students "strongly want" lecturers to provide notes. This might be due to students preferring shorter summaries opposed to reading a chapter in a textbook. Although the intended purpose of these lecturer notes is to help students, researchers (Del Principe & Ihara, 2016:230; Schoenbach *et al.*, 2012:9) have observed a tendency by lecturers to use the notes and slides to teach "around" the prescribed reading, as they know students struggle to comprehend disciplinary concepts, etc. from reading the prescribed text independently.

Joliffe and Harl (2008:599) documented that some lecturers who took part in their study, admitted that students could pass exams if they came to the lectures and took (or bought) good notes, "whether or not they read the material". This self-defeating practise kept students from opportunities to practise much needed academic reading skills. Because students struggled with academic content, Schoenbach *et al.* (2012:9) found that some lecturers stopped prescribing it altogether. Students then got used to the practise of receiving notes compiled by lecturers. As they were no longer expected to do their own academic reading in a certain module, they seemed to expect this in all their modules and they remained dependent on someone else to interpret and simplify the content.

In conclusion, using only notes as text is detrimental because it does not encourage students to read the complete academic text, but rather to rote-learn and memorise (Bharuthram & Clarence, 2015:43). According to these researchers, it is not only students' poor reading skills that set these practises in motion, but also the pressure on lecturers for throughput figures. Supplying students with lecture notes seemed to be one of the tactics to try to get a higher percentage of students to pass the module and increase the throughput figures. Although students may pass the module, the fact that they did not engage with academic texts, is to their disadvantage as they miss out on opportunities to engage in disciplinary discourse and develop much needed reading comprehension skills.

2.2.4 The task

"With the exception of reading for pleasure, reading in the real world will almost always occur in the context of a task, which impacts how people judge information's relevance to their goals and the strategies they enact to meet their goals" (McCrudden *et al.*, 2010:238). In the context of this study, this statement rings true as students at university mostly read academic texts to complete a task. According to Valencia *et al.* (2014:277), the task "...might be part of an instructional event, curriculum unit or even an assessment". In the tertiary context the task is more often than not part of assessment (Del Principe & Ihara, 2016:230). This section firstly describes the general purpose of tasks. Thereafter, the focus is on implications of the question format of a task.

In a university context it is the ideal that students want to read academic texts as they are supposed to be in pursuit of knowledge. According to Del Principe and Ihara (2016:230), this is not usually the case. In order to show that they have achieved a learning outcome, students are required to complete tasks to show that they have mastered the outcome. Students then receive marks for these tasks, and these marks motivate students to perform certain actions, such as reading the prescribed text. Del Principe and Ihara (2016:230) therefore state that students will likely read academic texts if they know or suspect that there is a linked task that will be marked. However, the fact that students have to complete a task does not guarantee that the prescribed text will be read with comprehension (cf. section 2.2.2.2).

As stated by McCrudden *et al.* (2010:238), the task impacts whether or not the student judges the text to be read as relevant. It is assumed that when a student judges a text as relevant, he/she is motivated by the judgement to read the text. The task also impacts the strategies the student uses to comprehend the text to reach the goal of completing the task. At university, the task is typically a test or assignment, both of which consist of questions. The student makes judgments and chooses strategies based on the questions. Therefore the questions and more specifically,

the question format of a task determine the actions of a student, notably whether or not the prescribed text will be judged as relevant and read (Singer & Alexander, 2017:4).

Livingston (2009:1) broadly divides task questions into two groups: multiple-choice questions and constructed-response questions. Multiple-choice questions are questions where the student has to choose an answer from a list of options. Constructed-response questions are questions which require the student to produce an answer in a pen-and-paper format. This answer can be as simple as filling in a missing word or writing an argumentative essay. At university, a test might contain both multiple-choice questions and constructed-response questions while assignments typically only contain constructed-response questions.

“The multiple-choice question format has come to dominate large-scale testing” (Livingston, 2009:1). This researcher points out that this question format is popular because students can answer a large number of questions in a limited amount of testing time, a “broad range” of content can be tested, and a multiple-choice test can be marked electronically or by an individual with no knowledge of the test content. Apart from the mentioned practical advantages of multiple-choice tests, the drawback of this question format is that it cannot measure complex skills. It only tests if students can locate and recall information (Livingston, 2009:2; Palmer & Devitt, 2007; Singer & Alexander, 2017:4). So, if students attend a lecture where the needed information for a multiple-choice test is conveyed, they would possibly be able to complete the multiple-choice test with just the information from the lecture and so they would judge the textbook as irrelevant.

Constructed-response questions on the other hand, require students to produce their own answer (Chan & Kennedy, 2002:957; Singer & Alexander, 2017:27). Tasks with constructed-response questions generally require longer answers such as writing an essay. Constructed-response questions take longer to answer and longer to mark than multiple-choice questions (Livingston, 2009:3; Palmer & Devitt, 2007). It can also not be marked electronically as the marker has to have knowledge of the task and the content it tested. Despite these practical disadvantages, a constructed-response question format enables lecturers to test, among others, inference and whether or not students can evaluate aspects. Students would not be able to answer such questions with rote-learned facts which they wrote down during a lecture. They will need to have read and understood not only keywords, but the complete content, which can usually be found in the prescribed academic text (Singer & Alexander, 2017:27). Thus, if students know that the task requires constructed-response questions requiring, for example, evaluation, they would possibly judge the prescribed text as relevant and use strategies to read and understand the content.

Hermida (2009:28) promotes the use of constructed-response questions in tasks. She concludes that tasks should encourage students to use “higher order cognitive skills to construct meaning from academic texts”. The researcher continues that the task should evaluate if students used these higher order skills to read academic texts.

The wording of the constructed-response questions of tasks also influences the way in which students complete the activity. It seems that instructions are understood differently by students and lecturers (Williams, 2005:164). According to the findings of Williams’ (2005) study, the main difference is that lecturers have a higher expectation of how students should respond to a question than the students. The students, who took part in the study, understood the questions in a more simplistic manner. If there is a difference in what the lecturer expects students to do when they have to, for example, summarise a read passage, and how students understand it, students might not summarise as thoroughly as the lecturer expects. There is in fact a difference between a two-sentence summary and a summary of 300 words. The expectations a lecturer has about how the questions of a task should be answered, cannot remain tacit. When a student and the lecturer have a similar understanding of what the question entails, the student has a better chance to understand, for example, that the complete section of text has to be read with comprehension in order to write a one-page summary. Williams (2005:168) concludes that when students do not answer the questions of the task according to expectations, it might be possible that the unspoken expectations of the lecturer with regard to how students should answer the questions might be blamed for unsatisfactory completion of the tasks.

Consequently, a task will yield better results when it tests higher order cognitive skills closely tied to reading and when the students’ and the lecturers’ understanding of the instructions are aligned. Although a multiple-choice question format has a number of practical advantages, it cannot test these higher order cognitive skills. Constructed-response questions enable the lecturer to test higher order cognitive skills and students would possibly judge the reading of the textbook important in preparing to answer such questions. The question format of the task is an important determinant of the student’s judgement and as a result, motivation to read the text and his/her choice of strategy to complete the task. Therefore, it is important that lecturers make the question format of the task known to their students. When the students are unsure of the question format, their judgement of the importance of the prescribed text might be skewed which could negatively affect their motivation to read. They might also not make use of effective strategies to reach their goal of successful completion of the task.

2.3 Summary

This chapter presented the theoretical framework, substantiated by a review of literature relating to the core aspects of the framework (Figure 1.1). As is clear from the theoretical framework, reading comprehension is a process in which the reader, the text and the task are interconnected within a certain socio-cultural context. In terms of the socio-cultural context, undergraduate students experience transitional challenges moving from the school environment to the disciplinary instructional context upon entering university. The lecturer has an important role in this disciplinary instructional context and the digital environment also influences students' academic reading skills. In terms of the reader, three cognitive capacities were discussed in terms of reading comprehension, namely knowledge of reading strategies, reading motivation of students and vocabulary knowledge. The academic textbook and notes as text were elaborated on in the text section, and lastly, the purpose and challenges of the reading activity were indicated.

From the literature review, it seems that the variables of the reader, text and task as well as influences of factors from the socio-cultural context affect academic reading. There is also seem to be a relationship between the variables as they influence each other within the disciplinary instructional context in the broader context of the university. These relationships may have implications for reading support. The empirical section of this study commences with the following chapter which sets out how the reading strategies and reading comprehension of first year students at University X were investigated.

CHAPTER 3: RESEARCH METHODOLOGY AND DESIGN

3.1 Introduction

The research methodology and design are important for any study as it structures the content and supports the specific research paradigm of the study (Adler & Clark, 2011:6; Joubert *et al.*, 2016:5). The purpose of this chapter is to explain the research methodology and design used in this study to gather information about first year university students' reading strategy use and reading comprehension.

This chapter describes the outline of a systematic and focussed investigation of the empirical research process according to the following topics: research paradigm, research approach, research design, sampling, data collection methods, validity, reliability and trustworthiness of the data collection methods, data collection procedures, analyses of the data, ethical considerations and the role of the researcher.

3.2 Literature review

The function of a literature review is to find and describe theoretical perspectives and previous research findings regarding the topic of research (Leedy & Ormrod, 2005:64). A thorough literature review enabled the researcher to identify lacunae or gaps in knowledge which then directed the researcher to pinpoint the topic of this research project and to position it in the context of previous research findings (Baker, 2016:265; De Vos *et al.*, 2011:134).

The literature review process began with identifying keywords linked to the topic of research. These keywords are: *South African throughput rates, universal throughput rates, academic literacy, tertiary/undergraduate/university: reading, reading strategies, metacognitive awareness, read-to-learn, reading with comprehension, the reading task/activity; academic text/textbooks; the context of instruction; the digital context/environment.*

Once the keywords were selected, searches were conducted in all available sources of information as proposed by De Vos *et al.* (2011:139), such as standard reference materials like abstracts and indexes, computer-accessible databases, the internet, scholarly books, research reports and peer-reviewed articles. The majority of searches were done through the Onesearch option of the university library's electronic interface. Onesearch is a powerful search platform that automatically searches through many databases such as EBSCHOHost, RSAT, SABINET and NEXUS, to name but a few. The findings of the databases were supplemented by additional searches on the Google Scholar database, as well as the catalogue of the library.

Throughout the searches, the researcher was involved in a process whereby the identified sources would be read, critiqued, and sifted according to the specific element of the study which it addressed. The reference lists of applicable articles were also scrutinised and relevant sources identified, searched and studied. With the searches the researcher aimed to incorporate an appropriate breadth and depth of the topic as suggested by Leedy and Ormrod (2005:65).

From the literature it seemed clear that many South African first year students experience reading challenges at university. Some of these challenges can be ascribed to the transition from school to university. Furthermore, it seems as though the tacit expectations of content lecturers in terms of students' compliance with prescribed academic reading and the completion of tasks, possibly contribute to students not being able to meet these expectations. Additionally, content lecturers do not explicitly teach and support their students in terms of reading requirements for the modules. Students are often sent for general academic support or the responsibility is placed on the shoulders of language or academic literacy lecturers. Research points out that the separation of reading instruction and support, and disciplinary content is inefficient. The digital environment that many students immerse themselves in on a daily basis, also seems to have implications for the reading of disciplinary prescribed texts. The university as an organisation and specifically the content lecturers, should be aware of the socio-cultural context of the undergraduate students entering into the different disciplines. The students are not raw material to be moulded, but individuals who need to adapt to the new environment. When lecturers are conscious of the socio-cultural challenges, it should influence the way they teach, the texts they choose and the tasks they design.

The undergraduate student as reader comes to the reading task with certain cognitive capacity resources. Three of these resources are knowledge and use of reading strategies, reading motivation and vocabulary knowledge. Knowledge and use of reading strategies could aid students in reading comprehension as they are mental plans to solve problems of understanding when reading. These reading strategies should be identified, explicitly taught and modelled by content lecturers while dealing with disciplinary content. Students should not only have knowledge of the useful reading strategies, but should be able to apply the strategies when reading disciplinary instructional texts.

Reading motivation has been strongly linked to reading comprehension. Yet, students do not seem intrinsically motivated to read the prescribed academic texts even though they know that reading is expected and would benefit their academic progress. Students seem to be extrinsically motivated by the marks they receive of the tasks they complete in the modules, but a number of

factors, in particular the question format of the tasks play a role in whether or not a student will actually read the prescribed text.

Vocabulary knowledge is another cognitive capacity resource needed in reading comprehension. Students need breadth and depth of knowledge of general academic vocabulary and technical vocabulary pertaining to the disciplinary discourse. Lecturers often assume that students should take responsibility for broadening and deepening their vocabulary. However, from literature it is clear that lecturers also have a responsibility to ensure that their students are aware of the importance of vocabulary (e.g., terminology) in understanding what they read. Lecturers should teach vocabulary learning strategies, and involve the students in vocabulary learning opportunities.

The textbook remains the text type which is the figurative holy grail of undergraduate academic texts. A textbook on its own cannot be considered difficult, but rather readable or less so for a group of readers in a certain context. Apart from containing module content, the textbook and other academic sources also provide opportunities for the reader to be immersed in academic discourse. Written discourse cannot be compared to spoken discourse encountered during a lecture. When students make notes of the spoken discourse and use the notes instead of the textbook, students place themselves at a disadvantage. Lecturers, who supply these notes, should realise that their notes may result in short-term gains for students in terms of module content but long-term losses for students in terms of disciplinary discourse competence. Reading academic texts benefits students as they practise their reading skills and this exposure could possibly have a positive influence on their written academic output and reading comprehension.

The completion of tasks within modules is a central learning activity at university. If the question format of the tasks require higher order cognitive skills such as evaluation, students may judge the text as relevant. This may motivate students to use reading strategies to understand the text and complete the task to show that they have mastered the relevant learning outcome.

3.3 Empirical investigation

3.3.1 Research paradigm

A paradigm can be explained as stating a knowledge claim (Creswell, 2003:6). Guba and Lincoln (1994:107) fittingly refer to it as “ultimates or first principles”. At the commencement of a research project, the researcher needs to acknowledge certain assumptions about how she will learn and what she will learn through the course of the project (De Vos *et al.*, 2011:41; Firestone, 1987:16). These assumptions are the first principles of the study, in other words the research paradigm.

The paradigms are generally divided into quantitative paradigms and qualitative paradigms (Johnson & Onwuegbuzie, 2004:14).

Quantitative paradigms support the assumptions that social observations should be treated as entities in the same way that scientists treat physical phenomena. The observer is also separate from that which is being observed. The researcher should thus remain emotionally detached and empirically justify the stated hypotheses. The knowledge claim of this paradigm is that reality can be observed and measured. The post positivist paradigm is an example of a quantitative paradigm (Creswell, 2003:7; Johnson & Onwuegbuzie, 2004:14).

Qualitative paradigms support the assumption of multiple-constructed realities. Individuals want to understand the world they live in and they develop meanings of their experiences. These meanings are subjective and complex (Creswell, 2003:8). According to these paradigms, there can thus be no time- and context-free generalizations. The researcher as the observer is an inseparable part of that which is being observed as the subjective researcher is “the only source of reality” (Johnson & Onwuegbuzie, 2004:15). There are no hypotheses in qualitative paradigms. The researcher interprets findings based on visiting the context and gathering information personally. Reality is not measured in this paradigm, but meaning is generated from interaction between people and their environment (Creswell, 2003:9).

This study was driven by its research questions. To be able to answer the research questions, reading strategy use and reading comprehension of students had to be measured. Emerging data patterns had to be explained and understood. For this reason, neither a pure quantitative nor qualitative paradigm sufficed, and so this study departed from a pragmatist perspective. According to pragmatism research philosophy, the research questions are the important determinant of the research design in terms of the data collection strategies to be used (Creswell, 2003:11; Creswell & Plano Clark, 2011:42). Pragmatism does not engage in the debate regarding positivism and interpretivism but accepts that there may be multiple realities and therefore it does not enter the debate but postulate their pragmatic stance and move onto the most appropriate data collection strategies to answer the research questions, thereby resolving the conflicting nature of other research paradigms (Cherryholmes, 1992:13).

With regard to epistemology, pragmatism is characterised by practicality (Creswell & Plano Clark, 2011:42). The relationship between the researcher and that being researched was determined by what worked best and this governed the way data were collected in this study. The intended consequence of the research project, in this case implications for academic reading support, was also the driving force for the research and according to Cherryholmes (1992:13) this is another

knowledge claim of the pragmatic paradigm. Consequently, this paradigm offers the best choice of first principles for this study, as it proposes that there exists a middle ground between quantitative and qualitative paradigms.

3.3.2 Research approach

The research problem of this study is multifaceted. It involved lecturers, first year students, their perceived use of reading strategies, reading comprehension as well as their task achievement. Textbooks and other course materials as well as tasks were also under investigation and so numerical as well as narrative data were collected. Thus, neither a purely quantitative nor a purely qualitative research approach was fitting.

From a pragmatic viewpoint, it is possible to use components from both a quantitative and a qualitative research approach in this study. This is called a mixed method research approach (Creswell, 2003:18; Leech & Onwuegbuzie, 2009:266). The definition of a mixed method approach given by Creswell and Plano Clark (2011:5) relies on its core characteristics:

- Both quantitative (numeric) and qualitative data (text) are collected and analysed.
- The two forms of data are mixed.
- The procedures are combined into a specific research design.

According to this approach, the research has a number of characteristics. Amongst others, the research is problem-centred and pluralistic (Creswell, 2003:18). These two characteristics were evident in this study:

- Firstly, the research problem was a starting point in the research design. The apparent reading challenges of first year university students took centre stage in this study. As the opinions and experiences of the participants were important in this study and there were numerical data to be collected, a mixed method approach was suitable.
- Secondly, the study is pluralistic as it accepts that there is no single answer for the research problem being studied. It also aimed to incorporate the views of different role players.

Personal experience is another criterion for selecting an approach (Creswell, 2003:23). The researcher was aware that the mixed method approach may take more time as both quantitative and qualitative data needed to be collected and analysed. She was prepared to spend extra time on the mixed method approach as it gave her confidence that she was utilising the best elements of the quantitative and the qualitative approaches. The researcher also felt at ease with both the structure of the quantitative research and the flexibility of the qualitative research.

3.3.3 Research design

A research design is the procedure for collecting, analysing, interpreting and reporting data in research studies (Johnson *et al.*, 2004:14). Without a research design, the researcher would be unable to make the right choices about collecting data and interpreting the findings. The research problem of this study called for a mixed method approach grounded in the pragmatic paradigm.

There are a wide range of available classifications of type of mixed method designs. Creswell and Plano Clark (2011:56-59) tabularised over fifty designs according to the authors of the designs and the discipline. It became evident that there exist different formulations for mixed method designs, although the characteristics of many of the designs seem to be similar. Creswell is generally considered to be a leading author in the field of mixed method research. For the purpose of this study, the terminology of Creswell and Plano Clark (2011) is used when referring to the mixed method design.

The convergent parallel mixed method design was used in this research project. According to Creswell and Plano Clark (2011:77), this is the most well-known design. The intent in using this design is to merge the large sample size, trends and generalizations of quantitative methods with smaller samples, details and in depth enquiry of qualitative methods. The choice of this design was based on the way that the quantitative and qualitative strands of the study related to each other, as proposed by Creswell and Plano Clark (2011:63). The typology of triangulation was the motivation for selecting a convergent parallel mixed method design. According to Greene *et al.* (1989:259), “triangulation seeks convergence, corroboration and correspondence of results from the different methods”. The convergent parallel design was initially called a triangulation design because quantitative and qualitative methods were used to get triangulated results (Creswell & Plano Clark, 2011:77; Rocco *et al.*, 2003:22, 23). This design is definitely suitable as both quantitative and qualitative data were collected during the same phase of the research process and then merged for an overall interpretation.

Creswell and Plano Clark (2011:64-68) identify four procedural considerations that are important in all mixed method research designs, namely level of interaction between strands, the relative priority of the strands, timing of the strands and the procedure for mixing the strands. The level of interaction refers to the extent to which the quantitative strand and the qualitative stand are kept independent or interact with each other. In this study, there was an independent level of interaction. The quantitative and qualitative data collections were kept separate. The researcher only mixed the results of the two strands when conclusions were drawn and interpretations were made at the end of the study.

The relative priority of the strands refers to the importance or weighting of the quantitative and qualitative methods for answering the research questions. The weighting of the qualitative and quantitative methods is equal in this study, as both components play an equally important role. Timing indicates the temporal relationship between the qualitative and quantitative research components and describes the order in which the researcher collects, analyses and interprets the data sets. The timing can be concurrent, where the qualitative and quantitative data are collected at approximately the same time and analysis and interpretation do not happen until all data have been collected. This study made use of concurrent timing as the data were collected from students and lecturers in a single semester and not in different phases.

The fourth procedural consideration is how the quantitative and qualitative methods are mixed. Mixing indicates the procedure for combining the different data sets. Creswell and Plano Clark (2007:83, 84) identify three strategies for mixing quantitative and qualitative data, namely merging, embedding and connecting the data sets. This study merged the two data sets as part of the interpretation phase after the presentation, analysis and interpretation of the individual data sets. Merging was done as the quantitative and qualitative data are closely linked involving the variables of the reader, the text and the activity.

There are a number of convergent parallel design attributes relevant to this study (Creswell, 2003:62-67). Firstly, the purpose of the design is to obtain different, but complimentary data in the same study to best understand the research problem. In this study numerical data about reading strategies, reading comprehension and task achievement were obtained. Descriptive/narrative data were gathered about students' reading abilities, the tasks they completed in the modules and the prescribed texts. The data is thus different, but as all data are relevant to reading comprehension, it is also complimentary. Secondly, the intent of the design is to make use of the strengths of quantitative and qualitative methods, while at the same time trying to minimize the respective weaknesses of the two methods. Thirdly, the design provides for the implementation of quantitative and qualitative research methods during the same time frame and with equal weight. Fourthly, the design is specifically useful to expand the quantitative results with qualitative data, and finally, the two data sets were merged. This was accomplished by bringing together the quantitative and qualitative results during the interpretation phase of the research. The purpose of the convergent parallel design is to find valid and well-substantiated conclusions about the phenomenon, in this case the reading strategies and reading comprehension of first year students at University X.

A mixed methods research model for this study was developed as a conceptualisation of the research design and process. Figure 3.1 is a model of the study's convergent parallel mixed method research design.

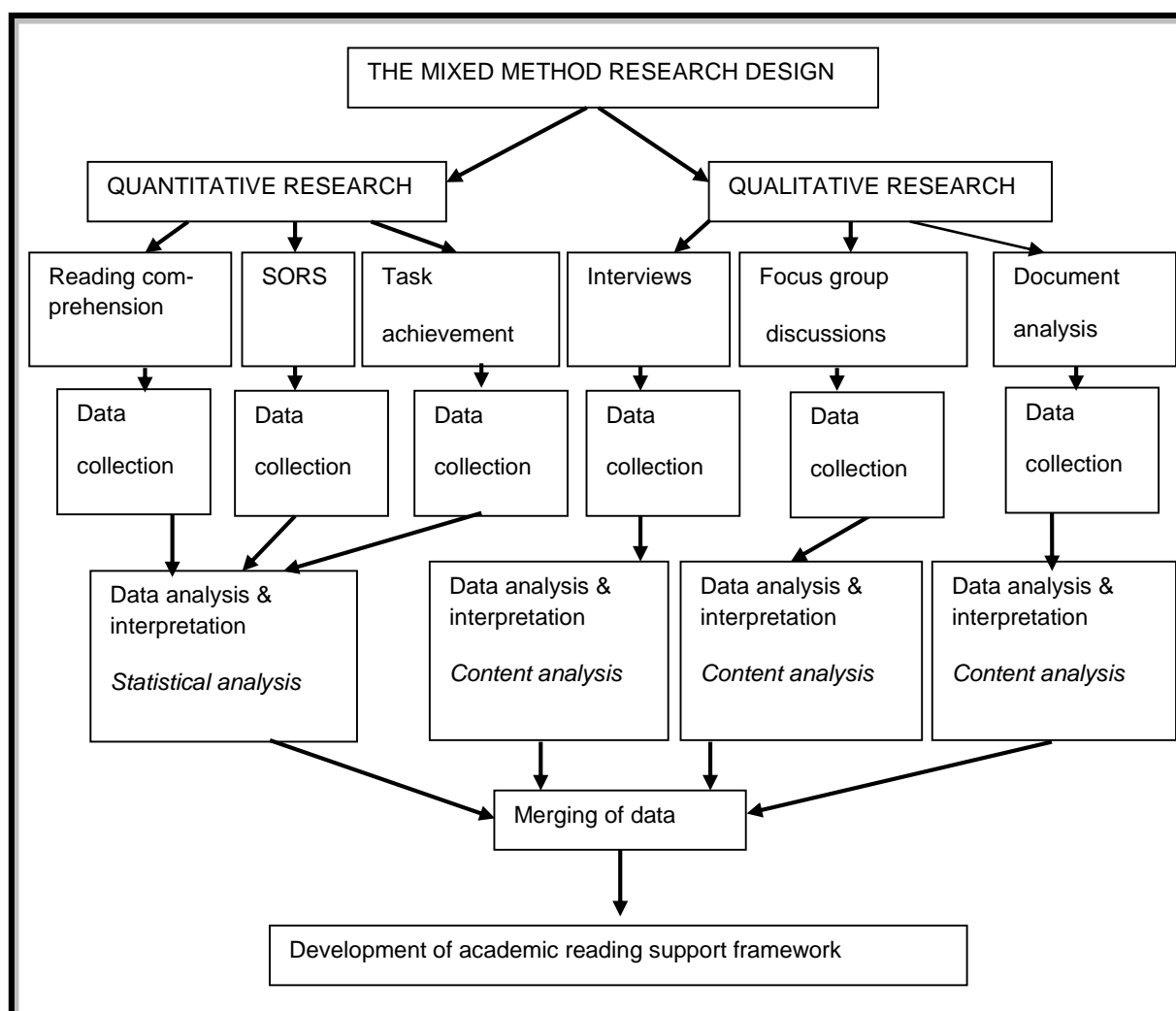


Figure 3.1: The mixed methods research model

3.3.4 Sampling

Sampling refers to the selection of participants from the total population with which the research problem is concerned (De Vos *et al.*, 2011:223; Joubert *et al.*, 2016:39). The group of participants is much smaller than the population, but it is representative of the total population. The population of this study is all on-campus first year undergraduate students at University X. According to the Institutional Office of the university, there were 4 947 on-campus first year students enrolled at the date of 16 March 2017 (North-West University, 2017). Due to time and cost considerations, the researcher could not involve all 4 947 students in this study and so a mixed method sampling design was used.

Teddlie and Yu (2007:87) define mixed method sampling “as involving the selection of units of analysis for a mixed method study through both probability (quantitative) and purposive (qualitative) sampling strategies”. According to these researchers, creativity and flexibility in the sampling design of mixed method research is important. For this research project, the researcher adhered to the suggestion of Teddlie and Yu (2007:98) and used a creative combination of purposive sampling and key informant sampling (non-probability sampling) as well as stratified random sampling (probability sampling).

According to De Vos *et al.* (2011:230), stratified random sampling involves the division of a population into smaller groups known as strata. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics. A random sample from each stratum is taken in a number proportional to the stratum's size when compared to the population. These subsets of the strata are then pooled to form a random sample. In this study the strata are the faculties the students are enrolled in.

University X houses eight faculties, namely Arts, Natural Sciences, Theology, Education Sciences, Economic and Management Sciences, Law, Engineering and Health Sciences. The researcher used purposive sampling to select seven of the eight faculties for use in this study. According to De Vos *et al.* (2011:232), purposive sampling is based on the judgement of the researcher. The researcher originally planned to include all eight faculties in this study. There were, however, only twelve enrolled first year on-campus students in the Theology faculty, and the researcher decided not to include this faculty in this study because of the small number of possible participants.

Firstly, stratified random sampling was used to choose a single programme of study from each faculty, thus seven programmes in total. The researcher obtained yearbooks of each faculty. In the yearbook there is a list of programmes that the faculty offers, with the applicable modules involved per semester, per year of study. The researcher then made use of random selection to choose a programme of study in the faculty.

With the programme chosen, random sampling was used again to select two modules in the programme presented by the specific faculty. There were seven programmes selected, thus fourteen modules were chosen in total. With the modules selected, key informant sampling was used to select fourteen lecturers, each responsible for a module. According to De Vos *et al.* (2011:234), this non-probability sampling technique relies on selecting experts in a field of interest. There may be more than one lecturer who teaches a module, but there was only one lecturer responsible for the content of the module. That lecturer is the expert and he or she was

approached to find out if he or she was willing to participate in this study. All approached lecturers had no objection to the study and agreed to participate (cf. section 3.3.8).

Once the lecturers voluntarily agreed to participate, the researcher could identify participants. Purposive sampling is the second non-probability sampling technique used in this study. According to De Vos *et al.* (2011:232), purposive sampling is based on the judgement of the researcher. The purposive sampling relied on a few steps. It is important to note that the possible student participants per faculty were all enrolled in the selected programme of the faculty. Thus, the students were enrolled in both modules A and B per faculty. The students enrolled in a programme were also grouped according to their time tables, group size and available lecture venues by the time table committee of University X.

Firstly, the researcher determined in which of the two modules (A or B), the lecturer had time to spare during a class period for the researcher to address the students. Some lecturers were more accommodating than others. Once that was determined, via each of the lecturers of module A or B respectively, the researcher gained access during a class period to a group of students enrolled in the chosen programme. Secondly, dependent on a suitable timeslot and the permission of the lecturers, the researcher approached one group of students enrolled in a programme. Thirdly, the researcher addressed one group per programme and explained the study and its purpose. Thereafter, a number of students voluntarily agreed to be participants in the study. According to Gay *et al.* (2009:133), for a population of about five thousand, a sample size of four hundred is adequate. Five hundred and fifty eight first year on-campus students willingly participated in this study. Thus, the sample size is adequate for the population of 4 947 (number of first-year students enrolled at the date of March 2017). Table 3.1 indicates the number of participants per faculty.

Table 3.1: Number of participants per faculty

Faculty	Number of participants
Arts	76
Natural Sciences	47
Education Sciences	88
Economic and Management Sciences	18
Engineering	147
Health Sciences	108
Law	74
Total participants:	558

Figure 3.2 is a diagram of the sampling process utilised in this study. The total number of each selection is indicated in brackets. The combination of probability (quantitative) and non-probability

(qualitative) sampling strategies is evident, and according to Teddlie and Yu (2007:87) this defines mixed method sampling.

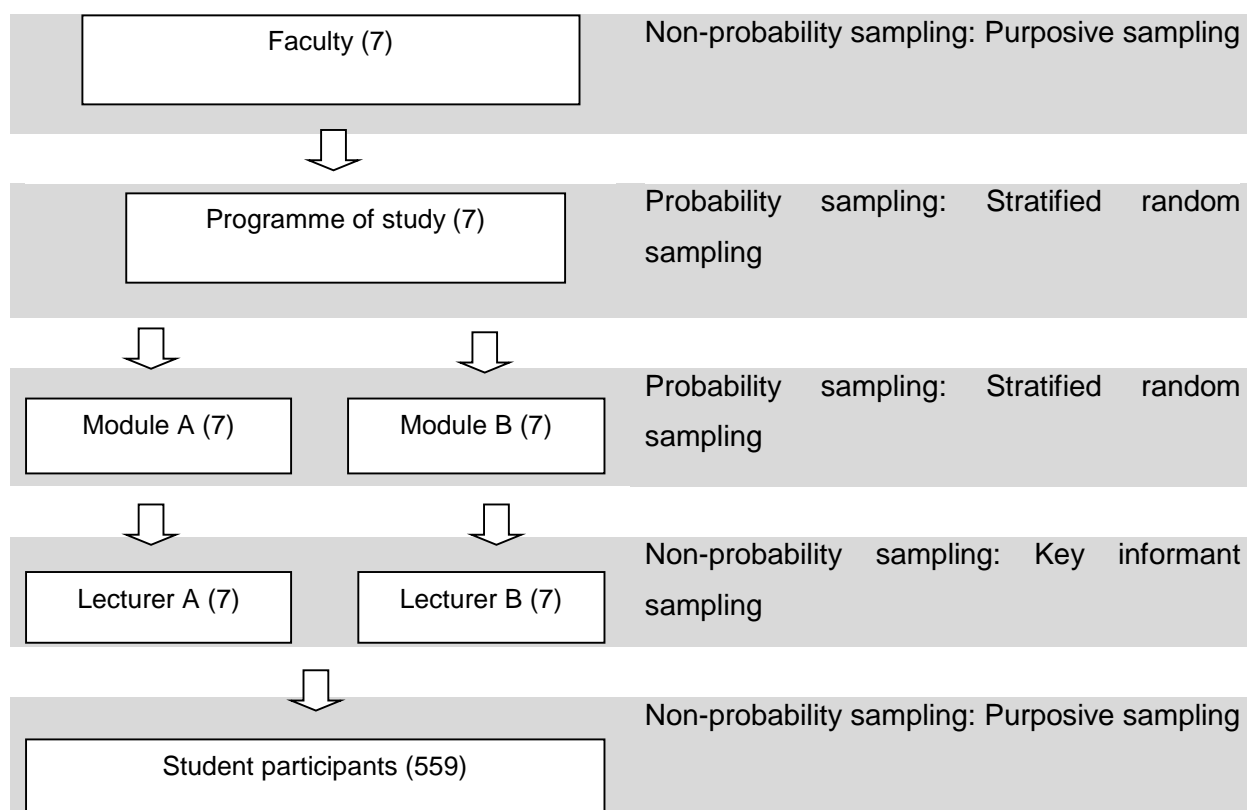


Figure 3.2: Figure of sampling process

3.3.5 Data collection methods

This study aims to shed light on the perceived reading strategy use and reading comprehension of first year students. As there is more than one faculty in a higher education setting, including students from a range of faculties would paint a clearer picture of the reading strategy and comprehension needs of undergraduate students, as opposed to following a single group of students from one faculty for a period of time. Thus, a cross-sectional investigation is best suited as it includes students from different strata, in this case, faculties at a university.

In this study a convergent parallel mixed method design was applied. As stated in section 3.3.3, this design makes use of both quantitative as well as qualitative methods for data collection. Each of the data collection methods are discussed in the following two sections.

3.3.5.1 Quantitative data collection methods

Questionnaires, reading comprehension tests and task achievement were quantitative data collection methods used in this study to collect the following numerical data:

- Data on the reading strategies used by first year students.

- Numerical data related to students' reading comprehension abilities, comprising of reading speed and comprehension percentage.
- Task and participation marks per module.

The reliability and validity of each of the quantitative data collection methods are addressed within the discussion of each method.

i) Questionnaires: The Survey of Reading Strategies Questionnaire (SORS) was the instrument used to collect data on the reading strategies used by students (cf. Appendix A). It was developed by Mokhtari and Sheory (2002:2). This questionnaire was designed to measure adolescent and adult students' metacognitive awareness and perceived use of reading strategies while reading academic materials. The SORS consists of 30 items, each of which uses a 5 point Likert scale ranging from 1 to 5. Participants indicated whether they

- never or almost never used the reading strategy (1),
- occasionally used the reading strategy (2),
- sometimes used the reading strategy (3),
- usually used the reading strategy (4) or
- always used the reading strategy (5).

Three broad categories of reading strategies are measured by this instrument:

- Global reading strategies (13 questions)
- Problem solving strategies (8 questions)
- Support reading strategies (9 questions)

According to the developers of the SORS, students use **global reading strategies** to work with text directly or to manage and monitor their reading intentionally. Having a purpose in mind and previewing the text are examples of global reading strategies. Questions 1, 3, 4, 6, 8, 12, 15, 17, 20, 21, 23, 24 and 27 fall into this category.

Support reading strategies are used as basic mechanisms to aid reading comprehension, for example, note-taking or underlining textual information (Mokhtari & Sheorey, 2002:4). Questions 2, 5, 10, 13, 18, 22, 26, 29 and 30 fall into this category.

Problem solving strategies are used to solve problems of understanding that arise as students are reading. Examples of these strategies include adjusting one's reading speed or guessing the meaning of unknown words. Questions 7, 9, 11, 16, 19, 25 and 28 fall into this category.

Leedy and Ormrod (2005:28, 92) explain **validity** of an instrument as the extent to which the instrument measures what it is supposed to measure. According to Mokhtari and Reichard (2002:254), SORS is a valid instrument. It does have face validity as the questions it contains all centre around reading strategies used while reading an academic text. It was also important to further test the statement of the developers by determining the construct validity of the instrument. This refers to the measurement of abstract characteristics that cannot be directly observed and measured (Hancock & Mueller, 2010:340). The degree of correlation of the latent variables (the three categories Global, Problem solving and Support) comprising the SORS was investigated. A confirmatory factor analysis was performed to determine construct validity of the SORS (cf. Figure 3.3).

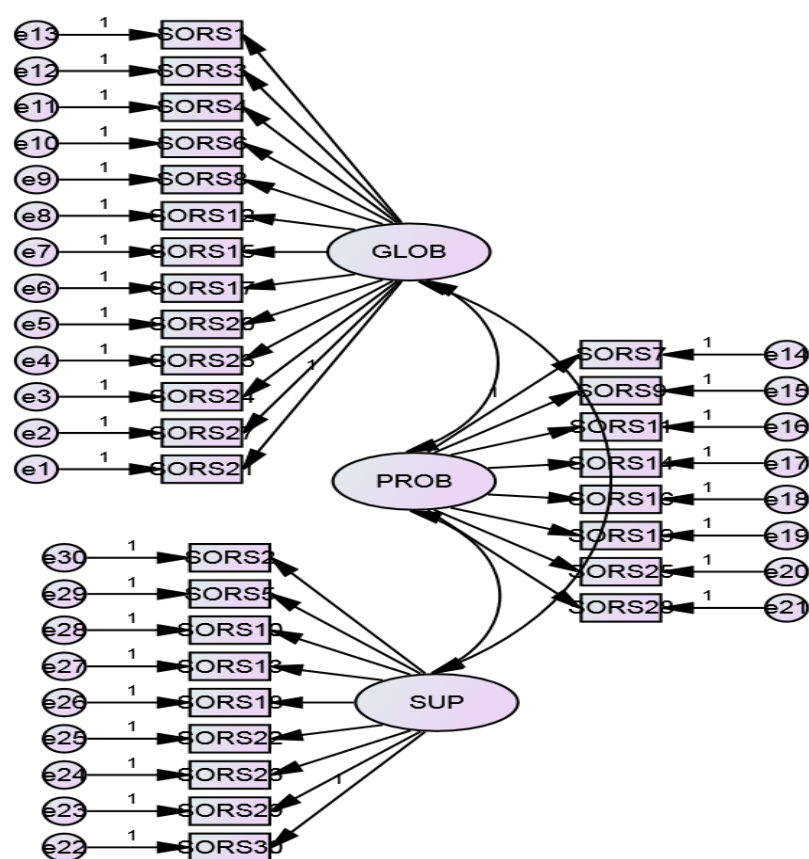


Figure 3.3: Diagram of the confirmatory factor analysis

All 30 items loaded statistically significantly on their latent variables. The “Goodness of Fit” test is the most basic kind of Chi Square test “...which seeks to determine if some pattern of frequencies is significantly different than would be expected based on some criteria” (Geher & Hall, 2014:306). The Chi-square test is viewed by some as an overly strict indicator of model fit as it can detect even small deviations from the proposed model (Hancock & Mueller, 2010:109). Mueller (1996:83) suggested that the Chi-square test statistic be divided by degrees of freedom.

The three-factor model yielded a Minimum Sample Discrepancy divided by Degrees of Freedom (CMIN/DF) value of 3.311. Interpretation of the size of this value depends to a large extent on the viewpoint of the researcher, but in practice some interpret ratios as high as 3, 4 or even 5 as still representing a good model fit (Mueller, 1996:89). It is, however, considered good practice to report multiple fit indices, typically from three broad classes (Hancock & Mueller, 2010:110). Mueller (1996:90) described values of above 0.9 as indicative of a good overall fit for a Comparative Fit Index. A relatively low Comparative Fit Index (CFI) of 0.744 was found for the three-factor model while a Root Mean Square Error of Approximation (RMSEA) value of 0.064 with a 90% confidence interval of [0.061; 0.068] was obtained. Blunch (2008:77) stated that models with RMSEA values of 0.10 and larger should not be accepted and as the RMSEA value of the SORS was smaller than 0.10, it can be accepted. Although the CFI was low, the CMIN/DF and RMSEA values were good. This is enough evidence to indicate that the SORS has construct validity in the context of this study and, that, it indeed measured the abstract characteristic of reading strategies of students when reading academic text.

Reliability can be explained as the consistency with which a measuring instrument gives a certain result when that which is being measured, has not changed (Leedy & Ormrod, 2005:29; Maree, 2007:147, 215). The Cronbach alpha coefficient is most commonly used to statistically determine the reliability of an instrument based on the instrument's inter-item correlations (De Vos *et al.*, 2011:177). The mean of the inter-item correlations should fall between 0.15 and 0.55 (Clark & Watson, 1995:309-319) and reliability coefficients higher than 0.70 are often considered acceptable in the social and behavioural sciences. Coefficients above 0.90 represent a high reliability (Gray 2009:158; Hancock & Mueller, 2010:341; Nunnally & Bernstein, 1994:265).

The developers of the SORS reported that they calculated a Cronbach alpha coefficient at 0.93 which indicates that the instrument is highly reliable (Alsheikh & Mokhtari, 2011:153). As the instrument was used in a South African context, the reliability of the instrument was again statistically determined for the purpose of this study, by means of the Cronbach alpha coefficient. Table 3.2 summarises the Cronbach alpha coefficient values and the means of the inter-item correlations which indicate the reliability of the three categories of reading strategies which comprise the SORS.

Table 3.2: Reliability values of the three categories of reading strategies of the SORS

Reading strategy category	Cronbach alpha	Inter-item correlation mean
Global reading strategies	0.778	0.220
Problem solving strategies	0.661	0.205
Support reading strategies	0.702	0.212

Table 3.2 indicates that the inter-item correlation values were all between 0.15 and 0.55. The Cronbach alpha coefficient values of the thirteen questions of the Global reading strategies category and the Support reading strategies category were both higher than 0.7 which indicates reliability. The corrected item-total correlation of question 28 of the Problem solving strategies category, was low (0.106) compared to the other questions of the category. This low value caused the Cronbach alpha coefficient value of that category to be below 0.7. When answering question 28 the readers indicated on the five-point Likert scale how often they guessed the meaning of unknown words or phrases when they read. Guessing is not precise and according to Field (2005:675) when dealing with psychological constructs like guessing for example, a coefficient value of less than 0.70 can still indicate reliability.

The reliability of SORS was further enhanced as it was administered exactly as directed by the developers (Mokhtari & Sheory, 2002:5). The method of group administration of the SORS was used whereby a group of respondents enrolled in the same programme within a faculty, completed the questionnaire (Maree, 2007:157). This method has the advantage that the questionnaire can be completed in a short space of time and that response rate is optimal.

ii) Reading comprehension: Numeric data of students' reading comprehension abilities were collected by making use of the computer-based reading language programme, Readers are Leaders. The software was developed by the South African company Four Blind Mice. The reason for using comprehension data compiled by this programme, is because Readers are Leaders is the programme used at University X. All first year on-campus students of University X, have to complete a reading course on the Readers are Leaders programme. It is the reading development component of the compulsory academic literacy modules.

This component is practical in nature and takes place in the reading development centre. The Readers are Leaders programme works in the following way. A student is given a text to read, and continues to answer questions on the text. The student's reading speed is then calculated. The computer also marks the questions answered about the read text and based on answers being correct or incorrect, then calculates a comprehension rate which is reflected as a percentage. The required level of reading is 220 words per minute with 80% comprehension (Meihuizen, 2017:4). Students who comply with the required level of reading skill during the first assessment are exempted from the reading component. Students who do not accomplish the initial assessment outcomes have to complete the reading component, followed by a final assessment. During the reading component, the student has to do multiple comprehension tests. The programme keeps track of the student's progress.

The student participants of this study gave consent that the researcher may access the data on their reading tests as calculated by the Readers are Leaders programme (cf. section 3.3.8). For each student, the numerical data related to their words per minute count as well as their comprehension percentage was obtained.

The educational software company, Four Blind Mice could not supply the researcher with any proof that the Readers are Leaders software programme has undergone a rigorous analysis process to determine the validity and reliability of the programme. It does have face validity as it asks questions to determine if the reader understood the text supplied. The programme also calculates the reading speed of the reader. This is done by calculating the time it takes the reader from opening the text document he/she is going to read, until the reader starts answering the questions. The researcher performed the Flesch Reading Ease test to determine if the passages were on the indicated level.

Many formulas exist to determine readability of text. The Flesch Reading Ease formula was used in this study as it is easily accessible as a built-in readability tool for Microsoft Office Word software. The Flesch Reading Ease mark correlates with an estimated reading grade level (Flesch, s.a). A mark index range between 50 and 60 correlates with grades 10 to 12 in high school. A range between 30 and 50 correlates with university at an undergraduate level and marks between 0 and 30 with graduate level. The lower the mark is, the more difficult it is to read. According to Flesch (1948:228), the Flesch reading ease calculation should be done with samples of text of more than a hundred words. Two paragraphs of about 200 words were selected from four comprehension tests of the Readers are Leaders software programme. See Appendix B for the level 12, 13, 14 and 15 passages. The MS Office Reading ease marks of the passages were:

- Level 12 passage: 59.4
- Level 13 passage: 46.9
- Level 14 passage: 58.8
- Level 15 passage: 60.5

The level 12 passage is thus on high school level and the level 13 passage on university level. One would assume that the marks of the level 14 and 15 passages would be less than the level 13 passage, which would render it more difficult. This is not the case. Both level 14 and level 15 have a higher mark than level 13, indicating that the passages are easier to read than the level 13 passage and on high school level. The level 12 and level 13 comprehension tests of the Readers are Leaders software programme are in other words more reliable than the level 14 and level 15 test.

iii) Task achievement: Task achievement was measured by collecting marks per participant per module. For each of the fourteen modules, a mark was firstly collected for one or in some cases two tasks done in the semester as part of the participation mark. These tasks included assignments, tests and presentations. The participation mark was also collected for each participant for each module. The participation mark is the total percentage calculated by combining all the marks for tasks done during the semester. At the specific university, the students need to achieve a minimum of 40% for participation before they are granted permission to write the exam in a module. The final mark for a module is a combination of the participation mark and the mark achieved in the exam at the end of a semester. The weighting of the participation and exam mark differs from module to module and is determined by the faculty.

The purpose of participation marks is to help students to systematically work through the content of the module and to motivate students to attend classes and complete all tasks. The lecturer responsible for the content of the module makes decisions about the type, format and number of tasks to be done for the participation mark. These decisions are usually done in consultation with other lecturers who teach the module or the type, format and number of tasks may be prescribed by the head of the programme in the faculty. The decisions about the tasks are also often influenced by previous experiences of the lecturer about the abilities of students and the nature of the content.

The tasks were the “measuring instruments” by which the first task achievement marks were obtained. There are no specific validity and reliability guidelines for such tasks at the specific university, but in order to ensure quality consistency, certain procedures are put in place. In educational assessment, validity is determined by the lecturer who ensures that there is alignment between the task criteria and the intended learning outcomes (Bloxham & Boyd, 2007:34; Brown, 2001:16). Procedures to increase the validity of tasks are typically:

- internal moderation done by other faculty members, or
- external moderation done by an individual or individuals outside the faculty usually from another university.

Reliability in educational assessment refers to the consistency of marking tasks against provided criteria (Brown, 2001:16; Bloxham & Boyd, 2007:38). An assignment’s mark, for example, can be deemed reliable when different markers give the same mark or when one marker makes consistent judgements about the tasks of different students (Bloxham & Boyd, 2007:38). Procedures to increase the reliability of assessing tasks are typically:

- the consistent use of a rubric or memorandum for each task.
- the training of marking assistants.

- the lecturer's moderation of at least 10% of tasks marked by marking assistants.
- moderation meetings between lecturers who are marking the same tasks to discuss marking procedure and penalisations.

The following section gives a brief description of the tasks of each of the modules. To view the complete task with the memorandum or rubric where applicable, refer to the appendix as indicated:

Tasks: Faculty of Arts

In **Module A**, the marks for two tasks were collected. One of the class tasks students completed was a case study. Students had to read two articles about the implementation of a government policy in preparation for class. During class they had to follow guidance prompts relating to the core aspects of the articles which align with a discussion in the textbook. The students had to write their thoughts down in the form of a short discussion (cf. Appendix C). A large number of students received a mark of zero for this assignment, and the researcher enquired whether many students were absent and did not complete the case study. This was not the case. According to the marking assistants who marked the case studies, the majority of the group did the case study, but many students could not identify the main concepts in the articles which aligned with the section in the textbook. As this case study is but one of the marks used to calculate the participation mark, a class test was also included (cf. Appendix D). The test consists of two sections with two questions in each section. Students could choose to answer either section A or section B. The questions required paragraph-type answers where the students had to "discuss", "elaborate" and "explain". Each question counts 25 marks, with the test total being 50 marks. The marks for the case study and the class test were averaged. This is common practise in the faculty in order to calculate the participation marks.

In **Module B**, the marks were collected for an essay students completed in groups. They had to read and analyse a text in terms of the outcomes of the module. They also had to use other prescribed articles in the analysis. The general guidelines were that students had to use a minimum of five sources and the length of the essay was 2 000 words. 50% of the marks were awarded for technical prerequisites and 50% for the content. Refer to Appendix E for the essay instruction, slide show presentation about the task as well as the rubric.

Tasks: Faculty of Natural Sciences

In **Module A**, students learn a computer programming language. They have to have knowledge about how the language works and they also need to be able to use the programming language successfully in practical tasks. A pen-and-paper class test was used to test the students'

knowledge and a practical test was used to test if students could apply their knowledge. See Appendix F for the class test, memorandum, practical instructions and memorandum.

In **Module B**, the marks were collected for one of the weekly class tests. This test was written in the tutorial class. The tutorial is scheduled for three hours once a week. The purpose of the tutorial test is to force students to work through the content. Students know before the test what they need to prepare. During the tutorial, the students have the opportunity to write the test and leave, or they can participate in the class and get individual help with calculations they do not understand. For the tutorial test used in this study, students were allowed to work from their textbooks. They had to answer five questions which involved definitions and descriptions of processes. See Appendix G for this test.

Tasks: Faculty of Education

In **Module A**, the marks were collected for a short unannounced class test. This test had a total of ten marks and students answered three questions. The students had to provide definitions of key terms previously discussed in class and also included in the prescribed textbook. It also tested if they had read the policy documents given to them as preparation for the class. See Appendix H for the test and memorandum.

In **Module B**, the marks were collected for a 3-page pamphlet students had to create in the class. The pamphlet had to summarise information covering twelve pages of the textbook. Students had to complete the pamphlet in 60 minutes. See Appendix I for the instructions and the rubric.

Tasks: Faculty of Economic and Management Sciences

In **Module A**, the marks were collected for a class test. Students wrote this test individually and they had to study two chapters from the prescribed textbook and answer “list, discuss and explain” questions for 25 marks. See Appendix J for the test and the memorandum.

In **Module B**, the marks were collected for a group presentation. Students formed groups of between eight and ten members and they had to present a section of the work throughout the semester. The students could choose the date of the presentation and the lecturer assigned the content they had to present. The content is dealt with in the textbook as part of the outcomes of the module. The students had to create a PowerPoint presentation to present the content to their peers. The oral part of the presentation could be done by any combination of members of the group, be it one presenter or several. The lecturer awarded 50% of the marks for the content and 50% of the marks for the presentation. See Appendix K for the instruction slide show and rubric.

Tasks: Faculty of Health Sciences

In **Module A**, it is important that the students have knowledge about pharmaceutical calculations but they must also be able to do certain calculations in practical laboratory sessions. Thus, marks were collected for a class test as well as a practical laboratory session. Students had scheduled laboratory sessions where there was help available in the form of tutors and the lecturer. See Appendix P for the test and memorandum of the class test and the laboratory session.

In **Module B**, marks were collected for a class test. The test had a total of 15 marks. In this test students had to “describe” and “name”. Students had to study sections in the prescribed textbook for this test. See Appendix Q for the complete test and memorandum.

Tasks: Faculty of Engineering

In **Module A**, the marks were collected for a class test covering two chapters in the prescribed textbook the students had to study on their own. The test counted ten marks and students had to choose the correct answer from a list and name methods of processing. See Appendix N for the test.

In **Module B**, the marks were collected for a class test. The test total is 35 marks. Students mostly had to do calculations and answer multiple-choice questions where they had to determine the correct answer of a calculation. See Appendix O for the test and memorandum.

Tasks: Faculty of Law

In **Module A**, the marks were collected for a group presentation. This task was called “Heads of Argument”. Students were instructed to work in groups of ten. The groups were paired and each pair received a topic, such as a divorce case or a harassment case. One group was the party who instituted legal proceedings and the other group had to do the defence. This mock trial task was structured in phases:

- In the first phase, the groups had to prepare their heads of argument. They had 90 minutes to do research in the library. The research included previous court cases and relevant acts as published in the Government Gazette. From the research they had to compile a document which set out the main arguments they planned to use during the mock trial against their opponents.
- In the second phase, the party who instituted the legal proceedings had to complete a request form to hand in the court document that had to be correctly indexed and paginated.

- During the third phase, the opposing groups had to evaluate each other's heads of argument by using the applicable rubric.
- The fourth phase was the presentation itself. The groups presented their heads of argument during a mock trial in front of the lecturers. They had to follow set criteria for the presentation, like dress code and note taking.

In this task students applied their knowledge about court cases and had the opportunity to experience all the phases and requirements of a trial. See Appendix L for the instructions, rules and rubric of this task.

In **Module B**, the marks were collected for a class test. The test totalled 50 marks and contained different sections: multiple-choice, fit column A to column B, give definitions, do a calculation and a discussion. Students had to study sections from their textbook as well as a prescribed court case. See Appendix M for the test and memorandum.

Table 3.3 provides a summary of the measuring instruments for task achievement per faculty:

Table 3.3. Measuring instruments for task achievement

Faculty	Module	Task achievement		
		Task 1	Task 2	Participation mark
Arts	A	Case study	Class test	average %
	B	Essay		
Natural Sciences	A	Class test	Practical assignment	average %
	B	Tutorial class test		
Education Sciences	A	Class test		average %
	B	Pamphlet		
Economic and Management Sciences	A	Class test		average %
	B	Group presentation		
Law	A	Group presentation		average %
	B	Class test		
Engineering	A	Class test		average %
	B	Class test		
Health Sciences	A	Class test	Practical task	average %
	B	Class test		

The participation marks for each module were also collected. The lecturers calculated this mark towards the end of a semester. The participation marks were then sent to the administrative office of the faculty. As the researcher had the student participants' permission to use their participation marks, the marks for the fourteen modules were obtained from the administrative office of each of the seven faculties.

3.3.5.2 Qualitative data collection methods

In this study a convergent parallel mixed method research design was used. As illustrated in Figure 3.1, both quantitative as well as qualitative methods were used. This section discusses the qualitative methods.

According to Johnson and Onwuegbuzi (2004:18), the inclusion of quantitative and qualitative methods in mixed method research "is likely to result in complementary strengths and nonoverlapping weaknesses". To apply these strengths in this study, the researcher included three qualitative research data collection methods to gain direct access to first year students, their lecturers, the textbooks they had to read and understand and the tasks they had to complete. The researcher held semi-structured interviews, focus group interviews and also completed document analyses on the prescribed texts, task instructions, rubrics, tests and memoranda.

i) Interviews: An interview is a two-way conversation between the interviewer and a participant. The interviewer asks the participant questions to collect data and to learn more about the ideas, beliefs, views, opinions and behaviours of the participant. The aim of an interview is to obtain descriptive data that cannot be obtained in any other way (De Vos *et al.*, 2011:342; Leedy & Ormrod, 2005:155; Maree, 2007:87). Interviews can be open-ended where the researcher explores with the participant his or her views, ideas, beliefs or attitudes about a certain topic in a conversational way. These interviews are spread out over a period of time. Interviews can also be semi-structured or structured. Semi-structured interviews are commonly used in studies to confirm data emerging from other sources. It seldom spans a long time and usually requires the participant to answer a series of predetermined questions. According to the responses of the participant, the interviewer can probe for clarification of answers as semi-structured interviews are more flexible than structured interviews. In a structured interview, questions are detailed and developed in advance. This type of interview is commonly used in multiple case studies or large sample groups to ensure consistency. As the interviews are structured, probing is inhibited (Maree, 2007:87).

In this study, recorded semi-structured interviews were held with fourteen willing lecturers from seven different faculties. These lecturers were all experts on the first year module outcomes and

content as they were responsible for the module in a specific programme in the faculty. The interviews were conducted according to a semi-structured interview schedule (cf. Appendix R). This schedule predetermined the questions and sequence for the researcher. During the interviews data pertaining to prescribed texts and tasks were collected. Information was also obtained about selection criteria of academic material, the format and structure of tasks the first years had to complete in that module and the lecturers shared some insights on the reading abilities of first year students they observed in their classes. A semi-structured interview worked best in this study as it allowed the researcher to clarify, probe and crosscheck responses. The researcher also altered and rephrased questions according to the responses of the lecturer (Joubert *et al.*, 2016:113). With the permission of the lecturers, all interviews were audio-recorded for the purpose of transcription, analysis and integration.

ii) Focus group interviews: Focus group interviews are interviews that take place with a group of participants where the researcher encourages and observes group interaction (Barbour, 2007:2). A particular issue is discussed based on the assumption that group interaction will cultivate a range of responses as participants may perhaps voice their opinions more freely surrounded by their peers, than they would in a one-on-one interview situation. Participants are able to contradict or elaborate on each other's comments to provide the interviewer with an in-depth view of the ideas, beliefs, views, opinions and behaviours of the group (De Vos *et al.*, 2011:360; Leedy & Ormrod, 2005:156; Maree, 2007:90). The size of a focus group varies from five to twelve participants (Maree, 2007:91).

One focus group interview was held with a group of students from each of the seven faculties, thus seven focus groups in total. The participants of each of the focus groups were all enrolled in the same programme. Therefore, everyone in the focus group had the same two modules that were randomly selected in the programme of study. Students were homogeneous in this aspect. The groups ranged from five to nine participants. The lecturer informed each group of students during a class period in one of the chosen modules that a focus group was to take place at a specific time and venue. The participants in the focus group were the students who voluntarily decided to take part.

The researcher decided to include focus groups as she deemed the experiences and opinions of the first year students valuable for insight into the research problem. This correlates with one of the main purposes of focus groups as set out by Maree (2007:91). The researcher also planned to compare the viewpoint of the students with that of their lecturers with regard to prescribed textbooks and tasks.

The questions asked during the focus group discussions stemmed from the research questions. The questions were similar to the questions asked to the lecturers during the semi-structured interviews. Information was gathered about the students' reading abilities, prescribed texts they had to read as well as the tasks they had to complete. With the permission of the focus group members, all focus group interviews were audio-recorded for the purpose of transcribing, analysis and integration.

iii) Document analysis: According to Joubert *et al.* (2016:232), document analysis is a qualitative method that systematically analyses and evaluates documents to understand the document better so that empirical knowledge can be generated. The documents can be both printed and electronic. This study analysed excerpts from prescribed academic texts, the instructions of tasks, as well as rubrics and memoranda of the tasks. Twenty two excerpts of texts were collected. Table 3.4 lists the module-specific prescribed academic texts which were collected for analysis in this study:

Table 3.4: Prescribed academic texts collected for data analysis per module

Faculty	Module	Document(s) analysed
Arts	A	Journal article
		Textbook
	B	Journal article
		Biographical interview
Natural Sciences	A	Textbook
	B	Textbook
Education Sciences	A	Textbook
	B	Textbook
Economic and Management Sciences	A	Textbook
	B	Textbook
Law	A	Court case
	B	
Engineering	A	Textbook
	B	Textbook
Health Sciences	A	Textbook
	B	Textbook

Microsoft PowerPoint presentations are also a form of text that lecturers compile and use within the context of instruction. With the generally used Microsoft Office program, PowerPoint, lecturers usually create a visual representation of the content of a lecture. For an example of slides of such

a PowerPoint presentation, refer to Appendix C. Although these slides are primarily presented in class, lecturers also make them available to students before or after lectures as an additional resource. For the qualitative analyses, slides of Microsoft PowerPoint presentations will be referred to as “slides” only. This term is not only more concise, but also the way in which students and lecturers at University X refer to the content specific Microsoft PowerPoint presentations.

3.3.5.3 Trustworthiness

Just like quantitative methods must be valid and reliable, qualitative methods must be trustworthy (Lincoln & Guba, 1985:290; Maree, 2007:80). Four issues of trustworthiness demand attention: credibility, transferability, dependability, and confirmability (Freeman *et al.*, 2007:28-29).

Firstly, credibility is an evaluation of whether or not the research findings represent a “credible” conceptual interpretation of the data drawn from the participants’ original data (Lincoln & Guba, 1985:296). During the course of this study, the engagement with the data such as transcripts was intense to make sure the data were not interpreted incorrectly. Verbatim responses were included to reflect the different types of responses the researcher observed during the interviews. The credibility of the researcher was also enhanced by the assistance of an experienced researcher, the promoter who oversaw the interview schedule and transcription process. This researcher also evaluated the researcher’s interpretation of the data and regular discussions enabled the researcher to make needed adjustments according to her recommendations.

The second issue of trustworthiness is transferability. This is the degree to which the findings of this inquiry can apply or transfer beyond the bounds of the project (Babbie, 2013:407). The researcher strove to ensure transferability by providing thorough, detailed descriptions of data. The variety of information within the context of first year students and their reading abilities, were maximised by the purposive sampling of students enrolled in different modules and faculties.

Dependability and confirmability are also important. Dependability is an assessment of the quality of the integrated processes of data collection, data analysis, and theory generation. The researcher endeavoured to ensure that the research process was clearly documented to reflect the logical manner in which it took place. Confirmability is a measure of how well the inquiry’s findings are supported by the data collected (Lincoln & Guba, 1985). The researcher ensured confirmability by repeatedly engaging with the data and repeating steps in the data analysis process to make sure that the interpretations of the findings were grounded in the gathered quantitative and qualitative data. A confirmability audit trail was meticulously tended to so that interpretations, conclusions and recommendations could be revisited.

According to Maree (2007:80), engaging in multiple methods of data collection, also improves trustworthiness of a research project. The trustworthiness of this study is therefore, enhanced by the inclusion of semi-structured interviews, focus group interviews and document analysis. Creswell (2003:196) refers to it as triangulation whereby “different data sources are used to build a coherent justification for themes”. With application to this study, all three these methods were used to gather data about prescribed academic text as well as the format and structure of tasks. The semi-structured interviews and the focus group interviews were both used to also gather data about the reading abilities of students. All paper trails, such as the informed consent forms of lecturers and students, hard-copy excerpts from texts as well as task instructions were meticulously filed as suggested by Creswell (2003:196).

3.3.6 Data collection procedure

Data collection was conducted in the following manner:

i) Questionnaires: The first year students who agreed to take part in the study completed the SORS during a scheduled period of one of the modules chosen for this study. This was determined by the permission of the lecturer. The SORS was administered to one group of students in each faculty over a time period of two months. According to the developers, the SORS is easy to read and administer (Mokhtari & Sheorey, 2002:4) and this was indeed the case. The total administration time was approximately 10 to 12 minutes. After the researcher explained the purpose of the inventory, students read each of the 30 statements on the questionnaire and indicated how often they use the described reading strategy, using the 5-point Likert scale provided after each statement. The researcher clarified questions when students were uncertain. Students made use of the official university multiple-choice answer sheets to indicate the 5-point Likert scale. This answer sheet worked well, as the university has an electronic card reader available for use by researchers, on which the Kofax capture software is installed. This software automatically captured the marked Likert scale on the multiple-choice answer sheets, and converted it into data which could be used to interpret the SORS as indicated by the developers. The data generated by the Kofax capture software was also used in statistical analyses.

ii) Reading comprehension: The reading component as part of the academic literacy module, is compulsory for all first year students at University X. Therefore, all participants of the study also completed the compulsory reading assessment done on the Readers are Leaders software programme. This assessment took place at the reading laboratory of the specific university. Students complete the assessment at a time that suits them. The software programme keeps record of all the assessments and tasks completed by each student. It also compiles a report of the reading comprehension ability of each student in terms of words per minute with

comprehension. The student participants gave the researcher permission to use their reading reports in this study. The administrative officer of the reading laboratory provided the researcher with the reading reports of all the study's participants.

iii) Task achievement: The participants within a faculty were enrolled in the same programme of study. Therefore, each participant was enrolled in both selected modules of each of the seven faculties. For task achievement, the researcher needed the mark (or in some cases marks) for a task (or tasks) for the module as well as the final participation mark for each module. The lecturer of each module sent the task mark (or marks) of the participants to the researcher. The participation marks were sent to the researcher by an administrative officer of the faculty.

iv) Semi-structured interviews: Fourteen semi-structured interviews took place over the course of three months in the second semester of 2015. The interviews took place in no particular order. The researcher sent out e-mails to the lecturers responsible for the selected modules. The interviews were scheduled as the lecturers replied to the researcher's invitation to take part in the study. All interviews took place in the offices of the lecturers at a time that suited both the researcher and the lecturer.

v) Focus group interviews: Seven focus group interviews were held over the course of three months in the second semester of 2015. Students from the selected group in each faculty were invited to take part in the focus groups. The time and venue were also given and the students who voluntarily arrived at the scheduled time and venue, took part in the focus groups. The size of the focus groups ranged from five to eight participants. The size is appropriate for a focus group (Barbour, 2007:60; Leedy & Ormrod, 2005:146; Maree, 2007:91). The focus groups were held in no particular order and the venues ranged from a discussion room in the library, to the researcher's office.

vi) Document analysis: During the semi-structured interviews, the researcher collected the titles of academic texts that the lecturers prescribed for their modules. In some cases the researcher collected the documents from the lecturers and returned them on a later date. In other cases the researcher collected available copies from the library or the documents were electronically available on academic search engines. The researcher also collected copies of the task(s) instructions or tests as well as the rubrics or memoranda. The documents were all collected over a three month period in the second semester of 2015.

3.3.7 Data analysis

This study made use of a mixed method research design. Thus, both quantitative and qualitative data were gathered and so both quantitative and qualitative data analyses were done in this study (cf. Figure 3.1):

3.3.7.1 Quantitative analyses

In this section the data analyses of the numerical data of the questionnaire, reading comprehension marks and task achievement is set out. Firstly, the questionnaire was analysed according to the developer's instructions. The developer of the SORS prescribed how the Likert-scale answers of the questionnaire should be marked (Mokhtari & Sheorey, 2002:4). Marks should be transferred and totalled by making use of the scoring sheet. As the participants completed the Likert-scale on the multiple-choice answer sheet and the sheets were read by the Kofax capture software, it was possible to mark the SORS answer sheets electronically with calculations available on MS Excel. The mark was calculated for each of the three reading strategies, namely global reading strategies, problem solving strategies and support reading strategies. Once those had been calculated, it was possible to calculate the total mark of the SORS as prescribed by Mokhtari and Sheorey (2002:4). The overall reading strategies (ORS) was calculated by adding the averages of the three categories and dividing it by three.

These marks were then interpreted using the interpretation key provided. "The usage levels provides a convenient standard for interpretation of the score averages" (Magogwe, 2013:6). The Statistical Consultation Service of University X aided the researcher in analysing the quantitative data by means of the SPSS computer programme (SPSS Inc., 2016), the SAS computer programme (SAS Institute Inc., 2016) as well as STATISTICA version 13 (StatSoft Inc., 2016). The data were organised and summarised in a meaningful way by making use of descriptive statistics (Leedy & Ormrod, 2005:289; Maree, 2007:183; De Vos *et al.*, 2011:251). The analysis of variance (ANOVA) was also used to determine if there were statistically significant differences among students' reading strategy use between different faculties.

Secondly, the Statistical Consultation Service made use of the same computer programmes listed above to analyse the numerical data of the reading comprehension computerised tests as well as the task achievement. The analyses were completed to determine the correlations between reading strategies, reading speed and comprehension percentage, as well as reading strategies and task achievement. For this purpose the Spearman correlation coefficient was employed. According to Maree (2007:237), this correlation coefficient is used to determine whether or not there is a correlation between variables. The magnitude of the correlation being tested was calculated by an effect size (Joubert *et al.*, 2016:346; Maree, 2007:211). The effect size as

practical significance is reported to determine whether the findings of this study are actually useful and have implications for practice (Leedy & Ormrod, 2005:276). Cohen's effect size r was used to determine if a practically significant correlation exists between the variables of reading strategy use, reading speed and reading comprehension for all participants, as well as reading strategy use and task achievement per faculty (Cohen, 1988:26). The following scale was used for r -values:

Small effect: 0.1 (indicated by +)

Medium effect: 0.3 and also observable with the naked eye (indicated by ++)

Large effect: ≥ 0.5 and also practically significant (indicated by +++)

3.3.7.2 Qualitative analysis

The qualitative data of this study were gathered by means of fourteen semi-structured interviews, seven focus group interviews and document analyses. The interviews were firstly transcribed. Then, the analyses of the narrative data collected by means of the interviews, were done by means of content analysis. According to Maree (2007:101), "(i)t is a process of looking at data from different angles with a view to identifying keys in the text..." Coding is an important part of this process whereby data are divided into meaningful units or codes. Codes can either act as collection points for important data or they are tools that enable further investigation (Seidel & Kelle, 1995:53). In this study the codes themselves were firstly collection points to sort the transcribed data, and then also aided the discovery of embedded themes.

The research questions of this study lead to the development of *a priori* codes. According to Maree (2007:107), this term refers to codes existing before data are analysed. The over-arching categories of this study were used as the *a priori* codes. These categories were the socio-cultural context, the reader, the text and the task. During the interviews and focus interviews, the reading abilities of the students, the prescribed text and the tasks were discussed. Thereafter, the transcribed discussions were sorted by the *a priori* codes. After the segments of data were sorted, the researcher continued to delve deeper into the data. By making use of axial coding, new connections were made between segments and themes emerged from the categories of the socio-cultural context, the reader, the text and the task (De Vos *et al.*, 2011:412-413; Maree, 2007:107).

Twenty two excerpts of academic documents were collected for document analysis (cf. Table 3.3). Prescribed academic materials were collected from lecturers responsible for the modules' content. These materials were analysed with the Coh-Metrix Common Core Text Ease and Readability Assessor (T.E.R.A.). This is an online tool designed to analyse the "easability" and readability of texts (Graesser *et al.*, 2011:223). This tool is available on the internet for research

purposes (www.cohmetrix.com). The T.E.R.A is suitable for the document analysis of this study as it does not solely focus on the surface difficulty of sentences and words. According to Graesser *et al.* (2011:224), it “...was developed to analyse texts on multiple characteristics and levels of language-discourse”.

T.E.R.A. analyses text on the following five components:

- *Narrativity*: The more story-like the easier the text.
- *Syntactic simplicity*: Syntactic simplicity is measured through several indices such as average number of clauses per sentence, the number of words per sentence, and the number of words before the main verb of the main clause.
- *Word concreteness*: Concrete words are words that refer to things you can see, hear, taste, touch, feel, or smell. Abstract words cannot easily be seen, heard, touched, felt or smelled. A text with relatively high numbers of concrete words is easier to read and will have a high word concreteness mark.
- *Referential cohesion*: Referential cohesion is the overlap between words, word stems, or concepts from one sentence to another. When sentences and paragraphs have similar words or conceptual ideas, it is easier for the reader to make connections between those ideas.
- *Deep cohesion*: Deep cohesion measures how well the events, ideas and information of the text are tied together. T.E.R.A. does this by measuring the different types of words that connect different parts of a text. Examples of these connectors are after, earlier, before, during, while, later (Anon., 2012; McNamara *et al.*, 2014:85).

Once an excerpt of a text is inserted into T.E.R.A, each of the above mentioned components is given an “ease” mark. In addition to the five component marks, T.E.R.A indicates the supplied excerpt’s grade level using the Flesch-Kincaid grade level readability formula. This readability formula gives an indication of the suitability of the text for a certain grade level (Kincaid *et al.*, 1975:19). It is important to note that this is only an estimate as text difficulty does not lie in the text itself, but is influenced by the reader, the task and the instructional context (cf. Figure 1.1)

Information about tasks was gathered during the lecturer interviews and focus group interviews. The researcher also collected the task documents from lecturers such as tests, task instructions and rubrics. As part of the qualitative analyses, these task documents were analysed. The purpose of this analysis was triangulatory, as it provided further insight into the lecturers’ and students’ views and perceptions on the different tasks.

According to Reeves (2012:18), there are a number of educational taxonomies to classify the complexity of questions in the context of a task. As the focus of this study is not educational

taxonomies itself, the tasks were analysed by making use of an adaptation of the generally known Bloom's taxonomy. According to the taxonomy, there are six hierarchical categories with which mental activities can be organised, namely knowledge, comprehension, application, analysis, synthesis and evaluation (Bloom, 1956:17; Reeves, 2012:19). As with any educational tool, there were debates and concerns which led to a revised taxonomy (Reeves, 2012:20-23). Umalusi, the council for quality assurance in general and further education and training, attempted to address some of these concerns by developing a typology of cognitive demand for home language examination analysis based on the revised Bloom's taxonomy (Reeves, 2012:25).

This typology is an analysis instrument that takes the type of cognitive demand and degree of difficulty into account. This instrument is useful for the analyses of the tasks in this study, as it enabled the researcher to determine the type of cognitive demand needed for the question, as well as the difficulty level. The difficulty level is constructive because questions sometimes required the same cognitive demand, but varied in difficulty. Table 3.5 (Reeves, 2012:25) is the Umalusi typology of cognitive demand.

It is important to note that this typology is but one way of classifying an activity. According to Valencia *et al.* (2014:281), it is important to look into the relationship between the text and the activity so that the actual act of comprehension can be classified. This supports the theoretical framework of this study where all variables are interconnected (cf. Figure 1.1).

Table 3.5: Umalusi typology of cognitive demand based on the revised Bloom's taxonomy

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge <ul style="list-style-type: none"> • Recall and recite knowledge • Remember, define and describe basic facts • Identify, label, select, locate information • Straight recall • Identifying from text • Know and use appropriate vocabulary 	Easy	Very simple recall; identify specific data; tell; recite; list
	Moderate	Medium content; read and locate; briefly define a term; name and match
	Difficult	Recall complex content; correct spelling and use of vocabulary
2. Comprehension (Understanding) <ul style="list-style-type: none"> • Understanding of previously acquired information in a familiar context • Regarding information gathering: change or match information • Regarding use of knowledge: distinguish between aspects, compare and predict, defend and explain 	Easy	Simple relationships; simple explanations; 1 step answers
	Moderate	Counter-intuitive relationships; give examples, explain, briefly summarise, translate, interpretation of realistic visuals. Summarise a text; draw inferences from a text or predict
	Difficult	Identify principles which apply in a novel context; explaining; more complex reasoning with regard to understanding and explaining, motivate inferences or predictions made, using information from the text to support the position
3. Application <ul style="list-style-type: none"> • Interpret and apply knowledge • Choose, collect and do basic classification of information • Modify existing text by making use of the existing knowledge • Candidates to decide for instance on the most appropriate procedure to solve the question and perform preliminary calculations • Select the most appropriate information from options • Decide on the best way to represent data to create a particular impression 	Easy	Write texts related to familiar contexts. Candidates know what process is required to solve the problem from the way the problem is posed. All of the information required is immediately available
	Moderate	Draw information from given text, construct ideas
	Difficult	Collect information from available texts to support a particular position/opinion and re-present the position in own text

<p>4. Analysis & problem solving</p> <ul style="list-style-type: none"> • Analysis of information in a new or unfamiliar context • Examine and differentiate • Distinguish to find the most appropriate information • Research and investigate information • Interpreting and extrapolating from solutions obtained by solving problems based in unfamiliar contexts • Using higher level cognitive skills and reasoning to solve problems • Being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem • Non-routine problems based on real contexts 	<p>Easy</p> <p>Moderate</p> <p>Difficult</p>	<p>Simple process in known or practiced context but with some variation which prevents the answer from being strictly formulaic</p> <p>Investigate; classify; categorise; compare; contact; solve; relate; distinguish</p> <p>Complex abstract representation; referring to combination of concepts; interpreting; report on; sort; debate; using higher level cognitive skills and reasoning; being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem</p>
<p>5. Evaluation & syntheses (Creation)</p> <ul style="list-style-type: none"> • Making judgment (evaluate), critique and recommend by considering all material available • Weigh possibilities and do recommendations • Construct new • Synthesise, create or find innovative solution • Formulate new ideas 	<p>Easy</p> <p>Moderate</p> <p>Difficult</p>	<p>Opinion, giving general critique on a fairly straightforward topic</p> <p>Substantiate an opinion; critique statements about situations made by others; involving synthesis; critical argument; novel or abstract contexts</p> <p>Generalise patterns observed in situations; working with complex problems involving insight and logic-leaps; creating new solutions to problems; redesign; writing a complex review/critique</p>

The analyses of the tasks in each faculty were completed by means of this instrument. For information about each task, refer to section 3.3.5.1.

3.3.8 Ethical considerations

“Research should be based on mutual trust, acceptance, cooperation, promises and well-accepted conventions and expectations between all parties involved in a research project” (De Vos *et al.*, 2011:113). To ensure that this is always the case, professional ethics have come to

the forefront. The researcher had two categories of ethical responsibility in this research project: responsibility to the participants and responsibility to the discipline of science.

The participants in this study were students and lecturers. The researcher adhered to the following ethical guidelines:

- Firstly, harm was avoided. Participants were protected from physical and emotional harm within all possible reasonable limits. They were thoroughly informed beforehand about the potential impact of the study and they had the opportunity not to participate further if they did not want to.
- Secondly, participation in the study was strictly voluntary. No first year student or lecturer was forced to participate and it was made clear to them that non-participation in the project would not affect any of their marks or disadvantage them in any way.
- Thirdly, students and lecturers gave informed consent for participation in this study. The researcher was transparent about the goal of the study, the expected duration of the data collection procedures, the possible advantages, disadvantages as well as the credibility of the researcher (De Vos *et al.*, 2011:117). The students willing to participate also gave written consent to the researcher to obtain task marks for two of their tasks and participation marks done in different modules as well as the results of the reading comprehension test done on the Readers are Leaders programme. The written consent was treated with discretion and stored away in the correct manner. Refusal of consent was accepted and respected. See Appendix S for the student informed consent form and Appendix T for the lecturer informed consent form. The students who volunteered to take part in the focus group interview, completed another consent form in which they indicated their voluntary participation and that the researcher may use the narrative data of the focus group in her study. See Appendix U for the Focus group consent form.
- Fourthly, the privacy of the participants was safeguarded. The information from the SORS was kept confidential as well as the identity and information of participants, such as module marks. The research report does not release information about individuals which may be identifiable.

The researcher also honoured her responsibility to the discipline of science and strived to be accurate and honest in the reporting of this research (De Vos *et al.*, 2011:114).

Lastly, it is important to note that ethical clearance was obtained from University X. Due to confidentiality, the ethical clearance number is not included in this document as it states the name of the university. The researcher can be contacted for the specific ethical clearance information.

3.4 The role of the researcher

This study is grounded in the pragmatic paradigm and followed a mixed method approach (cf. sections 3.3.1 and 3.3.2). The role of the mixed method researcher was to acquire knowledge about both quantitative as well as qualitative research methods. The researcher also had the responsibility to mix the methods appropriately. The researcher had to allocate additional funds and time frames to complete a mixed method study successfully, as it is often more expensive and time consuming than either a quantitative or a qualitative study (Johnson & Onwuegbuzie, 2004:21).

While conducting this mixed method study, the researcher used quantitative methods. These methods like the questionnaire required the researcher to play an objective role (Maree, 2007:80). The role of the researcher was inevitably to find a balance between the objectiveness of the quantitative methods and the subjectiveness of the qualitative methods.

The quantitative methods yielded numeric data which was statistically analysed by means of computer software. The focus of the researcher was to analyse and report the facts stemming from the analyses. It was thus not difficult for the researcher to stay objective during the statistical analysis and the discussion thereof as factual data was reported on.

During the interviews and analyses thereof, subjectivity is inevitable as the background and belief system of the researcher always play a role (). The researcher herself was once a student who had to read textbooks which seemed complicated, and so she was able to, for example, sympathise with the students' and their apparent frustrations with reading textbooks. On the other hand, the researcher is also a lecturer faced with similar challenges as the other lecturers, for example, the pressure of students passing the module and the frustration lecturers have in "forcing" students to read. During the collection and analyses of the qualitative data, the researcher focussed on not "choosing sides" between the lecturers and the students, and put an effort into reporting their perceptions without having her own ideas "clouding" her interpretations of the qualitative data. She posed to accomplish a balance between the objectivity of the quantitative data interpretations and the subjectivity of the qualitative interpretations by following an interview schedule during all interviews. Thereafter the transcriptions were done verbatim and interview notes were also used during interpretations and analyses.

Johnson and Onwuegbuzie (2004:21) state that in a mixed method study, the researcher has to identify the weaknesses of a method and overcome it by the strengths of another by being able to successfully use multiple methods. The researcher was constantly aware of this role and endeavoured to use the different methods in such a way that they would provide stronger

evidence for a conclusion. The role of the mixed-method researcher can be adequately summarised by the words of Greene and Caracelli (1997:7): "...to understand more fully, to generate deeper and broader insights, to develop important knowledge claims that respect a wider range of interests and perspectives".

3.5 Summary

This chapter described the research methodology for this study. A mixed method approach, grounded in the pragmatic paradigm was the most suitable for this investigation. The empirical research process was further detailed in terms of the convergent parallel mixed method research design, a combination of quantitative as well as qualitative sampling procedures, a selection of data collection methods, procedures and descriptions of the applicable data analyses. The ethical considerations as well as the role of the mixed-method researcher were also outlined in this chapter. Chapter 4 reports in detail on the findings of this mixed-method study.

CHAPTER 4: RESULTS OF THE STUDY

4.1 Introduction

To learn more about first year students' reading strategy use and reading comprehension, quantitative and qualitative data were collected. This chapter presents and interprets the results of the quantitative data analysis followed by the presentation and interpretation of the qualitative data analysis (cf. Figure 3.1). The themes that emerged from the analyses are presented in the summary section of this chapter. True to the convergent parallel mixed method research design, the findings were merged. Chapter 5 presents these merged findings.

4.2 Quantitative data analyses and interpretation

The quantitative analyses were imperative to answer the following two research questions (cf. section 1.6):

- What categories of reading strategies do first year undergraduate students report applying while reading academic texts in a higher education setting?
- What is the relationship between reading strategy use, reading comprehension and task achievement?

Both descriptive and inferential statistics were used to summarise the data and determine relationships between the variables. A mixed-method sampling strategy was used in this study (cf. Figure 3.2), which included probability and non-probability sampling. As the participants of the study were selected by means of non-probability sampling, statistical significance is not relevant although the p-values will be reported for thoroughness (cf. section 3.3.7.1). The emphasis falls on the practical significance and effect sizes of the findings to determine whether the quantitative findings have implications for practise. In all discussions the tables are presented first as the sources of the data, followed by the discussion of the relevant data within the table. Values are also rounded off to the second decimal to enhance readability.

4.2.1 Analyses and interpretation of students' reading strategy use

In order to identify the categories of reading strategies that first year students report applying while reading academic texts, the data yielded by the SORS were analysed. 558 first year students completed this questionnaire. The participants were grouped by faculty (cf. Table 3.1). The analysis is reported for the total number of participants (n=558) and thereafter by faculty.

4.2.1.1 Analysis and interpretation of the SORS questionnaire for total number of participants

Table 4.1 summarises the results of the SORS for all 558 participants per reading strategy as well as category.

Table 4.1: Reported use of reading strategies

Reading strategy category	Item	Reading strategy	M	SD
GLOB	1.	I have a purpose in mind when I read.	3.97	0.84
SUP	2.	I take notes while reading to help me understand what I read.	2.85	1.27
GLOB	3.	I think about what I know to help me understand what I read.	3.89	0.93
GLOB	4.	I take an overall view of the text to see what it is about before reading it.	3.31	1.18
SUP	5.	When text becomes difficult, I read aloud to help me understand what I read.	3.28	1.42
GLOB	6.	I think about whether the content of the text fits my reading purpose.	3.33	1.06
PROB	7.	I read slowly and carefully to make sure I understand what I am reading.	3.71	0.96
GLOB	8.	I review the text first by noting its characteristics like length and organization.	2.88	1.23
PROB	9.	I try to get back on track when I lose concentration.	4.07	0.89
SUP	10.	I underline or circle information in the text to help me remember it.	3.70	1.31
PROB	11.	I adjust my reading speed according to what I am reading.	3.88	1.00
GLOB	12.	When reading, I decide what to read closely and what to ignore.	3.49	1.10
SUP	13.	I use reference materials (e.g., a dictionary) to help me understand what I read.	2.73	1.21
PROB	14.	When text becomes difficult, I pay closer attention to what I am reading.	3.96	0.96
GLOB	15.	I use tables, figures, and pictures in text to increase my understanding.	3.28	1.20
PROB	16.	I stop from time to time and think about what I am reading.	3.25	1.04
GLOB	17.	I use context clues to help me better understand what I am reading.	3.13	1.05
SUP	18.	I paraphrase (restate ideas in my own words) to better understand what I read.	3.55	1.09
PROB	19.	I try to picture or visualize information to help remember what I read.	3.95	1.00
GLOB	20.	I use typographical features like bold face and italics to identify key information.	3.29	1.22
GLOB	21.	I critically analyse and evaluate the information presented in the text.	3.26	0.96

SUP	22.	I go back and forth in the text to find relationships among ideas in it.	3.15	1.07
GLOB	23.	I check my understanding when I come across new information.	3.54	0.90
GLOB	24.	I try to guess what the content of the text is about when I read.	3.07	1.14
PROB	25.	When text becomes difficult, I re-read it to increase my understanding.	4.14	0.94
SUP	26.	I ask myself questions I like to have answered in the text.	3.16	1.13
GLOB	27.	I check to see if my guesses about the text are right or wrong.	2.92	1.15
PROB	28.	When I read, I guess the meaning of unknown words or phrases.	3.11	1.14
SUP	29.	When reading, I translate from English into my home language.	3.03	1.44
SUP	30.	When reading, I think about information in both English and my home language.	3.35	1.35
Total GLOB		Global reading strategies	3.33	0.56
Total PROB		Problem solving strategies	3.76	0.54
Total SUP		Support reading strategies	3.20	0.69
ORS		Overall reading strategies	3.41	0.51

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

M: Mean

SD: Standard deviation

ORS: Overall reading strategies

Table 4.1 presents the 30 reading strategies (items) of the SORS, the mean (M) as well as the standard deviation (SD). The standard deviation is the average that scores in a distribution vary from one another (Geher & Hall, 2014:384). The smaller the standard deviation, the closer the fit. The means, indicated in the table, were calculated as the average of the 5 point Likert scale (cf. section 3.3.5.1). The developers also provided a key to interpreting the averages (Mokhtari & Sheory, 2002:2):

High:	3.5 or higher
Medium:	2.5-3.4
Low:	2.4 or lower

These levels provided a convenient benchmark to measure the strategies as well as the total categories and the overall use of the reading strategies. The means of the items range from a high 4.14 mean (Item 25) to a medium 2.73 mean (Item 13). There are 11 items in the high usage level (mean of 3.5 and above). The remaining 19 items are in the medium usage level (mean of 2.5-3.4) and none in the low usage level. Regarding the categories, the mean of the problem solving strategies is the highest (3.76), followed by the global reading strategies (3.33) and the support reading strategies category has the lowest mean of the three categories (3.20). According to the usage level key, problem solving strategies were highly used, and global reading strategies and support strategies were used at a medium level. It is clear that the participants favoured problem solving reading strategies when reading academic text. The mean of the overall reading strategies was calculated at 3.41, which indicates a medium usage level.

Table 4.2 shows the five most often used and five least often used reading strategies for the total number of participants.

Table 4.2: Reading strategies used most and least often by total number of participants

Category	Item	Reading strategy most often used	Mean
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.14
PROB	9	I try to get back on track when I lose concentration.	4.07
GLOB	1	I have a purpose in mind when I read.	3.97
PROB	14	When text becomes difficult, I pay closer attention to what I am reading.	3.96
PROB	19	I try to picture or visualize information to help remember what I read.	3.95
		Reading strategy least often used	Mean
SUP	29	When reading, I translate from English into my native language.	3.03
GLOB	27	I check to see if my guesses about the text are right or wrong.	2.92
GLOB	8	I review the text first by noting its characteristics like length and organization.	2.88
SUP	2	I take notes while reading to help me understand what I read.	2.85
SUP	13	I use reference materials (e.g. a dictionary) to help me understand what I read.	2.73

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

It is interesting to note that in Table 4.2, four of the five most often used strategies, fall in the problem solving category. According to Mokhtari and Sheory (2002:4), these strategies are used when readers work directly with text and encounter comprehension problems. It seems as though the majority of the participants re-read difficult text, try to get back on track when losing

concentration, read with a purpose in mind, pay close attention when something is difficult and try to visualize information.

Three of the five least often used reading strategies fall in the support reading strategies category. These are basic support strategies to help the reader understand the text (Mokhtari & Sheory, 2002:4). From the results in Table 4.2 it is clear that using reference material like a dictionary, is the last thing the participants will do when struggling to understand text. This might be due to the time it takes to look up a certain phrase or the accessibility of such reference material. The participants are also not very keen to make notes while they read. A possible reason might again be that they do not want to spend additional time on this as it takes more time away from reading. They might also lack the knowledge of identifying keywords or linking the outcomes of the task with the text being read. Texts were also not often reviewed by noting their characteristics. It seems as though the readers did not make guesses in the pre-reading phase and they did not often translate into their native language. A common characteristic of the five least used strategies is that they take time. As students often have slides available of lectures and notes compiled by lecturers or bought from other students, it seemed as though they preferred the quicker options where information is already condensed and summarised, to using time consuming support strategies to help them understand the academic text.

Only one global reading strategy was mentioned in the most used category. Global reading strategies are described as “intentional carefully planned techniques” which readers use to monitor or manage their reading (Mokhtari & Sheory, 2002:4). Participants noted that they did read with a purpose in mind. The frequencies of the use of the reading strategies by category, is set out in Table 4.3.

Table 4.3: Frequency of reading strategy use per category

Use	GLOB	PROB	SUP	ORS
<i>High</i>	205 (36.7%)	412 (73.8%)	188 (33.7%)	247 (44.3%)
<i>Medium</i>	314 (56.3%)	136 (24.4%)	286 (51.3%)	289 (51.8%)
<i>Low</i>	39 (7%)	10 (1.8%)	84 (15.1%)	22 (3.9%)
<i>N</i>	558 (100%)	558 (100%)	558 (100%)	558 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

Table 4.3 clearly shows that there was a big preference for problem solving strategies (73.8%) followed by global reading strategies (36.7%) and support strategies (33.7%). The lowest usage can be found at the support strategies (15.1%). The frequencies echo the summary of the most and least used strategies set out in Table 4.2, namely that four problem solving strategies are listed under the top five most used strategies and three of the least used strategies were support strategies.

4.2.1.2 Analyses and interpretation of students' reading strategy use by faculty²

As the context of this study is a higher education setting, the researcher chose to include participants from seven of the eight faculties of University X (cf. section 3.3.4). Table 4.4 presents the means of reading strategy use per item and category for the seven faculties. The analysis of variance (ANOVA) was used to determine if there were statistically significant differences between the reading strategies indicated by the participants within the different faculties. The Mean Squared Error (MSE) is a measure of how close a fitted line is to data points. For every data point, the distance is vertically taken from the point to the corresponding y value on the curve fit (the error), and square the value. Then all those values are added up for all data points, and divided by the number of points minus two. The squaring is done so negative values do not cancel positive values. The smaller the Mean Squared Error, the closer the fit is to the data.

² The following sections may be repetitive reading as the quantitative data analysis and interpretations are presented per faculty. The researcher realises that only statistically meaningful differences are usually discussed. However, to adequately address the research questions of this study, it was imperative to present the quantitative reading strategy findings for each of the seven faculties, in order to enable triangulation of the qualitative data concerning reading strategy use. The purpose of the inclusion of the separate sections is also to provide feedback for each faculty in terms of the reading strategies used by the applicable group of students, the students' comprehension as tested by Readers are Leaders and correlations between reading strategy category and comprehension as well as reading strategy category and task achievement.

Table 4.4. Summary of means for total reading strategy use and use per faculty

Item	Total (N=558)	Arts (N=76)	Sci (N=47)	Edu (N=88)	Ems (N=18)	Engi (N=147)	Health (N=108)	Law (N=74)	MS Error	P- value
1	3.97	3.93	3.87	3.56	4.11	4.16	4.01	4.02	0.68	<0.001*
2	2.85	3.60	2.38	2.72	2.94	2.48	3.17	2.78	1.47	<0.001*
3	3.89	3.74	3.93	3.85	3.94	3.92	3.85	4.01	0.86	0.700
4	3.31	3.21	3.06	3.44	3.38	3.25	3.29	3.51	1.39	0.393
5	3.28	3.61	3.27	3.68	3.33	2.59	3.61	3.33	1.84	<0.001*
6	3.33	3.34	3.34	3.09	3.27	3.41	3.28	3.46	1.12	0.336
7	3.71	4.00	3.70	3.84	3.61	3.49	3.73	3.66	0.90	<0.001*
8	2.88	3.17	2.85	2.94	3.16	2.60	2.92	2.95	1.48	<0.001*
9	4.07	4.13	4.12	3.92	4.44	4.11	4.06	3.98	0.79	0.293
10	3.70	4.04	2.97	4.06	3.72	3.27	4.12	3.63	1.57	<0.001*
11	3.88	3.76	3.93	3.86	3.66	3.95	3.93	3.81	1.00	0.739
12	3.49	3.33	3.38	3.10	3.88	3.51	3.69	3.74	1.18	<0.001*
13	2.73	3.26	2.34	2.92	2.66	2.39	2.58	3.09	1.36	<0.001*
14	3.96	4.00	4.00	3.75	4.50	4.06	3.95	3.81	0.91	<0.001*
15	3.28	2.94	3.21	3.11	3.11	3.56	3.52	2.93	1.38	<0.001*
16	3.25	3.30	3.25	3.06	3.22	3.27	3.28	3.29	1.09	0.777
17	3.13	3.34	3.06	2.96	3.27	3.12	3.00	3.29	1.10	0.152
18	3.55	3.64	3.44	3.63	3.27	3.35	3.66	3.67	1.18	0.152
19	3.95	3.97	3.87	3.94	3.38	3.99	3.98	4.00	0.99	0.360
20	3.29	3.21	3.00	3.32	3.22	3.20	3.50	3.40	1.47	0.255
21	3.26	3.40	3.29	3.04	3.11	3.38	3.10	3.35	0.91	<0.001*
22	3.15	3.38	2.82	2.98	3.44	3.10	3.19	3.22	1.13	0.059
23	3.54	3.74	3.70	3.35	3.27	3.53	3.44	3.63	0.80	<0.001*
24	3.07	3.46	3.12	3.11	2.88	2.81	2.87	3.10	1.25	<0.001*
25	4.14	4.22	4.06	3.98	4.50	4.05	4.24	4.21	0.88	0.183
26	3.16	3.54	2.76	2.95	3.22	3.08	3.24	3.27	1.24	<0.001*
27	2.92	3.38	2.89	2.71	2.88	2.84	2.75	3.10	1.29	<0.001*
28	3.11	3.36	3.10	3.07	3.55	3.03	3.01	3.08	1.30	0.254
29	3.03	3.18	2.82	3.42	1.61	2.68	3.43	2.94	1.92	<0.001*

30	3.35	3.56	3.48	3.50	2.11	3.33	3.38	3.17	1.77	<0.001*
G	3.33	3.40	3.28	3.20	3.35	3.33	3.32	3.45	0.31	0.153
P	3.76	3.84	3.75	3.68	3.86	3.74	3.77	3.73	0.29	0.587
S	3.20	3.53	2.92	3.32	2.92	2.92	3.38	3.23	0.42	<0.001*
O	3.41	3.56	3.30	3.36	3.35	3.32	3.46	3.46	0.26	<0.001*

Key

G:	Global reading strategies
S:	Support reading strategies
P:	Problem solving reading strategies
O:	Overall reading strategies

* The p-values marked with the asterisk indicate that there are statistically significant differences for the reading strategy use between the participants grouped per faculties.

Abbreviations of faculties:

Arts: Faculty of Arts

Sci: Faculty of Natural Sciences

Edu: Faculty of Education Sciences

Ems: Faculty of Economic and Management Sciences

Engi: Faculty of Engineering

Health: Faculty of Health Sciences

Law: Faculty of Law

With the help of descriptive statistics, the reading strategies used most and least often by the participants of the seven different faculties are set out in Tables 4.5, 4.7, 4.9, 4.11, 4.13, 4.15 and 4.17. To get an overview of the preference of the reading strategy category, Tables 4.6, 4.8, 4.10, 4.12, 4.14, 4.16 and 4.18 summarise the frequency of reading strategy category use per faculty. A discussion of the data per faculty follows the frequency tables.

Table 4.5: Reading strategies used most and least often: Faculty of Arts

Category	Item	Reading strategy most often used	Mean
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.23
PROB	9	I try to get back on track when I lose concentration.	4.13
SUP	10	I underline or circle information in the text to help me remember it.	4.04
PROB	14	When text becomes difficult, I pay closer attention to what I am reading.	4.00
PROB	7	I read slowly and carefully to make sure I understand what I am reading.	4.00

Reading strategy least often used				
GLOB	4	I take an overall view of the text to see what it is about before reading it.		3.21
GLOB	20	I use typographical features like bold face and italics to identify key information.		3.21
SUP	29	When reading, I translate from English into my native language.		3.19
GLOB	8	I review the text first by noting its characteristics like length and organization.		3.17
GLOB	15	I use tables, figures, and pictures in text to increase my understanding.		2.95

Table 4.6: Frequency of reading strategy use per category: Faculty of Arts

Use	GLOB	PROB	SUP	ORS
High	34 (45.3%)	59 (78.7%)	44 (58.7%)	42 (56.0%)
Medium	36 (48.0%)	15 (20.0%)	25 (33.3%)	32 (42.7%)
Low	5 (6.7%)	1 (1.3%)	6 (8.0%)	1 (1.3%)
<i>N total</i>	76 (100%)	76 (100%)	76 (100%)	76 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

It is clear from Tables 4.5 and 4.6 that the 76 participants from the Faculty of Arts indicated that they mostly use problem solving reading strategies when reading academic text. When they are busy reading they would re-read, try to get back on track, underline or circle information, pay close attention and read slowly. Table 4.5 shows that they do not often employ global reading strategies, specifically strategies where they get an overview of information or look at typographical features and other characteristics, especially tables and figures to enhance their understanding. They also rarely translate information. As with the total population, it seems like the participants in this faculty rush into the reading process, almost like an army storming into battle and they fight head on with problem solving strategies, without carefully and strategically planning their reading via global reading strategies or using more basic support strategies.

Table 4.7: Reading strategies used most and least often: Faculty of Natural Sciences

Category	Item	Reading strategy most often used	Mean
PROB	9	I try to get back on track when I lose concentration.	4.13
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.06
PROB	14	When text becomes difficult, I pay closer attention to what I am reading.	4.00
PROB	11	I adjust my reading speed according to what I am reading.	3.94
GLOB	3	I think about what I know to help me understand what I read.	3.94

Reading strategy least often used				
SUP	22	I go back and forth in the text to find relationships among ideas in it.		2.83
SUP	29	When reading, I translate from English into my native language.		2.83
SUP	26	I ask myself questions I like to have answered in the text.		2.77
SUP	2	I take notes while reading to help me understand what I read.		2.38
SUP	13	I use reference materials (e.g. a dictionary) to help me understand what I read.		2.34

Table 4.8: Frequency of reading strategy use per category: Faculty of Natural Sciences

Use	GLOB	PROB	SUP	ORS
<i>High</i>	15 (31.9%)	34 (72.3%)	11 (23.4%)	16 (34.0%)
<i>Medium</i>	31 (66.0%)	13 (27.7%)	20 (42.6%)	30 (63.8%)
<i>Low</i>	1 (2.1%)	0 (0.0%)	16 (34.0%)	1 (2.1%)
<i>N total</i>	47 (100%)	47 (100%)	47 (100%)	47 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

Tables 4.7 and 4.8 are a summary of the reading strategies used most and least by the 47 participants of the Faculty of Natural Sciences. These participants also demonstrated a trend towards problem solving strategies with the frequency being 72.3%. They seem to get distracted often as *trying to get back on track* is the reading strategy with the highest usage. These participants also re-read and pay close attention when the text gets difficult. They also indicated that they adjust their reading speed and they think about what they know to help them understand what they read. All five of the least used strategies by students in this faculty fall into the support category. This indicates that the participants do not use basic support mechanisms when they read like going back and forth to find relationships, translating, asking questions about the text, making notes and least of all using reference materials. All these support strategies seem to be more time consuming than the problem solving strategies. Time seems to be a determining factor when it comes to choosing reading strategies. The participants in this faculty seem to want to read through the text as quickly as possible.

Table 4.9: Reading strategies used most and least often: Faculty of Education Sciences

Category	Item	Reading strategy most often used	Mean
SUP	10	I underline or circle information in the text to help me remember it.	4.07
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	3.99
PROB	19	I try to picture or visualize information to help remember what I read.	3.94
PROB	9	I try to get back on track when I lose concentration.	3.92
PROB	11	I adjust my reading speed according to what I am reading.	3.86
Reading strategy least often used			
SUP	26	I ask myself questions I like to have answered in the text.	2.95
GLOB	8	I review the text first by noting its characteristics like length and organization.	2.94
SUP	13	I use reference materials (e.g. a dictionary) to help me understand what I read.	2.92
SUP	2	I take notes while reading to help me understand what I read.	2.73
GLOB	27	I check to see if my guesses about the text are right or wrong.	2.72

Table 4.10: Frequency of reading strategy use per category: Faculty of Education Sciences

Use	GLOB	PROB	SUP	ORS
<i>High</i>	21 (23.9%)	60 (68.2%)	31 (35.2%)	33 (37.5%)
<i>Medium</i>	60 (68.2%)	27 (30.7%)	52 (59.1%)	53 (60.2%)
<i>Low</i>	7 (8.0%)	1 (1.1%)	5 (5.7%)	2 (2.3%)
<i>N total</i>	88 (100%)	88 (100%)	88 (100%)	88 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

Tables 4.9 and 4.10 set out the five most and least used strategies as well as the frequency of the categories for the 88 participants of the Faculty of Education Sciences. The Education students indicated that they underline or circle information in text to help them remember it. This suggests that this group of students know and use one of the basic support mechanisms. The rest of the most used strategies correspond with the other faculties as these students also re-read, picture or visualize information, try to get back on track and adjust their reading speed. Regarding the least used strategies, the participants from this faculty did not indicate a high usage of asking questions, noting the characteristics of the text, using reference materials, making notes while reading and checking guesses. According to Table 4.10, the global reading strategy category was the category least used by participants in this faculty. This might indicate that they either have a lack of intentionally planned techniques to monitor and manage their reading or that

they choose not to monitor and manage their reading, but rather deal with reading problems as they occur.

Table 4.11: Reading strategies used most and least often: Faculty of Economic and Management Sciences

Category	Item	Reading strategy most often used	Mean
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.50
PROB	14	When text becomes difficult, I pay closer attention to what I am reading.	4.50
PROB	9	I try to get back on track when I lose concentration.	4.44
GLOB	1	I have a purpose in mind when I read.	4.11
GLOB	3	I think about what I know to help me understand what I read.	3.94
Reading strategy least often used			
GLOB	24	I try to guess what the content of the text is about when I read.	2.89
GLOB	27	I check to see if my guesses about the text are right or wrong.	2.89
SUP	13	I use reference materials (e.g. a dictionary) to help me understand what I read.	2.67
SUP	30	When reading, I think about information in both English and my mother tongue.	2.11
SUP	29	When reading, I translate from English into my native language.	1.61

Table 4.12: Frequency of reading strategy use per category: Faculty of Economic and Management Sciences

Use	GLOB	PROB	SUP	ORS
<i>High</i>	7 (38.9%)	14 (77.8%)	3 (16.7%)	8 (44.4%)
<i>Medium</i>	9 (50.0%)	4 (22.2%)	12 (66.7%)	9 (50.0%)
<i>Low</i>	2 (11.1%)	0 (0.0%)	3 (16.7%)	1 (5.6%)
<i>N total</i>	18 (100%)	18 (100%)	18 (100%)	18 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

Tables 4.11 and 4.12 indicate the five most and least used strategies as well as the frequency of the categories for the 18 participants of the Faculty of Economic and Management Sciences. The trend of mostly using problem solving strategies continues for these participants with a frequency of 77.8%. The frequency of support strategies is low at 16.7%. These participants mostly re-read text and pay closer attention when text becomes difficult. They try to get back on track when losing concentration, read with a purpose and think about what they know to help them

understand. The last two strategies fall into the global reading strategy category. These participants do not often guess about the content, check their guesses, use reference materials, and think and translate into other languages. This might indicate that they feel confident about their reading abilities.

Table 4.13: Reading strategies used most and least often: Faculty of Engineering

Category	Item	Reading strategy most often used	Mean
GLOB	1	I have a purpose in mind when I read.	4.17
PROB	9	I try to get back on track when I lose concentration.	4.11
PROB	14	When text becomes difficult, I pay closer attention to what I am reading.	4.07
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.05
PROB	19	I try to picture or visualize information to help remember what I read.	3.99
Reading strategy least often used			
SUP	29	When reading, I translate from English into my native language.	2.69
GLOB	8	I review the text first by noting its characteristics like length and organization.	2.61
SUP	5	When text becomes difficult, I read aloud to help me understand what I read.	2.59
SUP	2	I take notes while reading to help me understand what I read.	2.49
SUP	13	I use reference materials (e.g. a dictionary) to help me understand what I read.	2.40

Table 4.14: Frequency of reading strategy use per category: Faculty of Engineering

Use	GLOB	PROB	SUP	ORS
<i>High</i>	53 (35.8%)	109 (73.6%)	25 (16.9%)	61 (41.2%)
<i>Medium</i>	86 (58.1%)	36 (24.3%)	87 (58.8%)	79 (53.4%)
<i>Low</i>	9 (6.1%)	3 (2.0%)	36 (24.3%)	8 (5.4%)
<i>N total</i>	147 (100%)	147 (100%)	147 (100%)	147 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

Tables 4.13 and 4.14 are a summary of the reading strategies used most and least by the 147 participants of the Faculty of Engineering. Reading with a purpose is the strategy with the highest mean (4.17). The other mostly used strategies correspond with those indicated by students in the other faculties, as these participants also try to get back on track, pay closer attention, re-read text and picture or visualize information to help them remember what they read. According to the data presented in Table 4.14, support strategies are not used frequently (16.9%) and four of the

five least used strategies fall into this category. These participants do not often translate, do not often note characteristics of text, do not often read aloud, seldom make notes while reading and the strategy least used is the use of reference materials. It might be that they do not have knowledge of basic support mechanisms or choose not to use these mechanisms while reading academic text. This might be due to the fact that the students have access to the PowerPoint presentations compiled by the lecturer and used during lectures. These presentations usually contain the main ideas covered in the textbook. Pecorari *et al.* (2012:244) state that the declarative knowledge of the engineering discipline entails that there is an overlap between content taught in lectures and contained in the textbook. Thus, it might be that support mechanisms are not needed when reading the textbooks.

Table 4.15: Reading strategies used most and least often: Faculty of Health Sciences

Category	Item	Reading strategy most often used	Mean
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.24
SUP	10	I underline or circle information in the text to help me remember it.	4.13
PROB	9	I try to get back on track when I lose concentration.	4.06
GLOB	1	I have a purpose in mind when I read.	4.02
PROB	19	I try to picture or visualize information to help remember what I read.	3.98
Reading strategy least often used			
GLOB	17	I use context clues to help me better understand what I am reading.	3.00
GLOB	8	I review the text first by noting its characteristics like length and organization.	2.93
GLOB	24	I try to guess what the content of the text is about when I read.	2.88
GLOB	27	I check to see if my guesses about the text are right or wrong.	2.76
SUP	13	I use reference materials (e.g. a dictionary) to help me understand what I read.	2.58

Table 4.16: Frequency of reading strategy use per category: Faculty of Health Sciences

Use	GLOB	PROB	SUP	ORS
<i>High</i>	41 (38%)	82 (75.9%)	47 (43.5%)	53 (49.1%)
<i>Medium</i>	56 (51.9%)	21 (19.4%)	53 (49.1%)	48 (44.4%)
<i>Low</i>	11 (10.2%)	5 (4.6%)	8 (7.4%)	7 (6.5%)
<i>N total</i>	108 (100%)	108 (100%)	108 (100%)	108 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

It is clear from Tables 4.15 and 4.16 that the 108 participants from the Faculty of Health Sciences indicated that they mostly use problem solving reading strategies when reading academic text (75.9%). The problem solving strategy of re-reading is at the top of the list, followed by the support strategy of underlining or circling information. They also try to get back when losing concentration, read with a purpose and picture or visualize information to help remember what was read. Four of the five least used strategies fall into the global reading strategy category. This group of participants indicated that they do not really use context clues, note characteristics of text, or try to guess and check their guesses while reading. The least used strategy is the use of reference material. This might indicate that these students are not focussed on monitoring or managing their reading with carefully planned techniques. The question arises as to whether they have knowledge of such techniques, or whether they deem problem solving reading strategies to be more effective than global reading strategies.

Table 4.17: Reading strategies used most and least often: Faculty of Law

Category	Item	Reading strategy most often used	Mean
PROB	25	When text becomes difficult, I re-read it to increase my understanding.	4.22
GLOB	1	I have a purpose in mind when I read.	4.03
GLOB	3	I think about what I know to help me understand what I read.	4.01
PROB	19	I try to picture or visualize information to help remember what I read.	4.00
PROB	9	I try to get back on track when I lose concentration.	3.99
Reading strategy least often used			
PROB	28	When I read, I guess the meaning of unknown words or phrases.	3.08
GLOB	8	I review the text first by noting its characteristics like length and organization.	2.96
SUP	29	When reading, I translate from English into my native language.	2.95
GLOB	15	I use tables, figures, and pictures in text to increase my understanding.	2.93
SUP	2	I take notes while reading to help me understand what I read.	2.78

Table 4.18: Frequency of reading strategy use per category: Faculty of Law

Use	GLOB	PROB	SUP	ORS
<i>High</i>	34 (45.9%)	54 (73.0%)	27 (36.5%)	34 (45.9%)
<i>Medium</i>	36 (48.6%)	20 (27.0%)	37 (50.0%)	38 (51.4%)
<i>Low</i>	4 (5.4%)	0 (0.0%)	10 (13.5%)	2 (2.7%)
<i>N total</i>	74 (100%)	74 (100%)	74 (100%)	74 (100%)

Key

GLOB: Global reading strategies

SUP: Support reading strategies

PROB: Problem solving reading strategies

ORS: Overall reading strategies

Tables 4.17 and 4.18 indicate the five most and least used strategies as well as the frequency of the categories for the 74 participants of the Faculty of Law. Problem solving strategies were used the most by these students as evident in Table 4.18 (73.0%). The academic text mostly read by the participants is their prescribed textbook as well as court cases and government laws. In terms of court cases and government laws, it should benefit students to note the characteristics of the text, as both these text types have a certain format, and to make notes while reading. Both these strategies were not frequently used which raises the question whether the students knew about these strategies and that it could benefit them. The fact that the reading strategy of using tables, figures and pictures is the second least strategy used, can be attributed to the fact that pictures and figures are not prevalent in court cases and government laws.

4.2.2 Analysis and interpretation of the reading comprehension scores

The Readers are Leaders software package calculates the reading speed in words read per minute (wpm) and the number of questions on the texts answered correctly, presented as percentage. This percentage of questions answered correctly, as tested by this specific software package, is referred to as the comprehension rate (comp %).³ The mechanics of the software package entails that the student opens a text, reads it and then proceeds to multiple-choice questions. The student selects the correct answer for each of the questions, from a list. The programme keeps time from when a student opens a text, to when he or she starts to answer the questions and calculates the reading speed. It is possible that a student might not read the full text before starting to answer the questions. This will result in the calculation of an incorrect reading speed. One example is a participant who read at the speed of 401 words per minute, but only achieved a 30% comprehension rate. It is likely that the participant only scanned the text and was thus not able to answer the majority of the questions correctly. It can also happen that a student reads at 800 words per minute with a 50% comprehension rate. This indicates that the student most probably guessed half of the answers correctly without reading the text. The content of some of the texts are also of such a nature that it is possible to answer the majority of the questions correctly by guessing and not reading. This means that the comprehension rate might

³ This software package has a number of limitations in terms of attributing a numerical value to reading comprehension, which will be discussed in the last chapter. Here, it is important to recognise that the comprehension rate determined by Readers are Leaders gives a **mere indication** of whether or not a student can read with understanding. There are a number of other validated tools which also measures reading comprehension by taking a number of additional variables into account. In the context of University X, the researcher did not make use of other tools as Readers are Leaders is the measuring tool in place and a number of decisions are based on this tool's measurement of students' reading comprehension.

not be a true reflection of the reader's reading comprehension. For this reason University X's reading laboratory uses an additional calculation to determine a student's reading efficiency.

An article by Cousin and Vinckenbosch (2015) presents a mechanism for calculating reading efficiency whereby reading speed is weighted by the percentage of correctly answered questions after a passage has been read. The term reading efficiency in this context should not be confused with reading automaticity or reading fluency. It simply refers to reading speed multiplied by the comprehension rate. This mechanism has not been scientifically researched but it does give an additional parameter to calculate reading speed to address the issue of guessing by students. As this reading efficiency parameter is an instrument used by University X to make decisions with regard to student reading support, and because of the logic of this parameter, it was also included in this study. This parameter also enabled a grade level score to be matched with the reading comprehension ability of the participants.

Taylor (1965:193) compiled a table of grade-level norms of the various components of oculomotor activity during reading, one of which was words read per minute with comprehension. If a reader understands 70% of what was read, comprehension can be assumed (Nel *et al.*, 2004:97; Taylor, 1965:193). Table 4.19 presents Taylor's grade levels with the corresponding words read per minute (Taylor, 1965:193).

Table 4.19: Taylor's grade levels and reading rates

Grade level	1	2	3	4	5	6	7	8	9	10	11	12	Col.
RwC	80	115	138	158	173	185	195	204	214	224	237	250	280

Key

Col: College

RwC: Rate with comprehension (words per minute)

It is important to note that 280 words per minute is the suggested reading speed of tertiary students (Taylor, 1965:193), however, the research of Kwon and Linderholm (2015:161) point to the fact that reading speed does not always align with reading comprehension ability and that a reader can use reading strategies to comprehend text, even at a slower pace than 280 words per minute (cf. section 2.2.2). At University X, the required level of reading is lower than Taylor's (1965:193) recommendation and stipulated in the study guide as 220 words per minute with 80% comprehension (Meihuizen, 2017:4).

In order to calculate reading efficiency, the 70% percent a reader has to understand of a text, is multiplied by the reading speed. Table 4.20 presents the reading efficiency values, reading speed and corresponding grade level.

Table 4.20: Grade level, reading speed and reading efficiency values

Gr	1	2	3	4	5	6	7	8	9	10	11	12	13 Univ
wpm	80	115	138	158	173	185	195	204	214	224	237	250	280
EFF (wpmx70)	560	805	966	1106	1211	1295	1365	1428	1498	1568	1659	1750	1960
	0	0	0	0	0	0	0	0	0	0	0	0	0

Key

Gr: Grade
Univ: University level
wpm: words per minute
EFF: reading efficiency

The reading course is compulsory for all first year students at University X (cf. section 3.3.5.1). There are, however, students who do not complete the reading course in their first year due to numerous reasons. Of the 558 participants in this study, eight did not complete the reading course. For the 550 participants who did complete the reading course, the Readers are Leaders software programme calculated their reading speed and comprehension rate. With the data available it was possible to also calculate the reading efficiency of participants by multiplying these two numeric values. This is presented in Table 4.21.

Table 4.21: Words per minute, comprehension rate and reading efficiency

	Minimum	Maximum	Mean	SD
Words per minute	37	506	186.40	64.80
Comprehension %	17	100	73	20.20
EFF	629	50600	13694	6417.20

Key

EFF: reading efficiency
SD: Standard deviation

Table 4.21 indicates that the average reading speed for the participants was 186.40 words per minute with a standard deviation of 64.80. According to the reading norms of Taylor (cf. Table

4.20), the average grade level according to the reading speed is Grade 6. As the standard deviation is high, the scores are spread out over a wide range of values. The average comprehension rate is 73% with a standard deviation of 20.20. This indicates that the participants' level of comprehension is on par as 70% is acceptable according to Taylor (1965:193), but too low for the 80% requirement at University X (Meihuizen, 2017:4). The reading efficiency of the 550 participants averaged 13694 with a standard deviation of 6417.20. According to Table 4.20, the average reading efficiency of the participants places them on reading grade level 7.⁴ The participants were busy with their first year of undergraduate studies and therefore with a reading efficiency average of grade 7, it can be expected that they would experience some challenges with regard to reading prescribed academic texts and their reading load.

Table 4.22 summarises the reading speed, comprehension rate, reading efficiency and grade level per faculty. ANOVA was used to determine if there were any statistically significant differences between the faculties. The p-values and MS error values are given for thoroughness, although all p-values are larger than 0.05, indicating that there is no statistically significant difference between the words per minute, comprehension rate and reading efficiency of participants within the different faculties.

Table 4.22: Reading speed, comprehension rate, reading efficiency and grade level per faculty

	Arts (N=73)	Sci (N=45)	Edu (N=87)	Ems (N=18)	Engi (N=147)	Health (N=108)	Law (N=72)	MS Error	P-value
wpm	148.21	189.10	175.41	209.78	175.33	204.82	206.76	4.75	0.22
comp %	66.32	73.10	70.81	73.22	63.33	75.76	76.63	5.22	0.07
EFF	10100	13823	12392	15245	13517	15372	15769	3.37	0.24
Gr	3	7	5	9	6	9	10		

Key

wpm:	words per minute
comp%:	comprehension rate
EFF:	reading efficiency
Gr:	Grade level
MS Error:	Mean squared error

⁴ Reading speed and comprehension rate were the only aspects used to determine a reading grade level. Therefore the reading grade levels calculated for the students are only an indication of the reading comprehension abilities of students which would vary in other circumstances such as students reading disciplinary texts to complete a task.

Table 4.22 indicates that the average reading speed of the participants of the different faculties varies. It is clear from Table 4.22, that none of the faculties reached on average the required reading speed of 220 words per minute (Meihuizen, 2017:4) or the suggested reading speed of 280 words per minute (Taylor, 1965:193), thus, it is to be expected that their slower reading speed will influence their ability to complete the volume of texts they have to read. This might impact their motivation to read the prescribed academic texts.

4.2.3 Analyses and interpretation of the task achievement scores

Data were collected for the scores/marks of tasks as well as the participation mark for each of the 14 modules used in this study. For an explanation on participation marks, refer to section 3.3.5.1. The scores for one task were collected in eleven modules and two task marks were collected for three of the modules (cf. Table 3.3). In the university context it happens that a student does not complete a task due to various reasons. A student might also choose not to complete a module towards the end of a semester, this is why there are variations regarding the number of participants, tasks and participation marks per faculty. The SORS questionnaire was completed by the participants at the beginning of the semester. The number of participants per faculty given in Table 3.1, reflects the participants at the beginning of the semester. The number of participants given in Table 4.23 might be lower than the original number of participants, but not more.

Table 4.23 presents the means for the tasks as well as the participation marks per module per faculty. The purpose of this table is not to compare the task marks of the different modules. A comparison would be futile as the tasks differed in format and content. One purpose of this table is to provide a birds-eye-view of the task achievement per module sorted by faculty. A second purpose is to emphasise modules where there is more than 15% difference between the average of the task mark and the average of the participation mark. This discrepancy indicates that the lecturer provided additional assessment opportunities for students in which they achieved on average higher marks. Students usually need a participation mark of above 40% to gain access to the module's exam (cf. section 3.3.5.1). Table 4.23 is also used in the qualitative task analyses (cf. sections 4.3.1.2, 4.3.2.2, 4.3.3.2, 4.3.4.2, 4.3.5.2, 4.3.6.2 and 4.3.7.2).

Table 4.23: Task achievement per faculty

Faculty	Module	Task achievement								
		Task 1			Task 2			Participation mark		
		N	M	SD	N	M	SD	N	M	SD
Arts	A	74	19.10	23.60	74	35.60	24.90	74	53.20	13.70
	B	70	56.20	19.40				70	53.10	17.90
Natural Sciences	A	47	41.90	25.30	45	53.50	28.00	47	60.60	19.60
	B	47	62.10	26.40				47	44.30	13.80
Education Sciences	A	87	33.40	24.40				87	56.40	19.90
	B	87	54.80	32.40				87	63.50	21.60
Economic and Management Sciences	A	18	57.60	24.10				18	55.90	15.90
	B	18	67.00	21.90				18	59.60	13.80
Engineering	A	147	45.50	27.60				147	62.10	12.80
	B	89	48.80	17.10				146	59.20	10.80
Health Sciences	A	108	86.70	7.90	108	77.50	12.40	108	77.50	12.40
	B	107	73.60	20.10				107	69.50	12.30
Law	A	74	64.20	16.00				74	66.00	7.50
	B	71	52.40	20.10				71	60.00	10.70

Key

M: Mean

SD: Standard deviation

In Module A within the Faculty of Arts, students averaged 19.1% and 35.6% for their tasks although they achieved an average of 53% as participation mark. This shows that although they did very poorly in two of the tasks, the lecturer provided additional tasks for students to better their marks. Students within the Faculty of Natural Sciences did better in the second task than in the first one, and they were able to “collect” additional marks in this module as well, as the

participation mark was almost a 20% improvement on the first task. In Module B in this faculty, the average participation mark is much lower than the task mark. This indicates that the students did a number of other tasks for participation marks in which they did not do as well as they did in task one. In Module A within Education, students achieved an average of 33.4% for the task that was analysed in this study. As their average participation mark was 56.4% in this module, it is clear that students had additional tasks in which they achieved higher scores. In Module A within Engineering, students achieved an average of 45.5% for task one, and they were able to achieve an average participation mark of 62%. This indicates that students had more opportunities to better their marks in the form of other tasks. The variation between the marks of the tasks and the participation marks is also an indication of lecturers' decisions to "weight" tasks in their calculation of the participation mark.

In conclusion, thirteen of the fourteen modules had an average participation mark of above 50%, irrespective of the averages the students achieved for the different tasks. This sheds light on the possibility that the lecturers set tasks throughout the semester for students in such a way that the average student can obtain a participation mark of above 40%, which will give him or her access to write the exam in the module. Without writing the exam, the students cannot complete the module. The number of students passing a module is referred to as the throughput figure. This throughput figure is an important parameter in the context of University X. A poor throughput figure often reflects negatively on the lecturer and the outcomes of the module, while the opposite is seen in a more positive light by faculty management structures and institutional management. The question arises whether lecturers and the university as an institution places such importance on throughput figures that the time and effort required for disciplinary reading development and disciplinary reading support for students are less important than providing students with additional opportunities to pass a task so that they can pass the module.

4.2.4 Correlations between reading strategy use, reading comprehension and task achievement

One of the research questions of this study is as follows (cf. section 1.6):

- What is the relationship between reading strategy use, reading comprehension and task achievement?

The Readers are Leaders software programme calculated students' reading speed and comprehension (cf. section 3.3.5.1). Reading speed was included in this correlation as it is used at University X to determine the reading grade level of students with the aim of reading support. Adjusting reading speed is also one of the problem solving reading strategies included in the SORS (item 11, cf. Table 4.1). To discover whether or not a relationship exists, correlations were determined between reading strategies and comprehension, as well as reading strategies and

task achievement. This was done by means of the Spearman correlation coefficient (cf. section 3.3.7.1). The analysis and interpretation of reading strategies, reading speed and comprehension are presented first, followed by the analyses and interpretation of reading strategies and task achievement per faculty.

4.2.4.1 Correlations between reading strategies and reading comprehension

Table 4.24 indicates the correlations between reading strategies, reading speed and reading comprehension. This correlation was calculated for 550 participants who completed the Readers are Leaders software programme (cf. section 3.3.5.1).

Table 4.24: Correlations between reading strategy use and reading speed and reading comprehension

			comp%
Reading strategy category	GLOB	Correlation Coefficient	.063
		N	550
	PROB	Correlation Coefficient	.038
		N	550
	SUP	Correlation Coefficient	-.043
		N	550
	ORS	Correlation Coefficient	.022
		N	550

Key

GLOB:	Global reading strategies
SUP:	Support reading strategies
PROB:	Problem solving reading strategies
ORS:	Overall reading strategies
comp%:	reading comprehension

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: $\geq 0.5+++$

There was no correlation between reading strategies and reading comprehension. This lack of relationship might be due to the measurement of the reading comprehension by the Readers are Leaders software package. The length and topics of the passages, as well as the digital environment in which the students had to read and answer questions, might not have required of reading strategy use.

4.2.3.2 Correlations between reading strategies and task achievement per faculty

Marks were collected for tasks as well as participation marks for each module in a faculty (cf. Table 3.3). The correlation tables are presented in this section, sorted by faculty. Table 4.25 gives the correlations between reading strategies and task achievement of the Faculty of Arts.

Table 4.25: Correlations between reading strategy and task achievement: Faculty of Arts

			Task achievement		
			Mod_A_T_1	Mod_A_T_2	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	.058	.106 ⁺	.205 ⁺
		N	74	74	70
	PROB	Correlation Coefficient	.008	.103 ⁺	.192 ⁺
		N	74	74	70
	SUP	Correlation Coefficient	.009	.056	.038
		N	74	74	70

Key

GLOB:	Global reading strategies
PROB:	Problem solving reading strategies
SUP:	Support reading strategies
Mod_A_T_1:	Module A task 1
Mod_A_T_2:	Module A task 2
Mod_B_T:	Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: ≥ 0.5 +++

Table 4.25 shows that there are no statistically significant correlations between reading strategy use and task achievement in the Faculty of Arts. There was a small practically significant relationship between two groups of strategies and task achievement. Task two of Module A was a test on two chapters in the textbook and the task of Module B was an essay where students had to integrate and apply prescribed articles (cf. section 4.3.1.3). Students were expected to read to prepare for the test and complete the task. The use of both global reading strategies and

problem solving strategies would have benefitted students in their reading in preparation for the tasks, although the small practically significant effect indicates that the relationship is not noteworthy.

Table 4.26 gives the correlations between reading strategies and task achievement of the Faculty of Natural Sciences.

Table 4.26: Correlations between reading strategy and task achievement: Faculty of Natural Sciences

			Task achievement		
			Mod_A_T_1	Mod_A_T_2	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	-.116 ⁺	.198 ⁺	-.088
		N	45	47	47
	PROB	Correlation Coefficient	-.173	.190 ⁺	.194 ⁺
		N	45	47	47
	SUP	Correlation Coefficient	-.097	.405 ^{***}	-.111
		N	45	47	47

Key

GLOB:	Global reading strategies
PROB:	Problem solving reading strategies
SUP:	Support reading strategies
Mod_A_T_1:	Module A task1
Mod_A_T_2:	Module A task2
Mod_B_T:	Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: ≥ 0.5 +++

Most notable in Table 4.26 is the statistically significant correlation between the second task of Module A and support reading strategies, with a medium practically significant effect. This task was the practical application of a computer programming language. Students received instructions and they had to do the programming on the computer. Students studied the textbook beforehand and wrote the pen-and-paper test (task1) and then completed the practical test

(task2). Support reading strategies are generally used as basic mechanisms to aid reading comprehension, for example taking notes while reading. Although the participants within this faculty indicated that they use support strategies the least of all three reading strategy categories (cf. Table 4.8), it is clear from Table 4.26 that when students did use support strategies, these strategies were of help during their practical task.

Table 4.27 gives the correlations between reading strategies and task achievement of the Faculty of Education Sciences.

Table 4.27: Correlations between reading strategy and task achievement: Faculty of Education Sciences

			Task achievement	
			Mod_A_T	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	.108 ⁺	.108 ⁺
		N	87	87
	PROB	Correlation Coefficient	.035	.035
		N	87	87
	SUP	Correlation Coefficient	.156 ⁺	.156
		N	87	87

Key

GLOB:	Global reading strategies
PROB:	Problem solving reading strategies
SUP:	Support reading strategies
Mod_A_T:	Module A task
Mod_B_T:	Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: $\geq 0.5+++$

As evident from Table 4.27, there are small practically significant correlations between global reading strategies and the tasks of Module A and B as well as a small practically significant correlation between support reading strategies and the task of Module A. The task of Module A entailed a short unannounced class test in which the students had to define and explain concepts dealt with in class and set out in their prescribed reading (cf. Appendix H). For Module B's task students had to summarise twelve pages of the textbook in a pamphlet format. Neither of the

tasks required students to do more than recall information and so, students did not need to use a variety of strategies to be able to complete the tasks. This might be one of the explanations for the negligible practically significant correlations.

Table 4.28 gives the correlations between reading strategies and task achievement of the Faculty of Economic and Management Sciences.

Table 4.28: Correlations between reading strategy and task achievement: Faculty of Economic and Management Sciences

			Task achievement	
			Mod_A_T	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	-.267	.624 ^{**+++}
		N	18	18
	PROB	Correlation Coefficient	-.388 ^{**}	.637 ^{**+++}
		N	18	18
	SUP	Correlation Coefficient	-.249	.492 ^{*++}
		N	18	18

Key

GLOB:	Global reading strategies
PROB:	Problem solving reading strategies
SUP:	Support reading strategies
Mod_A_T:	Module A task
Mod_B_T:	Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: ≥ 0.5 +++

Table 4.28 indicates that in the Faculty of Economic and Management Sciences, there are a number of statistically and practically significant correlations, of medium and large effect. These correlations are discussed by task.

The Module A task entailed a class test. Students had to study two chapters of the prescribed textbook. The test included *list*, *discuss* and *explain* questions (cf. Appendix J). There is a negative correlation between problem solving reading strategies and this task. This shows that those students using problem solving reading strategies scored lower in the class test. It is

possible that the problem solving reading strategies were not the most strategic strategies to use to complete the task.

For the Module B task, students had to work in groups of 8 to 10 members and they had to present a section from the textbook to their peers. Table 4.28 shows statistically significant as well as large and medium practically significant correlations between the task of Module B and global, problem solving and support reading strategies. This indicates that all three groups of reading strategies were possibly used and aided students in completing the presentation task successfully.

Table 4.29 gives the correlations between reading strategies and task achievement of the Faculty of Engineering.

Table 4.29: Correlations between reading strategy and task achievement: Faculty of Engineering

			Task achievement	
			Mod_A_T	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	.058	.026
		N	147	89
	PROB	Correlation Coefficient	-.002	.074
		N	147	89
	SUP	Correlation Coefficient	.058	-.014
		N	147	89

Key	
GLOB:	Global reading strategies
PROB:	Problem solving reading strategies
SUP:	Support reading strategies
Mod_A_T:	Module A task
Mod_B_T:	Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: $\geq 0.5+++$

In this faculty, according to Table 4.29, there were no statistically or practically significant correlations between global, problem solving and support reading strategies and task achievement. The task of Module A was a short class test with multiple-choice and constructed-response questions (cf. Appendix N). This class test covered the main ideas of two chapters in the prescribed textbook. The Module B task was also a class test where students had to do calculations and choose the correct answer in a multiple-choice format (cf. Appendix O). The absence of correlations may indicate that students made very little use of reading strategies in preparation for the tests.

Table 4.30 gives the correlations between reading strategies and task achievement of the Faculty of Health Sciences.

Table 4.30: Correlations between reading strategy and task achievement: Faculty of Health Sciences

			Task achievement		
			Mod_A_T_1	Mod_A_T_2	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	.240 ⁺	.126 ⁺	.208 ⁺
		N	108	108	107
	PROB	Correlation Coefficient	.255 ^{***}	.247 ⁺	.332 ^{***}
		N	108	108	107
	SUP	Correlation Coefficient	.238 ^{**}	.087	.214 ⁺
		N	108	108	107

Key

GLOB: Global reading strategies
 PROB: Problem solving reading strategies
 SUP: Support reading strategies

Mod_A_T_1: Module A task 1

Mod_A_T_2: Module A task 2

Mod_B_T: Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: ≥ 0.5 +++

Table 4.30 shows a number of statistically and practically significant correlations between reading strategies and the tasks of Modules A and B in this faculty. There were statistically and practically

significant correlations between all three groups of reading strategies and the task achievement of Module B, particularly the practically significant correlation of medium effect between the task achievement and problem solving strategies. For the task of Module B, students wrote a class test about a section of the work. The test totalled 25 and there were eight multiple-choice questions and two constructed-response questions. The correlations indicate that students benefitted from using reading strategies from all three groups, especially problem solving strategies, in preparation for this test.

Table 4.31 gives the correlations between reading strategies and task achievement of the Faculty of Law.

Table 4.31: Correlations between reading strategy and task achievement: Faculty of Law

			Task achievement	
			Mod_A_T	Mod_B_T
Reading strategy category	GLOB	Correlation Coefficient	-.119	.072
		N	74	71
	PROB	Correlation Coefficient	-.196	-.075
		N	74	71
	SUP	Correlation Coefficient	-.185	-.014
		N	74	71

Key

GLOB:	Global reading strategies
PROB:	Problem solving reading strategies
SUP:	Support reading strategies
Mod_A_T:	Module A task
Mod_B_T:	Module B task

- Statistical significance: $p < 0.05$ * $p < 0.01$ **
- Practical significance: Small effect: 0.1+
 Medium effect: 0.3++
 Large effect: $\geq 0.5+++$

No statistically or practically significant correlations were indicated between any reading strategy group and the two tasks as shown in Table 4.31. For the task of Module A, students had to do a group presentation where they needed to apply their knowledge to represent a fictional client and the case required as part of the preparation, the reading of text such as similar court cases and

government laws. Although reading was part of the preparation, the absence of correlations may point to the fact that reading did not play a central part in this task.

In Module B's task, students were tested on sections of their prescribed textbook as well as a prescribed court case. Thirty of the fifty marks of the test involved matching words and phrases and giving definitions. Thus, this test did not require intensive reading of passages. Rote learning would have been sufficient to answer more than half of the questions and so students could "get by" without reading the prescribed texts. This might be a possible reason for the lack of correlations between the task achievement and reading strategies.

This concludes the presentation and analyses of the quantitative data. In the coming section, the qualitative data is presented and analysed per faculty.

4.3 Qualitative data analyses and interpretation

The qualitative analyses played an important role in answering the following research question (cf. section 1.6):

- How do lecturers and students themselves perceive students' reading abilities, prescribed academic texts and tasks assigned by lecturers?

Qualitative data were collected with semi-structured interviews, focus group interviews and document analysis. The data were analysed through a coding process of content analysis (cf. section 3.3.7.2). At first, all transcribed interviews and focus group interviews were read to gain a bird's eye view of the data. The transcribed data were divided into sections namely the reading abilities of students, the prescribed text of the modules and the tasks of the modules. After the data segments were divided, the researcher made use of axial coding to discover embedded themes within the data. These themes are presented in the summary section of this chapter and critically discussed in Chapter 5.

The results for each faculty are presented separately. The data from lecturer interviews and student focus groups are presented separately per category, followed by the document analyses of the prescribed texts and tasks for the two modules within each faculty.

4.3.1 Faculty of Arts

Within the Faculty of Arts, two semi-structured interviews were conducted, transcribed and analysed. One interview was held with the lecturer responsible for Module A (LMA) and one interview with the lecturer responsible for Module B (LMB). One focus group interview was conducted with a group of students enrolled in both modules (cf. section 3.3.5.2) and then

transcribed and analysed. Document analyses were done on four prescribed texts in the two modules (cf. Table 3.3) by means of the Coh-Metrix T.E.R.A formula (cf. section 3.3.7.2). Two tasks of Module A and one task of Module B (cf. Table 3.3) were also analysed by making use of the Umalusi typology (cf. section 3.3.7.2).

4.3.1.1 Semi-structured interviews and focus group interview

During the semi-structured interviews and focus group interview the researcher gathered information about the students' reading abilities, the prescribed academic text of the modules as well as the tasks in the context of two modules within the Faculty of Arts. Insight into the lecturers' and students' points of view of these same three topics enabled the discovery of underlying themes and connections. Each of these topics are dealt with in a separate section.

4.3.1.1.1 Reading abilities of the reader (i.e., student)

The lecturers were asked to share their thoughts on the reading abilities of their students. During the focus group the students were asked about their own reading habits and this led to a discussion about how they perceive reading in the context of Module A and Module B

Lecturers' perspective: It seems that both lecturers thought the students generally struggled with reading:

- *I see that students **struggle**... (with reading the textbook). LMA (Lecturer Module A)*
- *They (students) **struggle** with (reading) academic language in general. LMB (Lecturer Module B)*
- *I think **less than 3% of my students truly engage** with the prescribed reading material and can **read with the needed insight**. LMB*
- *They **do not understand** new reading material the first time around. LMB*

Both lecturers tried to compensate for students' apparent poor reading skills and their lack of reading motivation:

- *I add my own **practical examples** here and there even though there are many definitions and case studies at every section (in the textbook). LMA*
- *I try to "force" the students to engage with the textbook by **doing activities and having discussions** in class and by giving them **homework** to do after each class, in preparation for the next class. LMA*
- *I **vary the difficulty** level of the class activities. LMA*
- *When I **ask questions** in class, I always refer back to the textbook and open at the specific page. LMA*
- *I try to **include material that is more elementary** to compensate for students with low reading levels. LMB*

- *In class I **prepare** them for what they need to read. I also **give specific page references** to motivate them to read for example: “If you do not understand this, then you need to go and read it on page xx”. LMB*
- *To motivate the students I give them an efundi **quiz to complete** each week...They also submit an online tutor assignment. LMB*
- *I think a lecturer should **guide** them through the reading process, and **explain** to them what information is needed (and) how you go about gathering the information when you are reading something. LMB*

LMB spoke out about possible reasons behind students’ poor reading abilities:

- *I think it is a result of the **generation gap**. They are exposed to short reading passages online, ... it is condensed information. An academic article is the opposite...They would rather **watch a video** than read a passage.*

LMB eloquently summarised both lecturers’ perceptions about students’ reading abilities:

- *Reading seems to be the **last resort** for many students. Students don’t seem to be programmed to read long academic material in depth.*

Students’ perspective on their own reading abilities: During the focus group interview, some of the students hinted that they struggled with comprehending the textbook.

- *I have to **read and re-read** to get the idea of the authors.*
- *Because like, with the chapter, ...**when I read it, I get confused**, so I just skim and scan, and when we do the actual chapter in class, that’s when I literary understand.*

The comment of this student indicates that she cannot read the textbook with comprehension and then waits for the lecturer to elaborate on the content. Without the lecturer she would be unable to understand the content of the textbook. When asked what motivates students to read the prescribed material extensively, the group members answered as follows:

- ***The word test or exam.***
- ***I want an explanation before I read the textbook** of what is going to be talked about.*

Upon critically reflecting it became clear that the lecturers were of the opinion that students are unprepared and unwilling to read the prescribed academic texts with comprehension. A possible reason given by one lecturer was the fact that students cannot or did not want to cope with the lengthy texts they were provided with, due to students’ regular reading of texts, such as social media posts in the digital environment. This indirectly emanated during the focus group interview. The students seemed dissatisfied with the prescribed text as they struggled to read it with comprehension. Even though the lecturers seemed to go out of their way to get their students motivated to read the prescribed academic material, the students reported that they would only read upon hearing the word test or exam, which points to the fact that many of the lecturers’ other attempts to get students reading, failed.

4.3.1.1.2 Texts used in modules

During the interviews, lecturers gave information about the prescribed academic texts used in their modules. They also elaborated on whether they thought the text was on the right difficulty level for their students. During the focus group the students commented on the difficulty level of the prescribed texts of the modules and whether or not they read the texts.

Lecturers' perspective: Both lecturers felt that the prescribed academic material was on a first year student's reading level regarding the layout and vocabulary:

- *American academic material (that I prescribe) is more **accessible** for students (than the British material). LMB*
- *Yes, I think **the textbook is on the right level**. LMA*

Students' perspective: The group felt that the prescribed textbook used in Module A was difficult to read:

- *...they (the authors) wrote with **their level and not with our level**.*
- *The language is big and **lengthy**. They could just have used **bullets** and the textbook could have been much thinner.*
- *The book **does not flow**. When I'm reading I'm like like "What?", "What?" "What?"*
- *I just look at the book and I get drained because I have to **translate** too much.*
- *I think this textbook **was meant for a 3rd year** with background knowledge or something.*
- *...there are **unnecessary information** (in the textbook).*

They were more positive about the prescribed articles of Module B:

*Yes the **articles are much easier to read** than Module A's textbook.*

I like reading it (the articles).

*It builds on a logical argument and is **understandable**.*

Slides were also used by both lecturers (cf. section 3.3.5.2). During the interviews and focus group interview, lecturers and students commented on their use in the context of Modules A and B.

Lecturers' perspective: LMA and LMB use slides during the process of instruction in class. Both suspected that many students were using the slides as the only content source and they seemed worried about this:

- *I think they try and download my slides and **only use that** to study from. I do not encourage this as **my slides do not contain all the needed information** for the assignments and tests.
LMA*

- *(Students)...would be able to pass (the module by only studying the slides), but they **would not do very well**. I want them to use my **slides in addition** to the learning material they have to read. **On the slides I give the outlines only**, but the explanation is given in the reading material. LMB*
- *The rest (97% of the class) **rely on the slides** for their information (as opposed to reading the prescribed articles). LMB*

Students' perspective: During the focus group interview some participants indicated that they relied heavily on the slides for module content:

*I think some of us **rely more on the slides** than we do on the textbook.*

*I just target the main points and **I go through the slides**, for example I take the summary, I give it my own understanding and then **I go to the slides**. I then combine it all together. The **slides work** for me.*

It is clear from this segment of data, that there is a discrepancy between lecturers' and students' perspectives on the readability of prescribed academic texts. Lecturers prescribe texts that they deem fit while students experience these texts as being too difficult. The lecturers expect their students to cope with the prescribed texts while the students' grade three reading level abilities steer them towards easier alternatives (cf. Table 4.22). One of these alternatives students reported using were slides. Instead of taking time to read the prescribed text with the needed comprehension, students seem to be on the lookout for quicker alternatives with simpler language structures like the slides compiled by the lecturers. Lecturers correctly suspected that many students only relied on the slides for information.

4.3.1.1.3 Tasks

During the interviews, lecturers were asked to discuss a task that they gave to students that contributed towards the compilation of their participation marks. The lecturers commented on the format and purpose of the task(s). During the focus group, the tasks of the different modules were discussed in terms of preparation needed and if students understood the instructions given in the tasks.

Lecturers' perspective: LMA gave his class a few questions to answer on two articles. He summarised his experience of the task as follows:

- *Most students **did not read** the prescribed articles (needed to complete the assignment). Very few took part in the discussion (prior to the task). Most seemed **lazy** to participate. ...all the answers were in the article.*

Students' perspective: Students only commented on the task of Module A as Module B's had not yet been given to them at the time of the focus group interview:

- *He (LMA) **did not explain** what he wanted.*
- *We did not know what he **expected** of us.*
- *The **questions were vague** and the documents were like 30 pages long.*
- *There was just **miscommunication** there... With our previous lecturer, she literally said what to do and where to find it in the textbook.*
- *Yes, it (the articles) was easier (to read) than the textbook but **we did not understand the questions**.*

To summarise, the students expressed their frustration in not understanding the instructions of the first task of Module A, while the lecturer was of the opinion that the task was straight forward as he even gave them the main headings by which they had to discuss the article on child support grants in South Africa for example "Reasons for the grant?", "Role players", "Challenges" and "Effect on children – what should change in the future?" (cf. Appendix C). From their comments, the students did not understand that they needed to summarise the content of the articles under the given headings. The comment that the instructions were vague, points to the need of students to receive explicit and detailed instructions about a task.

Throughput figures: All tasks contribute towards the compilation of participation marks (cf. section 3.3.5.1). These marks are important as students need to achieve a certain average to be granted permission to write exam in a module. The number of students passing a module is an issue which both lecturers commented on.

- *I think **many students fail this module** because they are not really interested in the content and they only take this module as something extra (additional module to fill the curriculum).
LMA*
- *I also think that you have to **find a balance between throughput figures in your module** and knowledge that the students need to obtain. There is a lot of **pressure** not to have students fail your module, so it is not going to work if the material is too difficult. I try to achieve this balance with tutor classes and having the technical aspects of the essay count as much as the content of the essay. It is however noteworthy, that **a student can pass my module without doing a lot of reading**, as long as they attend classes and do the needed assignments. They can get the gist of the reading material in the tutor classes. It all comes down to pressure of getting as many students as possible to pass my module. LMB*

The pressure of throughput figures is another theme that emerged. As both lecturers commented about students failing or plans put in place to enable as many students as possible to pass the

module, it can be deduced that decisions about teaching and learning activities are informed by the potential number of students passing a module.

4.3.1.2 Document analyses

The document analyses involved the prescribed academic material of each module, as well as the tasks of the modules. Each module's documents are discussed separately. The prescribed academic materials are dealt with first, followed by the tasks.

4.3.1.2.1 Module A

Module A prescribed academic material

In this module the lecturer prescribed an academic textbook and also made use of a few peer-reviewed academic articles. The lecturer chose this textbook because “...*(t)wo of my colleagues contributed to this textbook, one as the editor and one as writer. It seems to me that they identified lacunae in the textbook of the time, which they seemed to address in this new textbook.*” The prescribed article selected for the purpose of this study, gave context to a certain learning objective the textbook covered.

The following excerpt from the **textbook** (Thornhill *et al.*, 2014:27) was entered into T.E.R.A to analyse the “easability” and readability:

The significant relevance of a political undertaking, formulated almost a century ago by two heads of state, resonate modestly in twenty-first century democratic, developmental states. Even though 'freedom from fear' and 'freedom from want' represent the primal character of a democracy and that of a developmental state respectively, these remain considerably complex political assurances offered to citizens within contemporary democratic developmental states.

The primary attribution of contemporary governments and therefore government officials within democratic developmental states is to determine, acknowledge and prioritise the developmental needs of a society within an inclusive democratic context and to ensure that those needs are addressed in the most efficient, effective and economic manner. A government therefore becomes a critical role player within a specific landscape that can be recognised as the State. It is within the landscape of the State that public officials execute second public management practices within a firm system of public administration.

The software generated the following graph to summarise the findings. In Figure 4.1, the higher the scores of the components, the easier and more readable the text.

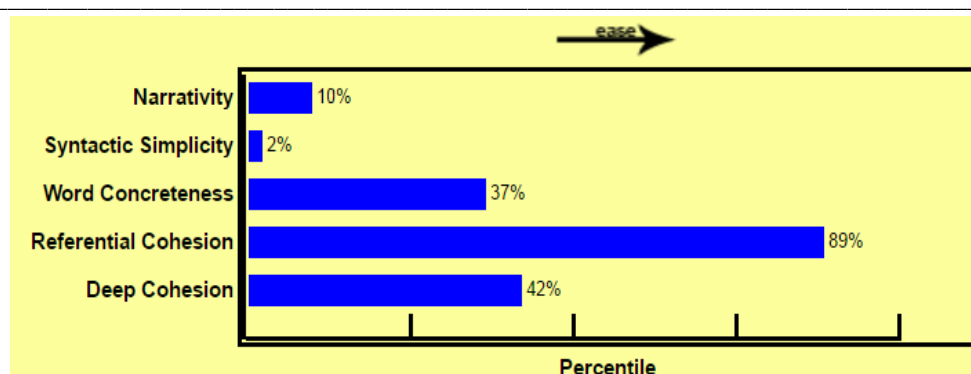


Figure 4.1: T.E.R.A graph: Textbook Module A Faculty of Arts

The excerpt was rated 10% in narrativity, which means it is not story-like and thus more difficult to understand. It scored a mere 2% in syntactic simplicity meaning that it consists almost exclusively of complex sentence structures which makes it difficult to comprehend. Word concreteness is 37% which means that many of the words in the excerpt were abstract. Referential cohesion measured high - 89%, indicating that there are many overlaps between ideas, words or sentences so the reader could ideally have made many connections. Lastly, the deep cohesion measured at 42% indicating that the majority of information in the excerpt did not tie together. The Flesch-Kincaid grade level measured at 21.

Although the whole textbook was not measured with the Coh-Matrix software, this analysed passage does give the indication that the textbook has a high difficulty level. Abstract words like “attribution” and the fact that the majority of information did not tie together would make this text difficult to comprehend for a student with an average university reading grade level of 13. The average reading grade level of this group of participants was grade 3 (cf. Table 4.22) and so it can be expected that these students would find this passage and most probably the whole textbook difficult to read and will need additional reading support.

Two paragraphs of the **prescribed article** (Brynard, 2009:312) were also analysed:

The content of policy in a democracy determines the kind of social and political activity that will be stimulated by the policy-making process. It is not possible that all policies will equally stimulate the interest of all people. Some policies may stimulate less interest, while others may trigger a chain of events having long-lasting results. Every policy proposal may therefore yield its own series of events, public actions, reactions and responses. These actions or reactions could be either organised or sporadic, institutional or individual. The exact interactions are difficult to predict, due to the nature of the particular policy.

The amount of time required to define a certain policy proposal, as well as the policy problem itself, is logically determined by the particular issue at hand. Issues that are complex and value-

laden generally have higher and more varied levels of involvement by various stake holders. In some instances, the courts may influence policy content and processes, which sometimes render this complex phenomenon even more shapeless and fluid. The support for, or opposition to the issue involved in the policy-making process, or even the implementation of the policy, further shape and form the final policy to reflect differing values and ideological positions.

Figure 4.2 summarises the findings:

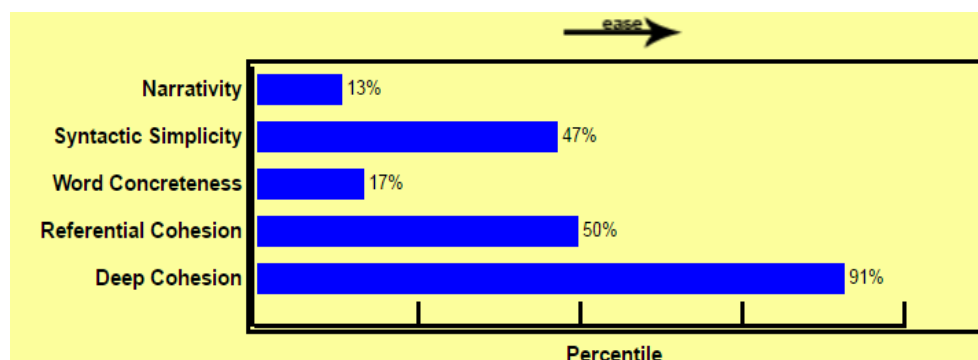


Figure 4.2: T.E.R.A graph: Article Module A Faculty of Arts

The paragraphs of the article scored 13% in narrativity. This indicates that it is less story-like and so more difficult to understand. It scored 47% in syntactic simplicity, meaning that it does contain complex sentence structures which are also difficult to comprehend. Word concreteness is 17% which points to the fact that many of the words in the excerpt were abstract. Referential cohesion measured 50%, indicating that just over half of the information contained overlaps between ideas, words or sentences so the reader could not make many connections. Lastly, the deep cohesion measured at 91% indicating that the information in the excerpt tied very well together. The Flesch-Kincaid grade level measured at 14. The analysed two paragraphs give an indication that this academic article would not pose too many reading challenges for a university student with an average reading grade of 13. However, their reading grade level of grade does give an indication that this group of students might have experienced reading challenges and were possibly unprepared for the reading demands of this textbook.

Module A task analysis

Task 1: The task type, content, format and lecturer's purpose for the task are summarised in Table 4.32:

Table 4.32: Specifications of task 1 in Module A: Faculty of Arts

Appendix:	C
Type of task:	Case study
Content tested:	Academic article

Memorandum / Rubric:	Memorandum
Total marks:	20
Individual work / Group work:	Individual
Lecturer's purpose for the task:	LMA wanted to motivate students to read prescribed articles and attend class.

According to LMA, the case study followed a class discussion. Students had to come to class prepared. They had to read two prescribed articles. At the end of the lecture LMA presented the class with guidance prompts for the case study (e.g., “Effect on children – what should change in the future?”). These prompts guided students in summarising the important information in the article. During the interview he referred to the prompts as “questions”, but on the slide (cf. Figure 4.3) it is not that clear:

Gevalle studie: Kinderondersteuningstoelaag	
Case study: Child Support Grant	
<ul style="list-style-type: none"> • Redes vir die toelaag? <ul style="list-style-type: none"> – Internasionale beleid – Grondwet – Omstandighede • Rolspelers <ul style="list-style-type: none"> – Primêr – Sekondêr • Uitdagings <ul style="list-style-type: none"> – Kinders/Ouers/Pleegsorg – Regering • Effek op kinders – wat moet verander in die toekoms <ul style="list-style-type: none"> – Regering 	<ul style="list-style-type: none"> • Reasons for the Grant? <ul style="list-style-type: none"> – International policy – Constitution – Circumstances • Role-players <ul style="list-style-type: none"> – Primary – Secondary • Challenges <ul style="list-style-type: none"> – Children/Parents/Foster care – Government • Effect on children – what should change in the future? <ul style="list-style-type: none"> – Government

Figure 4.3: PowerPoint slide: Instructions of case study

An analysis of the case study by means of the Umalusi typology is reported in Table 4.33:

Table 4.33: Analysis of task 1 in Module A: Faculty of Arts

Type of cognitive demand	Difficulty level of question	Explanation and examples of level
1. Conceptual knowledge Identify, label, select, locate information in article Identifying from text Know and use appropriate vocabulary	Moderate	Medium content: students had to listen to content in class, read the article and find the information sorted into four headings as provided on the slide above.

Type of cognitive demand	Difficulty level of question	Explanation and examples of level
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context – content was dealt with in class Regarding information gathering: match information on slide to information in article	Moderate	Students had to explain reasons for the grant, who the role players were, the challenges and the effect on children. By adhering to the given headings, the article was actually summarised.

It is clear that the lecturer's disappointment expressed during the interview is understandable as this case study was not very difficult from a lecturer's point of view and according to the Umalusi typology (cf. Table 4.33). Students had to understand and repeat what they read in the article. The students mentioned during the focus group that this case study was difficult because they did not know what was expected from them. It is clear that the task itself cannot be defined as difficult and that the problem lies with additional variables. The instruction of the task is one of the variables. The instructions were clear to the lecturer, but vague to the students. It did not provide students with enough purpose and so they did not know what to look for while reading the article. According to the majority of students in the focus group, they read the article for homework but the task instructions hampered their ability to reflect on what they had read. The role of the lecturer in the instructional context is to make adjustments according to the need of the students, even if it means firstly aligning expectations of the task and the meaning of the instructions between the lecturer and the students. It is possible that the low scores for this task (cf. Table 4.23) can be due to the instructions of the task.

Task 2: The task type, content, format and lecturer's purpose for the task are summarised in Table 4.34:

Table 4.34: Specifications of task 2 in Module A: Faculty of Arts

Appendix:	D
Type of task:	Class test
Content tested:	Four study units (four chapters in text book)
Memorandum / Rubric:	Memorandum
Total marks:	50
Individual work / Group work:	Individual
Lecturer's purpose for the task:	The test was designed to help students engage with the content of the study units and textbook.

In this module, a class test was also analysed as the case study reflected very poor scores. See Appendix D for the test and memorandum. The first of the four questions of the class test is provided as an example. Students were instructed to give paragraph answers for 25 marks per question.

Question 1: Policy-making is a complex process. Elaborate on this statement by explaining the purpose and usefulness of the policy-making process according to the following approaches:

The Policy Cycle Model;

The Policy Systems Model; and

The Stage Model.

The test was analysed with the Umalusi typology. The results are reported in Table 4.35:

Table 4.35: Analysis of task 2 in Module A: Faculty of Arts

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Recall and recite knowledge Remember, define and describe basic facts Straight recall	Easy Moderate	Very simple recall; identify specific data Medium content; define a term
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context Regarding use of knowledge: explain	Easy Moderate	Simple relationships; simple explanations Counter-intuitive relationships; give examples, explain, briefly summarise

According to the typology, this test cannot be considered difficult. The purpose of this test was to help students engage with the content. The cognitive demand of the test was conceptual knowledge and understanding which means that students had the opportunity to simply restate facts and so the lecturer should have achieved his goal, if students read and prepared accordingly. From the focus group it was clear that a test is sufficient motivation to get students to read the textbook, so this task possibly resulted in students trying to read the textbook. They probably would have felt very frustrated while reading and as discussed during the focus group, some students cast the textbook aside and only studied the slides on the topic because the slides summarised main points, although they did not contain all the information. The challenge of this task lay in the grade 21 difficulty level of the textbook and the average grade 3 reading level of the participants, which indicates that the students were possibly unprepared to read this text. These students also read on average at half of the speed they should be reading. These can be

some of the reasons behind the poor average of 35.6% they achieved for the seemingly straight forward test (cf. Table 4.23).

4.3.1.2.2 Module B

Module B prescribed academic material

According to LMB, there is no textbook that contains all the content which students need to reach the module outcomes. Therefore, she selects learning material. *Teaching Sociology* is the name of an American Society for Sociology's scholarship of teaching and learning resource material. LMB uses many of those articles and adds a South African focus. LMB gave students **an eight page excerpt** from the beginning of Mills (2000). The first two paragraphs of this excerpt were analysed:

Nowadays men and women often feel that their private lives are a series of traps. They sense that within their everyday worlds, they cannot overcome their troubles, and in this feeling, they are often quite correct: What ordinary people are directly aware of what they try to do are bounded by the private orbits in which they live; their visions and their powers are limited to the close-up scenes of job, family, neighbourhood; in other mile, they move vicariously and remain spectators. And the more aware they become, however vaguely, of ambitions and of threats which transcend their immediate locales, the more trapped they seem to feel.

Underlying this sense of being trapped are seemingly impersonal changes in the very structure of continent-wide societies. The facts of contemporary history are also facts about the success and the failure of individual men and women. When a society is industrialized, a peasant becomes a worker; a feudal lord is liquidated or becomes a businessman. When classes rise or fall, a man is employed or unemployed; when rate of investment goes up or down, a man takes new heart or goes broke.

A summary of the T.E.R.A analysis is presented in Figure 4.4:

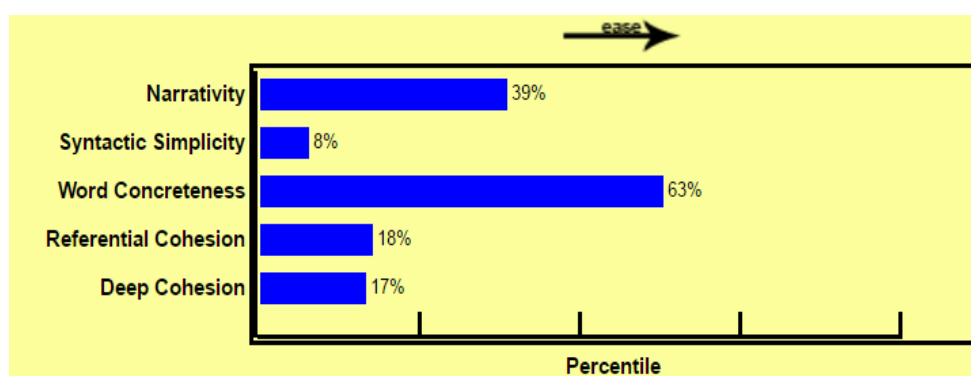


Figure 4.4: T.E.R.A graph: Article Module B Faculty of Arts

As this excerpt is expository, the narrativity percentage of 39% was to be expected. It scored low in syntactic simplicity (8%) but scored 63% on word concreteness, suggesting that there is not a high volume of word abstractness. It has a referential cohesion of 18%, so there are not many overlaps. Deep cohesion scored 17%, indicating that the information is not well related, which may make these two paragraphs more difficult to understand. The Flesch-Kincaid grade level measured at 14. With this reading grade level of 14 and a high score of deep cohesion, this article is suitable for use in the first year context. However, as stated this group of students seem to be unprepared for this article as indicated by their reading grade level average of grade 3 (cf. Table 4.22)

In Module B, students also had to read a biographical text written by Bekker (2012), based on an interview with a female mine worker. The two introductory paragraphs were analysed with T.E.R.A.

What makes Sylvia's life story so remarkable is the fact that she has been working in coal mining for the last 25 years. She entered mining while it was still illegal for women to do manual labour. Sylvia was part of an experimental group of women recruited by SASOL in anticipation that the laws prohibiting women to work on mines would be revoked. Sylvia Dawson was the first female dragline operator in the world. When recalling the early days as being one of the first women in coal mining she humorously says that: "I chewed more rocks on that mine than I ever hauled coal".

Sylvia says that she never thought she would end up working in mining. She initially wanted to enter military service or the police force after matric, but her father refused. Her mother wanted her to become a nurse, but she did not consider herself the "care taker" type. It was her dream to become a game ranger, but now she thinks she would have been "too soft" to do the job. She describes herself as someone with a "soft, small heart". She says that she would not be able to do all the things she did as a child when she was still a "tomboy", because now she has become a real "girl". She is now 48 years old. Sylvia has been married for 28 years and has two grown sons. She works as a Control Room Operator.

The findings are summarised in Figure 4.5:

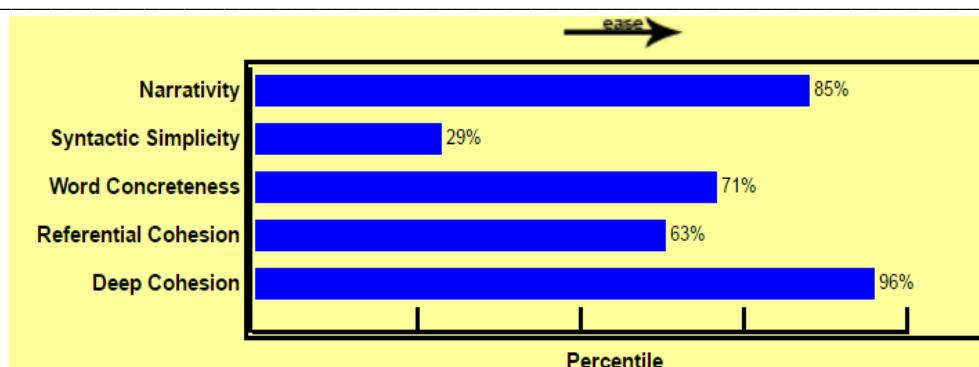


Figure 4.5: T.E.R.A graph: Biographical text Module B Faculty of Arts

This text scored 85% in narrativity, which was to be expected as it is Sylvia's life story. Usually, the more story-like a text, the easier it is to read. It scored 29% in syntactic simplicity meaning that the text does contain complex sentences. With a score of 71%, many words in the excerpt are concrete. Referential cohesion is 63% indicating that there is overlap between ideas, words and sentences. Deep cohesion is very high – 96% suggesting more explicit causal relationships as needed by the text. The Flesch-Kincaid grade level measured at grade 7, which means that this text is suitable for readers with a grade 7 reading grade average. The graph shows that this biographical story-like text should be easily read and understood by university students. Many of the words are concrete, there is an overlap between ideas and all the information in the text is very well related. For a university student there should be no problem with reading comprehension. In the focus group, students mentioned that they enjoyed reading some of the texts described in Module B. With this lower reading grade level, it is logical that they would be able to better comprehend this article, and might even have enjoyed reading it.

Module B task analysis

The task type, content, format and lecturer's purpose for the task are summarised in Table 4.36:

Table 4.36: Specifications of task in Module B: Faculty of Arts

Appendix:	E
Type of task:	Essay
Content tested:	Study units 1, 2, 3 and 4
Memorandum / Rubric:	Rubric
Total marks:	Technical prerequisites: 50 Content: 50
Individual work / Group work:	Group work: 3-7 members
Lecturer's purpose for the task:	"Learning happens in groups. You will never work in isolation in the workplace. Students need to learn skills to manage group work in preparation for the future. When they discuss the

issues of the essay with each other, learning occurs. I think they engage with the text and learn from each other in this way.”

The instructions for the essay were given as follows:

- *Read the following life story of a South African woman’s experience of working in the mining industry. Thereafter, analyse her story in terms of the sociological imagination and the social institutions that influenced her.*
- *I want you to use your sociological imagination to examine the interconnectedness between social institutions and this woman. Remember to include Mill’s (1959) ideas (thus, personal troubles, social issues, biography and history) in your analyses.*

The technical specifications included elements like page numbers, headings and referencing. A thorough rubric was given and it was very clear exactly what was expected of students. According to the rubric, the lecturer considered a number of aspects when marking the content, for example if the content discussed in the essay was relevant to the question, if the main issues were all addressed, the coherence of the essay and if the group came to new insights.

Based on the instruction and the listed aspects that were to be dealt with in the essay content, the researcher analysed the essay by means of the Umalusi typology presented in Table 4.37:

Table 4.37: Analysis of the task in Module B: Faculty of Arts

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge	Easy	Adhere to all technical specifications
Define	Moderate	Medium content; Basic terms understood & explained
Know and use appropriate vocabulary		
2. Comprehension (Understanding)	Moderate	Counter-intuitive relationships; give examples, explain, draw inferences from a text
Regarding information gathering: find own 4 sources		
Regarding use of knowledge: compare – examine interconnectedness (...between social institutions and this woman)	Difficult	Identify principles which apply in a novel context; explaining; more complex reasoning regarding to understanding and explaining, motivate inferences or predictions made, using information from the text to support the position

3. Application Interpret and apply knowledge Decide on the best way to represent data to create a particular impression (<i>coherence of argument</i>)	Moderate Difficult	Draw information from given text, construct ideas Collect information from available texts to support a particular position/opinion and re-present the position in own text
4. Analysis & problem solving Research and investigate information Using higher level cognitive skills and reasoning Non-routine problems based on real contexts	Moderate Difficult	Investigate; compare Complex abstract representation; referring to combination of concepts; interpreting; report on; debate; using higher level cognitive skills and reasoning
5. Evaluation & syntheses (Creation) Making judgment (evaluate), critique and recommend by considering all material available. Construct new ideas, synthesise, formulate new ideas	Moderate Difficult	Substantiate an opinion; involving synthesis; critical argument; novel context Writing a complex critique with insights

This task involved five different levels of cognitive demand as well as difficulty levels ranging between easy, moderate and difficult. Therefore, this task can be considered challenging. As this lecturer mentioned in the interview, throughput figures were important in her module and she was under pressure to get as many students as possible to pass the module. With the task itself being challenging, the students worked in groups. Her motivation for the group work was that students can learn from each other as they work together on the essay. The lecturer also set the rubric in such a way that the technical aspects of the essay counted 50% of the marks. So, a group could get half of the marks if they had included, for example, a cover page, table of content, and page numbers, to name a few technical specifications. So even though this is a challenging task which could engage students in reading and discussing the relevant topic, the marking scheme and the fact that they worked in groups, were both loop holes with which students could have passed the task without going through the relevant steps which would have helped them to grow in their academic reading skills.

4.3.2 Faculty of Natural Sciences

Semi-structured interviews were held with the lecturer of Module A (LMA) and lecturer of Module B (LMB) within this faculty. One focus group interview was also conducted (cf. section 3.3.5.2). After the data was transcribed, the analyses took place. In this faculty the document analyses were completed on two textbooks (cf. Table 3.4) with the Coh-Metrix T.E.R.A software (cf. section

3.3.7.2). As part of the document analyses, two tasks of Module A were analysed and one task of Module B. The analyses were done by means of the Umalusi typology (cf. Table 3.5).

4.3.2.1 Semi-structured interviews and focus group interview

The researcher gathered information about students' reading abilities, the textbooks and tasks of the two modules within the Faculty of Science. The purpose of talking to lecturers and students within this faculty enabled the researcher to gain insight into their points of view and to discover themes emerging from the qualitative data of this faculty.

4.3.2.1.1 Reading abilities of the reader (i.e., student)

In this category, remarks of the two lecturers are presented in terms of their impression of the reading abilities of their students and whether they thought students read the textbook. During the focus group interview, the participants were also asked to comment on their own reading skills and whether they were coping with the reading of their prescribed textbooks in the two modules.

Lecturers' perspective: The lecturer of Module A mentioned that her students seemed to struggle with reading instructions:

- *I find that students **cannot read and follow instructions** as given by the programming language, such as JAVA. That often frustrates me. LMA*

This might be an indication of students' poor reading abilities in the context of Module A. The lecturer of Module B (LMB) indicated that his students' reading abilities were not on par. He did not think students referred to the textbook for help:

- *I think no student goes to any textbook for help when they struggle with something. It is not in their **frame of reference**. They might be **lazy** to read because it **takes a lot of time** for students as their reading ability is not what it is supposed to be. LMB*

Students' perspective on their own reading abilities: The participants of this faculty commented that they do not really read the text sections of their textbooks. When they opened their textbooks, they just looked at the examples of the calculations that they had to do:

- *Only when we do a calculation we look at the textbook but it is **not needed to read** anything else in the textbook.*
- *I also just look at the **formula and calculation** itself.*
- *...there are examples you can read, but I would **rather practise** the calculations*

The participants seemed apathetic about their reading abilities. From the discussion it became clear that this group thought that reading was not an important skill in these modules – they just had to understand how to do calculations and programming and to them reading did not play a part in this process:

- *Reading is **not the problem**.*
- *I think it is more about understanding. It **does not matter how well you read**.*
- *...reading speed does not have anything to do with it. You have to read with understanding. It is not like History that you have to read and learn. **It is more about understanding and application**.*

Towards the end of the focus group, the participants made additional comments about reading a textbook. They came to a conclusion that time constraints were the biggest reason behind them not reading a textbook intensely:

- *I think the biggest reason why we do not read the textbook intensely is **time**. We do not have enough time to systematically work through the textbook and read it in detail.*
- *...we have **many other modules** to do.*
- *I think it is much **quicker when someone tells you something**, than when you have to read a whole paragraph in detail. **It takes long to read, reread** and try to make sense of everything. I think all of us will pass just with the textbook, but it will just **take too long**.*

Consequently, it can be noted that the two lecturers interviewed, were of the opinion that their students did not consider their prescribed textbook as valuable sources of content. One of the lecturers commented that the reading of a textbook was not in the students' "frame of reference" and the other noted that they will only read if all else fails. This indicates that the lecturers seem to have a hunch that their students seemed to want quicker alternatives to reading the textbook. This hunch was confirmed during the focus group interview. A student commented that it was quicker when someone explained the content to you and that reading was a slow process. This comment, together with the comment on time constraints (being the biggest reason the students gave for not reading the textbook), may point to the students' reading speed being too slow for the reading demands of their modules. Reading motivation also came to the fore. According to the lecturers, students seem unmotivated (lazy) to read. Students however, expressed that they did not deem reading important as they had to understand how to do calculations and use computer programming language, and for that they thought they just needed to look at the examples without reading the text. From their perspective they did not have to be motivated to read because they did not see the value of reading the text before or after an example of a calculation. The lecturers were of the opinion that reading the textbooks could aid students in their understanding while the students seemed ignorant of this fact.

4.3.2.1.2 Texts used in modules

Both lecturers prescribed one academic textbook for their module. During the interviews they commented on the need for the textbook and whether they thought it suitable for first year

students. The students also discussed the prescribed textbook and their use thereof during the focus group interview.

Lecturers' perspective: Both lecturers expressed the need for the prescribed textbook in their module:

- *This is the **only textbook** that directly correlates with the outcomes of this first year module. LMA*
- *They **definitely need the textbook** as they build from easy instructions to harder ones. They have to have correct foundations. The textbook does this perfectly with examples. **I like the order of the content** in the textbook. I refer to the textbook during every class and on the slides with specific page references. LMA*
- *It is the only textbook available about the subject which is **specifically suited** for 1st year students. LMB*
- *The **textbook is support** for that which I have done in class. LMB*

LMA and LMB were of the opinion that the textbooks were on a first year student's level:

- *I think the vocabulary and language are **suitable** for 1st year students. I do not think it is difficult. LMA*
*(The textbook)... is **specifically suited** for 1st year students. LMB*

LMA remarked however, that students did not seem to be using the prescribed textbook:

- *I truly experience that students **will not go to the textbook** to look for any answers. They will come and ask me first, or rather go and ask other students. The textbook is the place a student goes to, **if ALL else fails**. LMA*

Students' perspective: The participants did not find the textbook of Module A difficult:

- *It is **easy to read** this textbook.*
- *Here and there is a difficult term but overall I **do not find it difficult to read** the textbook.*

Except for one participant, the rest of the focus group indicated that when they did not understand something, they would first consult the textbook of this module and then look on YouTube or ask the lecturer:

- *I'd also **first go to the textbook** and if that does not help me, I'd go to the **lecturer**.*
- ***YouTube** is an option but only for programming.*

Only one of the participants bought the textbook of Module B. According to him the textbook was not difficult to read:

- *I found the English descriptions useful when I needed to understand a calculation. **It is not difficult**. You just have to **sit down and read** with insight then you will understand what is going on.*

The other participants used another student's textbook in class when needed. They also made contact with a peer who made extensive notes during class time. She was prepared to share her notes with these textbook-less participants:

- *...and then we **get the notes** from this intelligent girl in class.*
- *She actually makes notes of the textbook because the lecturer discusses the textbook in class. Her **notes are more concise**.*

It is noteworthy that this student seemed to hold a peer's notes in higher esteem than the textbook. Thus, these students preferred quicker access to specific information as opposed to reading the textbook themselves.

Slides were another type of text discussed during the interviews and focus group interview (cf. section 3.3.5.2). During the interviews and focus group interview, lecturers and students elaborated on this topic in the context of Modules A and B. Questions centred on whether the lecturers used slides and their rationale for using them. During the focus group discussion, questions were asked to find out if students made use of the slides.

Lecturers' perspective: LMA made use of slides to help her students:

- *Students, who struggle with the language of the textbook, use my **slides to help them**.*

Slides are not used at all by LMB:

- *No. I do not use slide shows in general. The students are supposed to use the textbook...In the ideal world students would **read the textbook before they come to class** to prepare themselves. Unfortunately I do not think students prepare for classes. The students solely rely on that which they hear in class and some students just attend every third class.*

Students' perspective: Students commented that they used the slides of Module A:

- *We **do not need it** (the textbook) for classes as the lecturer makes slides for every class. It is only for tests that we use the slides together with the textbook. She refers to the textbook in the slides.*

In conclusion, it seems as though the slides were used extensively by the students. Lecturers prescribed textbooks and deemed them to be very important for the mastery of the content even though they knew that students struggled with reading the textbook. Lecturers deemed the textbooks to be important while the students found other ways to get the content of the module, namely on the slides for Module A and in the lectures and notes of a peer for Module B. In this faculty the students and lecturers shared the opinion that the textbooks were suitable for use by first year students. Students reported that they did not struggle to read the textbook of Module A and many of the participants in the focus group interview did not even own the textbook of Module

B. Students within this faculty indirectly expressed their need for shorter and more concise texts than the textbooks.

4.3.2.1.3 Tasks

Tasks given as part of the participation marks were discussed during the interviews and focus group. The lecturers elaborated on the purposes of the tasks and the students were asked to discuss their experiences of the tasks.

Lecturers' perspective: LMA explained that her module has a theoretical and a practical component. In this module students learn a computer programming language. She tests the theoretical component with a class test where the students have to do the programming on paper. She purposefully included pen and paper tests and gave the following reason:

- *When they (students) have to programme in future, they have to sit down and write an algorithm, and for that they need the theory and have to use pen and paper. **The class tests are a good way for them to learn this.***

Thereafter the practical task is completed where students receive instructions and have to do the programming on the computer during a scheduled session. She made the following comment on the two test formats:

- *Students **struggle with the paper based tests**, but they can answer the same questions much better if they write the program on the computer. The reason is that they can test the program they have written on the computer and correct the mistakes. On paper this is not the case.*

According to LMB, the students wrote a class test once a week. The students were aware of the content of the test and they wrote it during a tutorial class. This entailed that a lecturer was present in this session. He explained the content of the test to students and they then had to complete the class test. They were allowed to use their textbooks for the applicable test and the lecturer was also available for additional support. The purpose of the tests is to:

- *... force students to **work through the content**.*

The lecturer made the following comment about the two groups of students he observed during a tutorial class test:

- *The diligent student comes prepared and is able to write the test immediately. The **lazy student hopes someone will explain** it to him/her and they do badly.*

Students' perspective: The students experienced the tasks of both modules as difficult:

- *This module (Module A) **is difficult** for us because none of us had computer programming in the past.*
- *You can use it (textbook Module A) during the practical but it would **take very long** and you only have two hours.*
- *We are still **uncertain** (about the practical tasks of Module A), so we have to read the textbook. If you are very good at programming, you will not need the textbook.*
- *On Module B's task: It is nothing like that which we did at school. We **do not understand** it well.*
- *He (LMB) tells us what would be in the test but we **do not necessarily understand** because **we do not make enough notes in class** about the examples he's done.*

Throughput figures: The compilation of task marks was done to calculate a participation mark for students (cf. section 3.3.5.1) which influenced throughput figures. The lecturer of Module B commented on the pressure of good throughput figures and he made the following connection:

- *I am of the opinion that lecturers do not pressure students to struggle with the textbook on their own, because **all lecturers are under pressure to have a good throughput rate** of students in their modules. As a result, **the lecturers take on more and more responsibility and the students take on less and less**. That negatively impacts the way students work on their own and engage with their textbooks.*

Upon critically reflecting on this data segment, a number of issues stood out. In contrast to the lecturers' opinions, students were of the opinion that the textbooks were not difficult, but they struggled with the tasks. One wonders if they would have found the tasks more manageable, if they read the text preceding or following the examples of calculations or programming in the textbooks.

It is interesting to note that students attribute the fact that they "struggle" or did not "understand" tasks to factors such as the fact that they did not have previous experience with the subject matter of Module A or that they did not make enough notes during Module B's lectures. Lack of reading the textbooks or their own reading abilities were not mentioned as reasons for struggling with tasks. Lecturers were of the opinion that the students needed to read the textbooks to be able to complete the tasks while the students did not think that the reading of the textbook was imperative. For example, the purpose of the tutorial class task within Module B, was to "force students to work through the content (of the textbook)", but as many of the students who took part in the focus group did not even have their own textbook, it seems as though the lecturer did not achieve his purpose. Students, on the other hand, did not make a connection between the

fact that the textbooks might have helped them to understand better and have less of a struggle with tasks.

The comment of LMB that one group of students was “lazy” to prepare for the tutorial class test links with a student’s comment that the textbook “takes too long”. They seem to constantly be on the lookout for other information sources that would help them with tasks. They used sources such as class notes, peer explanations or explanations from the lecturers themselves as these sources provided to the point information on task topics.

The comment on throughput figures can be viewed from different angles. According to LMB, the students did not work independently or read their textbook because of lecturers taking on much of the responsibility by, for example, compiling slides. He attributes this to lecturers wanting good throughput figures. He did not make any slides available and his purpose for the test was to “force” students to read the textbook before they would be able to complete the test. Even in the absence of slides, many of the students who took part in the focus group found alternative sources of information and still did not read the textbook. So even though the lecturer planned to facilitate self-directed learning, it still did not lead all students to reading the textbook and working independently. They seemed to ask for help from others as a strategy to complete the task. From a lecturer’s perspective it seems as though students are not taking enough responsibility by reading textbooks and preparing for tasks whereas students think they do take responsibility by looking for and using alternative “texts” that suit their preferences.

4.3.2.2 Document analyses

Only one textbook was prescribed in Module A and one textbook in Module B and two tasks were analysed within Module A and one task within Module B. As with the Faculty of Arts, the document analyses are presented by Module. The textbook is dealt with first followed by the task.

4.3.2.2.1 Module A

Module A prescribed academic material

The lecturer of Module A chose this textbook as there was no other available that was aligned with the module outcomes. The following excerpt from the textbook (Deitel & Deitel, 2011:38) was inserted into T.E.R.A to analyse the “easability” and readability:

2.1 Introduction

This chapter introduces Java application programming. We begin with examples of programs that display messages on the screen. We then present a program that obtains two numbers from a user, calculates their sum and displays the result. You’ll learn how to instruct the computer to perform arithmetic calculations and save their results for later use. The last example

demonstrates how to make decisions. The application compares numbers, then displays messages that show the comparison results. This chapter uses tools from the JDK to compile and run programs. We've also posted Dive Into® videos at www.deitel.com/books/jhtp9/ to help you get started with the popular Eclipse and NetBeans integrated development environments.

2.2 Your First Program in Java: Printing a Line of Text

A Java application is a computer program that executes when you use the `java` command to launch the Java Virtual Machine (JVM). Later in this section we'll discuss how to compile and run a Java application. First we consider a simple application that displays a line of text. Figure 2.1 shows the program followed by a box that displays its output. The program includes line numbers. We've added these for instructional purposes - they're not part of a Java program. This example illustrates several important Java features. We'll see that line 9 does the real work - displaying the phrase `Welcome to Java Programming!` on the screen.

```

1 // Fig. 3.2: GradeBookTest.java
2 // Creating a GradeBook object and calling its displayMessage method.
3
4 public class GradeBookTest
5 {
6     // main method begins program execution
7     public static void main( String[] args )
8     {
9         // create a GradeBook object and assign it to myGradeBook
10        GradeBook myGradeBook = new GradeBook();
11
12        // call myGradeBook's displayMessage method
13        myGradeBook.displayMessage();
14    } // end main
15 } // end class GradeBookTest

```

Welcome to the Grade Book!

Fig. 3.2 | Creating a `GradeBook` object and calling its `displayMessage` method.

Figure 4.6: Example of image from textbook Module A Faculty of Natural Sciences

Figure 4.7 summarises the findings of the text analysis:

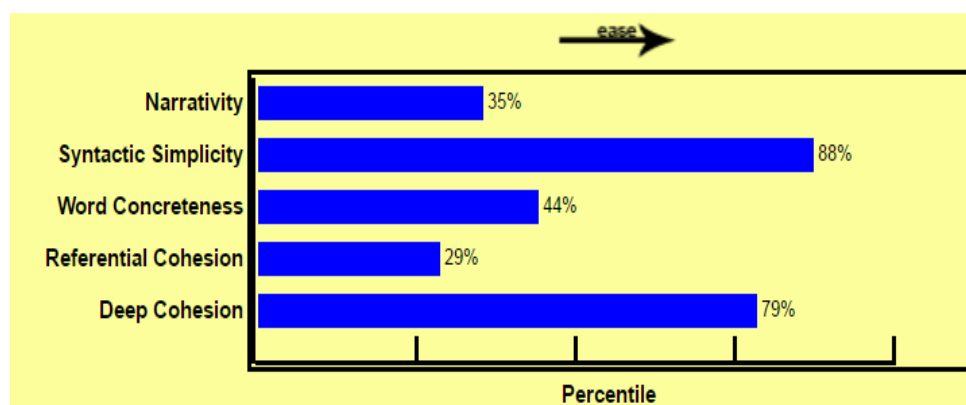


Figure 4.7: T.E.R.A graph: Textbook Module A Faculty of Natural Sciences

As the textbook is expository, a narrativity score of 35% can be expected. The analysed passages scored high in syntactic simplicity, which is an indication that the textbook has simple sentence structures which makes it easier to read and understand. It has low referential cohesion (29%)

indicating little overlap in words and ideas between sentences. These cohesion gaps require the reader to make inferences which can be challenging without prior knowledge. The deep cohesion measured 79%. There are relatively more connecting words for example “We begin...” and “We then present...” to help with clarification and because of this support, comprehension is aided. The Flesch-Kincaid grade level measured at grade 9.

The lecturer thus correctly assumed that this textbook should not be difficult for first year students. The average reading level of a first year student should be grade level 13. The average reading grade level of these participants was grade level 7 (cf. Table 4.22). Even though it still falls below the reading grade level 9 of this textbook, the students indicated that they did not find the textbook difficult to read (cf. section 4.3.2.1). This is possibly due to the high percentage of syntactic simplicity and deep cohesion.

Module A task analysis

Task 1: The task type, content, format and lecturer’s purpose for the task are summarised in Table 4.38:

Table 4.38: Specifications of task 1 in Module A: Faculty of Natural Sciences

Appendix:	F
Type of task:	Class test
Content tested:	Section of the textbook
Memorandum / Rubric:	Memorandum
Total marks:	40
Individual work / Group work:	Individual
Lecturer’s purpose for the task:	LMA wanted to test the knowledge of the students

The lecturer of this module explained that although this module is about computer programming, knowledge about algorithms is very important. With the pen-and-paper class test she wanted to get students into the habit of planning their algorithms before they did the programming on the computer.

An analysis of the class test by means of the Umalusi typology is reported in Table 4.39:

Table 4.39: Analysis of task 1 in Module A: Faculty of Natural Sciences

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Recall and recite knowledge Remember, define and describe basic facts Straight recall Know and use appropriate vocabulary	Moderate	Define terms, give the purpose of methods, name and describe
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context	Easy Difficult	Modify instructions More complex reasoning regarding to understanding and explaining – students needed to draw a diagram for an algorithm

This class test tested only if the students could recall facts they learnt from the textbook. The majority of the questions fell into the easy and moderate difficulty level and only the last two questions can be categorised as difficult. Students indicated during the focus group interview that they read the textbook in preparation for the theoretical test and they did not comment on the difficulty level of the theoretical test, just that they needed to study definitions by heart.

The students achieved an average of 41.9% for this class test. With the textbook itself having a reading grade level of grade 9 and the students averaging a reading grade of grade 7, it can be assumed that the textbook itself did not pose many reading challenges for the students. This was confirmed during the focus group interview. The comment of the lecturer that the students did not fare so well in pen-and-paper tests as they are unable to test and correct their algorithm on paper is a possible reason for the low scores.

Task 2: The task type, content, format and lecturer's purpose for the task are summarised in Table 4.40:

Table 4.40: Specifications of task 2 in Module A: Faculty of Natural Sciences

Appendix:	F
Type of task:	Practical task
Content tested:	To test if students can programme a certain algorithm
Memorandum / Rubric:	Memorandum
Total marks:	40
Individual work / Group work:	Individual
Lecturer's purpose for the task:	To test if students can apply their knowledge of computer programming.

The purpose of this module is to teach students how to do computer programming by means of a certain programming language. Students have to create a working computer programme by using the programming language. The students received the following problem statement:

A company has an unknown number of employees that need to receive salaries. Write a program that will receive the name, hours (regular and overtime) worked and level of employment for each employee, calculate the salary for each and provide a cost to company total at the end.

The lecturer designed the task in such a way that the students were guided in the steps they needed to follow to solve the problem. The task was analysed with the Umalusi typology. The results are reported in Table 4.41:

Table 4.41: Analysis of task 2 in Module A: Faculty of Natural Science

Type of cognitive demand	Difficulty level	Explanation and examples of level
<p>3. Application</p> <p>Interpret and apply knowledge</p> <p>Candidates to decide for instance on the most appropriate procedure to solve the question and perform preliminary calculations</p> <p>Select the most appropriate information from options</p> <p>Decide on the best way to represent data to create a particular impression</p>	Moderate	Draw information from given text, construct ideas
<p>4. Analysis & problem solving</p> <p>Using higher level cognitive skills and reasoning to solve problems</p> <p>Being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem</p> <p>Non-routine problems based on real contexts</p>	<p>Easy</p> <p>Moderate</p> <p>Difficult</p>	<p>Simple process in known or practiced context but with some variation which prevents the answer from being strictly formulaic</p> <p>Solve</p> <p>Complex abstract representation; referring to combination of concepts; using higher level cognitive skills and reasoning; being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem</p>

As this typology indicates, this task tested the application and problem solving abilities of the students. This test engaged the first two cognitive levels and the practical task engaged the third and fourth cognitive levels. These cognitive levels, together with the difficulty levels, shows that students needed a certain level of understanding of the programming language to complete this task. The students were allowed to use their textbooks during this task but according to participants of the focus group, this would not have worked as they felt they had too little time to use the textbook. The average reading speed of this group of students was 189.1 words per minute (cf. Table 4.22). On a first year reading level, it is suggested that they need to be able to read at 280 words per minute (cf. Table 4.19) and this task required the ability to read quickly. Their slow reading speed possibly deterred them from using their textbooks during the task. Their average mark for this task was 53.5% (cf. Table 4.23), proving the lecturer correct in her comment that the students did better in the practical task than the class test. A possible reason according to the lecturer was that students could test their algorithms while they were solving the problem on the computer.

4.3.2.2 Module B

Module B prescribed academic material

According to the lecturer of Module B, the prescribed textbook is the only suitable one available for his module. Paragraphs from the textbook (Giordano *et al.*, 2014:60-61) were inserted into T.E.R.A to analyse the “easability” and readability:

For our purposes we define a mathematical model as a mathematical construct designed to study a particular real-world system or phenomenon. We include graphical, symbolic, simulation, and experimental constructs. Mathematical models can be differentiated further. There are existing mathematical models that can be identified with some particular real-world phenomenon and used to study it. Then there are those mathematical models that we construct specifically to study a special phenomenon. Figure 2.4 depicts this differentiation between models. Starting from some real-world phenomenon, we can represent it mathematically by constructing a new model or selecting an existing model. On the other hand, we can replicate the phenomenon experimentally or with some kind of simulation.

Regarding the question of constructing a mathematical model, a variety of conditions can cause to abandon hope of achieving any success. The mathematics involved may be so complex and intractable that there is little hope of analysing or solving the model, thereby defeating its utility. This complexity can occur, for example, when attempting to use a model given by a system of partial differential equations or a system of nonlinear algebraic equations. Or the problem may be so large (in terms of the number of factors involved) that it is impossible to capture all the

necessary information in a single mathematical model. Predicting the global effects of the interactions of a population, the use of resources, and pollution is an example of such an impossible situation. In such cases we may attempt to replicate the behaviour directly by conducting various experimental trials. Then we collect data from these trials and analyse the data in some way, possibly using statistical techniques or curve-fitting procedures. From the analysis, we can reach certain conclusions.

Figure 4.8 summarises the T.E.R.A analysis:

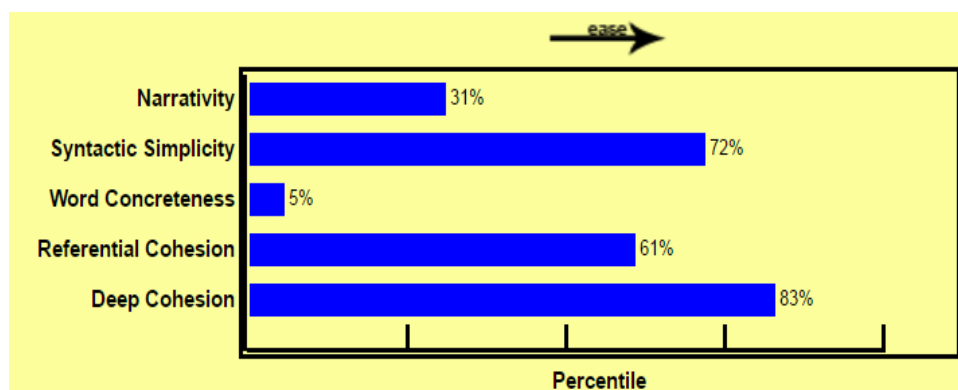


Figure 4.8: T.E.R.A graph: Textbook Module B Faculty of Natural Sciences

The analysed section of text indicates that the text has a large number of abstract words as the word concreteness scored a mere 5%. Words such as “nonlinear algebraic equations” and “experimental constructs” are examples of these abstract words. The text is high in syntactic simplicity meaning that there are simple sentence structures and the deep cohesion also measured 83%. This is an indication that in this textbook, the ideas and constructs are tied together in such a way that it aids comprehension. The Flesch-Kincaid grade level measured at grade 15.

The mathematical nature of this module would entail technical subject specific vocabulary. It is clear that the authors kept this in mind as they employed syntactic simplicity and high levels of referential and deep cohesion. The average reading level of these participants was grade 7, so it can be assumed that they might have been unprepared for the reading demands of a textbook measuring at reading grade level 15. The opinion of the students that they did not have to read the paragraphs of the textbook, but only the examples of calculations, points to transitional challenges. The students seemed to think that they should only be able to “do” a calculation as they were used to at school. However, they also need to understand why a calculation “works” in a certain way, which is presented not in the examples of calculations but in the discussion sections in the textbook.

Students who only read the calculations in their mathematical textbook, also points to a learned helplessness, where students are not actively in pursuit of knowledge, but wait for the teacher to supply all needed information. Some of the students also mentioned that they get the notes made by a class mate, and that these notes are more concise. This might indicate that some students were frustrated by reading the textbook because of the textbooks dense language structures (cf. Figure 4.8). This might have contributed to the students looking for alternative texts to read, such as notes compiled by others. As this lecturer did not provide slides, the class notes were the only other source of “text” on the content of the module, available.

Module B task analyses

Task: The task type, content, format and lecturer’s purpose for the task are summarised in Table 4.42:

Table 4.42: Specifications of task in Module B: Faculty of Natural Sciences

Appendix:	G
Type of task:	Tutorial class test
Content tested:	A section of the textbook
Memorandum / Rubric:	Memorandum
Total marks:	10
Individual work / Group work:	Individual work but as it is a tutorial class, students were allowed to help each other and help was also available from the lecturer present.
Lecturer’s purpose for the task:	“We force students to work through the content.”

Students had to provide definitions and they had to describe a process in five steps. Based on these instructions the tutorial class test was analysed by means of the Umalusi typology presented in Table 4.43:

Table 4.43: Analysis of the task in Module B: Faculty of Natural Sciences

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Identifying from text Know and use appropriate vocabulary	Moderate	Medium content; read and locate; briefly define a term; name and match
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context	Difficult	Identify principles which apply in a novel context; more complex reasoning regarding to understanding and explaining

3. Application Interpret and apply knowledge Candidates to decide for instance on the most appropriate procedure to solve the question and perform preliminary calculations	Easy Moderate	Candidates know what process is required to solve the problem from the way the problem is posed. All of the information required is immediately available. Draw information from given text, construct ideas
4. Analysis & problem solving Using higher level cognitive skills and reasoning to solve problems Being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem	Easy Moderate Difficult	Simple process in known or practiced context but with some variation which prevents the answer from being strictly formulaic Solve Being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem

Although a student could obtain a maximum of 10 marks for this tutorial class test, four types of cognitive demands were tested. Students had to have conceptual knowledge about aspects such as a “homogeneous system of linear equations” (cf. Appendix G) and the students had to comprehend how this concept links with others. Thereafter, students had to apply their knowledge and solve problems for example, “to prove that a linear combination of solutions of a homogeneous system is also a solution” (cf. Appendix G). This tutorial class test can be categorised as difficult. The support measures the lecturer put into place was the test setting– a tutorial class where help was available and the fact that the students could have used their textbooks during the class test.

During the focus group interview the students commented that this was a difficult module with difficult tasks as every calculation had its own formula. As the tutorial class test was informal and students could ask for help from the lecturer or a peer, some students were able to complete the activity without their own textbook. They were unsure whether the use of the textbook during tutorials would guarantee that they could answer all the questions. It seemed as though their main source of help came from one another and the explanations of the lecturer.

4.3.3 Faculty of Education Sciences

In this faculty qualitative data were gathered by conducting a semi-structured interview with the lecturer of Module A (LMA) and another with the lecturer of Module B (LMB). One focus group interview was held with a group of students within this faculty. The data were transcribed and

analysed. Document analyses were completed on two textbooks (cf. Table 3.3) by means of the Coh-Metrix T.E.R.A software (cf. section 3.3.7). One task in each module was also analysed as part of the document analysis by making use of the Umalusi typology (cf. Table 3.4).

4.3.3.1 Semi-structured interviews and focus group interview

By means of the interviews held within this faculty, the researcher gathered information about the students' reading abilities, the textbooks as well as one task completed within each module.

4.3.3.1.1 Reading abilities of the reader (i.e., student)

This data set presents the analyses of the reading ability comments of the two lecturers and the students.

Lecturers' perspective: The lecturer of Module A stated that he was unable to comment on his students reading abilities:

- *I do not really have an idea of how they read, or if they find it difficult or not. I do not get any feedback...*

Module B's lecturer was of the opinion that students lacked the needed reading abilities:

- *There are definitely **many problems with reading**, (and) understanding...*
- *I think **reading with comprehension is definitely a problem**.*
- *It is shocking that the students do not have those skills (reading and summarising information). And, **they read so slowly**.*
- *I am unsure if students who seem to struggle, **do not know where to get help**, and if they are just **lazy**.*

Students' perspective on their own reading abilities: The students in this faculty commented that they found the reading of Module A's textbook a slow and difficult process:

- *It **takes me very long** to read something.*
- *With this module I read and read, and **I still don't understand**.*

They also commented that their reading abilities were lacking as they struggled to cope with the academic English of Module A's textbook:

- *I **can't read** the textbook.*
- *...there are lots of **big English words** we do not know the meaning of. **We need help** because **we only know lower level English**.*
- *The English of the textbook is so formal, so I **do not have time to figure out** what is going on.*

These comments point to the lack of general academic vocabulary as well as the vocabulary of the discipline of the module. An example of general and disciplinary specific vocabulary is evident

in the phrase, “Adults and children are confronted by a tremendous, often quite disorderly diversity of values” (Landsberg *et al.*, 2013:32). “Confronted” and “tremendous” are examples of general vocabulary and “disorderly diversity of values” is an example of disciplinary specific vocabulary.

The researcher then asked students to elaborate on the strategies they used to understand the academic English of this textbook:

- **Google** is your best friend.
- Yes, I also try **Google** translate.
- I am **not going to buy a dictionary**, just for this module.
- I **do not go to trouble to look up words**. If it is important the lecturer will explain it in class.
- In our hostel **we also help each** other and we use **electronic dictionaries** because we have internet.
- When I read, I realise I **have just read without remembering anything**. Then I just skip that part and go to the next section.

One student admitted that her English reading abilities were on a low level. The average reading grade level of this group of students was grade 5 (cf. Table 4.22), so the students were correct in thinking their reading fell below average as the needed reading grade level of a first year student is grade 13. However, they did not comment on what they were doing to improve their own reading skills. They knew that their vocabulary was one element holding them back, but they only seemed to implement quick solutions to try and overcome this problem, such as using Google as a source of reference.

Some students commented that they used electronic resources such as internet search engines and electronic dictionaries to clarify words. These electronic resources, like the mentioned Google Translate, do not always provide a correct answer. According to Groves and Mundt (2015:113), Google Translate “only calculates probabilities of various translations and... do not aim for word-for-word translations”. Thus, this resource does not specifically cater for queries in an academic subject specific context and might even provide students with incorrect translations of terms in the context of Module A. More worrying were the students who did not even try to clarify unknown words. They relied solely on the lecturer, “If it is important the lecturer will explain it in class”. This is an expectation rooted in the school environment, where learners are coached and prepared for exams by the teacher. The students thus have a learnt helplessness as they are in the habit of passively receiving needed information. It is also possible that these students felt so far out of their depth that they seemed to give up on employing strategies to read with comprehension. As one student commented, “We need help.” Module B’s lecturer also knew that help was needed

in terms of reading but she wondered if students did not know where to get help or if they were just “lazy” to find help. This again points to the learned helplessness of the students and to the fact that most of the reading support available at University X is not disciplinary specific.

4.3.3.1.2 Texts used in modules

There was one prescribed textbook in each module. Questions during the interviews entailed the suitability of the textbooks and whether or not students read the textbooks.

Lecturers’ perspective: The lecturers held different views about the importance of the textbooks in their modules. For the lecturer of Module A, the textbook was of cardinal importance:

- *You cannot make progress if you do not **engage with the textbook**. They (students) **have to read it**.*

The lecturer of Module B commented that the textbook was not entirely suitable for use in the module and only certain sections were important:

- *So I only used theoretical sections in this textbook, and then we **mostly do practical activities**.*

Both lecturers were of the opinion that the textbooks were not very difficult.

- *I do not think the **language (of the textbook) is too difficult**. LMA*
- *I think **the textbook is too easy** and not on the academic standard of a first year student at tertiary level. LMB*

However, the lecturer of Module A commented that the textbook might seem difficult as the field of assessment is new to the students.

- *The assessment concepts dealt with (in the textbook) are very **theoretical**, and I think that is what they (students) struggle with.*

The same textbook is also prescribed for first, second and third year students and according to the lecturer of Module A:

- *The textbook is prescribed for 3 years, so you can make the assumption that students **take 3 years to master all the content** in the textbook.*

Students’ perspective: During the focus group all the students agreed that they found the textbook of Module A difficult.

- *Yes, there are **difficult terms** we have never seen.*
- *I think the textbook of Module A is **way too complicated**. I do not think we have **to go into so much detail**.*
- *I **struggle** with the textbook of Module A because the **type size** is very small and it is full of very **big words**.*
- *There is **just a lot of writing** on each page.*

Even though students found this textbook difficult, they admitted to using the textbook often:

- *There (in Module A) we have to prepare for class beforehand and we **need the textbook** for that.*
- *Yes, he (LMA) gives us assignments in class we have to complete, like summarise the information and **that forces us to read.***
- *We always have to do something or **look up answers in the textbook.***
- *We work **from it (the textbook) every period.** We open our textbooks and he explains it.*

The researcher asked the students whether they thought that the frequent tasks (in the form of unannounced class tests), helped to improve their reading comprehension. One participant exclaimed:

- *No, I **do not like it** because of the language. It takes me very long to read something...*

Although students seldom read Module B's textbook, they found it easy to use:

- *We **do not open it a lot** because the slides are very complete. When we do read the textbook, **we remember** what was done in class and then you **quickly grasp the meaning.***
- *It is about everyday things, so you **read it much easier** than the textbook of Module A.*

The group of students who took part in the focus group interview, also had strong views about the necessity of buying academic textbooks:

- *Yes, I also felt that **I am not going to buy a textbook** because I can't read the textbook. Before exams, I just study the slides.*
- *We spend thousands of rands for textbooks but **we do not use them.***
- *I feel like there is **no direct link** between the textbook and the outcomes of the module (Module B).*
- *When you are new at university you buy all the textbooks because they are prescribed but **then we do not use them.***
- *I rather spend money and **buy notes** from someone...My roommate in the hostel shares with me and then **we buy notes together.***

At the time of the focus group interview, the students had been at university for seven months. They came to the above conclusion based on the use of textbooks during the modules they took in their first semester. It is worrying that their impressions of the role of a textbook seemed to have been shaped in a few months at University X. Students do not seem inclined to spend time finding relevant information in a textbook. With notes students can find the relevant information quicker and it is usually written in simpler language.

As with the previous two faculties, **slides** were another type of text discussed during the interviews (cf. section 3.3.5.2). In both modules slides played a role.

Lecturers' perspective: The lecturer of Module A compiled slides for his lectures although they were not very comprehensive:

- *I also make slides for the lectures. I tell students that my **slides are not comprehensive enough** to study from.*
- Slides played a major role in the context of Module B:
- *My slides are the **primary academic material**.*
- *I compile **very complete slides** which they have access to with **reference to specific page numbers**, and I also tell students which pages they need to study from for a test or exam.*
- *As I am of the opinion that the textbook is lacking theory, I do **give additional academic material**. I insert the information into my slides.*
- *Students react better to **visual** information (given on slides).*

Students' perspective: Although the lecturer of Module A mentioned that he made slides, the students did not refer to the slides at all during the focus group interview. To them only the textbook seemed to matter. In the context of Module B, students seemed very content with the comprehensive slides and made a connection between comprehensive slides and a good lecturer:

- *We do not open it (the textbook) a lot because **the slides are very complete**.*
- *I think it (the complete slides) is because **she is a very good lecturer**. She makes it (lectures) interesting.*
- *Maybe if the lecturer (of Module A) made the module more **enjoyable with some slides** that gives us something, it would be better.*

Upon critically reflecting, it is clear that the textbooks did not have the same importance in the two modules. The lecturer of Module A commented that students would not “make progress” without the textbook and students admittedly used Module A’s textbook, although they complained about the difficulty level. In the context of Module B, the slides were the primary academic material. The students clearly preferred the slides of Module B to the textbook of Module A. This preference extended to the opinion the students held of the lecturers.

The students seemed to think that the lecturer of Module B was a “good lecturer”, one reason being the slides she made available, while another student suggested that the lecturer of Module A should also make his module “more enjoyable” with slides. Students within this faculty seemed content with the tailor made slides of Module B, while they did not “like” the fact that they had to grapple with the textbook of Module A.

As was evident in the previous two faculties, students wanted specific, easily digestible, to the point information which was easy to read and comprehend and directly applicable to the tasks or

tests of the modules. They wanted to “enjoy” and “like” reading the prescribed texts. As this was not always the case, students seemed to look to lecturers to “fix” this “problem”. The majority of the students who took part in the focus group interview commented that they were not inclined to buy and use textbooks in future as they experienced the prescribed textbooks were not used extensively in their previous modules. This statement cannot be generalised to all first year education students, but it reveals the negative attitudes some students have towards textbooks. When first year students display such attitudes, the question can be asked if these students will reconsider using textbooks during their second or third year of study and beyond.

4.3.3.1.3 Tasks

During the interviews tasks were discussed. These tasks were given as part of the assessment that contributed towards the compilation of the participation mark (cf. section 3.3.5.1). The lecturers commented on the purposes and formats of the tasks and the students discussed the tasks from their point of view.

Lecturers’ perspective: The lecturer of Module A explained that he set unannounced class tests for three reasons:

- **To promote class attendance:** *I want to force students to **come to class**.*
- **To motivate students to come to class prepared:** *They did have access to my slides beforehand, so they could have **read through it**.*
- **To help students to work through the content:** *I also try to spread the assessment throughout the **content**.*

The lecturer of module B explained that the reason behind the task was to help students to focus during the lecture:

- *I try to include activities in each lecture because I find that they **do not pay attention** if they are not busy.*

She also set the task as a group activity as that would entail less marking because of the group’s size:

- *The group consists of 658 students, so the groups are large. That is why I make the assignments group work to **ease the marking burden**. The marking rubric is quite elementary to make the **marking process of the large group easier**.*

Students’ perspective: Students commented that they experienced the task of Module A as difficult:

- *We only get class tests about things we have to name and discuss which are **above our level**. We **do not understand** those terms.*

- *How can I answer a question about something I **do not understand**?*

Contrastingly, they found the task of Module B pleasing:

- *In module B, we **enjoy** the class activities...*

To summarise, the lecturers' purposes of the tasks differed. The lecturer of Module A wanted to motivate students to attend class, prepare for class and engage with the content of the task, while the lecturer of Module B mainly wanted to focus the attention of students during class. These purposes were reflected in students' comments on the tasks. They found the task of Module A difficult as it entailed reading the "difficult" textbook, while Module B's task was easier. This indicates a possible connection between the difficulty levels of the prescribed text and the experienced difficulty levels of the tasks.

The instructions of the tasks of Module A also seemed to be problematic, as a student commented that she does not "understand those terms". The discrepancy between the lecturers' and students' opinion of the textbook was highlighted by the comments. Especially with regard to Module A, the lecturer thought the textbook to be an essential aid to completing the tasks while the students seemed to experience the textbook as an obstacle, and used it rather reluctantly.

4.3.3.2 Document analyses

One textbook and one task was analysed in Module A and B. The document analyses are presented by module with the textbook analysis preceding the task analysis.

4.3.3.2.1 Module A

Module A prescribed academic material

One textbook was prescribed in this module. The lecturer commented that this textbook was prescribed for similar modules at other South African universities, and reasoned that this textbook was useful as it was the standard textbook for the module content. The following excerpt from the textbook (Landsberg *et al.*, 2013:32) was analysed by T.E.R.A to determine the "easability" and readability:

2.3 Moral confusion and uncertainty about values

The brave new world of the 21st century is an era characterized by production-orientated materialism and accelerated technological advance. The blossoming of the mass media, with specific reference to the Internet, television and cell phone technology, makes it possible to be instantly aware of what is happening in every corner of the earth, every moment of the day. The boundaries between peoples, nations, religions, value systems and lifestyles are fading. A cosmopolitan world order is in the making – including in South Africa

Adults and children are confronted by a tremendous, often quite disorderly diversity of values. Influences of the mass media; the advertising, fashion and entertainment world, and the world of high finance are more often than not in direct conflict with the values of traditional white and black cultures in South Africa. The continuous and overwhelming confrontation with a multiplicity of lifestyles and pluralistic values has confused the people of the country to such an extent that the moral fibre of society is fast disintegrating.

In Figure 4.9 the findings are summarised:

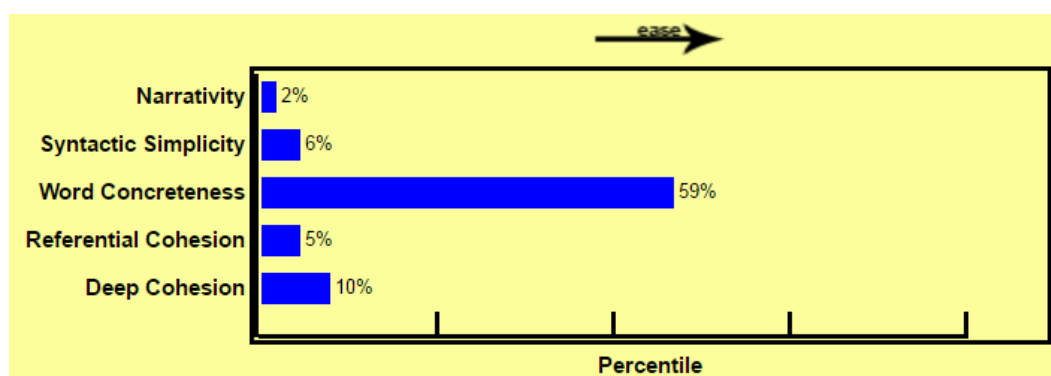


Figure 4.9: T.E.R.A graph: Textbook Module A Faculty of Education Sciences

The low scores of narrativity, syntactic simplicity, referential cohesion and deep cohesion indicate that the sentences are harder to process. The reader may have to infer the relationship between ideas and without sufficient prior knowledge the reader may not be able to read with comprehension. Word concreteness scored 59%, indicating that more than half of the words were concrete making the words easier to understand, for example the words “mass media” and “earth”. The Flesch-Kincaid grade level measured at grade 14.

This is a suitable textbook for university students as indicated by the Flesch-Kincaid level of 14. The lecturer assumed that the language was not so difficult but rather the abstract content of “values”, for example, that the textbook dealt with. As the word concreteness measured above 50%, his assumption was not totally off the mark, although the other components measured quite low pointing to the fact that the reader has to make connections between the concepts presented in the text. One of the reasons why the students found this textbook difficult to read with comprehension, could be because their own average reading grade level measured at grade 5 (cf. Table 4.22). The students also commented that they struggled to understand the words of the textbook, which points to the dense language structures of the textbook. Students also possibly lacked sufficient prior knowledge of disciplinary specific concepts.

Module A task analysis

Table 4.44 summarises the type, content, format and lecturer's purpose of this task.

Table 4.44: Specifications of the task in Module A: Faculty of Education Sciences

Appendix:	H
Type of task:	Class test
Content tested:	Section of the textbook
Memorandum / Rubric:	Memorandum
Total marks:	10
Individual work / Group work:	Individual
Lecturer's purpose of the task:	LMA wanted to improve class attendance, students' class preparation and the reading of the textbook.

There were only three questions in this test:

1. Give the meaning of an abbreviation.
2. What does it mean when a child experiences barriers to learning?
3. Explain the difference between remedial teaching and learner support.

Table 4.45 presents the analysis of the task by means of the Umalusi typology:

Table 4.45: Analysis of the task in Module A: Faculty of Education Sciences

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Recall and recite knowledge Identify, label, select, locate information Straight recall Identifying from text Know and use appropriate vocabulary	Easy	Very simple recall; identify specific data; tell; recite; list

Based on the Umalusi typology, this was an easy class test. Students had to answer the three given questions and could have made use of the textbook to do so. The students achieved an average of 33.4% for this task (cf. Table 4.23). It is difficult to understand how students could not locate the correct answers in the textbook as the questions were straight forward. Their poor average might be attributed to their unpreparedness for the reading demands of this textbook. It might also accentuate the comment made by a student that she did not know how she could answer questions about something she did not understand. The lecturer on the other hand, was of the opinion that the answers were in the textbook while the students did not know where to find them. The students' lack of vocabulary might have been one of the reasons why they seem to have struggled with this task (cf. 4.3.3.1.1). Another reason might have been students' lack of

knowledge about using, for example, a table of contents or an index to locate information they need. During the focus group interview one student commented that the “type size of the textbook was too small” and that there were not enough illustrations and graphic organisers. As a result, this student felt discouraged by “too much writing on a page” (cf. 4.3.3.1.1.2).

Module B prescribed academic material

Two paragraphs of the prescribed textbook of this module (Van Heerden, 2005:32) were analysed with T.E.R.A to determine if the lecturer’s comment that the textbook was too easy, was supported.

4.2 Understanding mental diversity

Is it possible to get beyond the conflict which diversity at times brings out? The straight-forward response is yes, if we focus on our personal strengths and the traits that make us unique, and we learn to accommodate strengths and traits that make others unique. Once we learn to appreciate diversity it often helps us also to deal better with change.

For a long time, psychologists and educators have been using “profile inventories” to measure personality factors, cognitive (thinking) abilities, personal motivation and how the individual manages change and conflict. More recent approaches also measure emotional intelligence, brain dominances and associated thinking, and communication style preferences. This professional trend indicates how important it is to focus on the unique traits of every individual and emphasises the importance of interpersonal behaviour and skills as well as communication between individuals across cultural and other divides.

Many years ago, Roger Sperry, a professor in neurology (science of the brain and nervous system), determined that the two halves of the human brain have different functions (Van Heerden, 2001) when he observed that surgically separating the two halves of the brain caused “disintegrated” behaviour. He further observed how removing different parts (in the case of tumours or epilepsy, for example) had different results and came to the conclusion that, unlike what had been believed up to that point, the various sections of the brain had particular tasks.

Figure 4.10 summarises the findings:

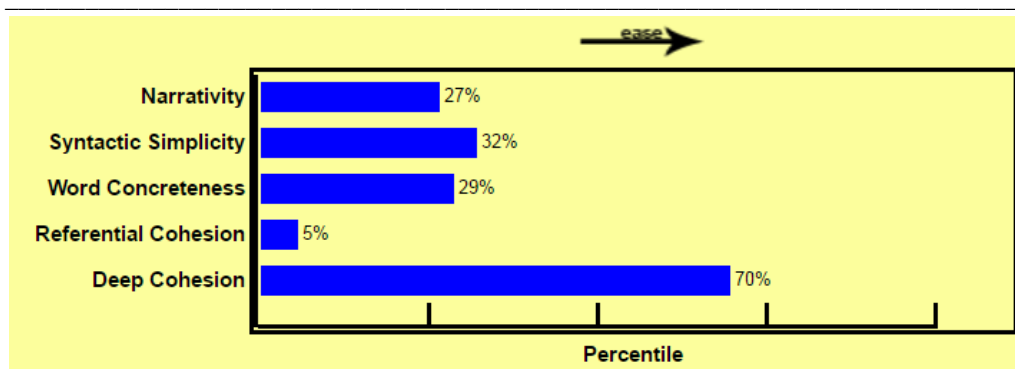


Figure 4.10: T.E.R.A graph: Textbook Module B Faculty of Education Sciences

What is notable from the graph is that the text scored rather low in narrativity, syntactic simplicity and word concreteness and very low in referential cohesion. This indicates that there are many abstract words and complex sentence structures. The 5% score of referential cohesion shows that there is little overlap between words and ideas between sentences. However, the deep cohesion scored 70% indicating that technical vocabulary is clarified. This can be seen in the additional phrase in brackets for example, “neurology (science of the brain and nervous system)” (Van Heerden, 2005:32). This phrase aids comprehension as the reader understands what neurology means. The Flesch-Kincaid grade level measured at grade 13 which means it is on the correct level for first year university students (cf. Table 4.20).

The lecturer commented that the sections she used from the textbook were “too easy”, while according to T.E.R.A software, the textbook measured at grade level 13. Students also commented that they found the textbook readable. The lecturer compiled comprehensive slides as her primary source of information, and chosen sections of the textbook were included in the slides. Therefore, the students did not in actual fact read all the chapters in the textbook, but only the sections of the textbook which were included in the slides.

Module B task analyses

Table 4.46 summarises the type, content, format and lecturer’s purpose of Module B’s task.

Table 4.46: Specifications of the task in Module B: Faculty of Education Sciences

Appendix:	I
Type of task:	Design a pamphlet
Content tested:	Twelve pages of the textbook
Memorandum / Rubric:	Rubric
Total marks:	10 (3 marks for content and 7 marks for presentation)
Individual work / Group work:	Group work

Lecturer's purpose for the task:

LMB wanted to help students focus during the lecture and wanted to gather participation marks with a low marking burden.

For this task students had to work together in groups to design a pamphlet that warned teenagers about the dangers of drug use. They had to read through twelve pages of the textbook on the subject, identify and summarise the important information and present it in a pamphlet format within sixty minutes. The rubric specified that the content totalled three marks and the presentation seven. Table 4.47 presents the analysis of the task by means of the Umalusi typology:

Table 4.47: Analysis of the task in Module B: Faculty of Education Sciences

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Identify, label, select, locate information Identifying from text Know and use appropriate vocabulary	Easy	Very simple recall; identify specific data; list
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context Regarding information gathering: change or match information	Moderate	Summarise a text

This task tested the students' conceptual knowledge as well as their comprehension on easy and moderate difficulty levels. According to the typology, this task cannot be considered difficult. Students had access to the twelve pages, they needed to read through them and summarise the information. This group of students' average reading speed was 175.41 words per minute (cf. Table 4.22) which is much slower than the suggested 280 word per minute (cf. Table 4.20) or the required reading speed of 220 words per minute (Meihuizen, 2017:4). The time constraint of 60 minutes could thus have been a problem for some students. However, they worked in groups and could have overcome this challenge by dividing the pages to be read.

When one looks at the rubric, the presentation of the pamphlet counted seven of the ten marks while the content only totalled three. Thus, students could have submitted a neat or well-designed pamphlet which lacked in appropriate subject content and chances are they would have received above 50% for the task. The fact that the content counted only 30% of the marks could have given students the idea that the content of the twelve pages was of less importance than the

visual elements of the pamphlet. It is clear that this task did not take a lot of time to mark as the rubric only had two criteria namely content and presentation, but the rubric might not have motivated all students to read the expected twelve pages of the textbook with comprehension.

4.3.4 Faculty of Economic and Management Sciences

Two semi-structured interviews were conducted. One with the lecturer of Module A (LMA) and one with the lecturer of Module B (LMB) within this faculty. One focus group interview was also held with some of the students enrolled in both modules. After the interviews the data were transcribed and analysed. The document analyses were completed on one textbook and one task per module. The Coh-Metrix T.E.R.A software was used to analyse the textbooks (cf. section 3.3.7.2) and the Umalusi typology was employed to analyse the tasks (cf. Table 3.5)

4.3.4.1 Semi-structured interviews and focus group interview

The purpose of the interviews was to gather data about students' reading abilities, the prescribed academic text of each module as well as a task per module. During the semi-structured interviews the discussion of these three topics enabled the researcher to gain insight into the lecturers' perspective and the focus group interview with students enabled insight into the students' perspective.

4.3.4.1.1 Reading abilities of the reader (i.e., student)

This section presents the analyses of lecturers' and students' comments on students' reading abilities.

Lecturers' perspective: Module A's lecturer commented that students achieve low marks in her module and she assumed that their poor reading abilities was one of the reasons:

- *I cannot understand why students do not do well in this module. There is nothing to understand. It is very straight forward. The students **have to read, remember and give the information in a test. My opinion is that ... (reading) strategies are lacking.***

Module B' lecturer made a number of observations about students' reading abilities and their motivation to read:

- *I pick up that students may **not have good reading skills.** Students seem **unable to read and digest a big volume of text and understand what they are reading while they are reading it.***
- *Students have **limited vocabulary and limited exposure to the context** of business in this module. I wish I could **force them to read** the Financial Times...*
- *I think students have developed a **negative stance towards reading...***
- *I think students just **do not want to read...** if you do not **force students to read,** they will never even open the prescribed textbook.*

Students' perspective: The group of students present at the focus group interview expressed that they did not have any problems with reading:

- *Reading is not a barrier for us.*
- *We do not need extra reading skills.*
- *...we generally do not have a problem with words and reading.*

Even though they were confident about their reading abilities they seemed to struggle with finding the applicable information in Module B's textbook:

- *The textbook compresses the information in such a way that it is there, but it is not there.*
- *The information you need is there, but if you do not have the slides or something to say this is what I need to look for, you won't be able to find the information.*

These two comments indicate that the students seem unable to locate information in the textbook, possibly because they are unable to identify the main idea, or might not know how use the table of content or index of the textbook. With the slides as additional help, they know where to find information. This is another example of the learned helplessness of students. They struggle to find information if it is not "spoon-fed" to them.

To summarise, it is clear that there was a discrepancy between the view the lecturers had about their students' reading abilities and the view students had about their own reading abilities. From comments made about finding information in Module B's textbook, it can be argued that students' were over confident about their reading abilities and that lecturers might be correct in their observations that students' reading abilities were not on par. Module B's lecturer specifically referred to students' lacking subject specific vocabulary whereas the students commented that they thought their vocabulary was adequate. One reason for this discrepancy might be that the lecturer wanted his students to comprehend all of the content, including terms and definitions whereas students got by using terms and definitions in tasks without comprehending them. As one student said, "I just use the word in my answer, even if I don't understand it". This statement points to the question format of the task which asked students to merely give information without determining whether or not students understood the information.

The lecturer of Module B was of the opinion that students seemed unmotivated to read and he stressed that he felt he needed to "force" students to do so. From the focus group interview this lack of motivation to read was evident in students' comments that they would only read when they had to prepare for a test. One student also said, "It (reading) is too boring." This proved the lecturer correct in his assumption that students needed to be "forced" to read as they would not otherwise engage in this "boring" activity.

4.3.4.1.2 Texts used in modules

In each module an academic textbook was the only prescribed text. During the lecturer interviews the discussions centred on the choice and suitability of the textbooks and during the focus group interview the students elaborated on whether or not they read the textbooks and if they found them easy or difficult to read.

Lecturers' perspective: Both lectures were of the opinion that the textbook they prescribed was suitable as it addressed the outcomes of their modules and the language of the textbook was suitable for use by first year students:

- *...it is **a good textbook** for this module. It **fits** closely with our learning outcomes. It is more descriptive and includes necessary tables. LMA*
- *I like the Oxford textbook because of the **frameworks and visual summaries** this textbook gives in the place of discussions like other textbooks. LMB*
- *If you have passed Gr12, you will be able to read the textbook. I think it is very **suitable**. LMA*
- *The textbook is in my opinion quite **simple and well set out**. LMB*

Even though the textbook was the only academic text prescribed by the lecturer of Module B, he was of the opinion that the textbook did not speak to the students' preferences:

- *Students expect **information to be delivered to them in an understandable context and not too long but in to-the-point style**. The students feel that **the reading is too much**.*

Both lecturers made a financial comment regarding to the textbooks:

- *The textbook is **value for money** because we do ten of the fifteen chapters in the textbook. LMA*
- *This **textbook costs about R400** and the other textbooks on the market that cover the same content are about R900.LMB*

Students' perspective: During the focus group the students mostly made comments about the textbooks' ease of use. To this group of students it seemed important that the study guide must be directly aligned with the textbook regarding the order of content and specific page numbers. In Module A this was the case and the students made the following comments about the textbook:

- *(The textbook) is much more **user friendly**.*
- *We get taught in **the order of the textbook**. The **information is all there**.*
- *It is much **quicker to find the information**.*

Conversely students found the textbook of Module B more challenging:

- *I find the module B textbook **difficult** (because) (i)t is not student friendly.*

- *The study guide has **the wrong page numbers** of the textbook, so it **takes long** to find the actual page in the textbook. The way it is structured in the study guide is also **mixed up** if you look at the structure of the textbook.*
- *The information you need is there, but if you do not have the slides or something to say this is what I need to look for, **you won't be able to find the information** because it's just like summarised in one chapter.*
- *They (the authors of the textbook) want you to find the information and make **your own summaries**. We **don't always have time**.*
- *You should **not need your own summaries** to make sense of the work. The **textbook should be able to explain** it to you.*
- *So the study guide helps you but **not the textbook**.*

One student also made a financial connection:

- *And we also **paid a lot of money** for the textbook, so the information should be there, it **should not take as much effort** to find the information.*

This comment indicates that the student wants the textbook to be tailored to his exact needs. The information he needs is in the textbook, but it is possible that it is not the title of a chapter, and so it takes some time to locate the information in the textbook. It seems as though students want to locate information quickly by skimming and scanning the text, without having to read sections of text with comprehension.

Upon critically reflecting on this data segment, it became clear that the lecturer of Module B was on the mark about how students want the content of the module to be delivered: Quick and to the point. Students found the textbook of Module A easy to use as the order of the chapters matched the order of the content done during the semester. In Module B, the order in which the lecturer dealt with the content was different from the order in which the corresponding information was presented in the textbook. The incorrect page numbers was due to a new edition of the textbook used by students while the study guide was written with an older edition. The content was thus the same, students just had to use the table of content of the new edition of the textbook to locate the applicable information. Students felt burdened by this as it was a process that they felt wasted their time. The textbook of Module B was also "difficult" as students expressed that it did not provide complete summaries after sections of content and students were expected to compile their own. In a consumerist fashion this was unacceptable to one student as he felt he paid for the textbook, and without summaries, he was not getting value for his money.

Slides were another form of text used in both modules of this faculty. Both lecturers made slides available, although their slides were not so complete that students could use the slides to study from:

- *They **cannot study from the slides alone** because there is not enough information on the slides for a discussion in a test. LMA*
- *I make my slides available, but students are constantly reminded that **they should not study from my slides. My slides are my copyright.** LMB*

Slides were an important link to academic texts according to students:

- ***I start with the slides.***
- *...if you do not have the slides ...you **won't be able to find the information...***
- ***The slides are usually the summary.***

Students seemed to depend on the slides. This group of students seemed to use the slides both as a starting point as well as a summary. They also needed the slides to indicate what was important and what was not important. They seemed incapable of locating the right information in Module B's textbook without the slides. The lecturers made it clear to students that they should not heavily depend on the slides. The lecturers wanted the students to use the textbook as their main source of information. This was not the case. The students seemed almost lost without the slides, and from the students' comments it was clear that the slides were more important to the students than the textbook. This is because of the short and to-the-point style of the slides, which was what the students preferred. If the tasks the students had to complete, tested, for example, rote learned definitions, the slides would have been a sufficient source of information.

This section indicated that regarding the textbooks, students had a school mind-set where they wait for the teacher to teach and highlight the core issues in the text and so, the students seemed unwilling to spend a lot of time independently reading the textbooks. They found the slides easily digestible. As one student mentioned, the textbook of Module B was not "student friendly", indicating that the textbook did not present information precisely the way the students wanted it. It would seem as though slides were more "student friendly". As long as they paid money for a textbook, they seemed to expect the textbook to cater to their needs. They seem to compare their prescribed textbooks with digital content which can be adapted according to preference.

4.3.4.1.3 Tasks

One task per module was discussed during the interviews with lecturers and students in terms of the purpose, format and how students experienced the tasks.

Lecturers' perspective: Within Module A, the lecturer set up a “straight forward” individual class test as part of the participation mark. She commented that this format worked the best as a test had the least loopholes. With group tasks she experienced that not all students participate equally, while with individual tests, each student had to work through the content:

- *We try to **pace students so that they learn throughout the semester**, increasing their chances to do better in the exam.*
- *The individual tests definitely **force students to read the textbook**, because they cannot hide behind a group assignment.*
- *A test makes it **easier to mark** because it is such a large group of students.*

In Module B, the students had to do a presentation for the class. Students had to work in groups of up to ten members. The lecturer divided the semester's content into sections and each group had to present a specific section during a lecture. The group received a mark for their presentation which formed part of the participation mark. The lecturer was present during these presentations and he gave additional explanations not addressed by the groups. He also facilitated a question and answer session after each presentation. The reason behind this task was to:

- *...try and **force the students to work through the textbook**.*

Students' perspective: As the focus group interview took place before the class test, the students were unable to comment on their experience of the class test. They did, however, say that they expected the test to be easy as:

- *...there is **not really any application** (in the class test). The textbook just gives information which you have to study.*
- *...you have to **read the textbook** to study for the test.*

There was a lengthy discussion on the presentation task of Module B. This might be due to the fact that students were familiar with a test while the presentation seemed to be a new task format for them. The students had different opinions about this task. The discussion can be divided into positive and negative comments:

Positive comments:

- *I think it is a **nice** way to get marks.*
- *The lecturer, as we were presenting, **he was supporting** as we left something out...I think it is a **good task and it worked well**. I liked it. As you prepare for the presentation, you actually had to **go through the work**, as if you were writing a test.*
- *If you have to present tomorrow, it **forces you to read the textbook**, otherwise you will look like a fool in front of everybody.*

Negative comments:

- ... we had to basically give class and the thing is you are going to get a group or two who is not going to get along well and give a good presentation and **the class is at a disadvantage** because we **did not get all the work** and learn from their presentation.
- I think the lecturer uses it like a **shortcut**. We do the work for him, and he just fills in the gaps. I think **he does not want to lecture**.
- I **do not like the group work**. We are a group of 10 and it is **difficult to get things done in such a big group** with all our egos.
- Every group has members like that, people who **do not make contributions**.

To summarise, it is clear that the students were used to the test format of the class test of Module A. Students had to read the applicable chapters of the textbook and be able to repeat what they read during the class test. The test therefore, involved rote learning. According to Table 4.23, the average of the test was 57.6%. Thus, the majority of students were able to remember more than half of what they read in the textbook. It would seem as though the lecturer achieved her goal for some of the students.

The presentation task of Module B clearly posed unique challenges to the participants. From the comments made during the focus group, it would seem as though the presenter of one of the groups was motivated to read the section of the textbook which his group had to present. It was not a requirement that all ten members had to deliver content during the presentation in front of the class. Thus, not all of the members would have been motivated to read the textbook if they knew that the person doing their presentation was prepared. As the students mentioned, it could be difficult to work together in such large groups and there were no guarantee that all the group members read the specific section of the textbook.

It seemed as though the lecturer did not quite achieve his purpose with this presentation task. Instead of being motivated by acquiring the needed knowledge about the given section of work, students seemed to be motivated by what their peers would think of them as they presented the information in front of the class. One student also commented that the reason behind the presentation was the lecturer's unwillingness to do the presentations himself. Although the lecturer was present during the presentations, filled in the gaps created by poor presentations and helped with the question and answer session afterwards, the students seemed to experience that they were the ones doing all the work and that the lecturer was taking a "shortcut". They were thus unfamiliar with self-directed learning.

4.3.4.2 Document analyses

During the document analyses of the Faculty of Economic and Management Sciences, one textbook and one task was analysed per module. Each module is dealt with separately. The textbook analysis is presented first, followed by the task analysis.

4.3.4.2.1 Module A

Module A prescribed academic material

One textbook was prescribed in Module A. The lecturer commented that this textbook was suitable as it covered all module outcomes. The following excerpt from Botha and Musengi (2012:26) were analysed by T.E.R.A to determine the “easability” and readability:

Ability to deal with risk and uncertainty

Entrepreneurs have the ability to deal with risk and uncertainty. They see risk as an opportunity. Many people in business try to avoid risk and so miss an opportunity to make their business grow. An entrepreneur will seize an opportunity in spite of the dangers involved after calculating how big the risk is. A risk may be financial or personal. It is possible to lose your hard-earned finances or even your family in starting a business.

Risk has to do with uncertainty. We can never be sure of the future. For example, there are political and economic uncertainties that we cannot control, while technological changes occur all the time. We will refer to these in Chapter 3 when we look at the business environment. Entrepreneurs make the necessary calculations and forecasts and go ahead with their plans in spite of uncertainties. This is another example of the difference between a small business and an entrepreneurial business. Small-business owners are more likely to carry on the business as they have always done, rather than to try something unknown and risky.

Opportunity orientated

Successful entrepreneurs are opportunity orientated. Opportunity-oriented people are constantly on the lookout for opportunities that could generate an income for them. They are familiar with their industries, customers and competition so that they can see any chances for improvement that there may be.

In Figure 4.11 the findings are summarised:

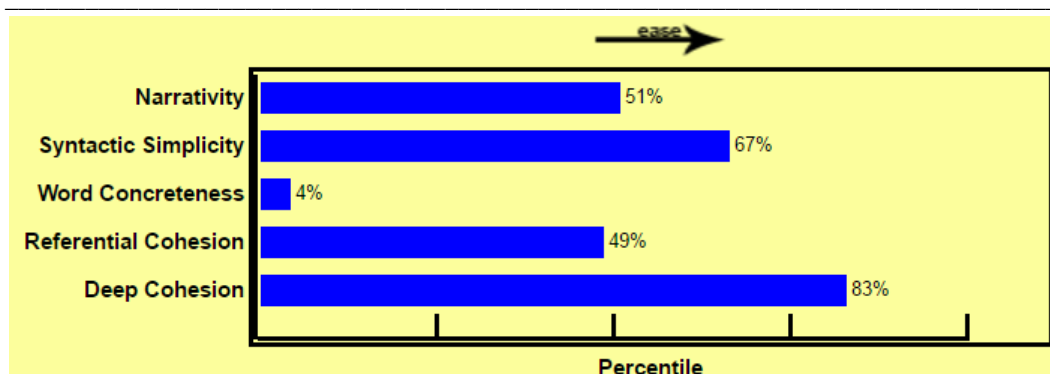


Figure 4.11: T.E.R.A graph: Textbook Module A Faculty of Economic and Management Sciences

The word concreteness measured at 4%, indicating that there are many abstract words in the extract. However, the high scores of syntactic simplicity (67%) as well as deep cohesion (83%) indicate that this text may be easy to comprehend. There are phrases to clarify information such as “for example” and “this is another example”. The Flesch-Kincaid grade level measured at grade 10.

The lecturer’s opinion that this textbook was suitable for her students is grounded. The average reading grade level of the students in this faculty was grade level 9 (cf. Table 4.22). Thus, they should not have had much difficulty with reading the textbook with comprehension as the textbook’s reading grade level was 10. This corresponds with the students’ comments that they found the textbook “user friendly”.

Module A task analysis

Table 4.48 presents the type, content, format and lecturer’s purpose of Module A’s class test.

Table 4.48: Specifications of the task in Module A: Faculty of Economic and Management Sciences

Appendix:	J
Type of task:	Class test
Content tested:	Two chapters of the textbook
Memorandum / Rubric:	Memorandum
Total marks:	25
Individual work / Group work:	Individual
Lecturer’s purpose for the task:	LMA wanted to “pace” students through the module content so that they could do better in the exam.

This test consisted of four questions. For the first three, students had to “name” and “discuss” and for the fourth question they had to read a scenario and apply the decision-making process. Table 4.49 presents the analysis of this class test by making use of the Umalusi typology:

Table 4.49: Analysis of the task in Module A: Faculty of Economic and Management Sciences

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Remember, define and describe basic facts Straight recall Identifying from text Know and use appropriate vocabulary	Easy	Very simple recall; identify specific data; tell; recite; list
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context	Easy	Simple relationships; simple explanations; 1 step answers
	Moderate	Explain
	Difficult	More complex reasoning with regard to understanding and explaining
3. Application Interpret and apply knowledge	Easy	Candidates know what process is required to solve the problem from the way the problem is posed.
	Moderate	Draw information from given text, construct ideas

As is clear from Table 4.49, three types of cognitive demand were applicable for this class test on various difficulty levels. The lecturer remarked that the class test was “not very complicated” but it seemed as though students found it difficult. They had to, for example, read one-sentence scenarios. Thereafter they had to choose and discuss an applicable plan for the scenario. This question involved application, which is more cognitively demanding than recalling a fact. The last question also required the application of knowledge as students had to make a suggestion to increase profit. Students commented that they expected the test to require straight recall of facts from the textbook, but clearly this was not the case as they had to understand what they had read and apply their knowledge. This points to the different expectations that the lecturer and students have about the task. The lecturer did not communicate the question format of the test explicitly to the students. If they students knew beforehand what format of questions they will have to answer, they might have prepared differently for this test.

Module B prescribed academic material

An excerpt from Davies *et al.* (2014:37) was analysed with T.E.R.A to determine if the lecturer was correct in deeming the textbook suitable, and to find out whether the students' complaints about the textbook's difficulty level could be justified.

2.6.5 The non-profit company

A non-profit company is a company that was previously recognised in terms of s21 of the Companies Act, 1973. The 2008 Act provides for the regulation of non-profit companies in Schedule 2. Briefly stated, such companies must have as at least one of their objectives a public benefit object relating to one or more cultural or social activities or communal or group interests. All assets and income of a non-profit company must be used to further the company's stated objective.

A non-profit company may acquire and hold securities issued by a profit company, or directly or indirectly, alone or with any other person, carry on any business, trade or undertaking consistent with or ancillary to its stated objects. An incorporator, member or director, or person appointing a director, of a non-profit company may not directly or indirectly receive any financial benefit or gain from the company, other than reasonable remuneration for work done, or compensation for expenses incurred, to advance the stated objects of the company. When a non-profit company is being wound up or dissolved, no member or director of that company is entitled to any part of the net value of the company after its obligations and liabilities have been paid.

Figure 4.12 summarises the findings:

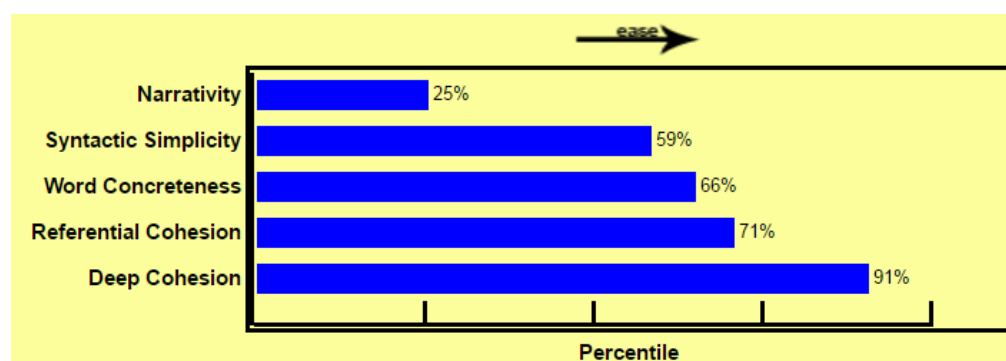


Figure 4.12: T.E.R.A graph: Textbook Module B Faculty of Economic and Management Sciences

According to the T.E.R.A software the deep cohesion of the extract measured at 91%. This means that the ideas and information of the text are all tied together. This section is about non-profit companies, and all the sentences give more information about that topic. The referential cohesion measured at 71%. This indicates an overlap between words or ideas from one sentence to

another. This might aid reading comprehension. The Flesch-Kincaid grade level measured at grade 14.

As the text excerpt measured at grade level 14, the lecturer was correct that the text is suitable for use on a first year reading level. The average reading grade level of this group of students was grade 9 (cf. Table 4.22) and this reading grade level, together with their comments that they found the textbook difficult, indicate that they were unprepared for its reading demands.

Module B task analyses

The task type, content, format and lecturer's purpose for the task are presented in Table 4.50.

Table 4.50: Specifications of the task in Module B: Faculty of Economic and Management Sciences

Appendix:	K
Type of task:	Presentation
Content tested:	Section of the textbook
Memorandum / Rubric:	Rubric: 50% content, 50% presentation
Total marks:	100
Individual work / Group work:	Group work
Lecturer's purpose for the task:	LMB wanted to "force" to work through the textbook.

Students formed their own groups and presented a given section of the textbook as determined by the lecturer. The groups made use of MS PowerPoint for the presentation and there were no set guidelines about who had to do the presentation. It could be only one member of the group or all members. The task is analysed with the Umalusi typology in Table 4.51:

Table 4.51: Analysis of the task in Module B: Faculty of Economic and Management Sciences

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge	Easy	Very simple recall; identify specific data; tell; recite; list
Recall and recite knowledge		
Remember, define and describe basic facts		
Identify, label, select, locate information	Moderate	Medium content; read and locate; briefly define a term
Straight recall		
Identifying from text		
Know and use appropriate vocabulary		

2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context	Easy	Simple relationships; simple explanations
	Moderate	Give examples, explain, briefly summarise, interpretation of realistic visuals. Summarise a text; draw inferences from a text
	Difficult	More complex reasoning with regard to understanding and explaining, motivate inferences or predictions made, using information from the text to support the position
3. Application Interpret knowledge Select the most appropriate information from options Decide on the best way to represent data to create a particular impression	Moderate	Draw information from given text
	Difficult	Collect information from available texts to re-present in own text

This presentation task required the students to understand the content and apply this knowledge as they presented it to their class. Various difficulty levels were involved in this task, ranging from easy to difficult. The lecturer's purpose in "forcing" the students to work through the text, would have been achieved as students drew information from the textbook, interpreted the information and presented it. Their motivation to do a good presentation was first and foremost to get marks for the presentation, which contributed to their participation mark. According to the typology, this was not a straight forward, easy task. Yet, students did not refer to the task as difficult. One described it as "nice" and another that it "worked well". Those students who did make negative remarks about the task, had issues with the group work and one felt they were doing the lecturer's work for him. It seemed as though this task might not have motivated all ten members to read the relevant section of the textbook, but only the student(s) doing the presentation.

4.3.5 Faculty of Engineering

Within the Faculty of Engineering an interview was held with each lecturer responsible for a module as well as one focus group interview with students. After the interviews the data were transcribed and analysed. In each module the lecturers prescribed one textbook which, together with a class test per module, was used for the document analyses.

4.3.5.1 Semi-structured interviews and focus group interview

During the lecturer interviews and the focus group interview with students, the discussion revolved around the students' reading abilities, the prescribed textbook as well as one task that contributed to the students' participation mark.

4.3.5.1.1 Reading abilities of the reader (i.e., student):

The analysis of lecturers' and students' comments on students' reading abilities is presented in the following section.

Lecturers' perspective: Within this faculty, the lecturer of Module A (LMA) and the lecturer of Module B (LMB) did not make specific comments about students' reading abilities, although the following comments seem to imply that students may have experienced reading problems in the context of Modules A and B:

- *Some students **struggle with the content** (of the textbook) and they come and ask me personally and I help them.* LMA
- *I go the extra mile to make slides... **to help students** (as opposed to the students using the textbook as the only resource).* LMA
- *Some students find the **language (of the textbook) difficult.*** LMB

The lecturer of Module A commented:

- *I have **no idea** if all of them (students) have the textbook.* LMA

This suggests that she also did not know whether all her students read the textbook. As a disciplinary expert, this lecturer had to "model" the discipline and how to acquire the knowledge and important aspects related to it. Part of this acquiring of knowledge is how to read in the discipline and what is important. She commented that the students struggled with the content and that they came to her for help. The act of providing slides, suggests that this lecturer did not model how students should refer back to the textbook as the main source of disciplinary content.

Students' perspective: The students present in the focus group interview initially remarked that they:

- *...**do not read** the textbooks.*
- *...only bought textbooks **to be able to sell them again** next year.*

This indicates that students could complete tasks and prepare for class without reading the textbook as the gist of the content was summarised in the slides and given during lectures. When the researcher asked them if they experienced the textbooks as difficult, the students admitted that they struggled to comprehend what they read:

- *It takes a bit **longer to read and understand** the English textbook. I understand it, but I have to read it about three times.*
- *I also read a paragraph a few times.*
- *Me too. We **help** each other...*

They did not seem too worried about struggling to comprehend the textbook as:

- *The **lecturer will explain** it in class.*

It seemed as though the two lecturers interviewed, had not given much thought to whether or not their students could read with comprehension. It seemed as though their students' reading abilities were not a major concern in the context of their modules. Even so, the lecturers provided notes for students to "help" them achieve module outcomes. The students expressed that they scarcely read any textbook but when they did, they admitted that they had to use reading strategies to understand what they had read, such as re-reading, asking a friend or waiting for the lecturer's explanation. Thus it can be concluded from the interviews that the engineering students' did not deem their textbooks as an important source of information.

4.3.5.1.2 Texts used in modules

Each lecturer prescribed an academic textbook in her module. During the interviews the lecturers and students discussed these textbooks in terms of their suitability and use.

Lecturers' perspective: According to both lecturers their textbooks were the best choice for their modules:

- *...the **examples (in the textbook) are easier to understand**. When I do examples in class, I do it from the textbook itself... LMA*
- *I think it is **very suitable** for the first years. LMA*
- *I think it is a **good textbook**, well written with **good examples**. It is a **good book** written **specifically for 1st year students**. LMB*

The lecturers made the following remarks about their prescribed textbooks:

- *I think we try and help students so much with things like slides to increase the pass rate, that **the textbook becomes redundant**. LMA*
- *I think **they do not read the textbook**. LMB*
- *It is a **thick and heavy textbook**. We even **show the sketches of the textbook on the slides**. LMB*

Students' perspective: According to some of the students, they did not read the explanatory text in either textbook, but only looked at the examples of calculations:

- *We **don't look at the theory** in the textbook. It is just **too much and unnecessary**...*
- *...I just look at the **calculations**. I **don't read the explanations**.*

- *It was clear that to some students the textbooks were not of any importance:*
- *I **don't have** a textbook.*
- *I **can't wait to sell** mine!*
- *In the beginning I studied the textbook, but **never again**.*
- *It (Module B's textbook) is just **too heavy**.*

Students did not seem willing to use this “heavy” module B textbook. Not only is it literally a thick book which they find uncomfortable to carry around on campus, but they were also of the opinion that the textbook is “heavy” with information which they would rather receive in a condensed to-the-point format.

To summarise, both lecturers deemed the prescribed textbook suitable for first year students as the textbooks provided good examples, but they also remarked that the “good” textbook had become redundant as they put other measures in place to help students, like slides for example. A possible reason for lecturers compiling alternative texts, could be the external pressure of throughput figures. As students seemed to have a learned helplessness, lecturers provide alternative text which better suited the students’ preferences. They seemingly did not cope with the reading of the “good” “suitable” textbooks which, according to lecturers, provided “good” examples. Lecturers seem torn between prescribing a good textbook on the one hand, and compiling additional “student friendly” material on the other. The compiling of additional material seems to be the only option which these lecturers implemented. There was no evidence of the lecturers modelling how the textbooks had to be read to understand concepts and the calculations.

From the students’ perspective, the textbooks were of minor importance in the context of the two modules. The students who had textbooks, commented that they only looked at the examples of calculations and the other students seemed to have managed without the textbooks. The comment by a student that there was “unnecessary information” in the textbooks, indicate that the student did not judge the information in the textbook as relevant. Information was judged as relevant when students were tested on it. Thus, it is possible that the students assumed they did not need the textbook as they would be able to complete the test with information on the slides and notes alone.

Slides were employed by the lecturers of Modules A and B. As indicated, the lecturer of Module A compiled slides to help students and the lecturer of Module B remarked that:

- *...students can **buy a summary of the slides** at the photocopy shop on campus.*

The lecturer of Module B and students referred to this summary of slides as **notes**. The lecturer explained her reason for making these notes available:

- *The reason I make the notes available, is **because of lots of complaints from students. They continually ask me for the slides, and so I made the notes available.***

The notes are not complete and contain references to figures in the textbook which students need to look up. Refer to Appendix X for an example of two pages of these notes. During the focus group interview it became clear that students almost exclusively relied on the slides of Module A and the notes of Module B:

- *We **start with the slides (Module A)** so we know what is going on. That way we won't look at **unnecessary information in the textbook.***
- *...the notes (Module B) already have those two **chapters summarised by the lecturer**, so all the important things would be there.*
- *The **textbook (Module B) takes too long.** They explain something in one long chapter and in our notes that same chapter only takes up 6 pages.*
- *I just **study the slides (Module A)** and then I look at the examples of calculations.*
- *I don't read the theory in the textbook (Module A), I **only look at the slides.***
- *Yes, the **slides are like a summary** (Module A).*
- *The **notes are a summary and that is all I use** (Module B).*
- *...there has never been something asked in a test (Module B) **that did not appear in the notes.***
- *The **notes are all we need (Module B).***
- *In the beginning of the year, I really studied from that textbook (Module B). Then when the test came, I did poorly. The next time I did not open the textbook, **I just studied the notes. Now I've learnt my lesson.***
- *...the lecturer went to a lot of trouble for us. We **like** the fact that the notes are a summary.*

In conclusion, it is clear that one lecturer's remark of the textbook becoming redundant was actually a true reflection of the state of textbook affairs within these two modules. Even though the lecturers thought the textbooks were suitable, they still created slides and notes in which they summarised and/or emphasised the important content sections of the textbooks. As a result, students labelled the textbooks as having "unnecessary" information. The lecturers were of the opinion that students still needed to refer to the textbooks for calculation examples, however it seemed as though some students managed without those examples as they helped each other or were able to ask the lecturer for clarification. The students commented that there was never a question in the exam which contained information not included in the notes. Thus, the questions included in the tests confirmed the students' impressions that the textbooks were irrelevant. The external pressure of throughput figures might be a possible reason for the lecturers providing notes and slides, as well as the complaints of students, as LMB mentioned.

The lecturer of Module B said the reason behind her making the notes available, was that students “complained” that her slides were not available. It seemed as though it was typical of the students within this faculty to expect academic material to be tailored to their needs. When this was not the case, they did not adapt existing material to their own needs, they “complained” to the lecturer and she compiled the notes for them. Students furthermore seemed to have a very positive attitude towards the slides and notes of Modules A and B because they were to-the-point and only contained the information of vital importance to the class tests. They also held the lecturer of Module B in high esteem as she “went to a lot of trouble” to compile the notes. The students “liked” these notes to such an extent that it became their primary text resource. The students of this faculty seemed to think that when it comes to academic texts, shorter is better.

4.3.5.1.3 Tasks

Within each module, the lecturers set up an individual class test as part of the students’ participation marks. During the interviews the class tests were discussed in terms of their purpose and how the students experienced them.

Lecturers’ perspective: Both lecturers designed an individual class test with a similar purpose:

- *...to see if the individual student **understands the content**. It is also a good way to **help students to keep up with the work**. LMA*
- *I use the class test to test **if the individual student understands the learning units**. LMB*

The lecturer of Module B also commented that a test was a true reflection of an individual’s knowledge as opposed to a task where the students:

- *...**copied** each other’s work.*

Students’ perspective: The students seemed to know what to expect in the class test of Module A:

- *We have written two tests and then we look at what she asked, so we know, **she will ask those things again**.*
- *...you just pick it up in class. In the beginning we did not know what the lecturer was going to ask us. Now, when you study, **you just know, yes, she is going to ask this**.*

The students said that for Module B’s test they only studied from the notes. They experienced that test as difficult:

- *It was a **difficult test**, especially the multiple-choice (questions).*

The researcher then asked the students whether they thought the textbook would have helped them prepare for the test, one student answered:

- *Yes, if you studied **every page, you would do very well**.*

However, they commented that they did not have adequate time to study from the textbook and that they:

- ...just needed to **study harder** (from the notes).

In conclusion, it seemed as though the class tests of the two modules tested the individual's knowledge about certain aspects. It became clear however, that the students preferred to "spot" the questions of the test and made use of the notes and slides to do so. According to the comments, the students thought that reading the textbook of especially Module B would have helped them to better prepare for the test but they were not prepared to spend the needed time to read the applicable chapters. They would rather rote-learn the notes than take time to read sections of the textbook.

4.3.5.2 Document analyses

One textbook and one class test was analysed within each module of the Engineering Faculty. The modules are dealt with separately and the textbook analysis is presented first, followed by the task analysis.

4.3.5.2.1 Module A

Module A prescribed academic material

The T.E.R.A software was used to analyse a passage from Askeland and Wright (2015:142). This was the only textbook prescribed by the lecturer of Module A:

5-1 Applications of Diffusion

Diffusion refers to the net flux of any species, such as ions, atoms, electrons, holes (Chapter 19), and molecules. The magnitude of this flux depends upon the concentration gradient and temperature. The process of diffusion is central to a large number of today's important technologies. In materials processing technologies, control over the diffusion of atoms, ions, molecules, or other species is key. There are hundreds of applications and technologies that depend on either enhancing or limiting diffusion. The following are just a few examples.

Carburization for surface hardening of steels: Let's say we want a surface, such as the teeth of a gear, to be hard; however we do not want the entire gear to be hard. The carburization process can be used to increase surface hardness. In carburization, a source of carbon, such as graphite powder or gaseous phase containing carbon, is diffused into steel components such as gears (Figure 5-1). The increased carbon concentration on the surface of the steel increases the steel's hardness because the carbon atoms in interstitial sites hinder dislocation motion. Similar to the introduction of carbon, we can also use a process known as nitriding, in which nitrogen is introduced into the surface of a metallic material.

The findings are summarised in Figure 4.13:

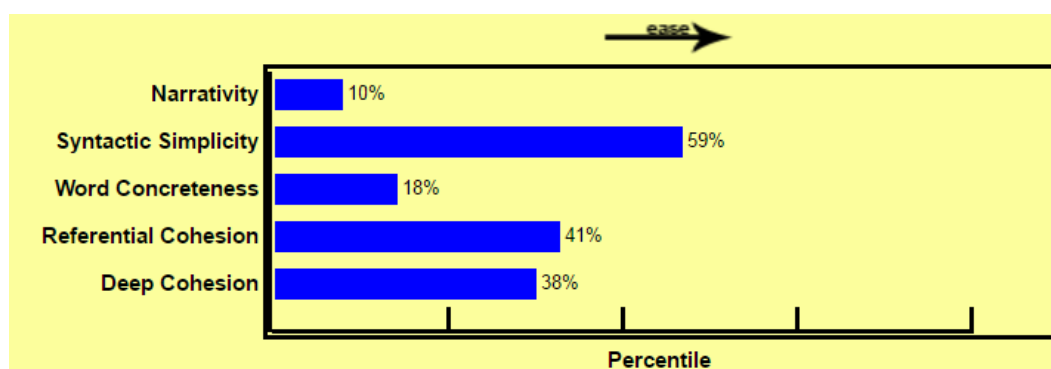


Figure 4.13: T.E.R.A graph: Textbook Module A Faculty of Engineering

This selection of text from Askeland and Wright (2015:142) measured low in narrativity and word concreteness. This indicates that the text is less story-like and contains abstract phrases, for example, “the net flux of any species”. The abstract words were the reason for word concreteness measuring 18%. With referential and deep cohesion measuring 41% and 38% respectively, the text did not have many overlaps between words and ideas and connecting words were also not used often. Thus, it seemed that the reader could not easily make connections between the words and ideas presented in this excerpt, making it more difficult to understand. The Flesch-Kincaid grade level measured at grade 11.

When one takes into account that a first year textbook should generally measure at reading grade level 13, a textbook such as Askeland and Wright (2015:142) with a reading grade level of 11, can be considered appropriate or manageable in a first year context. Based on the analysis, the lecturer, who expected her students be able to read at university level (grade 13), seemed to be correct in her assumption that the textbook is suitable for first year students with adequate reading abilities, but the students seem to be unprepared for the reading demands of this textbook as indicated by their grade 6 average reading grade level. The low narrativity of the textbook and prevalence of abstract words, for example, might have made the textbook challenging for this group of students to read and understand. This might be a reason why they seemed unwilling to read the explanatory sections of the textbook and rely strongly on the slides.

Module A task analyses

The type, content, format and lecturer’s purpose of Module A’s class test is presented in Table 4.52.

Table 4.52: Specifications of the task in Module A: Faculty of Economic and Management Sciences

Appendix:	N
Type of task:	Class test
Content tested:	Two chapters of the textbook
Memorandum / Rubric:	Memorandum
Total marks:	10
Individual work / Group work:	Individual
Lecturer's purpose for the task:	LMA wanted to see if the individual student understands the content.

In this test, students had to answer five questions for a total of ten marks. The first four questions were multiple-choice where students had to select the best answer and for the last question students had to name six methods of processing. Table 4.53 presents the analysis of this class test by making use of the Umalusi typology:

Table 4.53: Analysis of the task in Module A: Faculty of Engineering

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge	Easy	Very simple recall; identify specific data
Recall knowledge	Moderate	Name six methods...
Remember basic facts		

As Table 4.53 indicates, this test can be described as being straight forward. Only the first level of cognitive demand was tested and none of the questions were on a difficult level. Students had to remember the facts which they had to read in two chapters of their textbook. The students received an average of 45.5% for this “uncomplicated” class test (cf. Table 4.23). It would also seem as though students were not explicitly informed of the purpose of this test.

During the focus group interview, a student commented that the lecturer “will not ask theory” and usually only asked calculations. In this test no calculation was asked and students had to explain and interpret. The students had a different expectation of the test and this caused them to be inadequately prepared.

4.3.5.2.2 Module B

Module B prescribed academic material

The lecturer of Module B prescribed one textbook. The T.E.R.A software analysed the following excerpt from Halliday *et al.* (2011:88) to determine the “easability” and readability:

5-4 Force

We now wish to determine the unit of force. We know that a force can cause the acceleration of a body. Thus, we shall define the unit of force in terms of the acceleration that a force gives to a standard reference body, which we take to be the standard kilogram of Fig.1-3. This body has been assigned, exactly and by definition, a mass of 1 kg. We put the standard body on a horizontal frictionless table and pull the body to the right (Fig.5-1) so that, by trial and error, it eventually experiences a measured acceleration of 1 m/s. We then declare, as a matter of definition, that the force we are exerting on the standard body has a magnitude of 1 newton (abbreviated N).

We can exert a 2N force on our standard body by pulling it so that its measured acceleration is 2 m/s, and so on. Thus in general, if our standard body of 1kg mass has an acceleration of magnitude a , we know that a force F must be acting on it and that the magnitude of the force (in newtons) is equal to the magnitude of the acceleration (in meters per second per second).

The findings are summarised in Figure 4.14:

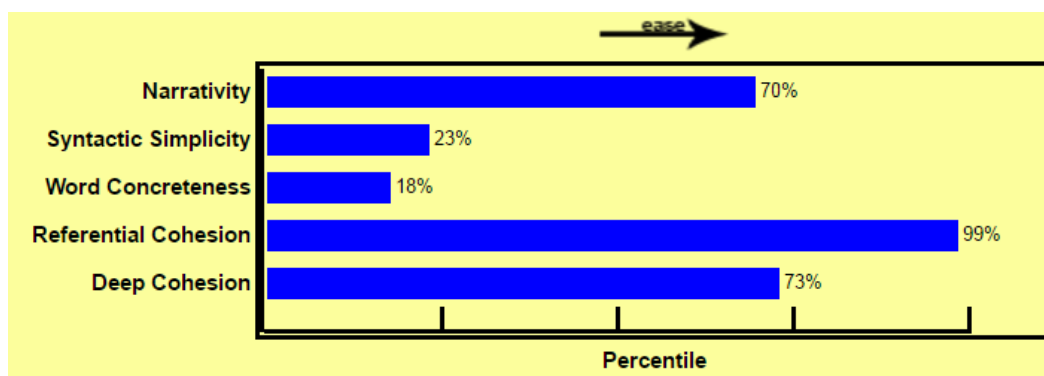


Figure 4.14: T.E.R.A graph: Textbook Module B Faculty of Engineering

This text excerpt measured quite high in narrativity (70%), deep cohesion (73%) and very high in referential cohesion (99%). Although the sentences were not very simplistic, and the excerpt included abstract phrases such as “a standard reference body”, according to T.E.R.A, the information is given in a story-like manner. According to the students, the content of the physics textbook was challenging. However, it is clear from the analysis that the authors used a more narrative writing style and made sure that words and ideas overlap (referential cohesion) so that it would be easier for the reader to make connections. The referential cohesion is evident in the

excerpt with the repetition of the words “force” and “acceleration”. As the excerpt is an explanation of “force”, the deep cohesion is also clear as all the information of the excerpt tie together with connection words like “thus”. Hereby, the authors seemed to present the seemingly challenging content, as reader-friendly as possible. The Flesch-Kincaid grade level measured at grade 11.

With the high percentage allocated to referential and deep cohesion, a first year student with a reading grade average of grade 13, might have found this textbook of Halliday *et al.* (2011: 88) easy to read, despite the seemingly challenging content it dealt with. Just like the textbook of Module A, this textbook also measured at reading grade level 11. As mentioned, students within this faculty had an average reading grade level of grade 6 which is an indication that the students might have struggled to read the abstract words and complex sentences which were prevalent according to the T.E.R.A analyses. This might have been one of the reasons why students needed the lecturer’s notes.

Another reason for students being adamant about notes, might be their learned helplessness. They want to be “spoon-fed” with summarised to-the-point information. The notes compiled by the lecturer met these preferences. The information contained in the notes is in a much shorter format than the longer paragraphs of the textbook (cf. Appendix X for an excerpt of the notes). The lecturer commented that it was a “good” and “suitable” textbook with lots of applicable examples. Clearly the students did not regard the textbook of Module B in the same light. As one student remarked, “I can’t wait to sell mine”.

Module B task analyses

The task type, content, format and lecturer’s purpose for the task are presented in Table 4.54.

Table 4.54: Specifications of the task in Module B: Faculty of Engineering

Appendix:	O
Type of task:	Class test
Content tested:	A learning unit
Memorandum / Rubric:	Memorandum
Total marks:	35
Individual work / Group work:	Individual
Lecturer’s purpose for the task:	LMB test if the students understand the learning units.

For the majority of questions in this class test, students had to do calculations. Only the first question required them to list properties of an electric field vector. Some of the questions required that the student write out his/her calculation and answer. Other calculation questions were in

multiple-choice format and there was also one true and false question. In Table 4.55 this class test is analysed by means of the Umalusi typology:

Table 4.55: Analysis of the task in Module B: Faculty of Engineering

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Recall and recite knowledge Remember, define and describe basic facts	Easy	Very simple recall
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context	Difficult	Calculation in a novel context
3. Application Apply knowledge Candidates to decide for instance on the most appropriate procedure to solve the question and perform preliminary calculations	Easy	Candidates know what process is required to solve the problem from the way the problem is posed. All of the information required is immediately available (multiple-choice question format)
4. Analysis & problem solving Being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem	Easy Difficult	Simple process in known or practiced context but with some variation which prevents the answer from being strictly formulaic Being able to break down a problem into its constituent parts – identifying what is required to be solved and then using appropriate methods in solving the problem

This class test required four different types of cognitive demand from students, with degrees of difficulty ranging from easy to difficult. Students had to solve problems by either doing the correct calculation or choosing the correct answer from the options given. They had to recall the properties of an electric vector in the first question and thereafter they had to prove that they knew how to solve the problems and then continue to apply their knowledge by choosing the correct answer. For some of the questions, this involved breaking the problem down into its parts and using appropriate calculations to give the correct answer. If one looks at the above analysis, this class test can be considered challenging and the students' remarks that the test was difficult, can be justified. The students achieved an average of 48.8% for this class test (cf. Table 4.23). The students attributed their low marks to the "difficult test" and the fact that they were very busy the week of the test and did not study "hard" enough. It seemed as though other factors may also have contributed to them perceiving the test as difficult.

One student mentioned that the multiple-choice section of the test was especially difficult. Another continued that this could be attributed to the fact that the multiple-choice section “asks detail”. It can be assumed the notes might have lacked the “detail” needed. Students explicitly said that they only studied from the notes for this class test, though one student admitted, “...if you studied every page (of the two chapters in the textbook), you would do very well”. It was clear that these students did not know how to prepare for multiple-choice question format test. It can be assumed that the question format affects how students prepare for the tests or tasks, which includes if they judge reading the textbook as crucial to their test preparation.

4.3.6 Faculty of Health Sciences

In this faculty, semi-structured interviews were held with two lecturers and a single focus group interview was conducted with a group of students enrolled in both modules. The data were transcribed and analysed after the interviews. The document analyses within this faculty were done on two prescribed academic textbooks, one per faculty as well as a practical session and class test in Module A and class test in Module B.

4.3.6.1 Semi-structured interviews and focus group interview

From the analysed data gathered during the semi-structured interviews and focus group interview, the researcher gained insight into the views held by the lecturers and students of this faculty in regard to students’ reading abilities, prescribed textbooks and tasks. The data analyses and interpretations are presented in the following section.

4.3.6.1.1 Reading abilities of the reader (i.e., student)

Both lecturers and students commented on students’ reading abilities within the academic context.

Lecturers’ perspective: The lecturer of Module A observed that her students struggled to read with comprehension:

- *I found that I have to **guide** them carefully to read with understanding with **questions** such as, “What do you read here?”, “What do you learn from this?”*
- *...many times I find that students **read over the important information**.*

The lecturer of Module B did not make such explicit comments. It seemed as though she did not regard the reading of the textbook as essential to pass the module:

- *I do not know if the **reading of the textbook** (of Module B) will be a good indication if a student will **pass** (the module) or not.*

It seemed as though both lecturers held the opinion that their students were unable to independently engage with the prescribed textbooks in such a manner that they would acquire all the needed knowledge.

Students' perspective: The students who took part in the focus group discussion commented on their reading abilities with specific reference to the textbooks. They were very confident about their own reading abilities in the context of Module A's textbook:

- *The language is **not difficult**.*
- ***We understand what is going on there** (the content of the textbook).*

This confidence dwindled in the context of Module B. When they discussed their own reading of the textbook, they seemed unsure of their reading abilities and commented:

- *...the words and terms are **difficult** to understand.*
- *It (the subject field of physiology) is like a language, and now you have to study this **language that is not your own, so that makes it difficult**.*

This comment points to students who do not have adequate general academic vocabulary knowledge as well as knowledge of the technical vocabulary of the discipline.

The students who took part in the focus group interview discussed their reading abilities in the context of the two modules. They felt confident about reading Module A's textbook and not at all confident about the reading they had to do in Module B. This is possibly because the lecturer of Module A used the textbook in class, while the lecturer of Module B only referred to pages of the textbook on her slides. It is interesting to note that the lecturer of Module A commented that her students needed additional support with reading the textbook, while the students themselves seemed confident about reading in the context of Module A. The support she provided by using the textbook in class, might be the reason for the students' confidence.

4.3.6.1.2 Texts used in modules

One academic textbook was prescribed in each module. During the interviews and focus group the textbooks were discussed.

Lecturers' perspective: Both lecturers commented that their specific textbooks were suitable because of the content, language and examples:

- *(T)he textbook is a **good summary** of all the content the students must master in this module. LMA*
- *I think this textbook works because it is **well aligned** with the outcomes of this module. LMB*
- *...it (the textbook) is suitable and **not too difficult** to understand and master. LMA*
- *I do not think the language (of the textbook) is hard to understand. LMB*

- *I think **all students have the textbook** but they do not bring it to class. It is prescribed in the study guide however, so **they should all have a textbook**. LMB*

Students' perspective: From the focus group discussion, it was evident that the students had a positive attitude towards the textbook of Module A. This seemed to be due to the fact that the lecturer works from the book in class, the students had to use the book continuously and the book contains ample examples and answers to exercises:

- *...you **understand what you read** because **we work from it in class**...you know exactly what is going on (in the textbook).*
- *In class she (LMA) **works directly from the textbook, which we appreciate**.*
- *She (LMA) opens the textbook and puts it under the document viewer (pages are enlarged on the screen in front of the lecturing hall), so **we know exactly where we are in the textbook**.*
- ***The language is not difficult**. I think it is **because we use it a lot**.*
- *The **book is nice** because of all **the examples**. It is nice that the **answers are also there**.*

In contrast, very few of the students present in the focus group interview, read the textbook of Module B. Only half of the students who were present had a textbook, and those who did, said that they only looked at the sketches in the textbook. This group of students all bought a package of compiled notes made by a peer about the content of the textbook organised by the learning units in the study guide. See Appendix X for a two page excerpt from such notes. It was clear that all the students who took part in the discussion, used these notes to study from:

- *We do not make our own summary of the textbook, we **buy someone else's notes**.*
- *The **notes are like a whole book** that is **very complete**.*
- *There are many different sets of notes. I have seen other students in class also use other notes than the ones we have. **The whole class has it**.*
- *We **need the notes because of the terminology**.*

The notes were, therefore, used instead of the textbook. The lecturer was under the impression that all students bought and used the textbook but that they did not bring their books to class. This was clearly not the case. It is ironic that one student mentioned that the notes were "complete". The bought notes are a shortened, summarised version of the textbook, which is in actual fact, the most complete original prescribed document that students needed to use in the first place. As the students commented that the whole class was using bought notes, it can be deduced that the students were in fact able to reach the outcomes of the module without having to read the textbook, as long as they used "complete" notes.

The lecturers of Module A and B both used **slides** in their modules. The lecturer of Module A was firm about the fact that students could not use her slides to study from:

- *...they (the students) **will not pass the module if they only study from my slides**. You have to apply the information given on the slides, **the slides alone are not enough**.*

From the focus group discussion it was clear that the students did not deem the slides of Module A as important, as they did not mention that they used the slides. The students only referred to the textbook and that it was the most important source of information. One student made a comment about the study guide of the module:

- *I **like** the fact that the study guide has the exact page numbers in the textbook. They fit. Then it is **easy to use and it saves time**.*

The use of the word “like” points to a positive attitude these students seemed to have about any measure that made quick access to the correct information in the textbook possible. Due to the lecturer incorporating the use of the textbook, the students were not only benefitting from learning the content of the module, but they also engaged in the discourse of the discipline, under the lecturer’s guidance. The lecturer facilitated their reading through the textbook.

According to the lecturer of Module B, her slides would have helped students to understand the content better, although she explicitly stated that all the information was not on the slides:

- *My slides are not that cryptic, but it is **not complete**.*

To summarise, it was clear that the textbook played a central part in Module A, both from the lecturer’s and students’ perspective. As they continuously worked from the textbook in class, and had to use the textbook to complete homework tasks, the students were at ease with the textbook and felt confident working from it. They did not seem to need any other resource, and that might be why no use of bought notes or the slides were mentioned in the focus group.

The students did not hold Module B’s textbook in the same esteem. The language and terminology of the textbook might be a possible reason, as well as the availability of other students’ textbook notes.

4.3.6.1.3 Tasks

In Module A students did practical sessions and wrote class tests. In Module B the lecturer only made use of class tests. One of the practical sessions and a class test was discussed during the interviews and focus group interview.

Lecturers’ perspective: According to the lecturer of Module A, the module outcomes included practical skills as well as knowledge. To test the practical skills, practical tasks were given so that the students had the opportunity to work with resource materials and make observations. These

sessions took place in a laboratory with the lecturer and assistants present to give assistance where needed. Students also wrote individual class tests. The reason given for these class tests was:

- *...to force students **to engage with the content.***

In Module B the lecturer mostly made use of individual class tests for participation marks. She had a similar purpose for the tests:

- *...to force the students **to work through the content.***
- *I find it (a class test) is **the best motivator** to get students to study.*

Students' perspective: At the time of the focus group interview, the students had not yet completed a practical task and thus it was not possible to discuss this task. The students had written a class test in Module A and B and were in agreement that the tests of both modules motivated them to engage with the module content:

- *...it (the class tests) definitely **forces you to read the (Module A) textbook.***
- *...it (the class tests of Module A) **helps you to understand.***
- *...we do not study if we do not write a test, so I guess it (class test of Module B) **forces us to look at the work we have to know.***

It is noteworthy that the students made specific reference to the textbook of Module A as their source when studying for the test, while they merely referred to the “work” they had to know in Module B. The use of the word “work” probably referred to the notes they mentioned that they study from in this module.

In conclusion, it was clear that both lecturers thought that an individual class test was an effective method to make sure students studied the content. The studying involved the reading of the textbooks. From the focus group interview it was clear that students read and studied from the Module A textbook, but in Module B it seemed as though students prepared for the tests by studying only the bought notes and slides and not the textbook itself.

4.3.6.2 Document analyses

Within each module of the Faculty of Health, an excerpt of the textbooks as well as one class test were analysed. The following discussion is organised per module, starting with the textbook analysis followed by the task analysis.

4.3.6.2.1 Module A

Module A prescribed academic material

An excerpt from Ansel (2012:37) was analysed with the T.E.R.A software.

Measurement of volume

Common instruments of the pharmaceutical measurement of volume range from micropipettes and burettes used in analytic procedures to large, industrial-sized calibrated vessels. The selection of measuring instrument should be based on the level of precision required. In pharmacy practice, the most common instruments for measuring volume are cylindrical and conical (cone-shaped) graduates (Fig. 3.1). For the measurement of small volumes, however, the pharmacist often uses a calibrated syringe or, when required, a pipette.

Whereas cylindrical graduates are calibrated in SI or metric units, conical graduates are usually dual-scale, that is, calibrated in both metric and apothecary units of volume. (Note: metric units of volume are described in Chapter 2, and apothecaries' units are described in Appendix A.) Both glass and plastic graduates are commercially available in a number of capacities, ranging from 5 to 1000 millilitres and greater.

As a general rule, it is best to select the graduate with a capacity equal to or just exceeding the volume to be measured. Measurement of small volumes in large graduates increases the potential for error. The design of a volumetric apparatus is an important factor in measurement accuracy; the narrower the bore or chamber, the lesser the error in reading the meniscus and the more accurate the measurement (Fig. 3.2).

Figure 4.15 presents a summary of the findings:

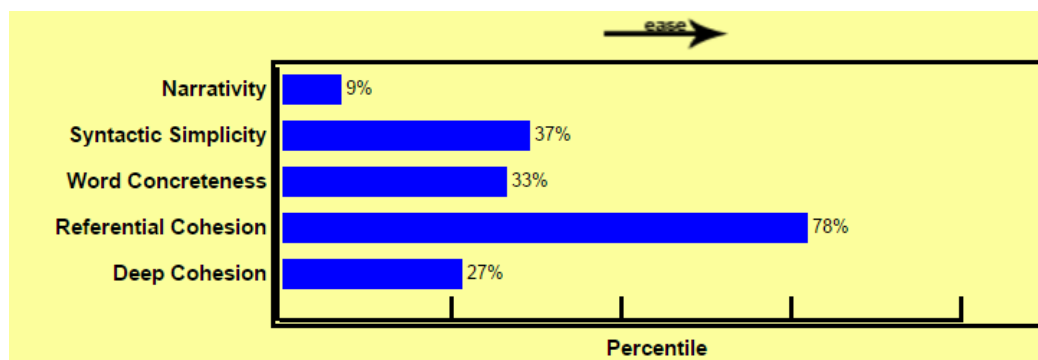


Figure 4.15: T.E.R.A graph: Textbook Module A Faculty of Health Sciences

This excerpt from Module A's textbook measured very low in narrativity. The 9% indicates that not many familiar words were used and that it is less story-like, which usually makes it harder to comprehend. The sentences are not very simple, which the low score of 37% for syntactic simplicity indicates. The occurrence of abstract phrases such as "pharmaceutical measurement of volume", explains the score of 33% for word concreteness. The extract has a high score of 78% for referential cohesion. This suggests that explicit words and ideas overlap between sentences. This overlap helps readers to make connections between ideas and concepts. The

excerpt measured at 27% for deep cohesion. This means that there are few connective words to help clarify relationships between information. Although there are overlaps between information, the absence of connective words may make the text more difficult to comprehend. The Flesch-Kincaid grade level measured at grade 13.

The excerpt from Ansel (2012:37) measured at Taylor's (1965) recommended university reading grade level and can be considered suitable in the first year context. The lecturer of Module A was correct in her comment that the textbook "is suitable and not too difficult to understand and master." From the focus group interview it was apparent that the students had a positive attitude towards the textbook. They found it "understandable" and motivated that they often work from the textbook, especially in class. This was mostly due to the lecturer who continuously modelled the use of the textbook in class and explicitly showed students where to find information and which sections were important.

Module A task analyses

Task 1: The task type, content, format and lecturer's purpose are summarised in Table 4.56:

Table 4.56: Specifications of task 1 in Module A: Faculty of Health Sciences

Appendix:	P
Type of task:	Class test
Content tested:	Section of the learning unit
Memorandum / Rubric:	Memorandum
Total marks:	35
Individual work / Group work:	Individual
Lecturer's purpose for the task:	LMA wanted to force students to engage with the content.

Students were supplied with information about a certain medicine. They had to read it and answer short questions. They also had to give the meaning of abbreviations and do calculations. Table 4.57 presents the analysis of this class test by making use of the Umalusi typology:

Table 4.57: Analysis of task 1 in Module A: Faculty of Health

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge	Easy	Very simple recall; identify specific data; tell; recite; list
Recall and recite knowledge		
Remember, define and describe basic facts	Moderate	Medium content; read and locate; briefly define a term; name and match
Identify, label, select, locate information		
Straight recall	Difficult	Recall complex content; correct spelling and use of vocabulary
Identifying from text		
Know and use appropriate vocabulary		
2. Comprehension (Understanding)	Easy	Simple relationships; simple explanations; 1 step answers
Understanding of previously acquired information in a familiar context	Moderate	Counter-intuitive relationships; give examples, explain
Regarding use of knowledge: explain	Difficult	Identify principles which apply in a novel context; explaining; more complex reasoning with regard to understanding and explaining
3. Application	Easy	Candidates know what process is required to solve the problem from the way the problem is posed. All of the information required is immediately available.
Apply knowledge		
Candidates to decide for instance on the most appropriate procedure to solve the question and perform calculations	Moderate	Draw information from given text
	Difficult	Perform calculations

Table 4.57 shows that this class test tested conceptual knowledge, comprehension and application in all three levels of difficulty. During the focus group interview, one of the students remarked that the class test “helps you to understand” because it forced them to read the textbook. As the average score for this class test was 86.7% (cf. Table 4.23), it can be assumed that most students did not have trouble reading and comprehending the section of the textbook they had to study for the test. It is possible that the lecturer’s modus operandi of continuously teaching from the textbook might have played a role in the high average students achieved for this class test.

Task 2: Table 4.58 summarises the type, content, format and lecturer's purpose for the second task in Module A.

Table 4.58: Specifications of task 2 in Module A: Faculty of Health Sciences

Appendix:	P
Type of task:	Practical task
Content tested:	Section of the learning unit
Memorandum / Rubric:	Memorandum
Total marks:	10
Individual work / Group work:	Work in pairs
Lecturer's purpose for the task:	Students have to discover how to use resource materials and they also have to make observations

As this module has a practical component, this task takes place in the laboratory. The lecturer and assistants are present to help students. Students needed to prepare for the practical session by studying relevant information. All the practicals have different tasks. For this practical they had to answer five questions. Table 4.59 presents the analysis of this practical task by making use of the Umalusi typology:

Table 4.59: Analysis of task 2 in Module A: Faculty of Health

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge	Easy	Very simple recall; identify specific data; tell; recite; list
Recall and recite knowledge	Moderate	Read and locate; briefly define a term; name
Remember, define and describe basic facts	Difficult	Correct spelling and use of vocabulary
Straight recall		
Know and use appropriate vocabulary		
2. Comprehension (Understanding)	Easy	1 step answers
Understanding of previously acquired information in a familiar context		

As Table 4.59 indicates, this practical task only tests two types of cognitive demand. Four of the five questions tested the students' conceptual knowledge, while the fifth question tested comprehension. As the students were interviewed before their first practical, they were unable to comment on this task. Table 4.23 indicates that the average score for task 2 was 77.5%. This suggests that the students did not find the practical task difficult again hinting to the routine usage of the prescribed textbook.

4.3.6.2.2 Module B

Module B prescribed academic material

The T.E.R.A software analysed the following excerpt from Martini *et al.* (2015:30) to determine the “easability” and readability of this prescribed textbook:

2-2 Chemical bonds are forces formed by atom interactions

Elements that do not readily participate in chemical processes are said to be inert. The noble gasses, helium, neon, and argon have filled outermost energy levels. These elements are also called inert gasses, because their atoms neither react with one another nor combine with atoms of other elements. Elements with unfilled outermost energy levels, such as hydrogen and lithium, are called reactive because they readily interact or combine with other atoms. Reactive atoms achieve stability by gaining, losing, or sharing electrons to fill their outermost energy level. The interactions often involve the formation of chemical bonds, which hold the participating atoms together once the reaction has ended. In the sections that follow, we will consider three basic types of chemical bonds: ionic bonds, covalent bonds, and hydrogen bonds.

When chemical bonding occurs, the result is the creation of new chemical entities called molecules and compounds. The term molecule refers to any chemical structure consisting of atoms held together by covalent bonds. A compound is a pure chemical substance made up of atoms of two or more different elements, regardless of the type of bond joining them. The two categories overlap, but they aren't the same. Not all molecules are compounds, because some molecules consist of atoms of only one element. (Two oxygen atoms, for example, can be joined by a covalent bond to form a molecule of oxygen.)

The findings are summarised in Figure 4.16:

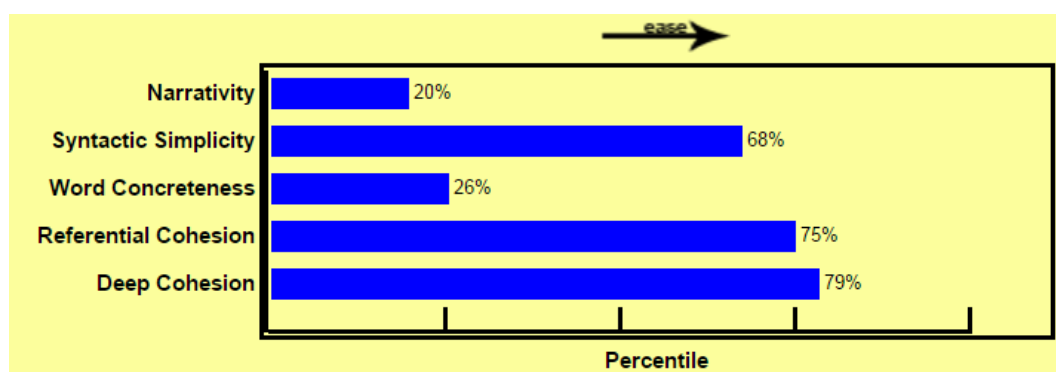


Figure 4.16: T.E.R.A graph: Textbook Module B Faculty of Health Sciences

This text is low in narrativity (20%) which indicates that it is not very story-like, making it harder to comprehend. It also scored low in word concreteness (26%), which means there are many abstract phrases, for example, “unfilled outermost energy levels”. This phrase is abstract as

energy levels is a concept that cannot be seen with the naked eye, and the technical vocabulary of these levels being “unfilled” and “outermost”, increases this abstractness. Words like these also contribute to the text being challenging to comprehend. The extract scored higher in the remaining three categories. The syntactic simplicity measured at 68%, which means that many sentences were simple making them easier to understand. The high scores of 75% and 79% of referential and deep cohesion indicate that there are overlapping ideas and information between sentences, as well as connective words to clarify relationships between information. This may help with the comprehension of challenging content. The Flesch-Kincaid grade level measured at grade 11.

Students present during the focus group interview, commented that they found the textbook of Module B “difficult”, specifically the vocabulary. It seems as though many words like “covalent” for example, were unfamiliar. It is interesting to note that the same group of students with an average reading grade level of grade 9, used both textbooks of Module A and Module B. Module A’s textbook measured at grade level 13, and Module B’s at grade level 11. However, according to the students, the textbook of Module A was more “understandable” than the textbook of Module B, which they experienced as “difficult”. It might be possible that the existence of photocopied notes of Module B, deterred the students from using the textbook. Thus, their perception that the textbook was difficult, was based on their comparison of the notes to the textbook. When one looks at the Flesch-Kincaid grade level measurement of reading grade 11, the textbook of Module B would have been easier to understand than the students expected. The fact that the lecturer of Module B just referred to pages in the textbook and did not work directly from the textbook in class, might have further alienated the students from the textbook, especially with the availability of the notes and the fact that the whole class seemed to be in possession of some form of copied notes.

Module B task analyses

The task type, content, format and lecturer’s purpose for the task are presented in Table 4.60.

Table 4.60: Specifications of the task in Module B: Faculty of Health

Appendix:	Q
Type of task:	Class test
Content tested:	A learning unit
Memorandum / Rubric:	Memorandum
Total marks:	25
Individual work / Group work:	Individual
Lecturer’s purpose for the task:	LMB found a test is the best motivator to get students to study.

In this class test, students had to answer eight multiple-choice questions and two longer questions. Most of the questions demanded that the students recall knowledge. Table 4.61 presents the class test analyses by means of the Umalusi typology:

Table 4.61: Analysis of the task in Module B: Faculty of Health

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Recall and recite knowledge Remember, define and describe basic facts Straight recall Know and use appropriate vocabulary	Easy	Very simple recall; identify specific data; tell; recite; list
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context	Easy	Simple relationships; simple explanations; 1 step answers

The purpose of this class test was to motivate students to read the content of the sections of the textbook with comprehension and to study what they have read. Conceptual knowledge was mostly tested, and it seemed as though the lecturer just tested whether the students could remember the facts that they needed to study. This is an example of rote learning. With the majority of the test consisting of multiple-choice questions and the two longer questions being of a recall nature, this test can be considered easy. As Table 4.23 indicates, the students did rather well in this test with an average of 73.6%. This might be due to the fact that the test did not include other types of cognitive demands or difficulty levels. According to the students, the notes contained a summarised version of the information they needed to study and it seemed as though the average student had success using the notes as the source of information for this test.

4.3.7 Faculty of Law

Within the Faculty of Law, two semi-structured interviews were held. One with each lecturer responsible for a module within a Law programme. A focus group interview was also held with a group of students enrolled in both modules. After the interviews took place, the data were transcribed and analysed. There were prescribed textbooks in both modules. Each of these law textbooks contained a number of court cases with discussions and activities. After the lecturer interviews, it became clear that the court cases were the sections of the textbooks mostly used. Thus, the document analysis was done on a single court case prescribed by Module B, but also applicable in Module A. The analysed tasks within this faculty were a presentation in Module A and a test in Module B.

4.3.7.1 Semi-structured interviews and focus group interview

The purpose of the semi-structured interviews and the focus group interview, was to learn more about the lecturers' and students' views about students' reading abilities, the applicability and difficulty level of the prescribed court cases used in the two modules, as well as the task contributing towards the completion of the participation mark.

4.3.7.1.1 Reading abilities of the reader (i.e., student)

Both lecturers and students commented on students' reading abilities within the academic context.

Lecturers' perspective: Both lecturers commented that reading is a crucial skill in the context of their modules, specifically the reading of court cases. Much of the lecture time is spent on court case discussions and both lecturers, therefore, expected their students to prepare for class by doing the required reading.

- *I expect students to **prepare** for class. They should have **read** something (a court case) before they enter my class. **I don't believe in sugar coating and spoon feeding.** LMA*
- *In this module, everything we do is **dependent on reading.** LMB*
- *Reading with comprehension is very important in this module, **especially the reading of court cases.** LMB*
- ***Interpretation of information is a key skill.** LMB*
- *They have **to read the court cases...** in preparation for the class. LMB*
- *I feel very strongly that **they should develop the needed skills to read and digest a court case on their own,** with the help of the law dictionary where needed. LMB*

With this comment, the lecturer placed the responsibility for developing the needed skills to read and comprehend a court case, on the student. He recommends a law dictionary as support if students struggle to understand. The question remains whether first year students are capable of developing these abilities on their own without other support strategies.

The lecturers were of the opinion that not many students were motivated to read in preparation for their classes.

- *It is however my personal opinion that **students do not read** the textbook in preparation for the lecture. LMA*
- *I can clearly see **only five or so students read** the case and were willing to participate. LMB*

The lecturers had different viewpoints on the reasons why students do not spend time reading in preparation for class. According to the lecturer of Module A, students only read when they know they are writing a test on the content.

- *The only time all the students will read the information before they come to class, is when you tell them **they are writing a test**. Then all the students read. Otherwise, very few of them know what is going on. **The reading has to be linked with participation marks.***

The lecturer of Module B commented that the students' reluctance to read might be due to different factors.

- *Students are **lazy** to read. LMB*
- *I also think students **struggle to read**, they might **not have the right reading skills** and because it is such an **effort to read**, they cannot get themselves to do it. LMB*

With "the right reading skills" the lecturer possibly referred to discipline specific reading strategies which could aid students in reading and understanding a court case.

It seemed as though both lecturers required students to read in preparation for their classes. It seemed as though students did not meet their requirements. The lecturer of Module A commented that tasks like tests are needed to extrinsically motivate students to read, while the lecturer of Module B felt that students should be intrinsically motivated to complete the required reading.

Students' perspective: The analysis of the focus group interview data, confirmed the views the two lecturers had on the students' reading motivation. Although the opinions of the students who took part in the focus group interview were not exactly similar, it seemed as though the following remarks were true for most students who were present:

- *I **wait for the word "test"** before I read or prepare anything.*
- *Sometimes they (court cases) are long and **you are lazy to read**.*

To summarise, the lecturers thought that the average student did not do enough reading in preparation for the class. Interestingly, the students admitted that they were "lazy" to read, which points to a lack of intrinsic motivation. They only read when they knew they were going to be tested on the content, so tests were their extrinsic motivation for completing the prescribed reading. The following comments of the students furthermore suggest that they had some negative feelings about the fact that they had to read the court cases independently, almost as if they expected more help from the two lecturers:

- *There was **no shortcut**. You had to read with comprehension.*
- *...you have to read it (a court case) **yourself** to make an interpretation.*
- *Some of the cases and terms we have never seen before, so **it feels as though we are thrown into the deep end**.*

These comments indicate that the students need support in the form of “modelling” of reading abilities as the discipline was unfamiliar to a first year student.

When students were asked to elaborate on their reading strategies used when they had to work through difficult content such as court cases, it seemed as though the group used support, global and problem solving strategies (cf. Table 4.1).

- *I use the (law) **dictionary**.* (Support strategy item 13)
- *I **paraphrase** the part I find difficult and I make **notes** about that.* (Support strategy item 18)
- *I go back to the **outcomes** and I use the **summary**. I go back to the court case and then I **read word-for-word**.* (Global strategy item 12; Problem solving strategy item 25)
- *I **highlight as I read**, and in the end I go back to the important parts.* (Support strategy item 10)

Although the lecturer of Module B wondered whether or not students had the needed reading abilities, the students seemed confident about their reading abilities as they were able to discuss reading strategies they used when confronted with a difficult text they had to read. The students gave the impression that they found the court cases challenging. Students seemed to want more support from their lecturers in terms of the content they had to read and analyse. However, they were seemingly able to put their own support strategies in place when they had to write a test about the content.

4.3.7.1.2 Texts used in modules

Court cases were the texts used most often in both modules. Although the modules had their own prescribed textbook, it became clear during the lecturer interviews and focus group, that court cases were of more importance.

Lecturers’ perspective: The lecturers held different viewpoints on court cases being a barrier to the student’s reading abilities. The lecturer of Module A thought that court cases were not that difficult to read with comprehension. She felt that the students had knowledge of Latin and law terms, which she dealt with previously. She was also of the opinion that the content of the court case played a role in students’ perception of its difficulty:

- *Some court cases are difficult to read, **especially ones that do not interest the students**, like for example a case about contracts. If it has something to do with a crime, for example Oscar Pretorious, **students find it more interesting and easier to read**. I am **unsure if the court cases are a barrier**. Maybe if it is very old court case, the language might be difficult. **But if you sit and read a court case, it is not really that difficult**. The Latin terms might be an obstacle, but even that is starting to dwindle. There are very specific law terminologies but that I do do with the students in the first semester, so they should not have a problem with it.*

The lecturer of Module B held a different opinion. According to him the language and terminology of court cases are difficult for the students, as well as the length of the court cases.

- *I think the **language of the court cases is definitely a barrier**. Law language is very different from the language we speak. The Latin terms and law-specific terms are also new for students.*
- *Students find the court cases **very long to read**. The maximum length of a court case I have given is 40 pages. **The students think it is very long and they would complain about it.***

Students' perspective: The majority of the students, who took part in the focus group, seemed to find the court cases they had to read, challenging.

- *...the court cases are **difficult to read**. They are written in **formal language** with a lot of **terminology** we have to look up.*
- *Sometimes they are **lengthy**...*
- *It **takes a lot of time to read** the court cases because you have to look up the words.*

These comments confirmed the observations of the lecturer of Module B. The students found the court cases lengthy and the terminology seemed to be the biggest stumbling block. Students appeared to have negative feelings towards any action that took some time and effort. They experienced the "lengthy" nature of court cases as a negative attribute. Looking up terminology was another time consuming action. Students gave the impression that they did not want to spend time doing this. The lack of lecturers' instructions on how to read a court case was also apparent. Students were metaphorically thrown into the deep end and expected to swim. Their only life line was the explanations of Latin terms and law vocabulary. As none of the students mentioned that they learnt the terminology earlier in the semester, it might be possible that the students were unable to apply the learnt terminology to the prescribed court cases.

Both interviewed lecturers made use of **slides** in their modules. They were also adamant that they used the slides only for main points and that they did not include any other information because they wanted to deter students from studying from their slides. This measure was put in place to force students to read the court cases.

- ***My slides are not complete at all, I just include main headings...I have noticed the more information you include on the slides, the less students listen in class and then they use the slides to study from.** I have even found if I do not include information on the slides, students will come and tell me they did not study that particular section because it wasn't on the slides. **I tell students that they cannot use the slides to study from.** LMA*
- *...the slides **only include main points** of a lecture and not any content. LMB*

- *I do not make any slides available which could act as a summary of a court case. I do not want to give students a short cut. They have to read the court cases...in preparation for the class. LMB*

This firm standpoint by both lecturers, were also reported during the focus group interview. It seemed as though very few students used the slides and those who did, only used them for direction. They slides were definitely not read extensively or studied.

- *I start with the slides, and I use them as **guidelines**.*
- *I do not use the slides a lot.*

Thus with incomplete slides, the court cases were the primary source of information and students had to read them to prepare for tasks. However, according to earlier lecturer remarks the students still did not read enough.

4.3.7.1.3 Tasks

The task information and students marks sent to the researcher by the lecturer of Module A, was for a group task where students had to do a mock trial and present heads of argument. This task was not discussed during the semi-structured interview. The lecturer's motivation for sending the information for another task was that this task was a better reflection of the students' abilities than any other task. It was not possible to interview the lecturer or the students on this task afterwards as the information was sent at the end of the academic year. This section only presents the qualitative data analysis of the task of Module B which was an exam test. As Module B is a year module spanning over two semesters, the test was written during the exam time in June, although the marks of the test still contributed to the students' participation marks, hence the term exam test.

Lecturers' perspective: The lecturer of Module B only made use of individual tests to gather participation marks for his students. It seemed as though the large student number was the prominent reason for this decision.

- *I have such **big groups** of students, 200 in one class, that I only make use of individual tests for assessment. If they were fewer, I might have considered using something else, but at the moment the **logistics** make it difficult to give any other task than a test.*
- *The tests are written **individually**. A test is **the best way that I can determine if a student has reached the outcomes of this module**. It is also **manageable to mark** the tests.*

The students seemed to experience these tests as difficult and monotonous.

- *Yes, we only write individual **horrible** tests.*
- *We study information and then we give it again. **Input and output**.*

The student was reluctant to elaborate why she described the test as “horrible”. The word seemed to suggest a level of frustration with the test. According to Table 5.23, the average score for the test was 52.40%, which can be considered low. It is possible that the student did not do very well in the test or that she disliked the tedious nature of the test which seemed to be memorization and reproduction of content. The students mentioned that they found the case studies and especially the terminology of the case studies difficult. As this test of Module B contained a large section on terminology and vocabulary, it is possible that that might be another reason why students found the test “horrible”. The analysis of the test is dealt with in the next section.

4.3.7.2 Document analyses

In the Faculty of Law, court cases were used in both modules. Therefore, a single South African court case was analysed, followed by the analysis of the group work task of Module A and the exam test of Module B.

Court case

Du Plessis v Pienaar NO en Andere (2003) was one of the prescribed court cases that students within this faculty had to read. An excerpt from the court case (Du Plessis v Pienaar NO en Andere, 2003:1) was analysed with the T.E.R.A software.

Headnote : Kopnota

In 1983 the appellant inherited certain movable and immovable property from her father. She was at that time married in community of E property, and the marriage was still in existence when the present case came before Court. The property was bequeathed to the appellant subject to a stipulation that it was not to form part of the joint estate of the appellant and her husband, that it was not to be subject to the marital power of the appellant's husband, and that it was not to fall within 'any possible insolvent estate' of the appellant's husband F nor vest in the trustee of such estate. The appellant's husband carried on business as a moneylender for the benefit of the joint estate. The business fell upon hard times and in March 2000 the joint estate was finally sequestrated. The first and second respondents were the trustees of the insolvent estate. When the trustees laid claim to the appellant's separate property for the benefit of creditors the appellant applied to a Provincial Division for orders declaring that G the property did not form part of the insolvent estate, prohibiting the trustees from selling the property for the benefit of creditors and compelling them to restore the property to her. The Court followed Badenhorst v Bekker NO en Andere 1994 (2) SA 155 (N) and dismissed the appellant's claims with costs but granted leave to appeal to the Supreme Court of Appeal. The central premise of the appellant's case was that the debts that had given rise to the claims H against the insolvent estate were debts incurred by the

joint estate, and that, that being so, they were recoverable only from the property of the joint estate, and not from the separate property of the appellant which falls outside the joint estate.

Figure 4.17 is a summary of the findings:

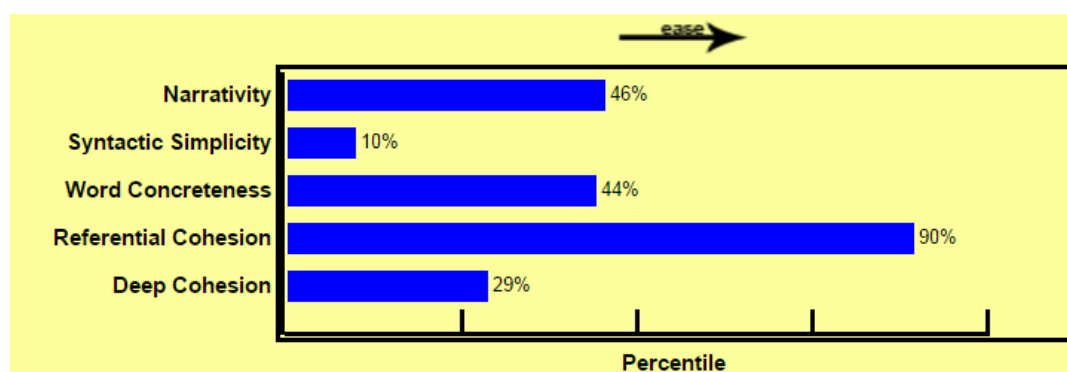


Figure 4.17: T.E.R.A graph: Court case Faculty of Law

The excerpt from the court case measured 10% in syntactic simplicity. This indicates that the sentences are complex with many clauses, for example, “The property was bequeathed to the appellant subject to a stipulation that it was not to form part of the joint estate of the appellant and her husband, that it was not to be subject to the marital power of the appellant's husband, and that it was not to fall within 'any possible insolvent estate' of the appellant's husband F nor vest in the trustee of such estate.” Such complex syntax is hard to process for a reader. The narrativity measured 46% and the word concreteness 44%. This shows that the excerpt is not very story like and that there are many abstract words. This can make the excerpt more difficult to read and understand. The excerpt has a high referential cohesion of 90%. This indicates that explicit words and ideas overlap between sentences. The overlap supports readers by referring to ideas introduced earlier, helping with connections. Deep cohesion measured at only 29%. This means that there are few connective words to clarify relationships between information. Because of this, the text may be more difficult to comprehend. The Flesch-Kincaid grade level measured at grade 14.

As the text excerpt measured at reading grade level 14, university students with a recommended reading grade level of 13, would have been able to read and understand the text. The lecturer of Module B was correct in his observation that the students found the court cases difficult to read as students confirmed this during the focus group interview. It can be expected that the students, with their average reading grade level of grade 10, would have experienced some challenges with, among others, the complicated sentence structures (syntactic simplicity of 10%) and the lack of deep cohesion (29%) of the text. The court case is also written in academic discipline-specific discourse. Students are entering this new discipline in their first year possibly without any prior knowledge of this discourse.

Module A task analyses

The task type, content, format and lecturer's purpose are summarised in Table 4.62:

Table 4.62: Specifications of the task in Module A: Faculty of Law

Appendix:	L
Type of task:	Presentation
Content tested:	Skills and knowledge acquired throughout the semester
Memorandum / Rubric:	Rubric
Total marks:	100
Individual work / Group work:	Group work
Lecturer's purpose for the task:	LMA was of the opinion that this task was a good reflection of the students' abilities

For this task, students had to work in groups of 10. Each group had to present a fictional client against the fictional client of another group. This task was also referred to as a "mock trial" as the groups appeared in "court" in front of their lecturers. This task had different aspects, such as preparation and research, drafting the necessary documents and presenting their argument. The presentation was marked with a rubric. There were five groups of criteria, namely participation, peer-reviewed heads of argument, lecturer-reviewed heads of argument, verbal argument and court etiquette. The reading of laws and other court cases were needed to compile the heads of argument. Of the hundred marks, the heads of argument itself only counted twenty marks. Ten was awarded by the peers, and ten by the lecturer. Thus, 80% of the marks comprised of other factors such as the presentation itself for which in-depth reading was not a pre-requisite. Table 4.63 presents the analysis of this task by means of the Umalusi typology:

Table 4.63: Analysis of task in Module A: Faculty of Law

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge	Easy	Very simple recall; identify specific data; tell; recite; list
Recall and recite knowledge	Moderate	Medium content; read and locate; briefly define a term; name and match
Remember, define and describe basic facts	Difficult	Recall complex content; correct spelling and use of vocabulary
Know and use appropriate vocabulary		

Table 4.64: Specifications of the task in Module B: Faculty of Law

Appendix:	M
Type of task:	Exam test
Content tested:	Learning units
Memorandum / Rubric:	Memorandum
Total marks:	50
Individual work / Group work:	Individual
Lecturer's purpose for the task:	LMB remarked that a test was the best way that he could determine if a student reached the outcomes of this module.

This class test consisted of four questions. Question one and two dealt with terminology and vocabulary, totalling thirty marks. Question two required the students to do calculations of a court case for ten marks and for question three the students had to recall the facts of a court case they had to study, also for ten marks. The analysis of this exam test was done with the Umalusi typology and is presented in Table 4.65.

Table 4.65: Analysis of the task in Module B: Faculty of Law

Type of cognitive demand	Difficulty level	Explanation and examples of level
1. Conceptual knowledge Recall and recite knowledge Remember, define and describe basic facts Straight recall Know and use appropriate vocabulary	Easy Moderate Difficult	Very simple recall; identify specific data; tell; recite; list Name and match Recall complex content; correct spelling and use of vocabulary
2. Comprehension (Understanding) Understanding of previously acquired information in a familiar context; Explain	Easy	Simple relationships; simple explanations; 1 step answers
3. Application Candidates to decide on the most appropriate procedure to solve the question and perform calculations.	Easy	Candidates know what process is required to solve the problem from the way the problem is posed. All of the information required is immediately available.

More than half of the marks of this exam test were awarded to terminology and vocabulary. Thus, this test mostly involved conceptual knowledge where students just had to repeat information

they learnt by heart. The remarks of the students during the focus group interview, that the tests of this module were rather tedious, seem to be grounded.

During the focus group, the students described this test as difficult, although, according to the Umalusi typology in Table 4.65, this should not have been the case. The students were able to achieve an average of 52.40% for this seemingly straightforward “input and output” test (Table 4.23). This average is an indication that the students either did not rote-learn the terminology, or that they were unaware of the question format of the test. It is uncertain if the lecturer made the purpose of the test and the question format explicit to the students. If they expected multiple-choice, they might not have adequately prepared for the two constructed-response questions and vice versa.

4.4 Summary

The results of the quantitative and qualitative data analyses were presented in this chapter. The quantitative section presented, analysed and interpreted data concerning reading strategies, reading comprehension and task achievement as well as the correlation between reading strategies and reading comprehension and the correlation between reading strategies and task achievement per faculty. In the qualitative section, findings about the reading abilities of the students, the prescribed academic texts and the tasks within the modules were presented, analysed and interpreted.

A number of themes emerged from these analyses and interpretations. These themes are grouped together according to the category from which they emanate. The four categories constitute the four core concepts of the theoretical framework of this study (cf. Figure 1.1), namely the socio-cultural context, the reader, the text and the task. I would like to make use of a metaphor representing cogs in a mechanism to illustrate how these cogs (e.g., socio-cultural context, reader, text and activity) are dependent on one another.

The following themes emanated from the socio-cultural context:

- Throughput figures have an effect on lecturers’ choice of texts as well as choice and format of tasks.
- Lecturers have assumptions related to the abilities of their students. These assumptions are that their students:
 - have the necessary reading skills,
 - can read independently,
 - are motivated to study and complete assigned work,
 - know how to “answer” tests and complete tasks,

- can work effectively in groups,
- come to class prepared, and
- intuitively know how to “use” scholarly discourse, in other words, what is expected in the discipline in terms of scholarly engagement.

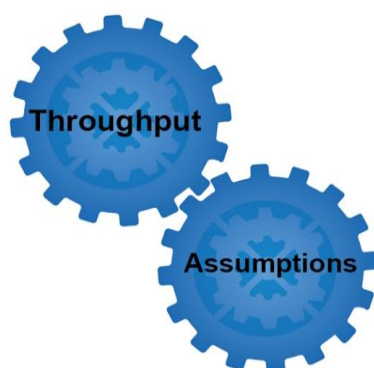


Figure 4.18: Socio-cultural context themes

The following themes emanated from the reader category, namely that students:

- lack the reading skills and vocabulary to work with the prescribed texts and this causes them to experience reading comprehension problems.
- make use of reading strategies.
- have certain assumptions. They assume that:
 - academic text can be customised to their needs,
 - lecturers should provide the same guidance as their school teachers, and
 - tasks at university are similar to those they were familiar with at school.
- are non-compliant with prescribed academic reading.



Figure 4.19: Reader themes

The following themes emanated from the text category:

- A textbook is the most prescribed type of academic text. Although lecturers thought the textbooks to be suitable, the students struggled with dense language structures and technical vocabulary, partly due to their reading abilities.

- Notes are the primary source of information in the majority of the modules. These notes include lecturer slides.

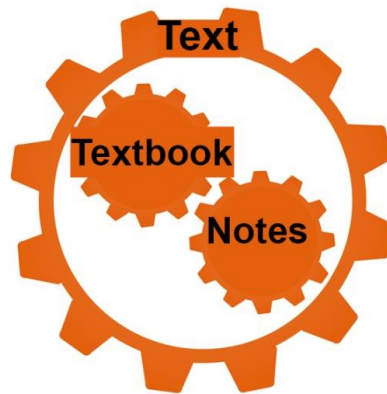


Figure 4.20: Text themes

The following theme emanated from the task category:

- The task format in terms of the instructions, task type, question format, marking criteria and cognitive demand level, affects students':
 - choice of texts,
 - reading strategies,
 - reading motivation.

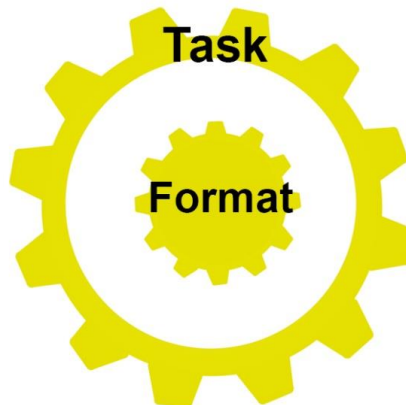


Figure 4.21: Task themes

In the final chapter the quantitative and qualitative results are merged and discussed. The implications of the results will be addressed in section 5.4 by means of Figure 5.1. Figure 5.1 is a visual representation of an academic reading support metaphor.

CHAPTER 5: MERGED FINDINGS, IMPLICATIONS FOR ACADEMIC READING SUPPORT AND CONCLUSION

5.1 Introduction

The final chapter of this study presents the merged quantitative and qualitative findings. As stated in the first chapter, numerical data about the use of reading strategies, results of reading comprehension tests and task achievement (quantitative) was collected and analysed. Descriptive/narrative data from students and lecturers about students' reading abilities, the nature of the prescribed academic texts in English and the tasks given (qualitative) were also collected and analysed. The synthesis of these findings enables the researcher to come to a number of conclusions about the different aspects and address the research questions. Thereafter the implications of these conclusions for academic reading support are discussed. This section is then followed by the limitations of the study, recommendations for further research and the contribution of this study.

5.2 Addressing the research questions: a merging of findings

"Mixed methods research is, generally speaking, an approach to knowledge that attempts to consider multiple viewpoints, perspectives, positions, and standpoints, always including qualitative and quantitative research" (Johnson *et al.*, 2007:113). In this study knowledge was gained about the influence and interplay of the socio-cultural context, the reader, the text and the task, on the reading comprehension and reading strategy use of first year students at a South African university. The research questions are addressed by discussing the core aspects of the merged quantitative and qualitative results.

5.2.1 What categories of reading strategies do first year undergraduate students report applying while reading academic texts in a higher education setting?

The quantitative and the qualitative data analyses indicated that the first year students at University X used a variety of reading strategies. The results showed a great deal of similarity between faculties in terms of the most as well as the least used strategies. Problem solving strategies were used most by the students within all faculties. These strategies are typically used by students to tackle the problem while the text becomes difficult to understand. Examples include pausing and thinking about the text, starting again from the part where you lost your concentration and so forth. A possible reason for the frequent use of problem solving reading strategies is students' familiarity with them. School teachers, for example, often make use of repetition (SORS item 25 cf. Table 4.1), model reading slowly and carefully (SORS item 7 cf. Table 4.1), and even stop from time to time to check whether the learners understand what is being read (SORS item 16 cf. Table 4.1). It seems as though the recurring use of these strategies at school, might have

led to the reported frequent use of problems solving reading strategies during the students' first year.

Global reading strategies was the second most used group of reading strategies. These strategies monitor and manage the reading process. Having a purpose in mind when reading and connecting information read to prior knowledge are two examples of global reading strategies. A global reading strategy that was not used often was the ability to identify important information. For example, the Economic and Management Sciences students mentioned that they struggled to find information in the textbook (cf. section 4.3.4.1.2). This can possibly be attributed to them being unable to identify the key concepts in the text. Students need lecturers to identify these key concepts for them. During the focus groups the students remarked that they needed and used the slides of the lecturers to guide them to the sections of the textbook that they assumed the lecturer thought to be important. Students were so dependent on the lecturer, that they were unable to independently decide what to read closely and what to ignore.

Support reading strategies involve getting help from outside aids to comprehend what is read. The support reading strategies of making use of reference materials to help with reading comprehension (item 13), and making notes while reading (item 2), were the least used reading strategies overall (cf. Table 4.4). The support category was also the least used category by the participants (cf. Table 4.3). The qualitative findings provided a possible reason for students' reluctance to use the support strategies listed on the SORS. From the qualitative data analyses, it became clear that students were using "alternative" support strategies to cope with their academic reading. The word "alternative" indicates that these strategies are not documented on the SORS instrument. The first alternative strategy used by all students who took part in the focus group interviews, was "using" lecturers' explanations to comprehend the disciplinary content. The following individual comments by students and lecturers supported the use of this strategy:

- "I'm not worried if I don't understand. The lecturer will explain it in class." (cf. 4.3.5.1.1)
- "I want an explanation before I read the textbook." (cf. section 4.3.1.1.1)
- "They (students) come to me and I help them." (cf. section 4.3.5.1.1)
- "The students are lazy and they want an explanation." (cf. section 4.3.2.1.3)
- "The students don't read, they ask me first." (cf. section 4.3.2.1.1)
- "The lecturer would explain the theory of the textbook in class, but simpler." (cf. 4.3.2.1.1)
- "He (lecturer) goes through the textbook and he then tells us "this is important, and that is important" and then he shows us examples of the calculations in class." (cf. 4.3.2.1.1)

Students possibly preferred this "strategy" because it reflects the teachers' role at school.

The second alternative support strategy identified from the qualitative data, was buying and using notes (cf. section 2.2.3.2 for an example of an advertisement and Appendix W for example of notes). The rationale for this alternative support strategy lies in the comments of students that they struggled with “long” texts, thus preferring summarised versions, which they were either unable or unwilling to compile themselves. From comments made during the focus group interviews, it can be concluded that some students consider these notes more helpful than the textbook itself. This strategy has similar advantages to “using” the explanations of the lecturer. Buying notes is much quicker than summarising, highlighting and making one’s own notes.

While students clearly benefitted from these two alternative support strategies in the short term, it may possibly affect students negatively in the long term. They get used to being passive receivers of knowledge. They stay just as dependent on their lecturers as they were on their school teachers. They do not form the habit of finding information in academic texts and so they miss out on opportunities to immerse themselves in the written discourse of their discipline. This could also have an effect when students are required to do independent research tasks. Furthermore, there has been little evidence of learning gains from using someone else’s notes (Van Meter *et al.*, 1994:323). This might be because the value of compiling notes lies in the fact that notes are a personal representation of what has been learned.

Students make use of reading strategies, but it is clear that the strategies have “a new look”. Students have adapted to learning in the 21st century environment where they have access to digital resources such as YouTube and electronic dictionaries. They seem to have a “consumerist” mind-set as they have the confidence to “demand” explanations and specific guidance from lecturers. The lecturers comply with their “demands” and instead of modelling reading strategies which are efficient and effective for disciplinary texts, the lecturers explain and explain again, compiling notes and designing tasks for which the reading of the textbook is not a necessity.

5.2.2 What is the relationship between students’ reading strategy use, reading comprehension and task achievement?

The relationship between reading strategy use and reading comprehension was not found to be statistically or practically significant. A possible reason may be that reading text on a screen is different to reading text on paper. For most of the students participating in this study it might have been their first time in terms of completing a reading comprehension test on a computer. Wästlund *et al.* (2005:377) provided a psychological and physical explanation that computer-based reading caused a greater level of tiredness and stress. These effects required an increase in cognitive demands, that is, the activation of more perceptual, executive and cognitive resources. Results

of a study conducted by Yen and Wang (2002:7) showed that most university students did not deal with e-based reading well.

In addition, the reported strategy use determined by the SORS relates primarily to paper-based use for example, summarising and making notes while reading. From the analyses of the focus group interviews, a statement such as “I read and read and I still don’t understand” (cf. sections 4.3.1.1.1) may indicate that students used, for example, the re-reading strategy, but that this strategy would have affected their reading speed and possibly their reading comprehension score as determined on the computer.

The relationship between reading strategy use and task achievement in the Faculties of Engineering and Law indicated an absence of a statistically as well as a practically significant relationship. During the focus group interviews it became clear that the students did not rely on reading to complete the specific tasks. For the multiple choice test in the Engineering faculty, students studied the lecturer’s slides (cf. section 4.3.5.1.3) and for the group task it seems that the Law students spent more time practising their presentations than they did reading a court case or government law.

A number of small and medium practically significant relationships between different groups of reading strategies and the tasks assigned were indicated within the other faculties. Small practically significant relationships were indicated between support reading strategies and task achievement within the Faculties of Arts, Natural Sciences, Education Sciences, Economic and Management Sciences and Health Sciences. As support reading strategies involve getting help from outside aids to understand what you read, the relationship between support reading strategies and task achievement seems logical. According to Cohen’s effect size r , a small or medium effect does not have implications for practise (cf. section 3.3.7.1). The qualitative data analyses indicate that students within the Faculties of Arts, Natural Science, Education and Health (Module B) mostly used notes and lecturer slides to complete the tasks. As mentioned previously a lack of relationship may be attributed to the use of “alternative” strategies as well as a possible lack of strategic use of strategies.

A practically significant relationship (i.e., large effect size) was found between global reading strategies, problem solving reading strategies, and the presentation group task within the Faculty of Economic and Management Sciences. From the document analysis (cf. section 4.3.4.2.2), it was clear that in order to complete this presentation, students firstly had to have an overview of what the topic was about (global reading strategies), and then they had to ensure that they understood the topic to such an extent that they could explain it to their peers. This involved

problem solving reading strategies such as paying close attention to important aspects and re-reading sections. Thus, for this task the use of strategies was necessary to complete the task successfully. This is one of the possible reasons for the practically significant relationship of a large effect size.

5.2.3 How do lecturers and students themselves perceive students' reading abilities, prescribed academic texts and tasks assigned by lecturers?

According to Valencia *et al.* (2014:287), "it is important to remember that task and text factors interact with reader factors within a context, and that none of these can be understood fully in isolation from the others". Although the lecturers and students commented on students' reading abilities, texts and tasks, the analyses of their perceptions revealed the interconnectedness of these three categories with regard to reading, as well as other influences which originate from the socio-cultural context. This section is not a summary of lecturers' and students' perceptions on each of the categories, but a synthesis of how their perceptions contribute to the knowledge of the use of reading strategies and reading comprehension of first year students at University X.

5.2.3.1 Perceptions of students' reading abilities

In general, the students and lecturers were of the opinion that students' reading abilities were lacking in terms of the reading demands of their modules. Students experience problems with understanding what they read, they are not complying with their prescribed reading, they "take long" to read, and they struggle to understand "difficult" words.

In terms of their reading comprehension, the quantitative reading comprehension data provided by the Readers are Leaders software programme (cf. Table 4.22), indicate that students' reading abilities are lacking and that they are generally unprepared for the reading demands at university. This is supported by qualitative findings from the lecturer and focus group interviews that students struggle to read with understanding.

Furthermore, the students' lacking reading abilities are evident in the cycle of non-compliance with prescribed academic reading which emanated from the interviews. Firstly, students realise that their reading abilities are inadequate as they experience problems of comprehension (i.e., "The authors want to look smart. They wrote with their level, not our level", cf. section 4.3.1.1.2). Then, they do not allot the needed time to read the text with comprehension. With too little time available, lacking reading stamina and slower than needed reading speed, students become frustrated and give up on reading (i.e., "The textbook is so formal, so I do not have time to figure out what is going on. I rather study other modules where I understand everything", cf. section 4.3.3.1.2). As a result, students become dependent on the lecturer to explain what they were

supposed to read (i.e., “If it’s important, the lecturer will explain it in class”, cf. section 4.3.3.1.1). The lecturer realises that students are non-compliant with the readings and because of the pressure to help students pass the module, the lecturer devotes class time to teach to the text (i.e., “Students will be able to pass this module without using the textbook”, cf. section 4.3.5.1.1). The students realise that the lecturer will review the needed sections of the textbook and so they are not forced to practise their reading skills in order to become better readers (i.e., “We start with the lecturer slides so we know what is going on. That way we won’t look at unnecessary information in the textbook” cf. section 4.3.5.1.1).

This cycle indicates that students themselves realise that they have problems with reading comprehension, but they would rather be non-compliant readers than take active steps to improve their reading skills. The fact that lecturers take responsibility to “teach” textbook content to students (e.g., identifying core aspects that could also be asked in tests etc.), reinforces students’ non-compliance and their reading abilities are not improved. These findings related to the negative cycle of non-compliance is supported by Ryan (cited in Hoeft, 2012:2) and Bean (2001:134).

As mentioned in the cycle of non-compliance, students lack reading stamina. The students within the Faculty of Arts commented that the academic articles they had to read were “too long”. From the interview it seemed as though a “very long” text consists of about 30 pages (cf. section 4.3.1.1.2). The Law students reported that the court cases were also “long” and that they were “lazy” to read them (cf. section 4.3.7.1.2) and one lecturer remarked that students were unable to read “a big volume of text” with comprehension (cf. section 4.3.4.1.1). Thus, it seems as though the students lack the reading stamina to independently read all their prescribed academic texts. This finding is supported by research (Springer *et al.*, 2014:304). This lack of stamina negatively affects students’ reading motivation and their willingness to read to prepare for class. Additionally, the volume of academic reading in the students’ coming years of study will most likely increase and if they are not frequently required to read lengthy academic texts, they will not have the opportunity to build their reading stamina.

A “slower than needed” reading speed is another reason why students “give up” on reading academic texts. The Readers are Leaders software programme measured the reading speed of the participants and it varied from 37 words per minute to 506 words per minute (cf. Table 4.21). This large range is one of the indications that students’ reading speeds vary. The average reading speed differed between faculties but all the averages were slower than Taylor’s (1965:193) suggested 280 words per minute (cf. Table 4.22) and University X’s required reading speed of 220 words per minute (Meihuizen, 2017:4). According to the qualitative data analyses on the topic

of reading speed, it was clear that lectures and students were of the opinion that students' reading speed was inadequate. A lecturer from the EMS faculty and a lecturer from the Education faculty commented that their students were "slow readers" (cf. sections 4.3.3.1.1 & 4.3.4.1.1) and the Engineering students and Education students remarked that it "takes long to read" (cf. section 4.3.5.1.1; 4.3.3.1.1). A reading speed slower than 280 words per minute is not necessarily detrimental. Research indicates that reading speed does not always align with reading ability and a slower reading speed can even be beneficial if the reader is reading strategically (Kwon & Linderholm, 2015:161). However, a reading speed slower than 280 words per minute might indicate that students will struggle with the amount of academic reading to be completed. Furthermore, at University X, reading speed and reading comprehension results are used to make certain decisions about an individual's reading abilities and whether or not he/she needs additional reading support. In this context, a slower than recommended reading speed is an indication of lacking reading abilities.

In terms of perceived reading abilities, students also seemed to lack the needed vocabulary to comprehend discipline-specific texts. The following comment emphasises this statement: "I just use words in my answer, even if I don't understand them." (cf. section 4.3.4.1.1). Law students specifically commented that they struggled with vocabulary. Within this faculty, disciplinary specific law terminology is important in understanding government laws and court cases and there are a number of concepts with specific meaning which must be interpreted when applied to scenarios. While both lecturers commented that they explicitly taught the needed vocabulary to their students, it seemed as though the students still found the vocabulary "difficult". Students were provided with lists of definitions to learn and this rote-learning of vocabulary without understanding how the vocabulary is used in context, was not that effective. This supports findings of Francis and Simpson (2009:112), that the memorisation of new vocabulary is not as effective as learning vocabulary in context.

5.2.3.2 Perceptions of prescribed academic texts

The academic textbook is a powerful tool that plays a crucial role in learning at university (cf. section 2.2.3.1). The majority of the lecturers were of the opinion that the textbook they prescribed was suitable for use in their module and by making use of the T.E.R.A software programme, the textbooks were deemed suitable. The textbooks were scored on five aspects namely narrativity, syntactic simplicity, word concreteness, referential cohesion and deep cohesion, and for each the Flesch-Kincaid grade level was indicated. The often low percentages for the mentioned aspects, indicate that the textbooks contained academic language in terms of "sophisticated" vocabulary and grammatical constructions, which are typical features of academic texts (Snow, 2010:450).

Even though the textbooks were suitable according to the T.E.R.A analyses and lecturers' comments, the majority of students held a different opinion. They thought many of their textbooks were too "difficult" and "unnecessary". This difference in opinion can be due to a "mismatch" of students' reading abilities and the difficulty levels of the textbooks. The opinion of students that the textbooks were not suitable, can also be due to the fact that reading was not essential in many of their modules. A student's frustration with realising that reading a textbook was in fact, not necessary, is evident from the following comment (cf. section 4.3.1.1.2): "The lecturer would say, prepare chapter 7 of the textbook and he literally only uses a few points, and there I go and study the WHOLE chapter, where I could have just like done something else."

The opinion of students that the textbooks were unsuitable, can additionally be ascribed to the availability of other texts in the module. Within Module B of the Faculty of Engineering, for example, it was not necessary for students to read the textbook. The lecturer "helped" the students (cf. section 4.3.5.1.1) by preparing notes. As a result students had little or no use for the textbook.

From the comments made by lectures and students, it was clear that the use of notes was not an occurrence isolated to the Engineering faculty. Most students made use of notes as a primary text. These notes either took the form of "hand-outs" of the lecturers' PowerPoint presentations, or were notes compiled by a peer. During the focus group interviews it became clear than selling and buying module notes is a practise among students in the Faculties of Arts, Module A and B; Education Module B; Engineering Modules A and B; and Health Module B. Students preferred these notes because information was summarised, to-the-point, and the key concepts were identified. These notes were, in many cases, the only text necessary to "read" to complete tasks. The following comment made by a student indicates how the availability of notes influenced his perception of the necessity of reading (cf. section 4.3.5.1.2): "In the beginning of the year, I really studied from that textbook. Then when the test came, I did poorly. The next time I did not open the textbook, I just studied the notes. Now I've learnt my lesson."

The availability of notes partly influences students to adapt such a pragmatist approach to reading. Students run a "cost-benefit analysis" when it comes to prescribed academic reading as they determine the minimum reading investment that will help them reach at least the minimum task requirements (Schwartz, s.a:1; Del Principe & Ihara, 2016:203). When other texts are available such as notes and students can use the notes to complete the task, students see no reason to "go to all the trouble" to read the textbook.

The only group of students who stated that they actually read and understood their textbook, was the students within the Faculty of Health (Module A). This group of students perceived this module's textbook as suitable. What differentiated this module from the others, is the fact that the lecturer worked from the textbook each period and required the students to have their textbooks in class (cf. section 4.3.6.1.2). The lecturer's slides were of little use and reading the textbook was a necessity for all the tasks students had to complete. As the lecturer continuously used the textbook, the students became aware of its purpose in their teaching and learning activities. They were thus able to "link" the text they had to read to the tasks they had to complete.

Another perception of students about academic texts, is that it should be adapted to their preferences. This perception possibly stems from their "enthusiastic" engagement with text in the digital environment (Joliffe & Harl, 2008:612). One lecturer commented that students would rather watch a YouTube video than read their textbook, and that the students were not "programmed" to read academic texts in depth (cf. section 4.3.1.1.1). A group of students also referred to YouTube as an option for finding information (cf. section 4.3.2.1.1). Another lecturer mentioned that a textbook was not in the students "frame of reference", possibly comparing the textbook to information available in the digital environment (cf. section 4.3.2.1.1). This links with a comment made by the group of Education students, that "Google is your best friend". YouTube and other online information is usually presented visually and in a summarised fashion.

As information in the digital environment is often dynamic (Wolf & Barzillai, 2009:32), it is interesting to note that students also expect this of their academic texts. Two groups of students stated that the textbook contained "unnecessary information" (cf. sections 4.3.1.1.2; 4.3.5.1.1). This points to a possible comparison between shorter summarised online texts and lengthy detailed academic texts in print. Students seemed to prefer the former. Students also expressed the need to find texts and lectures "enjoyable" (cf. section 4.3.3.1.2) pointing to the entertainment they experience in the digital environment. This finding is further supported by the comment of an EMS student that "(academic) reading is too boring" (cf. section 4.3.4.1.1).

Students also expressed the need for their academic texts to be tailored to their exact needs. This became evident in the focus group discussion of the Engineering students (cf. section 4.3.5.1.3) and the EMS students (cf. section 4.3.4.1.3). The EMS students, for example, felt strongly that as they paid for the textbook, they wanted more summaries in the textbook and they wanted a textbook with an easier structure to find information "quicker". The students seem so used to the dynamic and entertaining qualities of information in the digital environment that they struggle with academic text that is not necessarily interesting, lengthy and not tailored to their specific needs.

5.2.3.3 Perceptions of assigned tasks

Students and lecturers had different perceptions of the tasks assigned by lecturers. The document analyses of the tasks together with the analyses of the comments, enabled the researcher to uncover possible reasons for these perceptions and the implications for reading at university.

Firstly, the students and lecturers had different perceptions with regard to task difficulty. From the focus group interviews, it seemed as though the students often perceived the tasks as “difficult” while the lecturers were of the opinion that the tasks they assigned were not “difficult” and in many cases “straight forward”. The quantitative task achievement data (cf. Table 4.23), support students’ perceptions of task difficulty, as many of the task achievement averages barely reached 50% and students base their opinion on the mark they receive. Lecturers’ perceptions were also supported by the document analyses which indicated that most of the tasks involved questions from the first two cognitive levels and in many instances, the difficulty level of the questions were “easy” and “moderate”.

There is a number of reasons why the perceptions of students and lecturers differed. One of the reasons that became clear during the focus group interviews is students’ and lecturers’ assumptions. Students assumed that the tasks they had to complete within their modules, were similar to tasks they completed at school. While many of the tests students wrote bore similarity to school tests, other tasks lecturers assigned differed, such as an argumentative essay (Faculty of Arts, Module B) and a tutorial test (Faculty of Natural Sciences, Module B). One Natural Science student remarked that the tutorial test of Module B, was “nothing like that which we did at school. We don’t understand it” (cf. section 4.3.2.1.1). Due to the fact that some of the tasks differed from school tasks, students perceived them as “difficult”. They also assumed that lecturers would explain to them exactly what they had to do to complete a task. Lecturers assumed that students knew how to complete a task and this is part of the reason why they did not see the need for elaborate task explanations. When lecturers did not spend lecture time on discussing every aspect of a task and gave written instructions instead (cf. sections 4.3.7.2.1; 4.3.1.2.1), it contributed to students’ uncertainty of how the tasks were to be completed, and as a result students perceived such tasks as “difficult”.

Lecturers also assumed that students were motivated to complete tasks exceptionally well and that they were committed to the discipline. This finding is supported by Hobson (2004) who points out that lecturers see students as “younger versions of themselves.” These assumptions may have lead lecturers to perceive tasks as “simple”, as they were looking at these tasks from an

expert's point of view. As the first years were novices in the disciplines as well as novices in terms of completing tasks at university, their lack of disciplinary knowledge and experience caused the students to perceive the "simple" tasks as "difficult". Furthermore, from an analyses of the focus group interview data, it was clear that not all students were passionate about their chosen discipline and that the students had different levels of commitment to the tasks.

Another reason for the different perceptions of the tasks is the importance students and lecturers placed on reading as a requirement for task completion. All the lecturers remarked that students needed to read the prescribed texts to be able to complete the task. The lecturers generally communicated this requirement by providing students with relevant page numbers and informing them that reading is important. The link between the text and the task was clear to the lecturers, as they designed the tasks. They also thought it obvious that students would read the prescribed text, then complete the task in order to fulfil the module requirements.

For the students, the link between the text and the task was generally vague and in some cases absent. An example is the students within the Faculty of Arts who were unable to complete a case study about concepts discussed in a scholarly article, and the students within the Faculties of Engineering and Health who remarked that they did not need to read the textbook to complete their tasks. The students were usually in possession of alternative texts such as notes and lecturers' slides which contained module content summarised in a concise manner. As the students were unable to make the link between the prescribed text and the task, they could not understand why they had to "go to all the trouble" of reading the textbook when they could "just use the notes". Due to the fact that the majority of the students did not read the prescribed text as required by the lecturer, they seemed to lack needed information and were in general unable to complete the tasks with success. This also contributed to students perceiving the tasks as "difficult" even though they thought they were adequately prepared.

The question arose as to why the link between the prescribed academic text and the task seemed very clear to lecturers and vague or absent to the students. Although the lecturers reported that they "told" students that the text was important for task completion, students still seemed unable to make the link and were non-compliant with the prescribed reading. From the data analyses of the tasks as well as student and lecturer comments, it became clear that the task type, question format, cognitive level of the questions, instructions of the task and marking criteria all played a role in establishing or "disconnecting" the link between text and task.

For the majority of tasks, lecturers made use of tests. They commented that they preferred tests to tasks, because tests take less time to mark. In terms of the question format in the tests,

lecturers seemed inclined to make use of multiple choice questions rather than constructed-response questions. Reasons being that multiple choice questions can test a broad range of content and it can be marked without much effort, either electronically or with the help of assistants. This correlates with the research findings of Livingston (2009:1), namely that tests are the preferred task type and that multiple choice questions are frequently used in a university context. From the document analyses it was clear that most of the questions tested the first two cognitive levels and did not, for example, require application or synthesis. According to Hermida (2009:28), students would be encouraged to read if the task demands “higher order cognitive skills”, so why would students need to immerse themselves in written disciplinary discourse when they had to simply state facts and give definitions which can be found on lecturer slides?

In the focus group interviews students mentioned that they were content with “getting by” (i.e., achieving 50% for a task). Students remarked that they opted for any alternative strategy which enabled them to access textbook content without having to read the textbook. Two of these strategies were relying on lecturer’s explanations and buying notes. The tasks of Module B within the Faculty of Health Sciences serve as an example. During the semester, the lecturer set a number of class tests, of which one was included in the document analyses (cf. Table 4.61). These tests included the first two cognitive demand levels and the questions were rated as “easy”. It is thus not surprising that many of the students who took part in the focus group interview, commented that they did not own the textbook and that the bought notes were more than sufficient to prepare for the test. The notes contained key definitions and a summary of the information (cf. Appendix W). As a result, this group of students perceived that reading academic texts was not a necessity to complete a task. When students repeatedly write such tests, it strengthens this perception and negatively affects students’ opinions of the importance of reading in their modules.

Four of the fourteen lecturers chose to give a group task rather than a test (cf. Arts Module B, section 4.3.1.2.1; Education Module B, section 4.3.3.2.2; EMS Module B, section 4.3.4.1.3; Law, Module A, section 4.3.7.1.3). The lectures made use of this task type as they were of the opinion that it enabled them to test more than facts and definitions. The tasks required students to synthesise and apply their knowledge in a disciplinary context. From students’ comments it was clear that some group members were able to make the link between the text and the task as they reported to have read the prescribed text. However, as the task was a group task, it is uncertain if all members were able to make the link and comply with the required reading.

The formulation of the instructions required to complete tasks is an aspect that needs attention. According to Schwartz (s.a:3), “vague assignments without guidance as to what students should ‘get’ from the readings” are one of the reasons why students feel confused and in the end do not

complete the readings at all. An example from this study is the students within the Faculty of Arts who were unsure what was expected from them for the first task of Module A (cf. section 4.3.1.1.3):

- “I could not understand how a term can be converted into a long essay.”
- “The questions were vague and the documents were like 30 pages long. We did not understand what he wanted, and if you do not write exactly what he wants you will not get any marks for it.”

Explicit instructions have an impact on students' compliance to read prescribed texts, as well as their task achievement. If students understand the expectations of the lecturer in terms of how the task should be completed and if the instructions aid the students in making the link between text and task, they would possibly be more inclined to read the text and achieve success with the tasks' completion.

An analysis of the marking criteria used by lecturers indicates that they tend to manipulate these criteria so that students can complete the tasks successfully without using too much disciplinary engagement. For example in the essay task (Arts Module B, cf. section 4.3.1.2.2), 50% of the marks on the rubric, were allocated to technical aspects of the essay. The lecturer intentionally designed the rubric this way to “help” students. The essay involved conceptual knowledge, comprehension, application, analysis and problem solving (cf. Umalusi typology section 4.3.1.2.2). This task demanded higher order cognitive skills, but attributing half of the marks to technical aspects, “helped” students as it is “easier” to, for example, compile a table of contents and insert page numbers than applying and synthesising knowledge in the content section of the task.

Lecturers are generally of the opinion that students' task achievement is “poor” and attributed this to student “deficits”. According to them, students are “lazy” to study for tests, their reading abilities are lacking, they don't read the prescribed texts and they don't attend the lecture in which the task is discussed. From the interpretation of the data it is clear, however, that student “deficits” are only one of the reasons why students' and lecturers' task perceptions are not aligned. Discipline specific tasks which demand higher cognitive levels might aid students in making the link between the text and the task and as a result compel them to comply with prescribed reading. However, the instructions of the task need to be clear and the marking criteria should not convey the message that presentation (Law task Module A) or technical requirements (Arts task Module A) are more important than the content of the tasks which contain the real evidence of, for example, synthesis and evaluation.

Research indicates that students comply with prescribed reading if they know, or suspect that it is part of a task for which marks will be awarded (Del Principe & Ihara, 2016:203). The findings of this study support the findings of Reeves (2006:304) that the task has potential to engage undergraduate students in meaningful learning activities, which include reading academic texts with comprehension. However, at present it seems as though the first year students at University X are often inadequately engaged by traditional academic tasks such as multiple-choice tests of lower level cognitive knowledge. This inadequate engagement has repercussions as students do not make the link between the text and task and thus are not complying with prescribed reading, even when the reading is connected to assigned tasks.

5.3 Hypotheses

In this particular study, the null hypothesis must be accepted because the relationship between reading strategy use, reading comprehension and the task achievement of first year students within a higher education setting, are not strong enough to justify accepting the alternative hypothesis. Possible reasons for this lack of relationship are highlighted in section 5.5.

5.4 Implications for academic reading support

“Most first-year students do not know how to listen well, to make notes on what they hear, to read with comprehension, or to write referentially about the real world. Nonetheless, an equally important premise is that they are completely capable of learning to do all of these things” (Leamson, 1999:ix).

This accepting-yet-optimistic assessment of specifically first year students’ potential in terms of reading, echoes the purpose of the recommendations given in this section. Even though it is evident from the merged findings (cf. Figure 5.1), that there are several challenges with regard to reading strategy use and reading comprehension, there are a number of ways that these challenges can be addressed.

In Chapter 4 the themes which emanated from the reader, the text, the task and the socio-cultural context, were presented as separate cogs. According to the theoretical framework, reading comprehension can be conceptualised as the combination of three variables, namely the reader, text and task which occur within a socio-cultural context that influences and is influenced by the three variables (RAND Reading Study Group, 2002:11). The academic reading support metaphor is based on this theoretical framework and compares reading to a mechanism consisting of different interconnected cogs working together. Figure 5.1 is a visual representation of the academic reading support metaphor. The two cogs of throughput and assumptions are not directly connected to the three cogs of the reader, text and task as these cogs are situated

within the socio-cultural context (bigger blue circle) and this implies that they influence the reading comprehension process in totality.

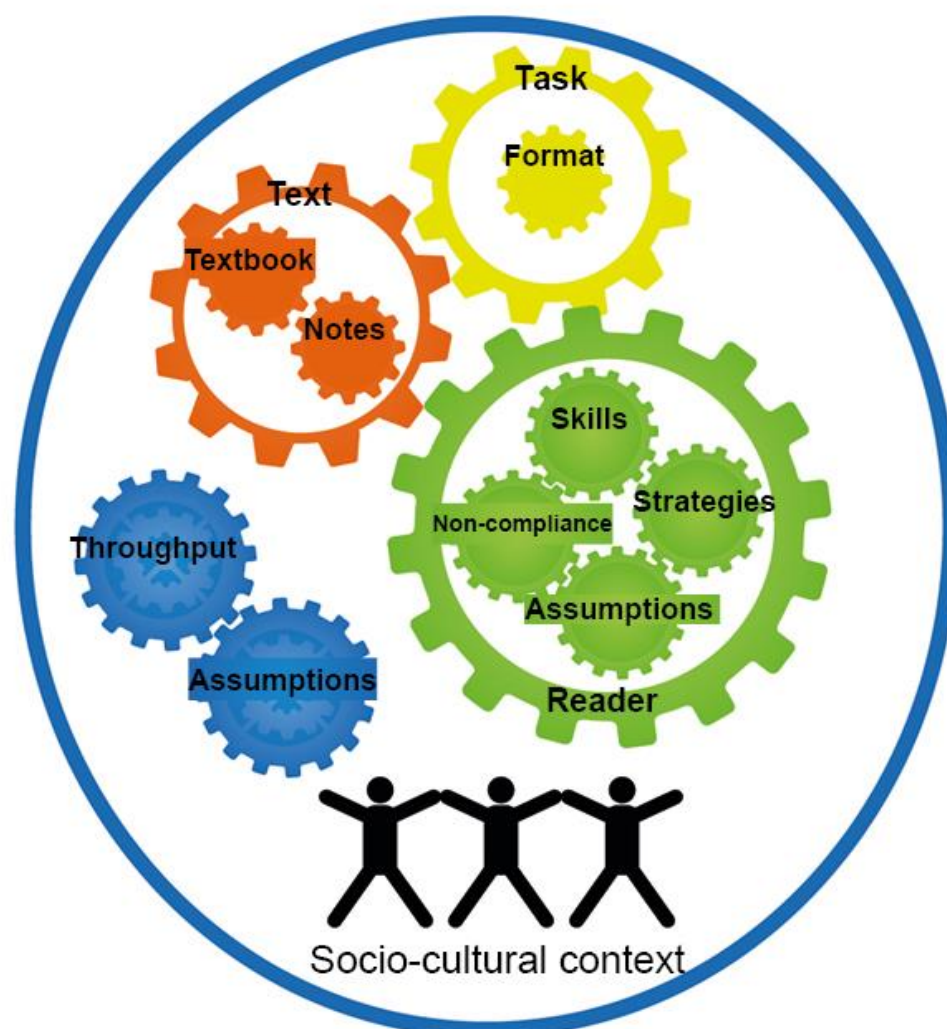


Figure 5.1: Academic reading support metaphor

Apart from the inclusion of the reader, the text and the task in the metaphor, three variables have been added. These three variables, together with the student (i.e., the reader) represent the stakeholders in students' success at university. Viewed from a hierarchical perspective, these stakeholders are institutional management, faculty management structures, the lecturer and the student. The additional stakeholders are presented by figures and not cogs as they fall within the socio-cultural context. Although they influence reading comprehension in some way, it is only the reader who is actively "doing" the reading. Therefore, the reader is presented by a cog, but not institutional management, faculty management structures and the lecturer. These stakeholders have to facilitate the "working" of the mechanism.

The mentioned stakeholders all have a role to play if the reading challenges experienced by first year students are to be addressed. In the University X context, there is currently a vertical

relationship in terms of providing students with academic reading support. The different stakeholders are perceived as pointing fingers at those who “cause” the reading challenges, as well as those responsible for “solving” these challenges.

An example of this practise is the reference made by lecturers to the pressure of throughput figures they experienced. In the Higher Education environment, there is pressure to grant students access to university and make sure that they succeed (Department of Education, 1997:10). It seems as though lecturers are pointing a finger at institutional managers who are running a university like a business. More students are equal to more money and so throughput must be ensured. Lecturers blame this pressure for decisions they have to make in terms of the instructional design of their modules, the tasks they design and the texts they choose. When students fail a module, the faculty management points a finger to the lecturer who is regarded as incompetent and who is held responsible for “solving” the problem of poor throughput. The lecturers point fingers at support staff responsible for providing support and development opportunities. This support provided to students is often generic in nature.

When generic reading support is delivered to students by a department functioning separately from the disciplines, there is a lack of synergy. As students know that the reading they have to do is not part of the different module outcomes, they are unmotivated to read and they undervalue the reading support. The provision of generic reading support means that the support readers receive is separated from the disciplinary text and task (i.e., disciplinary content). This leads to a lack of interconnectedness and a “broken” reading comprehension mechanism. Furthermore, when generic reading support is conducted electronically, other challenges emerge such as the negative aspects of reading on a screen and the fact that in the modules, hard-copy texts are usually read. When students receive generic reading support they miss out on opportunities to engage with written disciplinary discourse.

Hierarchically, the students are at the bottom position of the “food” chain and from analysed data it seems as though the reading challenges students experience, such as struggling to read the dense language structures of the textbook or being uncertain how to identify key aspects in a text, go by unheard and unaddressed. The findings of the study supported research indicating that lecturers “...do not regard themselves as involved with teaching reading” (Niven, 2005:786) and that lecturers place the responsibility of reading “firmly on the shoulders of students” (Hoefl, 2012:1). As the students are the main “clients” at a university, their needs have to be addressed. For this reason relationships between stakeholders need to change from vertical relationships to symmetrical relationships.

The stakeholders in Figure 5.1 are represented as “holding hands”. This signifies that in terms of academic reading support, there should be a collaborative approach and that all the stakeholders should accept responsibility. Lecturers are appointed at universities because of their expertise in a certain discipline. The Teaching and Learning Policy of University X states that lecturers should guide students to reach module outcomes “through active learning activities suitable to the level of autonomy expected at a certain level” (North-West University, 2011:1). This aligns with Bigg’s (1996:349) statement that the central goal of teaching is to design various learning activities that engage students to make sense of information by relating it to previous knowledge and experiences. Disciplinary experts do not necessarily have knowledge of what constitutes such suitable learning activities and might be unable to design activities which closely link the text and the task. The teaching-and-learning support structure of a university includes individuals who are experts in course design and in developing active learning activities, and have knowledge of academic reading support, but they lack disciplinary knowledge. The Faculty of Education Sciences can also contribute in terms of how reading support should feature within curriculum design and the specialists in information technologies can contribute in terms of how technology can be utilised to help with academic reading support. Such a team effort can possibly result in synergy between disciplines, the fostering of a symmetrical relationship between stakeholders who do not place blame, but take responsibility, and students receiving the necessary reading support crucial for their success at university. A number of recommendations for actions the different stakeholders can take in pursuit of such teamwork and the improvement of students’ academic reading literacy skills within the different disciplines, include:

Institutional managers should formulate and adopt policies in terms of academic reading being a priority. When reading is a priority it will determine different aspects such as goals, objectives, decisions in terms of allocating resources, and the implementation of reading support. The current Teaching and Learning Policy of University X, is based on the premise that “(t)he teaching and learning approach is one of guided, independent, outcomes-based study...” (North-West University, 2011:1). Although reading is implied in the term “independent study”, the stipulation of ensuring that all students have the necessary academic reading skills to be able to study independently, will possibly put processes in motion for effective reading support.

The different Faculty management structures and specifically the teaching and learning committees within the faculty, can also contribute to put measures in place which would support students’ reading literacy skills. Each faculty needs to stipulate their vision for strong reading literacy skills in their specific discipline. Such a vision is an important first step to start the discussion about the importance of reading in the discipline and the advantages for students, lecturers and the institution if students’ reading challenges are to be addressed.

The committee should furthermore make use of the needed intellectual resources from different offices on campus to better align the critical factors within modules. This statement is supported by Reeves (2006:302) and Jiang (2013:3). These researchers emphasise that aligned critical factors can improve student achievement by stimulating students to adopt learning approaches that reach beyond merely memorising a list of facts to critical engagement with written disciplinary discourse. Independent academic reading is central to this critical engagement. As the cogs metaphor indicates, this alignment should be a collaborative effort. The teaching-and-learning committee, together with lecturers and other staff members should engage in a dialogue as a better alignment of critical factors can enhance students reading compliance and have a positive impact on reading within the discipline. These critical factors include the outcomes of the modules, the content including prescribed texts, the instructional design of the module, the tasks, the role of the lecturer, the role of the student and the use of technology.

The misalignment between the text, the task and the instructional design of the module, featured strongly in this study. The instructional design includes among others, the overall arrangement of tasks, timing of tasks and choice of texts. Due to outside pressures such as throughput figures among others, lecturers seem trapped in assigning traditional tasks such as multiple choice tests. Lecturers should take part in a collaborative effort to design authentic tasks which closely links to reading. The pressure of throughput figures is a reality for many lectures and they should be vigilant that this pressure does not cause them to reduce the teaching-and-learning activities to lectures on how to pass the exam (e.g., teaching to the test).

Furthermore, the pressure to get as many students to pass the module and pressure from students in terms of their text preferences, should not cause lecturers to provide alternative texts. Such texts include notes and the lecturers' slides which can be used as the primary text. As indicated by the findings, students are driven by the task to determine the "pay-off" of reading an academic text. The text and the task have to be aligned in terms of the necessity of reading, and if the task addresses lower cognitive level activities than those intended by the lecturer, for example, the learning taking place within modules will be driven by "...backwash from testing" and not by lecturer's intentions (Biggs, 1996:350). In such cases students seem to only use slides and notes as the primary text to complete the task. It is thus imperative to align the text and the task to enhance teaching and learning and in particular students' compliance with academic reading. The value of students' engagement with written disciplinary discourse cannot be over emphasised.

Lecturers should furthermore determine if there is a mismatch between students' reading abilities and the difficulty level of the textbook. Students reading abilities can be measured by a number of tools, of which the Readers are Leaders software package is an example. These tools must be in line with discipline requirements. In addition, the difficulty level of the textbook can be determined by readability indicators such as the T.E.R.A online tool (<http://www.cohmetrix.com>). If the students' abilities measure lower than the difficulty level of the textbook, the lecturer should take a practice-based teaching approach and put measures in place to aid the students with their reading comprehension. The modelling of reading strategies is one of these measures.

Lecturers can model global reading strategies, support strategies and problem solving strategies in the context of their disciplinary discourse. For example, in terms of global reading strategies, lecturers can ensure that students have a purpose in mind when they read, which could imply a close link between the text and the task. Lecturers can also discuss the discipline specific illustrations and figures included in the textbook, such as the images of a computer programming script, and how students should "read" these figures. In terms of problem solving reading strategies, the lecturer can focus students' attention on the value of stopping and thinking when students do not initially understand what they read. With regard to support reading strategies, the lecturer can make sure students know about and have access to disciplinary reference materials and he/she can model note taking while reading disciplinary discourse. These are simple strategies but lecturers should not assume that their students have these skills.

The role of the lecturer and the role of the student should also be aligned with the other critical factors. The lecturers should create awareness of the difference between school and university, especially when teaching first year students. These differences need to be explicitly stated so that students are empowered to take the needed responsibility in terms of reading and learning:

- Lecturers have to explain to students that their role differs from the role of a school teacher. Although they guide students throughout the semester, they do not "spoon-feed" them in terms of, for example, explaining every section of the content.
- At school students took a more passive role to their own learning. Lecturers have to make sure that first year students do not continue with this "learned helplessness". They need to understand that they have to take an active role in their learning, specifically in terms of the reading of prescribed texts.
- Students need to realise that the tasks at university differ from the tasks they were used to at school. Lecturers need to inform students about discipline specific requirements of tasks assigned in their modules. Informing students about the task type, question format and which cognitive levels are included in the task, can aid them in their expectations of the task as well as adequate preparation. Knowledge of the task format also influences

students' choice of text and reading strategy, and if students are aware that they will have to synthesise or evaluate information, students might be more inclined to read the textbook in preparation as opposed to only make use of notes and slides.

Once students understand that there is a difference between school and university and that they have a more active role to play in their own learning, it is recommended that the students take up this active role and accept responsibility for their own learning. This includes accepting responsibility to act in the face of reading challenges. Students are not the "innocent victims" who suffer with complex tasks and difficult texts at the hands of lecturers. They are rather the "privileged few" who have been accepted into an academic community. Especially in the South African context, this privilege comes with responsibility and accountability. Especially in a students' first year of study, this responsibility and accountability need to be instilled. Raising awareness is a point of departure, but the findings of this study suggests that when the critical factors of a curriculum is aligned, students will have a better understanding of the value of academic reading. When students receive the necessary academic reading support, they are responsible to take action and apply what they have learnt.

Moreover, it is recommended that lecturers take responsibility to break the cycle of non-compliance with prescribed academic reading. This recommendation is supported by findings of Joliffe and Harl (2008:614). According to these researchers a disciplinary context of instruction that fosters reading compliance, depends on lecturers who take deliberate steps to clarify how the text to be read relates to valued aims of learning within the module and the task to be completed. According to Schwartz (s.a.:7), "it is crucial to still conduct the promised task in class, even if students appear unprepared." If lectures supply students with the information they were supposed to gain from independently reading the text, the students learn that prescribed reading is not necessary as the lecture will nevertheless summarise the information. Methods to force students to read include using class time to complete the reading, pop quizzes and short writing tasks on the reading as well as the random questioning of students.

Lastly, the use of technology should also be aligned. The current generation of students seem able to make use of technology in their search for and understanding of information. Montenery *et al.* (2013:405) support this statement. According these researchers, students' preferences for digital content should motivate lecturers to look into the alignment of technology with the other critical factors of the curriculum. Lecturers can develop innovative techniques which include the use of technology to ensure that students comply with reading. As many texts have electronic versions, lecturers can prescribe e-books, for example. Such academic texts seem to speak to students' preferences.

5.5 Limitations of the study

A number of limitations have been identified in this study. Firstly, the measurement of comprehension posed a number of challenges. When studying reading comprehension, all that can be measured is the output of comprehension in terms of the information the reader gained from reading. This is done by means of an assessment which typically consists of questions about the read text. The data gathered by means of such assessments have been described by Pearson and Ham (2005:14) as the mere remains of the reading comprehension process. The remains used in this study were the comprehension of the participants as determined by the Readers are Leaders software programme.

The comprehension is determined by marking the answers of multiple choice questions asked on a 300-word passage about a range of topics. These topics include the causes of cancer and how bees make honey. A limitation of the calculated comprehension is that the texts included topics of which one might have general knowledge as well as the multiple choice question format. This could have influenced the number of correct questions, as the student would not have been dependent on the text alone for information. The reading test was also digitally administered in a computer laboratory and online reading might also have had an influence on the students' comprehension.

The Readers are Leaders software programme has not undergone a rigorous analysis process to determine validity and reliability. Although it has face validity, it is a limitation that no information is available on how the texts for the different levels were selected. According to the Flesch-Kincaid reading ease test, level 14 and level 15 passages, are more readable than the level 12 and 13 passages. This indicates that the levels attributed to passages, might not be correct. As the comprehension and corresponding reading grade level of the students were determined by making use of these passage levels, the comprehension and reading grade level might be incorrect.

Secondly, the SORS used in this study also has limitations. This instrument was developed by Mokhtari and Sheory in 2002. Although the SORS is a valid instrument (cf. section 3.3.5.1), it seems to be outdated. It does not make provision for 21st century reading environments and the preparedness of students in diverse contexts.

5.6 Recommendations for further research

Further insight is needed into whether or not there are certain reading challenges students face within a certain discipline. Understanding the nature of these challenges requires having data available about students' reading comprehension of a disciplinary textbook, for example. Such

data can only be gathered with valid and reliable measures of reading comprehension that lecturers can administer in lecture halls. Further research is needed into the availability and creation of such disciplinary specific measures. This recommendation is supported by Pearson and Hamm (2005:63) who state: "...there is still much more to learn about how to measure a phenomenon (i.e., reading comprehension) that is as elusive as it is important." As written disciplinary discourses differ, it would be noteworthy to investigate if the analysis of such data yields trends of student reading challenges within a specific discipline. The investigation of such trends is important for "tailored" disciplinary academic reading support.

University X has a large number of distance students and their throughput is just as important as the throughput of the contact students. A similar study can be conducted with a group of distance students to determine if they also experience reading challenges and if similar themes emerge from the data. These findings could be of value as distance students have limited contact with lecturers and it is of importance to know how to provide academic reading support to this group of students. Furthermore, this study focussed on first year students. Future research could focus on reading support needed by students in other years of study, or even postgraduate students.

It is also recommended that further research is conducted about effective and efficient reading strategies within disciplinary contexts. Disciplinary experts continuously use reading strategies as they engage with written disciplinary discourse. The question arises whether these experts are aware of the reading strategies they use and if they have the knowledge to model these strategies so that their students are able to benefit from their use. Future research can also look into compiling discipline specific reading strategy inventories and whether or not the availability of such inventories result in students using the disciplinary specific reading strategies and the effect thereof on reading comprehension.

Finally, future research should also shed more light upon reading comprehension in the digital environment. As students and lecturers increasingly function in this environment, it is important to gain insight into the effect the availability of academic texts in the digital environment has on students' compliance with prescribed academic reading and students' reading comprehension.

5.7 Contribution of the study

This study contributed to the field of study by presenting an academic reading support cogs metaphor. First year students at University X need disciplinary reading support and even though the disciplinary lecturer is in the best position to provide this support, a collaborative approach is recommended. Institutional management, faculty management structures, lecturers and students

have certain responsibilities with regard to making reading and reading skills development a priority.

The metaphor of the reading mechanism with interconnected cogs, signifies that, for example, choosing a different text, or assigning a different task or enrolling students in a general reading support programme, or even teaching students a reading strategy, will not improve students' reading comprehension if it is not done in a connected manner. Reading comprehension is an interconnected process and all the stake holders, which includes the lecturer and the reader, as well as the text, the task and the socio-cultural context has to be taken into consideration when planning and delivering academic reading support.

5.8 Conclusion

The results of this study call attention to the role lecturers may have in perpetuating lack of disciplinary specific reading strategy use, reading non-compliance, and reading comprehension problems among first year students. It is easy to finger students as the source of the problem and to ignore the role that lecturers play. Lecturers need to ensure that they create the appropriate learning conditions that foster and reward the reading behaviour they seek.

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Appendix A: Survey of reading strategies

SURVEY OF READING STRATEGIES Kouider Mokhtari and Ravi Sheorey, 2002

The purpose of this survey is to collect information about the various strategies you use when you read **school-related academic materials in ENGLISH** (e.g., reading textbooks for homework or examinations; reading journal articles, etc.). Each statement is followed by five numbers, 1, 2, 3, 4, and 5, and each number means the following:

- '1' means that 'I **never or almost never** do this'.
- '2' means that 'I do this **only occasionally**'.
- '3' means that 'I **sometimes** do this'. (About 50% of the time.)
- '4' means that 'I **usually** do this'.
- '5' means that 'I **always or almost always** do this'.

After reading each statement, *circle the number* (1, 2, 3, 4, or 5) which applies to you. Note that there are **no right or wrong responses** to any of the items on this survey.

Statement	Never	1	2	3	4	Always
1. I have a purpose in mind when I read.	1	2	3	4	5	
2. I take notes while reading to help me understand what I read.	1	2	3	4	5	
3. I think about what I know to help me understand what I read.	1	2	3	4	5	
4. I take an overall view of the text to see what it is about before reading it.	1	2	3	4	5	
5. When text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5	
6. I think about whether the content of the text fits my reading purpose.	1	2	3	4	5	
7. I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5	
8. I review the text first by noting its characteristics like length and organization.	1	2	3	4	5	
9. I try to get back on track when I lose concentration.	1	2	3	4	5	
10. I underline or circle information in the text to help me remember it.	1	2	3	4	5	
11. I adjust my reading speed according to what I am reading.	1	2	3	4	5	
12. When reading, I decide what to read closely and what to ignore.	1	2	3	4	5	
13. I use reference materials (e.g. a dictionary) to help me understand what I read.	1	2	3	4	5	
14. When text becomes difficult, I pay closer attention to what I am reading.	1	2	3	4	5	
15. I use tables, figures, and pictures in text to increase my understanding.	1	2	3	4	5	
16. I stop from time to time and think about what I am reading.	1	2	3	4	5	
17. I use context clues to help me better understand what I am reading.	1	2	3	4	5	
18. I paraphrase (restate ideas in my own words) to better understand what I read.	1	2	3	4	5	
19. I try to picture or visualize information to help remember what I read.	1	2	3	4	5	
20. I use typographical features like bold face and italics to identify key information.	1	2	3	4	5	
21. I critically analyze and evaluate the information presented in the text.	1	2	3	4	5	
22. I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5	
23. I check my understanding when I come across new information.	1	2	3	4	5	
24. I try to guess what the content of the text is about when I read.	1	2	3	4	5	
25. When text becomes difficult, I re-read it to increase my understanding.	1	2	3	4	5	
26. I ask myself questions I like to have answered in the text.	1	2	3	4	5	
27. I check to see if my guesses about the text are right or wrong.	1	2	3	4	5	
28. When I read, I guess the meaning of unknown words or phrases.	1	2	3	4	5	
29. When reading, I translate from English into my native language.	1	2	3	4	5	
30. When reading, I think about information in both English and my mother tongue.	1	2	3	4	5	

SCORING GUIDELINES FOR THE SURVEY OF READING STRATEGIES

Student Name: _____ Date: _____

1. Write the number you circled for each statement (i.e., 1, 2, 3, 4, or 5) in the appropriate blanks below.
2. Add up the scores under each column and place the result on the line under each column.
3. Divide the subscale score by the number of statements in each column to get the average for each subscale.
4. Calculate the average for the whole inventory by adding up the subscale scores and dividing by 30.
5. Use the interpretation guidelines below to understand your averages.

Global Reading Strategies (GLOB Subscale)	Problem Solving Strategies (PROB Subscale)	Support Reading Strategies (SUP Subscale)	Overall Reading Strategies (ORS)
1. _____	7. _____	2. _____	GLOB _____
3. _____	9. _____	5. _____	PROB _____
4. _____	11. _____	10. _____	SUP _____
6. _____	14. _____	13. _____	
8. _____	16. _____	18. _____	
12. _____	19. _____	22. _____	
15. _____	25. _____	26. _____	
17. _____	28. _____	29. _____	
20. _____		30. _____	
21. _____			
23. _____			
24. _____			
27. _____			

_____ GLOB Score	_____ PROB Score	_____ SUP Score	_____ Overall Score
/ 13	/ 8	/ 9	/ 30
_____ GLOB Average	_____ PROB Average	_____ SUP Average	_____ Overall average

KEY TO AVERAGES: 3.5 or higher = High 2.5 – 3.4 = Medium 2.4 or lower = Low

INTERPRETING YOUR SCORES: The overall average indicates how often you use reading strategies when reading academic materials. The average for each subscale shows which group of strategies (i.e., Global, Problem Solving, or support strategies) you use most often when reading. It is important to note, however, that the best possible use of these strategies depends on your reading ability in English, the type of material read, and your reading purpose. A low score on any of the subscales or parts of the inventory indicates that there may be some strategies in these parts that you might want to learn about and consider using when reading (adapted from Oxford 1990, pp. 297-300).

Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students reading strategies. *Journal of Developmental Education*, 25 (3), pp. 2-10.

Appendix B: Readers are Leaders reading passages

Title: Cancer

Level: 12

Cancer is a disease in which cells multiply without control. It destroys tissue and endangers life. There are around one hundred different kinds of cancer. It is the leading cause of death in many countries. The disease occurs in most animal species, in many plants and in human beings. It affects people of all ages, but is more prominent in the middle-aged and elderly. The disease does not discriminate between sexes. Any part of the body can become infected and it will eventually spread to other parts. The parts which are most commonly infected are the skin, digestive organs, lungs, male prostate and female breasts. Skin cancer is the first or second most common cancer in many Western countries, but fortunately, with the exception of malignant melanoma (the rarest and most serious form), cancers of the skin are rarely fatal.

Most cancers form tumours, but not all the tumours are cancerous (malignant). Most are benign, which means that they are not health threatening. These benign tumours grow slowly and they normally look like the tissue they are growing from. What is significant about malignant tumours, though, is that they have the ability to spread beyond their original sites. They then invade the neighbouring tissues and form growths, called metastases. The less closely a cancer resembles its original tissue, the more malignant it tends to be.

Topic: Bees

Level: 13

Bees and man have lived together for thousands of years, but it is only recently that the therapeutic value of this fascinating insect, in treating a number of diseases, has come to be appreciated.

Products of the honey bee, for example honey, have been used for thousands of years in traditional Chinese and European herbal medicines. It is only over the last sixty years or so, that bee stings, as such, have been used. Most of these practices have occurred in China, but some practitioners also use these methods in America and Europe. Bee venom is manufactured in two glands, one producing an acid and the other an alkali. These are combined at the moment of stinging. Insects and other potential bee predators, for example spiders, are killed, or paralysed by bee stings, but a single bee sting will do little harm to a human. The only exception is, if someone has a serious allergic reaction and goes into anaphylactic shock. Bee venom is a rich source of enzymes, peptides and biogenic amines. There are at least eighteen compounds which have an active pharmacological effect. About half of the venom is melittin, which has anti-bacterial and anti-inflammatory properties, while another of its compounds, adolapin, acts on prostaglandins to reduce inflammation and relieve pain.

Topic: Coffee and tea

Level: 14

Coffee and tea are two of the most popular beverages in the world. Coffee is made from roasted, ground beans of certain trees in the Coffee family, native to Arabia and Africa. Tea is made by infusing the dried young leaves of *Camellia Sinensis*, an Asian Shrub.

In the 17th century, both these beverages were introduced into Europe, but due to their high price, did not become domestic staples until much later. Initially they were only drunk in coffee houses. They were drunk partially for their taste, but mainly for their stimulating qualities, similar to that of beer and wine. Coffee beans and tea leaves, as well as cola and cocoa beans, contain one or more chemicals in the xanthine family. These appear to have a stimulating effect on the central nervous system and the heart, and they act as diuretics and aid quicker digestion. The best known, and the one with the most powerful effect is caffeine. Caffeine tends to stimulate the brain and acts on the heart, kidneys and blood vessels. It can help people with fatigue and also assist concentration. Unlike other stimulants, caffeine does not boost the intellect, but it does increase the production of acid in the stomach which stimulates digestion.

Topic: The heart

Level: 15

Situated in the middle of the chest, is the heart, a large muscular organ. It weighs about three hundred and forty grams in men and it is slightly less in women. The function of the heart is to pump the blood around two separate circulations. Firstly, the heart pumps blood via the aorta, the central artery of the body, out into the arteries. This cardiovascular circulation takes blood through the tissues and organs, providing them with oxygen and food. The blood then returns to the heart, via the veins, having had all the oxygen absorbed from it.

On its second circuit, the heart pumps the blood to the lungs to replace the oxygen. It is then returned to the heart with its oxygen renewed. The circulation to the lungs is known as the pulmonary circulation and the one to the rest of the body is called the systemic circulation. Pulmonary and systemic arteries carry the blood outwards away from the heart, while the pulmonary and systemic veins return it back to the heart. Within the heart are four main pumping chambers. Each chamber is a muscular bag with contracting walls used to pump the blood forward.

Appendix C: Faculty of Arts, Module A, lecturer's slides with case study questions

Aktiwiteit / *Activity*

- Lees / *Read*:
 - Brynard, PA. 2006. The implementation of the Child Support Grant Policy
 - Brynard, PA. 2009. Civic engagement and public policy implementation: The Child Support Grant



Who are policy role-players? / Wie is rolspelers?

- Onderskei tussen belanghebbers en beleidsrolspelers
 - Belanghebbers = het direkte of indirekte invloed op beleidmaking, bv. Politieke instellings en akteurs, navorsers, politikus, belangegroep, wandelgangpolitikus, NRO, universiteite en media
- Distinguish between stakeholders and policy role-players
 - Stakeholders = either direct or indirect influence on policy making e.g. political institutions and actors, researchers, politicians, interest groups, lobbyists, NGOs, universities and media

Gevalle studie: Kinderondersteuningstoelaag

Case study: Child Support Grant

- **Rolspelers?**
 - **Primêr: Regering en in besonder die Department van Sosiale Dienste (x2)**
 - **Sekondêr: Samelewing wat insluit die arm kinders en voogde (x2)**
- **Role-players?**
- **Primary: Government and in particular the Department of Social Services (x2)**
- **Secondary: Society which includes poor children and guardians (x2)**

Gevalle studie: Kinderondersteuningstoelaag

Case study: Child Support Grant

- **Effek op kinders – wat moet vorentoe verander?**
 - **Kyk na maksimum ouderdomme van kinders om tot op ouderdom 18 in te sluit of selfs 'n toelaag vir voornemende studente te verskaf (x1)**
 - **Regering moet dus sy verantwoordelikheid nakom in terme van die voorsiening van sosiale bystand en sekuriteit (x1)**
- **Effect on children – what should change in the future?**
 - **Have a look at maximum age of children in order to include 18 year olds and even to provide a grant to prospective students (x1)**
 - **Government should thus fulfil their responsibilities in terms of providing social assistance and security (x1)**

Gevalle studie: Kinderondersteuningstoelaag

Case study: Child Support Grant

- Redes vir die toelaag?
 - Internasionale beleid aangaande armoede en in besonder kinder armoede: Millennium ontwikkelingsdoelwitte stipuleer ook dat armoede uit die weg geruim moet word omrede dit 'n samewelingsprobleem is (x2)
 - Grondwet van SA gee aan elke kind die reg tot sosiale dienste, wat insluit sekuriteitsdienste (x2)
 - Omstandighede in SA noodsaak 'n kindertoelaag ten einde sosiale sekuriteit in ooreenstemming met die Grondwet te verskaf en armoede op hierdie manier te verlig. Ook deel van welsyndienste van die land (x2)
- Reasons for the Grant?
 - International policy regarding poverty and in particular child poverty: Millennium Development Goals stipulate that poverty should be eradicated because it has become a societal problem (x2)
 - Constitution of SA gives every child the right to social services including security services (x2)
 - Circumstances in SA necessitates a child grant in order to provide social security in line with the Constitution to eradicate poverty in this manner. Also part of the welfare services of this country

Appendix D: Faculty of Arts, Module A, test and memorandum

INSTRUKSIES / INSTRUCTIONS

Beantwoord SLEGS een afdeling: Afdeling A of B. Beantwoord albei (twee) vrae uit 'n gekose afdeling.
Answer ONLY one section: Section A or B. Answer both (two) questions from a chosen section.

AFDELING A / SECTION A

Beantwoord albei vrae uit hierdie afdeling: beide vraag 1 & 2

Answer both questions from this section: both Question 1 & 2

Vraag 1 / Question 1 (25)

Beleidsmaking is 'n komplekse proses. Brei uit op hierdie stelling deur die doel en nut van die beleidsmakingsproses te verduidelik in ooreenstemming met die volgende benaderinge:

- die beleidsiklusmodel;
- die politieke stelselsmodel; en
- die fasemodel.

Policy-making is a complex process. Elaborate on this statement by explaining the purpose and usefulness of the policy-making process according to the following approaches:

- *The Policy Cycle Model;*
- *The Policy Systems Model; and*
- *The Stage Model.*

Gevalle studie: Kinderondersteuningstoelaag

Case study: Child Support Grant

- **Uitdagings?**
 - **Kinders/Ouers/Voogde:** Regte aanwending van fondse tot voordeel van die kinders: lewensverbetering (x1)
 - **Regering:** Sluit tans nie straatkinders in nie. Hoë voorkoms van HIV/Vigs infeksies, en toename in weeskinders. Regering moet daarom ondersoek instel na alternatiewe praktyke om te reageer op sosiale sekuriteit en vatbare groepe (x2)
- **Challenges**
 - **Children/Parents/Guardians:** The right allocation of funds in order to benefit the improvement of the lives of children (x1)
 - **Government:** Does not include street children. High prevalence and affection rate of HIV/Aids and an increase in orphans. The government therefore should investigate alternative practices in order to respond to issues of social security and susceptible groups (x2)

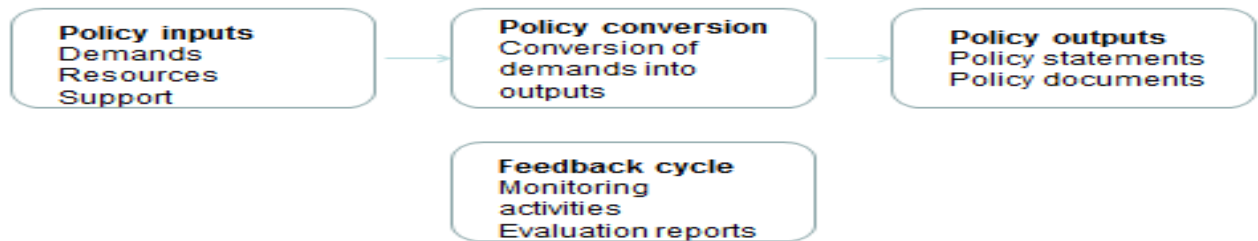
Model answer

<p>Beleidsmaking is kompleks en soms onmoontlik om te bepaal waar dit begin en moet eindig. Nieteenstaande, die begin moenie die regering afskrik om gedemonstreerde beleidprosesse te gebruik nie.</p> <p>(x1)</p> <p>Beleidsmaking prosesse sluit in:</p> <ul style="list-style-type: none"> • Beleidsiklusmodel • Beleidsstelselsmodel • Fase model 	<p>Policy-making is complex and sometimes impossible to determine where it starts and where it should end. However, the above should not deter government from using proven policy processes.</p> <p>(x1)</p> <p>Policy-making processes include:</p> <ul style="list-style-type: none"> • Policy Cycle Model • Policy Systems Model • Stage Model
<p>Beleidsiklusmodel: (x8)</p> <p>Oorspronklik die eenvoudigste manier om beleid te sien as 'n proses waar insette probleme is en uitsette beleid is in verskeie fases. Siklus bestaan skynbaar uit die logiese vloe van prosesse.</p> <p>Probleme:</p> <ul style="list-style-type: none"> • Gebrek aan analisering van konteks, of veronderstelling dat daar geen belange, verskillende rolspelers se take is nie gedefinieer nie. <p>Positiewe aspek</p> <ul style="list-style-type: none"> • Afdwingbaar dat beleidsmaking 'n leerproses is - beleidsleer vind plaas agv die verhouding tussen teorie en praktyk. 	<p>Policy Cycle Model: (x8)</p> <p>Historically simplest way of viewing policy as process where inputs are problems and outputs are policies - through various stages. Cycle appears to consist of logical flow of processes.</p> <p>Problems:</p> <ul style="list-style-type: none"> • Lack analysis of context, assumption that there are no interests, different role players tasks are not defined. <p>Positive aspect</p> <ul style="list-style-type: none"> • Enforce that policy making is a learning process - policy learning takes place as result of relationship between theory and practice.

Model answer continue

<p>Politieke Sisteemsmodel (x8)</p> <ul style="list-style-type: none"> • Logiese vloe van geïdentifiseerde prosesse nl inset, verandering, uitset en terugvoer • Waardevolle hulpmiddel vir identifisering van substelsels en prosesse van groter stelsels • Soos wat die geval is met die beleidsfasemodel, die model is nie sensitief tot 2 kritiese faktore nie nl verstaan van boonste raamwerk (beleid formulering) en die laer raamwerk (beleid implementering) - spesifiek aangesien die probleem laastens plaasvind indien dit nie beplan voor is nie. 	<p>Policy Systems Model (x8)</p> <ul style="list-style-type: none"> • Logical flow of identified processes namely input, conversion, output and feedback • Valuable tool for identifying sub-systems and processes of larger systems • As is the case with the policy stage model, the model is not sensitive to 2 critical factors, namely understanding the upper framework (policy formulation) and the lower framework (policy implementation) - specifically since problem occur in the latter is not planned for.
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Politieke Sisteemsmodel / Policy Systems Model



Fase Model (x8)	Stage Model (x8)
<ul style="list-style-type: none"> • <i>Informasie generering is 'n 2-riktig proses wat 11 fases van die beleidsproses konnekteer wat verder met rolspelers en laastens die beleidsomgewing verbind.</i> • <i>Grootste probleem = beleidmaker het nie absolute kontrole oor beleidprosesse, rolspelers of die omgewing nie</i> 	<ul style="list-style-type: none"> • Information generation is a 2-way process which interconnect with 11 stages of policy processes which further connects with role-players and finally with policy environment • Main problem = policy maker does not have absolute control over policy processes, role-players or environment /

Stage Model / Fase Model

- **Information generation is a 2-way process which interconnect with 11 stages of policy processes which further connects with role-players and finally with policy environment / *Informasie generering is 'n 2-riktig proses wat 11 fases van die beleidsproses konnekteer wat verder met rolspelers en laastens die beleidsomgewing verbind.***
- **Main problem = policy maker does not have absolute control over policy processes, role-players or environment / *Grootste probleem = beleidmaker het nie absolute kontrole oor beleidprosesse, rolspelers of die omgewing nie***



Vraag 2 / Question 2 (25)

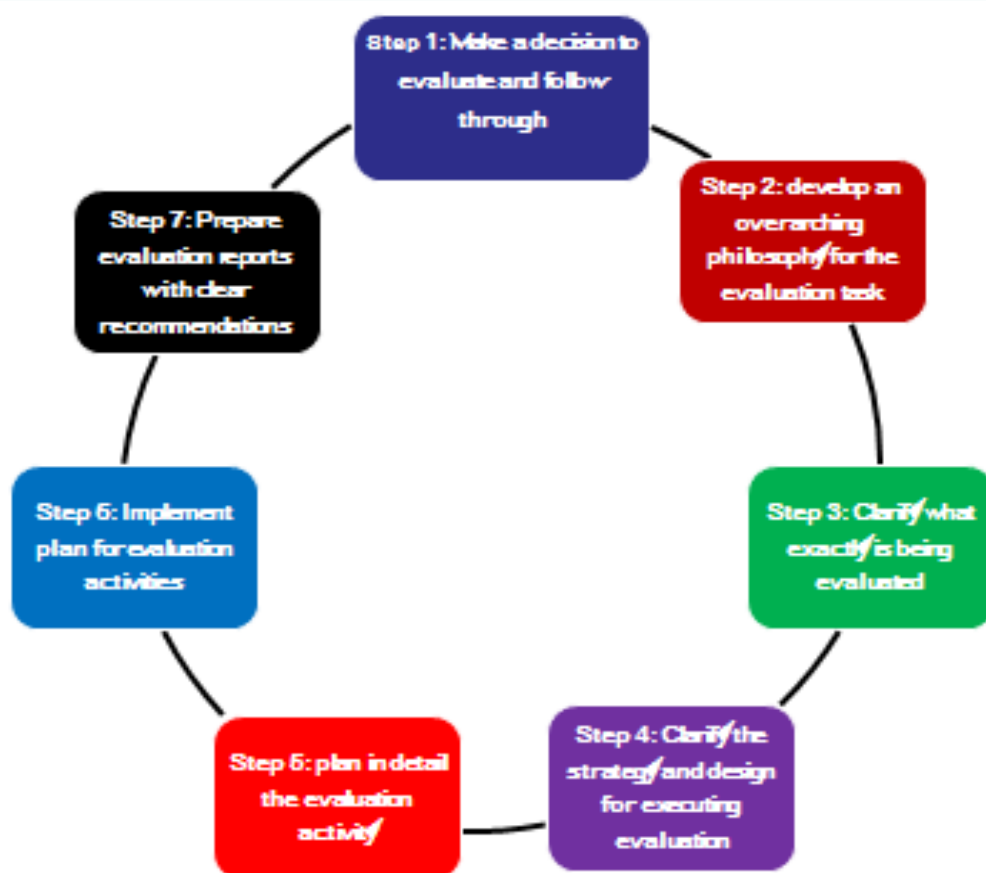
Verduidelik die belangrikste stappe van toepassing in 'n Monitoring en Evaluerings-oefening /

Explain the key steps involved in a Monitoring and Evaluation exercise.

(7 steps x 3 = 24 +1 mark for impression)

Model answer: See the attached copy from the Prescribed Source (p.205-206)

M&E praktiese stappe / M&E practical steps



See the attached copy from the Prescribed Source (p.205-206)

Vraag 3 / Question 3 (25)

Define the term “planning” and provide an overview of the core planning concepts according to the Framework for Strategic Plans and Annual Performance Plans of the National Treasury (2010) which is based on the Government-wide Outcomes-Orientated Monitoring and Evaluation approach.

Model answer

<ul style="list-style-type: none"> • Marx (1986:49) voer aan dat beplanning voorbereiding is vir aksie en 'n middel om doelstellings te formuleer wat deur uitvoerende instellings gerealiseer moet word • die proses om in detail te besluit hoe iets gedoen moet word voordat werklik daarmee begin word of om 'n plan van aksie te bedink • ...is gemik op realisering van doelwitte tydens 'n spesifieke voorafbepaalde tyd • ...en kan insluit die ontwikkeling van doelwitte, beleid, strategieë, programme en projekte, organisasie infrastruktuur en alles belangrik vir die suksesvolle implementering ingesluit die montering en evaluering hiervan. <p>(x5)</p>	<ul style="list-style-type: none"> • <i>Marx (1986:49) states that planning is a preparation for an action and a way to formulate objectives that have to be realised by executive institutions.</i> • <i>...the process of deciding in detail how to do something before actually starting to do it or devising a course of action</i> • <i>...is aimed at realising development goals and objectives at a specific predetermined point in the future</i> • <i>...and could involve the establishment of goals, objectives, policies, strategies, programmes and projects, organisational infrastructure and everything else necessary for the successful implementation including its monitoring and evaluation.(x5)</i>
<p>Visie</p> <ul style="list-style-type: none"> • <i>'n Visie is 'n geïnspireerde prentjie van die verkose toekoms. Dit is nie tydsgebonde nie en dien as 'n basis vir alle beleidsontwikkeling en beplanning, ingesluit strategiese beplanning.</i> <p>Missie</p> <ul style="list-style-type: none"> • <i>'n Missie stelling stip die rede vir die organisasie se bestaan uit wat op 'n wetgewende mandaat, funksies en verantwoordelikhede gebaseer is. Die missie moet bondig identifiseer wat die instelling doen, hoekom en vir wie.</i> <p>Waardes</p> <ul style="list-style-type: none"> • <i>Waardes identifiseer die beginsels vir gedrag vd instelling om sy missie uit te voer. Institusionele waardes word afgelei vd instelling se missie. Die waardes moet 'n burger-georiënteerde benadering definiëer vir produsering en lewering van regeringsdienste</i> <p>Strategiese doelwitte</p> <ul style="list-style-type: none"> • <i>'n Strategiese uitkoms-georiënteerde doel is 'n verklaring van voorneme wat SLIM is: specific, measurable, achievable, relevant and time-bound (strek tipies oor vyf jaar) en identifiseer areas van institusionele prestasie wat krities is vir bereiking van die missie</i> <p>Begrotingsprogramme en doelwitte</p> <ul style="list-style-type: none"> • <i>'n Begrotingsprogram is 'n hoofstroom afdeling binne die instelling se begroting wat 'n duidelike stel gedefinieerde doelwitte befonds, gebaseer op dienste en funksies binne die departement se wetgewende en ander mandate. Dit bestaan uit 'n bestuursseenheid wat gevestig is binne 'n instelling en</i> 	<ul style="list-style-type: none"> • Vision • <i>A vision is an inspiring picture of a preferred future. It is not time-bound and serves as a foundation for all policy development and planning, including strategic planning. It should be specific to the institution but linked to the overall vision of a particular sector or cluster.</i> <p>Mission</p> <ul style="list-style-type: none"> • <i>A mission statement sets out the reason for an institution's existence based on its legislative mandates, functions and responsibilities. The mission should succinctly identify what the institution does, why and for whom.</i> <p>Values</p> <ul style="list-style-type: none"> • <i>Values identify the principles for the conduct of the institution in carrying out its mission. Institutional values are derived in conjunction with the institution's mission. These values should define a citizen-oriented approach for producing and delivering government services.</i> <p>Strategic goals</p> <ul style="list-style-type: none"> • <i>A strategic outcomes oriented goal is a statement of intent that is SMART: specific, measurable, achievable, relevant and time-bound (typically span at least five years) and identify areas of institutional performance that are critical to the achievement of the mission.</i> <p>Budget programmes and purposes</p> <ul style="list-style-type: none"> • <i>A budget programme is a main division within an institution's budget that funds a clearly defined set of objectives based on the services or functions within the department's legislative and other mandates and also</i>

<p>verantwoordelik is vir die lewering van 'n gedefinieerde stel dienste en funksies</p> <ul style="list-style-type: none"> • 'n Program doel soos vervat in die jaarlikse begroting, is 'n verklaring wat in breë terme die hoof areas uiteensit vir die lewering van dienste waarvoor begroot is. Sulke doelwitte is nie streng gekoppel aan strategiese uitkomst, of doelwitte nie maar fokus eerder op die regsmandaat agter uitgawes wat reflekteer word in die program of subprogram. <p>Strategiese doelwitte</p> <ul style="list-style-type: none"> • 'n Strategiese doelwit in die vorm van uitset prestasie verklaring wat duidelik moet aandui wat die instelling moet doen om sy strategiese uitkomstes te bereik en; moet 'n prestasie teiken bereik teen die einde vd periode vd Strategiese Plan • Program prestasie aanwysers • 'n stel program prestasie aanwysers wat betroubaar, goed gedefinieerd, geverifieerd, koste effektief, toepaslik en relevant is om uitgaande prestasie te monitor in terme van werklike nommers wat ontwikkel moet word. <p>(x20)</p>	<p>constitutes a management unit established within an institution responsible for the delivery of that defined set of services and functions.</p> <ul style="list-style-type: none"> • A programme purpose, as contained in the annual budget, is a statement that sets out in broad terms the main areas of delivery for which funds are allocated. Such purposes are not strictly linked to strategic outcomes oriented goals or strategic objectives, but rather focus on the legal mandate behind the expenditures reflected in the programme or sub-programme. <p>Strategic objectives</p> <ul style="list-style-type: none"> • A strategic objective in the form of an output performance statement should state clearly what the institution intends doing to achieve its strategic outcomes and must set a performance target to achieve by the end of the period of the Strategic Plan. • Programme performance indicators • A set of programme performance indicators that are reliable, well defined, verifiable, cost effective, appropriate and relevant to track its on-going performance in terms of actual numbers must be developed. <p>(x20)</p>
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Vraag 4 / Question 4 (25)

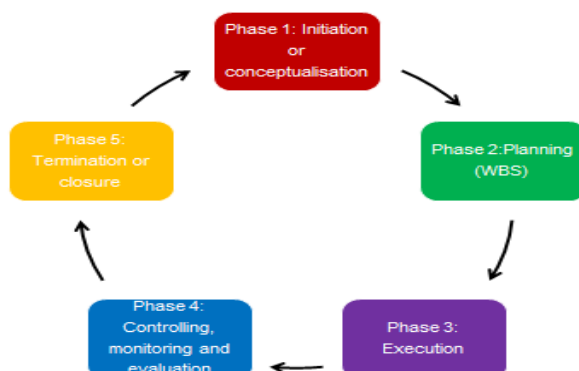
Lys en verduidelik die onderskeie fases van 'n projek se lewensiklus.

List and explain the respective phases of a project's life cycle.

Model answer: See the attached copies from the Prescribed Source (p.239-241)

5 phases x 5 marks = [25]

Projeklewensiklus / Project life cycle



TOTAL/TOTAAL: 50

Appendix E: Faculty of Arts, Module B, essay instructions, lecturer's slides and marking rubric

Opstel Instruksies / Essay Instructions

Onderwerp:

Lees die volgende lewensverhaal (sien eFundi) van 'n Suid-Afrikaanse vrou se ervaring in die mynbou industrie. Analiseer daarna hierdie lewensverhaal in terme van die sosiologiese verbeelding en die sosiale instellings wat haar beïnvloed het.

Ek wil hê dat jy jou sosiologiese verbeelding moet gebruik om die onderlinge skakels tussen sosiale instellings en dié vrou te ondersoek. Onthou Mill's se idees (persoonlike probleme; sosiale kwessies; biografie en geskiedenis) in jou analise in te sluit.

Topic:

Read the following life story (see eFundi) of a South African woman's experience of working in the mining industry. Thereafter, analyse her story in terms of the sociological imagination and the social institutions that influenced her.

I want you to use your sociological imagination to examine the interconnectedness between social institutions and this woman. Remember to include Mill's (1959) ideas (thus, personal troubles, social issues, biography and history) in your analyses.

Algemene Riglyne en Voorvereistes / General Guidelines and Prerequisites

- **Inhandiging / Submission: Maandag / Monday 14 September**
- **Aantal Bronne / Number of Sources: Minimum 5 Bronne / Minimum 5 Sources**
- **Lengte / Length: 2000 woorde / 2000 words**
- **Punte / Marks: 100 punte / 100 marks**
- **Puntetoekenning / Mark allocation: Tegniese Voorvereistes: 50 / Technical prerequisites: 50**

Inhoud: 50 / Content: 50

- **Penalisering / Penalty: Plagiaat = 0% / Plagiarism = 0%**

*Sien asseblief die assesserings vorm en die template op 'n eFundi vir die tegniese en inhoudelike voorvereistes / Please see the assessment form and templates on eFundi for the technical and content prerequisites.

Uitkomst / Outcomes

- Tegnieuse versorging van opstel / Technical care of essay
- In-teks verwysing / In text referencing
- Bronnelys / List of Sources
- Plagiaat / Plagiarism

Voorvereistes / Prerequisites

- Bronne / Sources
 - 5 bronne / 5 sources
 - Insluitent lewensverhaal / including life story
 - Boeke en/of akademiese artikels / Books and/or academic articles
 - 2000 woorde / 2000 words
 - Getik / Typed
 - Arial 11pt, 1½ lynspasiëring / line spacing

Volgorde / Order

1. Voorblad / Cover Page
2. Inhoudsopgawe / Table of Contents
 1. Inleiding / Introduction
 2. Gestruktureerde bespreking met subopskrifte / Structured discussion with sub-headings
 3. Gevolgtrekking / Conclusion
3. Bronnelys / List of Sources
4. Plagiaatvorm / Plagiarism Form
5. Asseseringsvorm / Assessment Sheet

Onderwerp / Topic

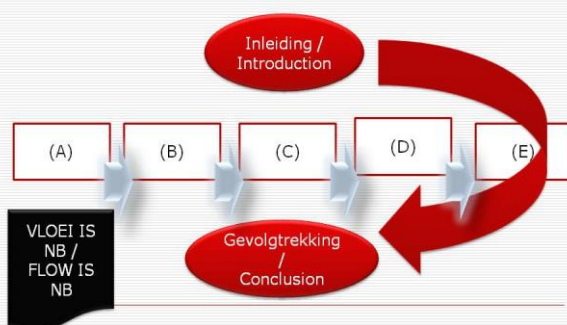
INLEIDING / INTRODUCTION

**Make it CATCHY, INTERESTING,
DRAW THE READER'S ATTENTION
– make me want to read your
essay!**

**Dan – hoe jy dit gaan bespreek / Then – how
you will discuss**

Byvoorbeeld: 'Eerstens sal daar ..., tweedens ... en laastens'
Example: 'Firstly focus will be placed on ..., secondly ... and
finally ...'

Beplanningsdokument / Planning document



Afsluiting/Conclusion

- Baie sterkte!/Good luck!
- Kontak my of jou tutor as julle enige hulp nodig het / Contact me or your tutor if you require any assistance
- Raadpleeg 'NWU Verwysings' vir enige navrae oor hoe om plagiaat te vermy / Consult 'NWU Referencing' for any queries on how to avoid referencing

Essay Assessment Form

1. Peer Assessment

Cover Page	5	<ul style="list-style-type: none"> Information should be in the top right hand corner (which one). Information must be in the same font as the essay (Arial 11pt). Must include: Group number, Title, Subject, Subject Code, Lecturer Name, Date of Submission and Group members (Name, Surname and Student Number, Cell Phone Nr).
Table of Contents	5	<ul style="list-style-type: none"> Heading must read: Contents or Table of Contents (not 'content'). e.g. Table of Contents or TABLE OF CONTENTS (Contents or CONTENTS) Must have the sub-heading 'Page' in the top right hand corner, on the next line. Headings must be numbered. Headings must indicate the page section starts (check that it is in fact correct before printing). Headings must be typed in the correct format. e.g. 1. Introduction (first order heading) 1.1 Development in South Africa (second order heading) 1.1 Development in Gauteng (third order heading) The Reference List and Plagiarism Form should NOT have numbered headings, but the table of contents should indicate on what page it appears. Remember that the Table of Contents should not be numbered.
Page Numbers	1	Page numbers should be in the bottom, right hand corner.
Page Margins	2	2.5cm (<i>top and bottom</i>) 2cm (<i>left and right</i>).
Font	1	Arial, 11pt.
Line Spacing	1	1.5 Line Spacing.
Reference List	5	<ul style="list-style-type: none"> Heading must read: Reference List (or References). Heading must be typed in bold. Heading should not be numbered. Sources must be alphabetically ordered. Harvard method (NWU referencing guide) should be used. No bullets or numbering of sources. Check that every source ends with a full stop. There must be at least 5 sources. Make sure that every source on the list is in fact referenced in the text and that all references cited in the text also appears in the Reference List.
In-text Referencing Harvard Style	5	<ul style="list-style-type: none"> Correctly referenced (Surname, year: page) or Surname (year: page). If the reference is at the end of a sentence it should end with a full stop, outside of the bracket. Two spaces should follow a colon or a full stop. Every paragraph should contain at least one reference, otherwise it is plagiarised.
Spelling and Language	5	<ul style="list-style-type: none"> South African English or British English. No 'z' – e.g. modernisation not modernization. Deduct one mark for every spelling error.

<p>Introduction</p>	<p>4</p>	<ul style="list-style-type: none"> • Heading should be typed in bold (first order heading) • e.g. 1. Introduction • Must contain a Heading that is numbered. • The introduction should include what will be discussed in essay (chronologically) and should introduce the topic that will be discussed as well as the key arguments that will be made. • Make sure it future tense is used when referring to what will be discussed in the essay. • The introduction should be in a separate paragraph at the start of the essay
		<p>and be followed by the heading of the first section of the body of the essay.</p>
<p>Sections and SubSections</p>	<p>5</p>	<ul style="list-style-type: none"> • Each section and sub-section must contain a Heading that is numbered and information must be presented in full sentences in paragraphs—no bulleted phrases or sentence fragments. • e.g. 1. Introduction; 2. Women's Status Defined; 3. Main Indicators of Women's Status; 3.1 Women in the Media; 3.2 Cultural Portrayal of Women.... Etc.; 4. Status of Women in SA; 5. Conclusion. • A paragraph should be separated from the previous paragraph/ section with one open line. • Must include an in-text reference. • Sections and sub-sections should add to the argument presented in the essay and follow a logical order.
<p>Headings In-text</p>	<p>5</p>	<p>☐ Heading must be typed in the correct format and be numbered/ 1. Introduction (first order heading) 1.2 Development in the South (second order heading) 1.2.1 Risks associated with the South (third order heading)</p>
<p>Conclusion</p>	<p>5</p>	<ul style="list-style-type: none"> • Must contain a Heading that is typed in bold and is numbered ☐ e.g. 5. Conclusion. • The conclusion should be separated by one line from the essay, but not be on a separate page. • The Conclusion should include what was discussed in the essay. (chronologically), summarise the main argument/s and conclude the essay—conclude your argument. • Make sure that past tense is used when referring to the beginning of the essay or what has been discussed. • The conclusion should be a summary of the essay and should include the summarised version of the main argument. It should relate directly to and answer questions posed in the introduction.
<p>Plagiarism Form</p>	<p>1</p>	<p>Must be attached, signed and dated by all of the members involved.</p>
<p>SUBTOTAL (1)</p>	<p>50</p>	

2. Content, Structure and Argument –Lecturer Assessment

- Relevance to question: directly to the point of the question/topic
- Coverage: Main issues all addressed
- Concepts: Basic/core terms & concepts correctly understood; well applied and explained
- Coherence: Parts/ sections correctly arranged around a core ARGUMENT
- Planning: Paragraphs each internally structured to argue a main idea; clear connections between paragraphs
- Personal contribution: New ideas, insights, applications & connections; critique and/or use of personal examples

Comments:

SUBTOTAL (2)	50		
TOTAL	100		

Appendix F: Faculty of Natural Sciences, Module A, tests and memoranda

Module A, Task 1

Klastoets 2 / Class Test 2

1. Definieer die volgende begrippe: / *Define the following terms:*
 - a) Algoritme / *Algorithm* (3)
 - b) Psuedokode / *Psuedocode* (2)
 - c) Beheerstrukture / *Control structures* (1)

2. Wat is die doel van die volgende metodes in 'n klas? / *What is the purpose of the following methods in a class?*
 - a) Konstruktore / *Constructor* (1)
 - b) Set-metode / *Set method* (1)
 - c) Get-metode / *Get method* (1)

3. Noem en beskryf drie tipes beheerstrukture in Java. / *Name and describe three types of control structures in Java.* (6)

4. Verander die volgende instruksies so dat dieselfde funksie met behulp van **JOptionPane** verrig word. Jy mag meer as een instruksie per vraag skryf. / *Modify the following instructions so that the same function is performed by means of JOptionPane. You may write more than one line per question.*
 - a) `System.out.printf("The number is %.2f%n", object1.getNumber());` (3)
 - b) `System.out.println("Please enter your name: ");`
`name = inputs.nextLine();` (2)

5. Teken die UML aktiwiteitsdiagram vir die volgende algoritme: / *Draw the UML activity diagram for the following algorithm:*

Prompt and receive number

If number is greater than or equal to 10

Add number to 50 and assign to total

Else

Add number to 45 and assign to total

(7)

Display total

6. Teken die UML-klasdiagram van die volgende Java klas: / *Draw the UML class diagram of the following Java class:*

```
public class Test2
{
    private String pName;
    private int pBirth;
    public double pAccount;
    public Test2(String nameIn, int birthIn)
    {
        pName = nameIn;
        pBirth = birthIn;
        pAccount = 0.0;
    }
    public void setAccount(int age, double oldBalance)
    {
        if(age > 30)
            pAccount = oldBalance + 0.03 * oldBalance;
        else
            pAccount = oldBalance;
    }
    public String getName()
    {
        return pName;
    }
    public int getBirth()
    {
        return pBirth;
    }
    public double getAccount()
    {
        return pAccount;
    }
}
```

(13)

Totaal / Total: (40)

MEMORANDUM

ITRW124 Klastoets 2 / Class Test 2

14/08/2015

8h00-9h00

1. Definieer die volgende begrippe: / Define the following terms:

a) Algoritme / Algorithm

(3)

A (procedure for solving a computing problem) in terms of the (actions to execute) and (the order in which the actions should be executed).

b) Psuedokode / Psuedocode

(2)

An (informal language for developing an algorithm) without worrying about (specific syntax).

c) Beheerstrukture / Control structures

(1)

Structures / statements used for program control.

2. Wat is die doel van die volgende metodes in 'n klas? / What is the purpose of the following methods in a class?

a) Konstruktore / Constructor

(1)

Initialise the instance variables

b) Set-metode / Set method

(1)

Sets the value of an instance variable

c) Get-metode / Get method

(1)

Sends the value of an instance variable back to the calling program

3. Noem en beskryf drie tipes beheerstrukture in Java. / Name and describe three types of control structures in Java.

(6)

- **Sequential:** instructions in a program are executed in sequence.
- **Selection:** the program selects which instructions to execute next
- **Repetition:** allows you to specify that certain instructions must be repeated while a specific condition holds.

4. Verander die volgende instruksies so dat dieselfde funksie met behulp van JOptionPane verrig word. Jy mag meer as een instruksie per vraag skryf. / Modify the following instructions so that the same function is performed by means of JOptionPane. You may write more than one line per question.

a) `System.out.printf("The number is %.2f%n", object1.getNumber());`

(3)

```

message = (String.format("The number is %.2f%n", object1.getNumber());
(JOptionPane.showMessageDialog(null, message);
OR
(JOptionPane.showMessageDialog(null, (String.format("The number is
%.2f%n", object1.getNumber()));
    
```

b) `System.out.println("Please enter your name: ");`
`name = inputs.nextLine();` (2)

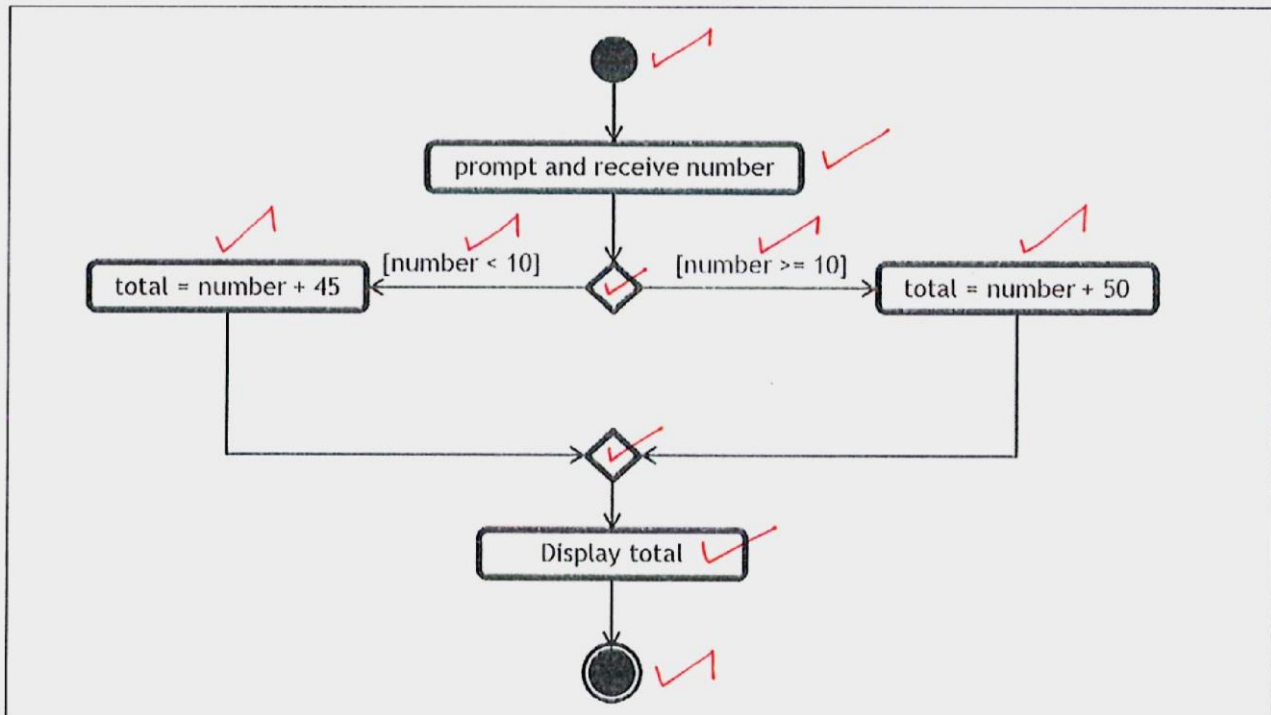
```

(name) = (JOptionPane.showInputDialog("Please enter your name: ");
    
```

5. Teken die UML aktiwiteitsdiagram vir die volgende algoritme: / Draw the UML activity diagram for the following algorithm:

Prompt and receive number
 If number is greater than or equal to 10
 Add number to 50 and assign to total.
 Else
 Add number to 45 and assign to total
 Display total

(7)



6. Teken die UML-klasdiagram van die volgende Java klas: / Draw the UML class diagram of the following Java class:

```

public class Test2
{
    private String pName;
    private int pBirth;
    public double pAccount;
    public Test2(String nameIn, int birthIn)
    {
        pName = nameIn;
        pBirth = birthIn;
        pAccount = 0.0;
    }
    public void setAccount(int age, double oldBalance)
    {
        if(age > 30)
            pAccount = oldBalance + 0.03 * oldBalance;
        else
            pAccount = oldBalance;
    }
    public String getName()
    {
        return pName;
    }
    public int getBirth()
    {
        return pBirth;
    }
    public double getAccount()
    {
        return pAccount;
    }
}
    
```

(13)

Test2 ✓	
<ul style="list-style-type: none"> - (pName : String) ✓ - (pBirth : int) ✓ + (pAccount : double) ✓ 	
<ul style="list-style-type: none"> (<<constructor>>) Test2 (nameIn : String , birthIn : int) ✓ (+ setAccount (age : int , oldBalance : double)) ✓ (+ getName () : String) ✓ (+ getBirth () : int) ✓ (+ getAccount () : double) ✓ 	

Totaal / Total: (40)

Module A, Task 2**Instruksies: / Instructions:**

Log on to eFundi and find the **Class Test 3** site.

Complete the additional security slip.

Use the password a2Q5pym to open the code file on eFundi.

Problem statement:

A company has an unknown number of employees that need to receive salaries. Write a program that will receive the name, hours (regular and overtime) worked and level of employment for each employee, calculate the salary for each and provide a cost to company total at the end.

1. Use the code for **Employee.java** and write the following class:

Employee
- salary : double - name : String
+ <<constructor>>Employee(genHours : int, oHours : int, level : int, nameIn : String) + getSalary() : double + getName() : String

The constructor calculates the **salary** as follows:

If **level** equals 2 (use the conditional operator)

Then the **salary** equals $R350 \times \text{genHours}$ plus $R550 \times \text{oHours}$

Else the **salary** equals $R300 \times \text{genHours}$ plus $R550 \times \text{oHours}$

The **name** is set equal to the parameter **nameIn** as received.

(10)

2. Use the code for **AllSalaries.java** and write a main program that:

- Uses a **do...while** loop to (while there are more employees):
 - Input an employee name (**emp1Name**);
 - Input the employee's regular hours (**hours**);
 - Input the employee's overtime hours (**overtime**);
 - Inputs the level of employment (**inputLevel**) of the employee;
 - Creates an object of the class **Employee** with **emp1Name**, **hours**, **overtime** and **inputLevel** as arguments;
 - Updates the **total** to be spent on salaries by calling the **getSalary()** method;
 - Displays a message for the current employee that indicates the employee name and salary by calling the **getName()** and **getSalary()** methods;
- Displays a message that indicates the total to be spent on salaries (**total**) by the company.

(30)

Submit both files AllSalaries.java and Employee.java on eFundi.

TOTAL: 40

Memorandum

```

//MEMO
//program to calculate salary of employees

import java.util.Scanner;
import javax.swing.JOptionPane;

public class AllSalaries
{
    public static void main(String args[])
    {
        //declare and initialise flag, hours, pay, total
        int flag = 0;
        int hours = 0;
        int overtime = 0;
        double total = 0.0;
        String empName = "";
        int inputLevel = 0;

        Scanner input = new Scanner(System.in);

        // Repeat
        do
        {
            // Prompt employee name
            System.out.println("Please enter the name of the employee");
            empName = input.next();
            // Prompt regular hours
            System.out.printf("Please enter the regular hours worked for %s\n", empName);
            hours = input.nextInt();
            // Prompt overtime
            System.out.printf("Please enter the hours worked overtime for %s\n", empName);
            overtime = input.nextInt();
            // Prompt employee level
            System.out.printf("Please enter the level of employment for %s\n", empName);
            inputLevel = input.nextInt();
            //create object of Employee
            Employee thisEmp1 = new Employee(hours, overtime, inputLevel, empName);
            // Add to total
            total += thisEmp1.getSalary();

            //output this employee's salary
            JOptionPane.showMessageDialog(null, String.format("The salary for %s is : R%.2f", thisEmp1.getName(), thisEmp1.getSalary()));

            // Prompt user for flag
            System.out.println("If there is another employee, enter 1, else enter 0 to stop.");
            flag = input.nextInt();
        }
        while(flag != 0);
        // Until user inputs the flag

        // Display total
        JOptionPane.showMessageDialog(null, "The total owed by the company is: R" + total);
    }
} // end method main
} //end class AllSalaries

//class to create new employee
public class Employee
{
    //declare instance variables
    private double salary;
    private String name;

    //constructor
    public Employee(int genHours, int oHours, int level, String nameIn)
    {
        salary = (level == 2 ? genHours * 350 + oHours * 550 : genHours * 300 + oHours * 550);
        name = nameIn;
    } //end constructor

    //method getSalary
    public double getSalary()
    {
        return salary;
    } //end getSalary

    //method getName
    public String getName()
    {
        return name;
    } //end getName
} //end class Employee

```

Appendix G: Faculty of Natural Sciences, Module B, test and example

Tutorial/Tutorial 6

01 September 20

1. Gee 'n definisie vir "dimensioneel versoenbaar". Give a definition for "dimensionally compatible".
2. Gee 'n definisie vir "dimensioneel homogeen". What is a homogeneous system of linear equations.
3. Wat is 'n homogene stelsel lineere vergelykings. Try to prove that a linear combination of solutions of a homogen system also a solution is.
4. Probeer bewys dat 'n lineere kombinasie van oplossings van 'n homogene stelsel weer 'n oplossing is. Wat is 'n "volle versameling dimensielose produkte". Give a definition for "dimensionally homogeneous".
5. Beskryf die prosedure van dimensionele analise (soos wat julle dit teengekom het in klasvoorbeelde) in 5 stappe (Die laaste twee stappe in die handboek gaan verder as ons voorbeelde).
What is a "complete set of dimensionless products"? Describe the process of dimensional analysis (as we did it in the examples) in 5 steps. (The last two steps in the handbook goes a bit further than our examples)

1. Equations that involve only sums of products having the same dimension are dimensionally compatible.

2. An equation that is true regardless of the system of units which the variables are measured is said to be dimensionally homogeneous.

3. Bv $t = \sqrt{2s/g}$ giving the time a body falls a distance s under gravity is dimensionally homogeneous. g is weeg laatbaar.

variable	m^a	g^b	t^c	r^d	θ^e
dimension	$(M)^a$	$(LT^{-2})^b$	$(T)^c$	$(L)^d$	$(M^0 L^0 T^0)^e$

$$M: +a + 0e = 0$$

$$L: +b + d + 0e = 0$$

$$T: -2b + c + 0e = 0$$

$$5-3=2 \Rightarrow \pi_1 = \theta$$

$$\Rightarrow \pi_2 = \frac{g t^2}{r}$$

i) $a=0, c=2b, d=-b$

$\therefore b=0, e=1$ dus $a=c=d=0$

dus $m^0 g^0 t^0 r^0 \theta^1$ X

$$\pi_2^2 e = 0, b=1, a=0, c=2$$

$$\therefore m^0 g^1 t^2 r^{-1} = g t^2 \Rightarrow i$$

14.2

1. (4)

2. (9)

5. STEP 1 - Decide with variables enter the problem investigation

STEP 2 - determine a couple sets that are complete dimensionless products such as π_1, π_2 should only appear in one of the dimension

STEP 3 - Make sure product used are dimensionless

STEP 4 - Apply Buckingham's theory to produce all, dimensionless equations

STEP 5 - Solve the equations so we can express variable

- A complete set of dimensionless products

\Rightarrow A set of solutions is complete if it is independent and every solution is expressible as a linear combination of solutions in the set

14.2.4

14.2.9 v

$$\begin{matrix} V & P & r & P & \mu \\ \text{MLT}^{-2} & - & 0 & \frac{V^a P^b r^c P^d \mu^e}{(L^3 T^{-1})^a (ML^{-1} T^{-1})^b (L)^c (ML^{-3})^d (ML^{-1} T^{-1})^e} \end{matrix}$$

$S-3=2$

M: $b + d + e = 0$

L: $3a - 2b + c - 3d - e = 0$

T: $-a - 2b - e = 0$

ii) $a=1, d=1, b=0, e=-1$

$$\begin{matrix} V & P & r & P & \mu \\ \text{MLT}^{-2} & - & 0 & \frac{V^1 P^0 r^{-1} P^1 \mu^{-1}}{(L^3 T^{-1})^1 (ML^{-1} T^{-1})^0 (L)^{-1} (ML^{-3})^1 (ML^{-1} T^{-1})^{-1}} \end{matrix}$$

$\pi_1 = PV/r$

$$\begin{matrix} V & P & r & P & \mu \\ \text{MLT}^{-2} & - & 0 & \frac{V^a P^b r^c P^d \mu^e}{(MLT^{-2})^a (ML^{-1} T^{-1})^b (L)^c (ML^{-3})^d (ML^{-1} T^{-1})^e} \end{matrix}$$

M: $a + b = 0$

L: $a + c + d = 0$

T: $-2a - c = 0$

$a=1, c=-2, d=1, b=-1$

$\pi_1 = F m^{-1} v^{-2} d r$

Appendix H: Faculty of Education Sciences, Module A, test and memorandum

Klastoets – 10 punte

1. Waarvoor staan CAPS oftewel KABV (2 punte)

Curriculum and Assessment (1 punt) Policy Statement (1 punt) OF Kurrikulum- en Assesserings- (1 punt) beleidsverklaring (1 punt)

2. Wat beteken “leerder wat hindernisse tot leer ervaar”? (2 punte)

Means any learner who has difficulties in accessing the curriculum (1 punt) due to several factors that may serve as barriers (1 punt)

3. Beskryf die verskille tussen Remedierende Onderwys (RO) en Leerondersteuning (LS) (6 punte)

Enige kombinasie van die volgende:

RO is meer ‘n 1 tot 1 hulpverlening (1 punt) terwyl LS ‘n spanbenadering impliseer (1 punt)

In RO was die onderwyseres die aktiewe kundige en die leerder oorwegend passief (1 punt), terwyl LS impliseer dat die leerder aktief deel word van haar eie verbetering (1 punt)

RO gebruik die mediese model en diagnose (1 punt) terwyl LS baie meer ekosistemies en konstruktivisties werk (1 punt)

In RO word vordering dikwels kwantitatief gemeet (1 punt) en by LS meer kwalitatief (1 punt)

RO het gefokus op leerprobleme (1 punt) terwyl LS op alle hindernisse fokus binne inklusiewe onderwys (1 punt)

RO fokus oorwegend op tekorte (1 punt) terwyl LS op sterktes/bates fokus (1 punt)

RO het maklik geetiketteer (1 punt) terwyl LS probeer wegkom van etikettering (1 punt)

RO is probleemgesentreerd en behoefte-gebaseer (1 punt) terwyl LS bate-gebaseerd werk (1 punt)

ENS – enige redelike verdere beskrywing.

Appendix I: Faculty of Education Sciences, Module B, task and marking rubric

Task 3

Use the information on p.101-112 in the textbook and design a pamphlet that warns teenagers about the dangers of drug use.

The purpose of this assignment is twofold:

1. You must be able to summarise information in the textbook and develop the skill to identify important information.
2. You have to be able to present the information in pamphlet form in the time frame of one hour.

Rubric

Criteria	Marks
Content	/3
Presentation	/7
Total:	/10

Appendix J: Faculty of Economic and Management Sciences, Module A, test and memorandum

Vraag / Question 1

Indien jy jou lokus van kontrole wil verbeter, is daar 'n paar dinge wat jy kan doen. Noem vyf veranderlikes van selfbestuur wat hierop van toepassing is. / *If you want to improve your locus of control, there are a number of things you can do. Name five variables of self-management that would be relevant for this.* (5)

p73-77

- Neem verantwoordelikheid vir jouself / Taking responsibility for yourself
- Hê n plan vir jou lewe / Have a plan for your life
- Selfmotivering, sukses en satisfaksie / Self motivation, success and satisfaction
- Self-beheer / Self control
- Werk/lewe balans / Work/life balance

Vraag / Question 2

Daar is verskeie maniere om die verskillende tipes bestuurders in 'n onderneming te klassifiseer, gebaseer op die organisatoriese struktuur. Bespreek die drie tipes bestuurders. / *There are various ways to classify the different types of managers found in businesses, based on the organisational structure. Discuss the three types of managers.* [6]

p77-79

1 x punt vir noem van tipe bestuurder
1 x punt vir bespreking

Topbestuurders / Top managers (1)

- *Fokus op die algemene bestuur van die besigheid as 'n geheel / Focuses on the general management of the business as a whole or*
- *Topbestuurders doen strategiese beplanning en neem verantwoordelikheid vir die algemene rigting of / Top managers do strategic planning and take responsibility for its overall direction or*
- *Topbestuurders stel langtermyn doelwitte en bepaal die visie en missie van die besigheid. / Top managers set long-term goals and determine the vision and mission for the business (1)*

Middelbestuurders / Middle managers (1)

- *Fokus op die beheer van die implementering van taktiese planne of die bestuur van funksionele areas of / Focuses on controlling the implementation of tactical plans or management of functional areas or*

- *Implementeer die besluite van topbestuur en hulle is verantwoordelik vir die mediumtermynbeplanning van die besigheid of / Implement the decisions of top management and they are responsible for the medium-term planning of the business or*
- *Transformeer algemene strategieë of breë beginsels na spesifieke doelwitte en aksieplanne om deur laervlakbestuur geïmplementeer te word. / Transform general strategies or broad policies into specific objectives and action plans for implementation by lower-level management. (1)*

Eerstelynbestuurders / First-line managers (1)

- *Bestuur die implementering van operasionele planne of / Manages the implementation of operational plans or*
- *Uitgevoer op 'n dag-tot-dagbasis of korttermyn / Carried out on a daily basis or short-term (1)*

Vraag / Question 3

Noem en bespreek die tipe plan wat jy in elk van die volgende scenario's sal gebruik. / Name and discuss the type of plan you will use in each of the following scenarios. (6)

p129-130

3.1 Op grond van die nuwe rookwet besluit jy om 'n rookbeleid vir jou besigheid op te stel. / Based on the new smoking law, you decide to compile a smoking policy for your business.

- *Staande / Standing plan (1)*
- *Soos 'n beleid wat "ongoing" is en rigting gee vir aktiwiteite / ongoing policy and giving direction to activities (1)*

3.2 Jy wil baie graag volgende jaar plek in 'n koshuis kry, want jy hou van die samehorigheidsgevoel en dit is goedkoper as om privaat te bly. Jy weet dat jou koshuisplek gaan afhang van jou akademiese prestasie en jou koshuisdeelname. Jy besluit dus om vier ure per dag te gebruik om te studeer en om elke week 'n sport- en kultuuraksie by te woon. / You really want to get a place in a hostel next year as you like the feeling of solidarity and it is cheaper than living privately. You know that your place in the hostel will depend on your academic performance and your hostel participation. You, therefore, decide to spend four hours a day to study, and to attend a sport- and culture activity once a week.

- *Spesifieke / Specific plan (1)*
- *Geen misverstande / doelwitte is duidelik gestel en die planne is goed gedefinieer / No misunderstandings or objectives are clearly given and set and plans are well defined (1)*

OR

- *Rigtinggewende plan / Directional plan*
- *Geen spesifiek uitgelig word watter sport, en kultuuraksies en die spesifieke tye vir swot aangedui is nie / Not specifically highlighter which sport or cultural activity or time spend studying.*

3.3 Jy stel 'n begroting op vir die Aardklop fees wat eenmaal 'n jaar plaasvind. Die begroting verskil elke jaar / *You set a budget for the Aardklop festival that occurs only once a year. The budget differs every year.*

- Enkel-gebruik plan / *Single-use plan* (1)
- Begroting vir die Aardklop 2014 fees wat eenmaal 'n jaar plaasvind. Die begroting word net eenmaal gebruik / *The budget will only be used for Aardklop 2014 that occurs once a year. The budget differs every year and will only be used once* (1)

Afdeling B

Vraag 4 / Question 4

Gebruik stappe 2 tot 5 van die besluitnemingsproses en maak 'n voorstel vir 'n besluit wat Baking Tray kan gebruik om hul wins met 'n bepaalde persentasie te laat toeneem. / *Make use of steps 2 to 5 of the decision-making process and make a suggestion for a decision that Baking Tray can use to increase profit by a certain percentage.*

p139-140

Belangrik:

- Stappe moet in volgorde wees. Indien die stap nie in volgorde is nie, word die bespreking ook nie gemerk nie.
- Die stap moet korrek benoem wees. (1 punt)
- By die bespreking onder elke stap: Indien stap net kortliks verduidelik is (1/2 punt); Indien stap goed toegepas is (1 punt)

Stap 2. Stel doelstellings / Set goals (v)

- Die doelstelling is om verkope met ___% binne die volgende ___ maande te verhoog. / *The goal is to increase sales by ___% within the next ___ months. (v)*
- SMART?

Stap 3. Soek alternatiewe oplossings / Search for alternatives(v)

- Alternatiewe oplossings vir die bereiking van die doelstelling van 'n ___% toename in verkope binne ___ maande kan wees: / *Alternative solutions for reaching the goal of a ___% increase in sales within ___ months could be:*
 - Om Baking Tray se bemarking vir die huidige teikenmark te verbeter; / *To improve Baking Tray's marketing to the current target market;*
 - Om 'n nuwe teikenmark te identifiseer met 'n belangstelling in koek en koekies en die produk aan die mark te bemark; en / *To identify a new target market interested in the cakes and cookies and to market the product to that group; and*
 - Om 'n nuwe resep te ontwikkel en dus 'n nuwe produk. / *To develop a new recipe and ultimately a new product. (v)*

Stap 4. Vergelyk en evalueer alternatiewe oplossings / Assess alternatives(v)

- Elke opsie moet nou in terme van sy sterk- en swakpunte, voor- en nadele geëvalueer word. / *Each option should now be evaluated in terms of its strengths and weaknesses, advantages and disadvantages.*
 - Toename in Baking Tray se bemarking mag die voordeel inhou van verlaagde kostes, maar 'n moontlike bedreiging is dat potensiële kliënte nie die produk wil hê nie, hulle sal dit nie koop nie, ongeag die bemarkingstrategie. / *Increasing Baking Tray's marketing effort might have the advantage of being less costly, but a possible threat is that if potential customers do not like the product, they will not buy it, regardless of the marketing strategy.*
 - Ontwerp van 'n nuwe produk het die nadeel dat dit duur is, maar dit bied die geleentheid om 'n groot deel van die mark te lok. / *Designing a new product has the disadvantage of being costly, but it presents the opportunity of attracting and capturing a large section of the market. (v)*

Stap 5. Kies tussen alternatiewe / Choose between alternative solutions(v)

- Na al die voor- en nadele van elke opsie geëvalueer is, kan die alternatiewe georganiseer word in volgorde van prioriteit, en die beste alternatief gekies word. / *After all the advantages and disadvantages of each option have been evaluated, the alternatives can be arranged in order of PRIORITY, and the best alternative is selected.*
- Student kies een van die alternatiewe geïdentifiseer in Stap 4 as die beste alternatief. / *Student has to select one of the alternatives identified in Step 4 as the best alternative. (v)*

Totaal 25

Appendix K: Faculty of Economic and Management Sciences, Module B, lecturer's slides and marking rubric

Class Presentations

- This is an interactive way for students to learn, prepare and present prescribed work;
- A form of class assessment and will count for your participation mark
- Dit is 'n interaktiewe manier vir studente om voorgeskrewe werk voor te berei en aan te bied;
- 'n vorm van klas assesering en sal deel uitmaak van die deelnamepunt.

Why class presentations

- Students must form groups of a maximum of 10 and a minimum of 8;
- Groups will be expected to make a 15 minute presentation during a scheduled contact session with a 5 minute feedback / discussion following each session. Time yourself prior to presenting.
- During this session groups will be evaluated by the lecturer and groups will evaluate themselves internally also.
- Studente moet groepe vorm van minimum 8 en maksimum 10;
- Groepe salverwag word om 'n 15 minute aanbieding gedurende die kontaksessie te maak waarna 'n 5 minute bespreking vir terugvoer/toegelaat sal word. Oefen die tydgleuf vooraf.
- Gedurende die sessie sal groepe ge-evalueer word deur die dosent asook onderling deur mekaar.

PRESENTATION

- All students must participate in some way or form;
- A mark will be allocated to each group and every group member will get the same mark;
- The mark will form part of the 15% class participation mark;
- There are no exchanges of presentation themes, times or dates ;
- If you do not present on the day and time scheduled no mark will be allocated to any group members;
- Keep your presentation professional and a **hard copy on the day** plus **soft copy** must be handed in with the lecturer as part of the evaluation process.
- Alle studente moet op een of ander wyse deelneem;
- 'n punt sal aan elke groep toegeken word en alle lede van die groep kry dieselfde punt ;
- Die punt sal deel uitmaak van jou **15 %** klasdeelnamepunt;
- Daar is geen uitruilings van voorlegging temas, tye, datums of groepe;
- Indien jy nie op die geskeduleerde tyd aanbied nie sal geen punt aan enige lid van die groep ge-allokeer word nie;
- Hou die voorlegging professioneel en 'n **harde kopie op die dag** asook 'n **sagte kopie** moet by die dosent ingehandig word vir evaluering doeleindes .

RULES

- You are expected to look at prescribed as well as non-prescribed sources. Use the content of your prescribed textbook as a basis and use additional sources to enhance your work / *Daar word van u verwag om van voorgeskrewe asook nie-voorgeskrewe bronne gebruik te maak. Gebruik die inhoud van die voorgeskrewe bron as basis en gebruik addisionele bronne om die werk uit te lig.*
- Be creative in terms of your presentation but be precise, accurate and thorough in compiling the topic information / *Wees kreatief met betrekking tot jou voorleging maar wees presies rakende die inhoud regdeur die samestelling van die onderwerk inligting.*

CREATIVE DOESN'T MEAN CLOWN

Expectations

- **Title slide / Titelskyfie**
- **Outcomes / Uitkomst:** formulate outcomes / Formuleer uitkomstes
- **Content / Inhoud:** not more than 5 slides / Nie meer as 5 slides
 - Each slide must contain no more than plus-minus five bullets and seven words per sentence under each bullet
 - Include pictures, videos etc. if so desired .
- **Summary / Samevatting:** evaluate outcomes by engaging your audience to determine whether outcomes was achieved eg. Quiz/vote/ask the audience
- Put in a reference list / Sit is bronnelys in

Guiding Structure of presentation

Presentation evaluation form

You will be evaluated on the following:	Marks
<p>Presentation slides</p> <p>Layout and design</p> <ul style="list-style-type: none"> • Initial slide (Title), final slides (closing, thank you) • Wording clearly visible • Heading font 28/32, body font 18 – 24 • 8 lines per slide ▪ Simplistic, professional 	15
<p>Content</p> <p>Title and introduction</p> <ul style="list-style-type: none"> ▪ Welcome your audience ▪ Interesting title ▪ Introduce your subject & objectives ▪ Create a relaxed but professional environment ▪ Place the subject into context ▪ Highlight benefits to listener ▪ Explain structure & timing <p>Structure (logical)</p> <ul style="list-style-type: none"> ▪ Present information in a logical order ▪ Avoid unnecessary “waffling” – focus on key issues ▪ Avoid using jargon or unknown abbreviations <p>Closing</p> <ul style="list-style-type: none"> ▪ Summarise key points ▪ End on a high note ▪ Thank audience for their time ▪ Answer any questions <p>Relevant material to the topic</p> <ul style="list-style-type: none"> ▪ MLAW 121... ▪ Entrepreneurial Law, material other than prescribed material used, interesting facts etc. 	55
<p>Communication skills</p> <p>Use of verbal and non-verbal communication</p> <p>Interaction with the audience</p> <p>Interaction with visual aids</p> <p>Clear and audible communication</p>	20
<p>Creative approach</p>	10
<p>TOTAL</p>	100

Appendix L: Faculty of Law, Module A, task instructions and marking rubric

RULES: Part A

1. Each group must comprise of 10 students.
2. Each group member will be required to be present during every phase of the assignment. Absence will result in that student receiving a 0 mark. At the end of each phase, every group will have to produce a confirmation of participation document that must confirm each member's participation or lack thereof during the performance of that task. This document must be submitted to either Mrs Schoeman or Mr Bothma at the end of each task.
3. Those students that are registered for luri 174 group b will be required to do the entire assignment in English – whether in writing or verbally. All remaining students will have the choice of language provided that every student in the group as well as opposing group must all complete the assignment in the same language. Please ensure that you select a presentation time that corresponds with your language preference.
4. For this assignment you will receive marks for luri 171 and luri 174. If you are registered for both you will receive separate marks for each module. If you are only registered for one of the modules – you will only receive marks for the one that you are registered.
5. If the tasks are not completed within the allocated times, a mark of 0 will be given.

RULES PART B

1. **Heads of Argument ('HOA')**
 - i. The HOA must be a minimum of 3 pages and a maximum of 10 pages.
 - ii. A bibliography, which is in accordance with the Faculty Style Requirements, must be attached to the back of the HOA.
 - iii. Due to facility and time constraints the HOA will no longer be served on your opponents. Instead the HOA will be filed in the court file. You will therefore need to file 2 copies of the HOA by no later than 09h00 on Friday the 2nd of October 2015.
 - iv. The 2 copies of the HOA must be filed at the Clerk/Registrar of the Court's office, during their office hours, located at Room 109 at the Faculty of Law.
 - v. Neither lecturer will accept service of the HOA. Should you not file the HOA with the Clerk/Registrar on or before the scheduled deadline – you will receive 0 for this portion of the assignment and you will have to do an application for condonation for the late filing thereof. The application will take place on the same day as your scheduled appearance.
2. **Indexing and Paginating of Court File**
 - i. The party who instituted legal proceedings has the obligation to index and paginate the court file.

- ii. The court file must be indexed and paginated by 13h00 the day before the matter is to be heard.
- iii. A request form for the file is to be completed and handed to the clerk/registrar in order to obtain the file for indexing and paginating.

3. Peer Assessment of HOA

- i. As part of the process you will be required to peer review your opponent's heads of argument.
- ii. The HOA will be made available for collection to both teams the day before the matter is scheduled to be heard.
- iii. You will peer review in accordance with the marking framework provided.
- iv. Your peer review must be submitted on the day of your hearing – more specifically during your scheduled court appearance. The peer review will be handed up to the presiding officers at the beginning of the hearing.

4. Court Appearance

- i. You are to be outside of the Moot Court, situated on the first floor at the Law Faculty, 5 minutes before your scheduled time.
- ii. You are to dress in professional wear on the day.
- iii. You may not witness any of your colleagues' court appearances.
- iv. Each party will have 5 minutes to address the court in respect of their matter.
- v. A minimum of 5 members of your group must address the court.
- vi. You may not read your HOA to the court.
- vii. Each individual member must be prepared to answer any questions that the presiding officers may have.
- viii. You will be required to take notes whilst your opposing party is busy with their argument. In order to assess the note taking, you will be furnished with 3 headings namely – essence of their argument, authority, rebuttal.

INSTRUCTION 4: HEADS OF ARGUMENT

Dear Students

Now that you have completed the research part of your preparation, you may now begin with the next step. The next step is now to take the research that you obtained and draft heads of argument. Examples have been placed on eFundi in order for you to see what they should look like. Remember that these are examples and that the content is not necessarily applicable to your set of facts.

Please note that:

- i. your heads of argument are to be a minimum of 3 pages and a maximum of 10.
- ii. A bibliography, which is in accordance with the Faculty Style Requirements, needs to be attached to the back of your heads of argument.
- iii. the heads of argument need to be served on your opponents and thereafter filed in the court file. The final date for filing is 09h00 on Friday the 2nd of October. Should you be late you will only receive 50% of the mark that would have been awarded. You will also have to do a condonation application for the late filing of the heads of argument.
- iv. you will have to peer review your opponents' heads of argument as per the marking framework – which will be placed on eFundi.
- v. the peer assessment must be submitted to the clerk / registrar of the court by 10h00 on the 12th of October 2015.
- vi. The clerk / registrar of the court's offices are situated in the waiting room of the language lecturers at the Faculty of Law, Room 109 They have office hours which shall be placed on eFundi under resources. They will only accept the documents during those hours – no exceptions will be made.

Regards,

Your lecturers

INSTRUCTION 4: HEADS OF ARGUMENT (Amended)

Dear Students

Now that you have completed the research part of your preparation, you may now begin with the next step. The next step is now to take the research that you obtained and draft heads of argument. Examples have been placed on eFundi in order for you to see what they should look like. Remember that these are examples and that the content is not necessarily applicable to your set of facts.

Please refer to the Rules Part B for further information in this regard.

Yours faithfully,

Your lecturers

MARKING FRAMEWORK IRO 171 AND 174 JOINT ASSIGNMENT

NAME OF FIRM _____

<u>ASPECTS OF ASSESSMENT</u>	<u>MARK ALLOCATION</u>					<u>TOTAL</u>
PARTICIPATION	INSTRUCTION 1 (/4)	INSTRUCTION 2 (/4)	INSTRUCTION 3 (/4)	INSTRUCTION 4 (/4)	INSTRUCTION 5 (/4)	20
PEER REVIEW OF HOA	LANGUAGE (/5)	STYLE REQS (/5)	ARGUMENT (/10)			20
HOA	LANG (/5)	STYLE REQS (/5)	ARGUMENT (/10)			20
VERBAL ARGUMENT	COMPLETE & TIMEOUS (/5)	Demeanor & Audibility (/5)	Thinking on their feet (/5)	Quality (/5)		20
COURT ETIQUETTE & NOTE TAKING	COURT ETIQUETTE (/10)	NOTE TAKING (/10)				20
NON PARTICIPATING STUDENTS'						
TOTAL						100

Appendix M: Faculty of Law, Module B, test and memorandum

General Instructions:

- ❖ Please fill in the numbers of the questions you answer on the cover page of the first exam script.
- ❖ Bear in mind that **correct language usage, full sentences and neat, accurate, but concise formulation** play an important role in the assessment of your answers.
- ❖ Furthermore, it is in your own interest for your paper to be **fully legible**.
- ❖ Use a **black ink pen** if possible.
- ❖ **No literature, notes or annotations** in any form are allowed in the examination hall.

QUESTION 1: [20]

Fit Column B to Column A

E.g. A = 1.

A		B	
A.	<i>not available during termination of engagement</i>	1.	<i>T v T</i>
B.	<i>Oglodzinski v Oglodzinski</i>	2.	<i>contract sui generis</i>
C.	<i>Actio Pauliana Utilis</i>	3.	<i>accrual system</i>
D.	<i>protects the spouse with the least growth in their estate</i>	4.	<i>does not terminate upon death of one or both spouses</i>
E.	<i>Ex Parte Dow</i>	5.	<i>s6 of the Children's Act</i>
F.	<i>marriage privilege</i>	6.	<i>Statutory example of irretrievable breakdown</i>
G.	<i>adultery</i>	7.	<i>ex officio marriage officer</i>
H.	<i>nature of an engagement contract</i>	8.	<i>Spoliation</i>
I.	<i>Van der Merwe v Road Accident Fund</i>	9.	<i>factor that may influence consensus</i>
J.	<i>two separate estates</i>	10.	<i>codifies the common law remedy of separation of the estate</i>
K.	<i>antenuptial contract</i>	11.	<i>statutory ground for divorce</i>
L.	<i>parties have not been living together as husband and wife for more than one year</i>	12.	<i>was a common law ground for divorce</i>
M.	<i>best interest of the child is of paramount importance in all matters concerning children</i>	13.	<i>marriage out of community of property</i>

N.	<i>irretrievable breakdown</i>	14.	<i>s18(b) of the Matrimonial Property Act is unconstitutional</i>
O.	<i>putative marriage</i>	15.	<i>marriage may be concluded outdoors</i>
P.	<i>Consortium</i>	16.	<i>as a general rule spouses do not have to testify against each other</i>
Q.	<i>Magistrate</i>	17.	<i>specific performance</i>
R.	<i>Badenhorst v Bekker</i>	18.	<i>relieves the harsh consequences of the void marriage</i>
S.	<i>Error</i>	19.	<i>fraudulent intent required</i>
T.	<i>s 20 of the Matrimonial Property Act</i>	20.	<i>no separate estate acknowledged when the joint estate is insolvent</i>

VRAAG 2 / QUESTION 2: [10]

Gee kortliks 'n beskrywing/definisie van die volgende terme:

Give a brief definition/description of the following terms:

Actio iniuriarum	(1)
Animus iniuriandi	(1)
Dignitas	(1)
Sui generis	(1)
Negatiewe interesse / <i>Negative interesse</i>	(1)
Actio legis aquiliae	(1)
Justa causa	(1)
Quantum	(1)
Ab initio	(1)
Error in persona	(1)

QUESTION 3: [10]

A and B got married out of community of property with the accrual system in 1990. After a marriage of 15 years, A and B decide to divorce. The antenuptial contract (ANC) provides that the commencement values of the separate estates must be calculated and that they are not nil. A had various assets and

debts before the marriage. The assets included the following: vehicles to the amount of R100 000. The debts amounted to R120 000. B only had assets and no debts. The assets amounted to R100 000. At the time of their divorce, A and B's separate estates amounted to R2 million and R3 million respectively. A's estate consists of, amongst others, the following: a donation from an anonymous person to the value of R500 000, patrimonial damages of R250 000; a vehicle in terms of the ANC worth R50 000; satisfaction due to pain and suffering of R100 000, and a house to the value of R100 000. B's estate includes the following assets, amongst others: solatium of R100 000; damages of R100 000 due to a third party that crashed into her car; a donation of R300 000 from B's father; a residential property worth R1 million. Due to the effect of inflation, R1 in 1990 was worth the equivalent of R3 in 2005, the year of their divorce.

Determine the accrual claim and to whom this claim has to be paid. The calculation must be indicated and explained step by step.

QUESTION 4: [10]

Briefly discuss the *Du Plessis v Pienaar 2003 1 SA 671 (SCA)* case under the following headings:

Facts; (2)

Legal question; (2)

Decision. (6)

TOTAAL / TOTAL: 50

MEMORANDUM

VRAAG 1 / QUESTION 1: [20]

A.	17
B.	8
C.	19
D.	3
E.	15
F.	16
G.	12

H.	2
I.	14
J.	13
K.	4
L.	6
M.	5
N.	1
O.	18
P.	1
Q.	7
R.	20
S.	9
T.	10

VRAAG 2 / QUESTION 2: [10]

Action for pain and suffering / aksie vir pyn en lyding

Intent to injure / opset om te krenk/seer te maak

Pride or dignity / eergevoel

Unique / eiesoortig / uniek

Place person in position where he/she was before contract was concluded

Action for damages / aksie vir skadevergoeding

Just cause / grondige rede

Amount / hoeveelheid

From the beginning / van die begin af

Error in the identity of the person / dwaal tov die identiteit van die persoon

QUESTION 3: [10]

A has a negative starting value and that becomes 0.

B has a starting value of R100k and with inflation it becomes R300k.

A has an end value of R2 million and the following assets are excluded:

Donation R500k

Vehicle from the ANC R50k

Pain and suffering R100k

A's end value = R1.35 million

B has an end value of R3 million and the following assets are excluded:

Solatium R100k

Donation R300k

B's end value = R2.6 million

Growth of A = R1.35 million

Growth of B = R2.3 million

Difference = R950k, thus A has to receive R475K from B.

QUESTION 4: [10]

Du Plessis v Pienaar 2003 1 sa 671 (SCA):

An appeal from the court a quo where the court a quo followed the Badenhorst v Bekker decision.

Facts and legal question similar to that in Badenhorst v Bekker. See head note attached hereto.

Decision:

Debts are not incurred by the estate but by individuals. When those debts are incurred by persons married in community of property, both are liable for debts incurred by one or the other.

The Insolvency Act does not recognize separate estates and further does not recognize that only a part of an estate becomes insolvent. Insolvency divests a debtor (in this case both spouses) of all of his/her assets.

When such insolvency occurs in a marriage in community of property, all of the spouses' undivided interests in the joint estate and all of their separately owned property become available to satisfy the claims. This is a normal legal consequence of a marriage in community of property and cannot be unilaterally changed by a testator or spouse.

Although the Matrimonial Property Act recognizes separate estates in marriage in community of property, this is only applicable to the spouses inter se and cannot affect or be recognized as a separate entity against third parties.

Finding of the court a quo confirmed.

TOTAAL / TOTAL: 50

Appendix N: Faculty of Engineering, Module A, test and memorandum

VRAAG 1 / QUESTION 1

(2)

Watter meganiese toetsing word tipies gekenmerk deur falings in drie stadiums naamlik kraakinisiasie, kraatvoortplanting en vinnige faaling.

Kies die regte antwoord en merk dit op jou antwoordstel

- 1) Hardheidstoets
- 2) Slagtoets
- 3) Trektoets
- 4) Kruiptoets
- 5) Vermeidheidstoets

Which of the following mechanical tests are typically characterised by failure in three stages namely crack initiation, crack propagation and fast failure.

Choose the correct answer and mark it on this answer sheet

- 1) *Hardness test*
- 2) *Impact test*
- 3) *Tensile test*
- 4) *Creep test*
- 5) *Fatigue test*

VRAAG 2 / QUESTION 2

(2)

Wanneer 'n metaal of legering onder 'n voortdurende konstante spanning verkeer as gevolg van die een of ander las, mag dit progressief plasties oor 'n tydperk vervorm. Watter meganiese toets word hier beskryf.

Kies die regte antwoord en merk dit op jou antwoordstel

- 1) Hardheidstoets
- 2) Slagtoets
- 3) Trektoets
- 4) Kruiptoets
- 5) Vermeidheidstoets

When a metal or alloy is under constant load or stress, it may undergo progressive plastic deformation over a period of time. What mechanical test are described here

Choose the correct answer and mark it on this answer sheet

- 1) *Hardness test*
- 2) *Impact test*
- 3) *Tensile test*
- 4) *Creep test*
- 5) *Fatigue test*

VRAAG 3 / QUESTION 3

(2)

Watter meganiese toets word gebruik om die smeebaar tot brosheid oorgang temperatuur te bepaal

Kies die regte antwoord en merk dit op jou antwoordstel

- 1) Hardheidstoets
- 2) Slagtoets
- 3) Trektoets
- 4) Kruiptoets
- 5) Vermeidheidstoets

Which test is used to determine the ductile to brittle transition temperature.

Choose the correct answer and mark it on this answer sheet

- 1) *Hardness test*
- 2) *Impact test*
- 3) *Tensile test*
- 4) *Creep test*
- 5) *Fatigue test*

VRAAG 4 / QUESTION 4

(1)

Die persentasie verlenging van 'n metaal is 'n indikasie van die metaal

Kies die regte antwoord en merk dit op jou antwoordstel

- 1) Vloei spanning
- 2) Maksimum treksterkte
- 3) Elastiese vervorming
- 4) Smeebaarheid
- 5) Spanning

The percentage of elongation is an indication of the of the metal.

Choose the correct answer and mark it on this answer sheet

- 1) *Yield strength*
- 2) *Maximum tensile strength*
- 3) *Elastic deformation*
- 4) *Ductility*
- 5) *Strain*

VRAAG 5 / QUESTION 5

(3)

Noem die ses basiese metodes van
prosessering van materiale

Name the six basic methodes of processing of
materials.

1.

2.

3.

4.

5.

6.

TOTAAL: 10

Appendix O: Faculty of Engineering, Module B, test and memorandum

Totaal/Total: 35

Afdeling A Section A: [Totaal/Total:16; maksimum/maximum: 15]

1.

- Die **elektriese veldvektor** \underline{E} het dieselfde rigting as die krag \underline{F} op 'n positiewe toetslading q_0 .
The **electric field vector** \underline{E} has the same direction as force \underline{F} on a positive test charge q_0 . ✓
- Die grootte van \underline{E} is: $E=F/q_0$. The magnitude of \underline{E} is: $E=F/q_0$. ✓
- Die elektriese veldvektor \underline{E} is altyd 'n raaklyn aan die veldlyn by elke punt.
The electric field vector \underline{E} is always tangential to the field line at each point. (2)

2. Die grootte van die krag op die elektron is $F = eE$, waar E die grootte van die elektriese veld daar is. Die grootte van die elektron se versnelling word deur Newton se tweede wet gegee as:
The magnitude of the force acting on the electron is $F = eE$, where E is the magnitude of the electric field at its location. The magnitude of the acceleration of the electron is given by Newton's second law:

$$a = \frac{F}{m} = \frac{eE}{m} = \frac{(1,60 \times 10^{-19} \text{ C})(2,00 \times 10^4 \text{ N/C})}{9,11 \times 10^{-31} \text{ kg}} = 3,51 \times 10^{15} \text{ m/s}^2. \checkmark \checkmark$$

$$\underline{a} = +3,51 \times 10^{15} \underline{j} \text{ m/s}^2 \checkmark$$

(3)

3. (a) $\sigma = q/A$

Die oppervlakladingdigtheid σ is die lading q op die oppervlak van die sfeer gedeel deur die area A van die sfeer. The surface charge density σ is the charge q on the surface of the sphere divided by the surface area A of the sphere. Dus/Thus:

$$\begin{aligned} \sigma &= q/A = 8,10 \times 10^{-6} \text{ C/m}^2 \times 4 \pi r^2 \\ &= 8,10 \times 10^{-6} \text{ C/m}^2 \times 4 \pi (0,60 \text{ m})^2 \\ &= 3,66 \times 10^{-5} \text{ C} \checkmark \checkmark \end{aligned}$$

(b) Trek 'n sferiese gaussiese oppervlak om die geleier. Volgens Gauss se wet is die elektriese vloed Φ : Choose a Gaussian surface in the form of a sphere, concentric with the conducting sphere and with a slightly larger radius. The flux Φ is given by Gauss's law:

$$\Phi = \frac{q_{\text{in}}}{\epsilon_0} = \frac{(3,66 \times 10^{-5} \text{ C})}{8,85 \times 10^{-12} \text{ C}^2 / \text{N} \cdot \text{m}^2} = 4,14 \times 10^6 \text{ N} \cdot \text{m}^2 / \text{C} \checkmark \checkmark$$

(4)

4.

✓ { Beskou 'n dun **skil** van ladings met totale lading $+q$ op 'n afstand R vanaf middelpunt. Trek 'n sferiese gauss oppervlak met radius $r \geq R$ konsentriese met en buite om die skil. Consider a thin **shell** of charges with total charge $+q$ on a distance R from the centre. Draw a spherical Gaussian surface with radius $r \geq R$ outside concentric with the shell.

✓ { Verdeel die Gauss oppervlak in 'n oneindige aantal klein oppervlakkies ΔA en definieer vir elk 'n vektoroppervlak $d\underline{A}$ wat loodreg daarop staan en uitwaarts is. Divide the Gaussian surface into small areas ΔA and define for each an area vector $d\underline{A}$ perpendicular to the surface and directed outward from the interior.

✓ { Die elektriese veld \underline{E} is radiaal uitwaarts gerig en a.g.v. die simmetrie vd situasie, oral loodreg op die Gauss oppervlak, dus is $\underline{E} // d\underline{A}$; sodat die hoek tussen \underline{E} en $d\underline{A} = 0^\circ$, sodat $\underline{E} \cdot d\underline{A} = E \cos 0^\circ dA = E dA$. The electric field \underline{E} is radially outward and because of the symmetry, perpendicular on the Gaussian surface. Thus $\underline{E} // d\underline{A}$, and the angle between \underline{E} and $d\underline{A} = 0^\circ$, thus $\underline{E} \cdot d\underline{A} = E \cos 0^\circ dA = E dA$.

✓ { Volgens Gauss se wet is die totale elektriese vloed deur die Gauss oppervlak: According to Gauss's law, the total flux through the Gaussian surface is: $\Phi = \oint \underline{E} \cdot d\underline{A} = \frac{q_{\text{in}}}{\epsilon_0}$ met ingeslote lading $q_{\text{in}} = q$ /with enclosed charge $q_{\text{in}} = q$.

Aangesien E oral op die Gauss oppervlak dieselfde waarde het, kan ons dit voor die integraalteken skryf., sodat: Since E has the same value everywhere ON the Gaussian surface, we put in front of the integral sign, thus:

$$E \cos \theta \oint dA = \frac{q}{\epsilon_0}$$

✓ { $\oint dA$ = die som van al die differensiële areas dA op die Gauss oppervlak en is dus die totale oppervlakte van die Gauss oppervlak nl. $4\pi r^2$.

$\oint dA$ = the sum of all the differential areas dA on the Gaussian surface and is thus the total area of the Gaussian surface: $4\pi r^2$.

✓ { Sodat/Thus $E = \frac{q}{A\epsilon_0}$ en/and $E = \frac{q}{(4\pi r^2)\epsilon_0}$ of/or $E = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2}$

(7)



✓(skets)

Afdeling B/ Section B (20)

Vraag/Question	Antwoord/Answer
1	5 <i>///</i>
2	4 <i>///</i>
3	4 <i>///</i>
4	5 <i>///</i>
5	7 <i>///</i>
6	2 <i>///</i>
7	2 <i>///</i>
8	4 <i>///</i>
9	3 <i>///</i>
10	3 <i>///</i>

Geen korrekte antwoord nie/ No correct answer

Appendix P: Faculty of Health Sciences, Module A, test and memorandum as well as instructions of practical task and memorandum

Assessering: / Assessment: 1

Punte: / Marks: Maksimum 35 / Maximum 35

Instruksies / Instructions

Beantwoord al die vrae. Toon alle berekeninge. / Answer all the questions. Show all calculations.

Vraag 1 / Question 1

(14)

Beskou die inligting rakende natrium-diklofenak (Panamor[®]) verskaf in aangangsel 1 en 2 en beantwoord die vrae. / Consider the information regarding diclofenac sodium (Panamor[®]) in annexure 1 and 2 and answer the questions.

- 1.1 Lys die tipe doseervorm(s) waarin Panamor[®] op die Suid-Afrikaanse mark beskikbaar is? / List the available dosage form(s) for Panamor[®] on the South African market? (1½)
- 1.2 Lys die verskillende sterktes van die doseervorm(s) genoem in vraag 1.1. / List the different strength(s) of the dosage form(s) listed in question 1.1. (2)
- 1.3 Lys die verskillende toedieningsroetes van die doseervorm(s) genoem in vraag 1.1. / List the different routes of administration of the dosage form(s) listed in question 1.1. (1½)
- 1.4 Mag 'n pasiënt met 'n peptiese ulkus Panamor[®] gebruik? / Is the usage of Panamor[®] permitted in patients with peptic ulcers? (1)
- 1.5 Wat is die maksimum daaglikse orale volwasse dosis van natrium-diklofenak? / What is the maximum daily oral adult dose of diclofenac sodium? (1)
- 1.6 Gee 2 voordele van die intramuskulêre toedieningsroete bo die orale roete. / Give 2 advantages of the intramuscular route in comparison to the oral route. (2)
- 1.7 Die orale roete is onderhewig aan eersteurgansmetabolisme. Wat beteken dit en wat is die implikasie daarvan? / The oral route is subject to first pass metabolism. What does it mean and what is the implication thereof? (2)
- 1.8 Wat is die empiriese formule van natrium-diklofenak? / What is the empirical formula of diclofenac sodium? (1)
- 1.9 Bespreek die oplosbaarheid van natrium-diklofenak. / Discuss the solubility of diclofenac sodium. (1)
- 1.10 Wat is die bergingstoestand vir natrium-diklofenak? / What are the storage recommendations for diclofenac sodium? (1)

Vraag 2 / Question 2

(7)

Gee die afrikaanse of engelse betekenis van die volgende afkortings of terme. / Give the afrikaans or english meaning of the following abbreviations or terms.

- | | |
|-----------|------------|
| a) Stat | h) nocte |
| b) q.s. | i) tuss. |
| c) Aq | j) a.c. |
| d) m. | k) t.d.s. |
| e) pulv.. | l) aurist. |
| f) p.r.n. | m) Gtt |

g) p.a. n) p.c.

Vraag 3 / Question 3 (10)

- 3.1 Indien 'n inspuitbare oplossing 25 μg geneesmiddel in elke 0.5 ml bevat, bereken hoeveel milliliter, 0.25 mg van die geneesmiddel sal bevat. / *If an injectable solution contains 25 μg of a drug substance in each 0.5 ml, calculate how many milliliters would contain 0.25 mg of drug substance.* (2)
- 3.2 Gekonjugeerde estrogeentablette (Premarin[®]) is beskikbaar in die volgende sterktes: 0.3 mg, 0.45 mg, 0.625 mg, 0.9 mg en 1.25 mg. Indien pasiënt "A" een tablet daagliks neem van die laagste dosis en pasiënt "B" een tablet daagliks neem van die hoogste dosis, wat is die verskil in die totale hoeveelheid (mg) geneem tussen die twee pasiënte oor 'n tydperk van 30 dae? / *Conjugated estrogen tablette (Premarin[®]) are available in the following strengths: 0.3 mg, 0.45 mg, 0.625 mg, 0.9 mg and 1.25 mg. If patient "A" took one tablet daily of the lowest dose and patient "B" took one tablet daily of the highest dose, what is the difference in the total quantities (mg) taken between the two patients over a period of 30 days?* (2)
- 3.3 Die dosis vir Augmentin[®] orale suspensie vir 'n pasiënt is 5 ml b.i.d. Elke 5 ml suspensie bevat 400 mg amoksisilien en 57 mg klavulaansuur. Indien die suspensie vir 10 dae geneem moet word en in 50 ml, 75 ml en 100 ml houers beskikbaar is, bereken: / *The dose of Augmentin[®] oral suspension for a patient is 5 ml b.i.d. Each 5 ml of suspension contains 400 mg of amoxicillin and 57 mg of clavulanic acid. If the suspension is to be taken for ten days and is available in 50 ml, 75 ml and 100 ml containers, calculate:*
- a) Die grootte houer wat geresepteer moet word wat die minste vermorsing tot gevolg sal hê. / *The least wasteful package size to dispense.* (2)
- b) Totale hoeveelheid van amoksisilien geneem tydens behandeling. / *Total quantity of amoxicillin taken during the treatment period.* (2)
- 3.4 Is die konsentrasie-uitdrukkings $\mu\text{g/ml}$ en g/l ekwivalent of nie? Bewys. / *Is the concentration expressions $\mu\text{g/ml}$ and g/l equivalent or not? Prove.* (2)

Vraag 4 / Question 4 (4)

Jy ontvang 'n voorskrif vir Angised[®] sublinguale tablette: / *You receive a prescription for Angised[®] sublingual tablets:*

- 4.1 Wat beteken sublingual? / *What does sublingual mean?* (1)
- 4.2 Indien die voorskrif geen datum op het nie, mag dit geresepteer word? / *If there is no date on the prescription, may it be dispensed?* (1)
- 4.3 Noem die inligting wat op 'n voorskrif moet kom. / *Name the information that must be on a prescription.* (2)

Aanhangsel 1: Panamor[®] voubiljet / Annexure: 1: Panamor[®] package insert

PANAMOR 25 TABLETS

PANAMOR AT 50 TABLETS

PANAMOR 75 SR TABLETS

PANAMOR 100 SR TABLETS

PANAMOR 75 INJECTION

PANAMOR SUPPOSITORIES 12,5

PANAMOR SUPPOSITORIES 25

PANAMOR SUPPOSITORIES 100

SCHEDULING STATUS:

S3 S2 (See indications below)

PROPRIETARY NAME

(and dosage form):

PANAMOR 25 TABLETS

PANAMOR AT 50 TABLETS

PANAMOR 75 SR TABLETS

PANAMOR 100 SR TABLETS

PANAMOR 75 INJECTION

PANAMOR SUPPOSITORIES 12,5

PANAMOR SUPPOSITORIES 25

PANAMOR SUPPOSITORIES 100

COMPOSITION:

Film coated tablets (which are also enteric coated) containing 25 mg or 50 mg diclofenac sodium, and film coated tablets containing 75 mg or 100 mg diclofenac sodium tablets in a sustained release form. These are also enteric coated. Each 3 mL ampoule contains 25 mg/mL diclofenac sodium with 4% v/v benzyl alcohol as preservative. Each suppository contains 12,5 mg, 25 mg or 100 mg diclofenac sodium.

PHARMACOLOGICAL CLASSIFICATION:

A 3.1: Anti-rheumatics (anti-inflammatory agents).

PHARMACOLOGICAL ACTION:

Diclofenac sodium is a nonsteroidal anti-inflammatory compound with analgesic, anti-inflammatory, anti-rheumatic and antipyretic properties. Plasma concentrations show a linear relationship to the size of the dose. Peak levels are attained in 1 to 4 hours with the tablets, and in the case of the suppositories, less than 1 hour. The peak plasma concentration of Panamor 75 SR and 100 SR tablets, though comparable to that reached after a single coated tablet of 25 mg, is maintained over a longer period due to the larger quantity of active substance. Diclofenac sodium is eliminated principally by metabolism and subsequent urinary and biliary excretion of glucuronide and sulphate conjugates of the metabolites. The principal metabolite in man is the 4hydroxy derivative of Diclofenac sodium. The amount excreted in urine accounts for 20-30% of the dose, and that in bile for 10-20%. The mean terminal elimination half-life is 1,2 to 1,8 hours.

INDICATIONS:

Tablets S3:

Rheumatoid arthritis, osteoarthritis and ankylosing spondylitis. Treatment of post traumatic pain and inflammation. Symptomatic treatment of primary dysmenorrhoea.

Tablets S2:

Emergency treatment of acute gout attacks. Treatment of posttraumatic conditions such as pain, swelling and inflammation for a maximum period of 5 days.

Injection S3:

For use as initial therapy for inflammatory and degenerative rheumatic diseases. Painful conditions due to inflammation of nonrheumatic origin and acute attacks of gout.

Suppositories S3:

Rheumatoid arthritis, osteoarthritisarthritis and ankylosing spondylitis. Treatment of post traumatic pain and inflammation. For use as initial therapy for inflammatory and degenerative rheumatic diseases.

CONTRAINDICATIONS:

Patients with porphyria. Children under the age of 2 years. Patients with a history of active gastrointestinal bleeding or peptic ulceration. Severe hepatic or renal impairment. Contraindicated in aspirin sensitive patients, patients sensitive to any other nonsteroidal anti-inflammatory agent, and in patients hypersensitive to any of the ingredients in these products. Safety during pregnancy and lactation has not been established. The use of the suppositories is contraindicated in proctitis.

WARNINGS:

Serious interactions have been reported after the use of high dose methotrexate with diclofenac.

DOSAGE AND DIRECTIONS FOR USE:

The tablets should be swallowed whole with a glass of water.

Panamor25 and AT50 tablets:

The initial dosage is 100 mg to 150 mg. In milder cases, as well as for long term therapy, 75 mg to 100 mg daily is sufficient. The maximum daily dosage is 150 mg. The daily dose should be prescribed in two or three fractional doses. The dose in children is 2-3 mg per kg body mass in two to three fractional doses. In primary dysmenorrhoea the daily dosage, which should be individually adapted, is 50 mg to 150 mg. Treatment should be started upon first appearance of symptoms, and, depending on their intensity continued for a few days.

Panamor75 SR and 100 SR tablets:

As a rule, the initial daily dosage is 100 mg to 150 mg administered as one tablet of Panamor100 SR as a single dose, or two tablets of Panamor75 SR tablets taken in two divided doses. In milder cases, as well as for long term therapy one tablet of Panamor75 SR is usually sufficient. These tablets should be neither broken nor chewed and should preferably be taken at meal times. Where the symptoms are most pronounced during the night or in the morning Panamor100 SR tablets should be taken in the evening.

Injection:

75 mg by deep intragluteal injection once daily, or two times daily, in severe or hospitalised cases. Each injection must be given at a different site. Not to be given by intravenous injection. Each injection should be separated by an interval of a few hours. Parenteral administration should not be given for more than a few days, if necessary; treatment can be continued with oral therapy.

Suppositories:

Suppositories should never be divided for administration as the active substance may be distributed unevenly.

12,5 mg and 25 mg Suppositories:

Children aged 2 years or more should be given 2 to 3 mg per kg body mass daily, in two or three fractional doses.

100 mg Suppositories:

The average dose is 100 mg each evening.

SIDEEFFECTS AND SPECIAL PRECAUTIONS:

Gastrointestinal disorders, including epi-gastric pain, eructation, nausea and vomiting may occur. Peptic ulceration and gastrointestinal bleeding have been reported. Other side effects include vertigo, headache, skin rashes, pruritis, tinnitus, depression, drowsiness, nervousness, insomnia, irritability, agitation, minor hearing disorders, oedema, palpitations, blurred vision and other ocular reactions. Sensitivity reactions, abnormalities of liver function tests, impairment of renal function, agranulocytosis and thrombocytopenia have been observed. Dizziness, eczema and haemolytic anaemia may also occur. It is advisable to perform blood counts in patients undergoing prolonged treatment. Panamor should be given with care to patients with cardiovascular disease, bleeding disorders, in those who are receiving coumarin anticoagulants, and in patients with impaired hepatic or renal function.

Allergic reactions which include angio-oedema, bronchospasm, urticaria and anaphylactic reactions have occurred. Because of the possibility of cross-sensitivity due to structural relationships which exist among nonsteroidal anti-inflammatory medicines, acute allergic reactions may be more likely to occur in patients who have exhibited allergic reactions to these compounds. Plasma concentrations are significantly decreased by the concomitant administration of therapeutic doses of aspirin. When given together with preparations containing lithium or digoxin, diclofenac sodium may raise their plasma concentrations. Concomitant administration of glucocorticoids or other nonsteroidal anti-inflammatory agents may aggravate gastrointestinal side-effects. Concurrent administration with two or more nonsteroidal anti-inflammatory agents may promote the occurrence of side-effects. It should be used, with caution in patients with asthma or bronchoconstriction. Use carefully in elderly patients. Decreased platelet aggregation with increased bleeding time may occur. May increase the half-life of probenecid. Use with care together with other proteinbound medicines e.g. tolbutamide, coumarin and hydantoin. In view of the product's inherent potential to cause fluid retention, heart failure may be precipitated in some compromised patients.

KNOWN SYMPTOMS OF OVERDOSAGE AND PARTICULARS OF ITS TREATMENT:

See "Side-effects and Special Precautions". Treatment is symptomatic and supportive.

IDENTIFICATION:

25 mg tablets: Yellowish mustard, film-coated, shallow biconvex tablets, which are also enteric-coated.

50 mg tablets: Light brown, film-coated, shallow biconvex tablets, which are also enteric-coated.

75 mg SR tablets: Pink, film-coated, triangular tablets, which are also enteric-coated.

100 mg SR tablets: Pale red, film-coated, round biconvex tablets, which are also enteric-coated.

75 mg/3 mL injection: Clear, colorless to slightly straw-colored solution in amber ampoules.

12,5 mg suppositories: White torpedo shaped suppositories.

25 mg suppositories: White torpedo shaped suppositories.

100 mg suppositories: Large, white, torpedo shaped suppositories.

PRESENTATION:

25 mg tablets: Blister packs of 30 and 100 tablets.

50 mg tablets: Blister packs of 15, 21 and 105 tablets.

75 mg SR tablets: Blister packs of 30 tablets

100 mg SR tablets: Blister packs of 28 tablets

75 mg/3 mL injections: Amber glass ampoules in packs of 5 and 50.

12,5 mg suppositories: Packs of 5 suppositories.

25 mg suppositories: Packs of 5 suppositories.

100 mg suppositories: Packs of 5 suppositories.

STORAGE INSTRUCTIONS:

Protect from moisture.

Protect ampoules from heat and light.

Store below 25°C.

KEEP OUT OF REACH OF CHILDREN.

REGISTRATION NUMBER

25 mg tablets: R/3.1/49

50 mg tablets: R/3.1/50

75 mg SR tablets: 29/3.1/0121

100 mg SR tablets: 29/3.1/0122

75 mg/3 mL injections: W/3.1/52

12,5 mg suppositories: 27/3.1/0121

25 mg suppositories: Z/3.1/172

100 mg suppositories: Y/3.1/395

NAME AND BUSINESS ADDRESS OF APPLICANT:

Pharmacare Limited, 7 Fairclough Road, Korsten

PORT ELIZABETH 6020

DATE OF PUBLICATION OF THIS PACKAGE INSERT:

9 August 1994

G751J

KOHLER C&P P.E

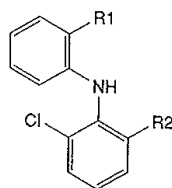
Updated on this site: June 2003

Current: March 2005

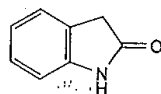
Source: Hospital Pharmacy

Aanhangsel 2: Monograaf van Natrium-diklofenak (BP, 2009) / Annexure: 2: Monograph of Diclofenac sodium (BP, 2009)

646 Diclofenac Sodium



- B. R1 = CHO, R2 = Cl:
2-[(2,6-dichlorophenyl)amino]benzaldehyde,
C. R1 = CH₂OH, R2 = Cl:
[2-[(2,6-dichlorophenyl)amino]phenyl]methanol,
D. R1 = CH₂-CO₂H, R2 = Br: 2-[(2-bromo-6-chlorophenyl)amino]phenyl]acetic acid,

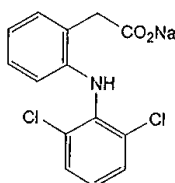


E. 1,3-dihydro-2H-indol-2-one.

Ph Eur

Diclofenac Sodium

(Ph Eur monograph 1002)



C₁₄H₁₀Cl₂NNaO₂

318.1

15307-79-6

Action and use
Cyclo-oxygenase inhibitor; analgesic; anti-inflammatory.

Preparations
Prolonged-release Diclofenac Capsules
Gastro-resistant Diclofenac Tablets
Prolonged-release Diclofenac Tablets

Ph Eur

DEFINITION

Sodium 2-[(2,6-dichlorophenyl)amino]phenyl]acetate.

Content
99.0 per cent to 101.0 per cent (dried substance).

CHARACTERS

Appearance
White or slightly yellowish, slightly hygroscopic, crystalline powder.

Solubility
Sparingly soluble in water, freely soluble in methanol, soluble in ethanol (96 per cent), slightly soluble in acetone.
mp: about 280 °C, with decomposition.

IDENTIFICATION

First identification A, D.

Second identification B, C, D.

A. Infrared absorption spectrophotometry (2.2.24).

Preparation Discs.

Comparison diclofenac sodium CRS.

B. Thin-layer chromatography (2.2.27).

Test solution Dissolve 25 mg of the substance to be examined in methanol R and dilute to 5 ml with the same solvent.

Reference solution (a) Dissolve 25 mg of diclofenac sodium CRS in methanol R and dilute to 5 ml with the same solvent.

Reference solution (b) Dissolve 10 mg of indometacin R in reference solution (a) and dilute to 2 ml with the same solution.

Plate TLC silica gel GF₂₅₄ plate R.

Mobile phase concentrated ammonia R, methanol R, ethyl acetate R (10:10:80 V/V/V).

Application 5 µl.

Development Over a path of 10 cm.

Drying In air.

Detection Examine in ultraviolet light at 254 nm.

System suitability Reference solution (b):

— the chromatogram shows 2 clearly separated spots.

Results The principal spot in the chromatogram obtained with the test solution is similar in position and size to the principal spot in the chromatogram obtained with reference solution (a).

C. Dissolve about 10 mg in 10 ml of ethanol (96 per cent) R. To 1 ml of this solution add 0.2 ml of a mixture, prepared immediately before use, of equal volumes of a 6 g/l solution of potassium ferricyanide R and a 9 g/l solution of ferric chloride R. Allow to stand protected from light for 5 min. Add 3 ml of a 10 g/l solution of hydrochloric acid R. Allow to stand, protected from light, for 15 min. A blue colour develops and a precipitate is formed.

D. Dissolve 60 mg in 0.5 ml of methanol R and add 0.5 ml of water R. The solution gives reaction (b) of sodium (2.3.1).

TESTS

Appearance of solution

The solution is clear (2.2.1) and its absorbance (2.2.25) at 440 nm is not greater than 0.05.

Dissolve 1.25 g in methanol R and dilute to 25.0 ml with the same solvent.

Related substances

Liquid chromatography (2.2.29).

Test solution Dissolve 50.0 mg of the substance to be examined in methanol R and dilute to 50.0 ml with the same solvent.

Reference solution (a) Dilute 2.0 ml of the test solution to 100.0 ml with methanol R. Dilute 1.0 ml of this solution to 10.0 ml with methanol R.

Reference solution (b) Dilute 1.0 ml of the test solution to 200.0 ml with methanol R. In 1.0 ml of this solution dissolve the content of a vial of diclofenac impurity A CRS.

Column:

— size: $l = 0.25$ m, $\varnothing = 4.6$ mm;

— stationary phase: end-capped octylsilyl silica gel for chromatography R (5 µm).

Mobile phase Mix 34 volumes of a solution containing 0.5 g/l of phosphoric acid R and 0.8 g/l of sodium dihydrogen

Dicloxacillin Sodium 647

phosphate R, adjusted to pH 2.5 with phosphoric acid R, and 66 volumes of methanol R.

Flow rate 1 ml/min.

Detection Spectrophotometer at 254 nm.

Injection 20 µl.

Run time 1.5 times the retention time of diclofenac.

Retention times impurity A = about 12 min;
diclofenac = about 25 min.

System suitability Reference solution (b):

— resolution: minimum 6.5 between the peaks due to impurity A and diclofenac.

Limits:

- impurities A, B, C, D, E: for each impurity, not more than the area of the principal peak in the chromatogram obtained with reference solution (a) (0.2 per cent);
- total: not more than 2.5 times the area of the principal peak in the chromatogram obtained with reference solution (a) (0.5 per cent);
- disregard limit: 0.25 times the area of the principal peak in the chromatogram obtained with reference solution (a) (0.05 per cent).

Heavy metals (2.4.8)

Maximum 10 ppm.

2.0 g complies with test C. Use a quartz crucible. Prepare the reference solution using 2 ml of lead standard solution (10 ppm Pb) R.

Loss on drying (2.2.32)

Maximum 0.5 per cent, determined on 1.000 g by drying in an oven at 105 °C for 3 h.

ASSAY

Dissolve 0.250 g in 30 ml of anhydrous acetic acid R. Titrate with 0.1 M perchloric acid, determining the end-point potentiometrically (2.2.20).

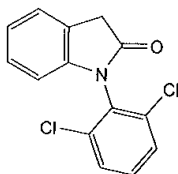
1 ml of 0.1 M perchloric acid is equivalent to 31.81 mg of C₁₄H₁₀Cl₂NNaO₂.

STORAGE

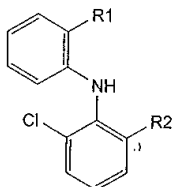
In an airtight container, protected from light.

IMPURITIES

Specified impurities A, B, C, D, E.



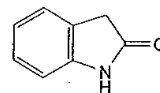
A. 1-(2,6-dichlorophenyl)-1,3-dihydro-2H-indol-2-one,



B. R1 = CHO, R2 = Cl:
2-[(2,6-dichlorophenyl)amino]benzaldehyde,

C. R1 = CH₂OH, R2 = Cl: [2-[(2,6-dichlorophenyl)amino]phenyl]methanol,

D. R1 = CH₂-CO₂H, R2 = Br: 2-[[2-(2-bromo-6-chlorophenyl)amino]phenyl]acetic acid,

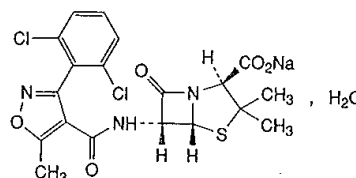


E. 1,3-dihydro-2H-indol-2-one.

Ph Eur

Dicloxacillin Sodium

(Ph Eur monograph 0663)



C₁₉H₁₆Cl₂N₃NaO₅S·H₂O 510.3

13412-64-1

Action and use

Penicillin antibacterial.

Ph Eur

DEFINITION

Sodium (2S,5R,6R)-6-[[[3-(2,6-dichlorophenyl)-5-methylisoxazol-4-yl]carbonyl]amino]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylate monohydrate. Semi-synthetic product derived from a fermentation product.

Content

95.0 per cent to 102.0 per cent (anhydrous substance).

CHARACTERS

Appearance

White or almost white, hygroscopic, crystalline powder.

Solubility

Freely soluble in water, soluble in ethanol (96 per cent) and in methanol.

IDENTIFICATION

First identification A, D.

Second identification B, C, D.

A. Infrared absorption spectrophotometry (2.2.24).

Preparation Discs.

Comparison dicloxacillin sodium CRS.

B. Thin-layer chromatography (2.2.27).

Test solution Dissolve 25 mg of the substance to be examined in 5 ml of water R.

Reference solution (a) Dissolve 25 mg of dicloxacillin sodium CRS in 5 ml of water R.

Reference solution (b) Dissolve 25 mg of cloxacillin sodium CRS, 25 mg of dicloxacillin sodium CRS and 25 mg of flucloxacillin sodium CRS in 5 ml of water R.

Plate TLC silanised silica gel plate R.

Memorandum

Vraag 1 / Question 1 (14)

- 1.1 Tablette
 Setpille
 Inspuitings (1½)
- 1.2 *Tablette: 25mg, 50mg, 75mg 100mg*
 Setpille: 12.5mg, 25mg, 100mg
 Inspuiting: 75mg (2)
- 1.3 Oraal
 Rektaal
 Parenteraal – IM of Intraglutaal (1½)
- 1.4 Nee (1)
- 1.5 150mg Natrium-diklofenak per dag (1)
- 1.6 Vermy eerstedeurgangseffek
 Vinniger aanvang van werking
 Verhoogde biobeskikbaarheid (2)
- 1.7 Die geneesmiddel word vanuit die SVK geabsorbeer en na die lewer vervoer waar dit gemetaboliseer word (eerste deurgangseffek) en die implikasie daarvan is dat biobeskikbaarheid verlaag word. (2)
- 1.8 C₁₄H₁₀Cl₂NNaO₂ (1)
- 1.9 “Sparingly soluble in water, freely soluble in methanol, soluble in ethanol (96%), slightly soluble in acetone.” (1)
- 1.10 Store in an airtight container, protected from light. (1)

Vraag 2 / Question 2 (7)

- | | |
|--|---|
| a) Onmiddelik / <i>immediately</i> | h) In die aand / <i>at night</i> |
| b) Genoegsaam / <i>sufficient</i> | i) ‘n Hoes / <i>A cough.</i> |
| c) Water / <i>water</i> | j) Voor ete / <i>before meals</i> |
| d) In die oggend / <i>in the morning.</i> | k) Neem drie keer daaglik / <i>take three times daily</i> |
| e) Poeier / <i>powder</i> | l) Oordruppels / <i>ear drops</i> |
| f) Indien nodig / <i>when required.</i> | m) Druppels / <i>druppels</i> |
| g) Aan geaffekteerde area / <i>to affected area.</i> | n) Na etes / <i>after meals.</i> |

Assessering: / Assessment: Laboratoriumsessie 2 & 3 / *Laboratory session 2 & 3*

Punte: / Marks: Maksimum 10 / *Maximum 10*

Instruksies / Instructions : Beantwoord al die vrae. / *Answer all the questions.*

Vraag 1 / Question 1 (2)

Noem die voordele van oplossings? / *Name the advantages of solutions?*

Vraag 2 / Question 2 (2)

Gee sinonieme vir die volgende: / *Give synonyms for the following:*

- a) Melksuiker
- b) Turlington
- c) Vitamin B₁₂
- d) Wassoda

Vraag 3 / Question 3 (2)

Noem 2 gebruike of funksies van aromatiese waters? / *Name 2 uses or functions of aromatic waters?*

Vraag 4 / Question 4 (1)

Wat beteken die volgende afkortings (Afrikaans)? / *What does the following abbreviations mean (English)?*

- a) Inf.
- b) Ung.

Vraag 5 / Question 5 (3)

Wat moet oorweeg word tydens die bereiding van oplossings? / *What should be considered during the preparation of solutions?*

Memorandum

Vraag 1 / Question 1 (2)

- GM is reeds in oplossing en hoef nie eers dissolusie ondergaan nie. Bevoordeel dus absorpsie
- Doseringaanpassings kan maklik gemaak word
- Oplossings kan volgens verskeie toedieningsroetes toegedien word.
- Nie nodig om houer te skud vir uniforme dosering nie
- Maklik om te sluk

Vraag 2 / Question 2 (2)

Gee sinonieme vir die volgende: / *Give synonyms for the following:*

- e) Laktose
- f) Friar's balsam
- g) Sianokobalamien
- h) Natriumkarbonaat

Vraag 3 / Question 3 (2)

Word as geurmiddel gebruik, besit ook preserverende eienskappe.

Vraag 4 / Question 4 (1)

Wat beteken die volgende afkortings (Afrikaans)? / *What does the following abbreviations mean (English)?*

- c) Infusion
- d) Ointment.

Vraag 5 / Question 5 (3)

- Vloeistowwe met hoë viskositeit moet by vloeistowwe met lae viskositeit gevoeg word en nie anders om nie
- Wanneer 'n kompleks oplossing berei word is dit raadsaam om eers die organiese bestanddele in alkoholiese oplosmiddels op te los en om wateroplosbare bestanddele in waterige oplosmiddels op te los.
- Waterige oplossings moet by alkoholiese oplossings gevoeg word terwyl daar geroer word om alkoholkonsentrasie so hoog as moontlik te hou.

Appendix Q: Faculty of Health Sciences, Module B, test and memorandum

CLASS TEST 2

LEERENHEID 2 / STUDY UNIT 2 MEMO

ANSWER ALL THE QUESTIONS ON THE TEST SUPPLIED TO YOU

VOORLETTERS EN VAN / INITIALS AND SURNAME

STUD. NR.

Vraag 1 / Question 1

Die respiratoriese mukosa voer die geleidingsgedeelte van die respiratoriese weg uit. Watter tipe epiteel kom hier voor? / *The respiratory mucosa lines the conducting portion of the respiratory tract. Which type of epithelium can be found here?*

- A Surfaktant selle / *Surfactant cells*
- B **Pseudogestratifiede kolomepiteel met silia / *Pseudostratified columnar epithelium with cilia***
- C Kubusepiteel / *Cuboidal epithelium*
- D Plaveiselepiteel / *Squamous epithelium*

(2)

Vraag 2 / Question 2

Skade aan die tipe II pneumosiete sal lei tot? / *Damage to the type II pneumocytes would result in?*

- A **Verlies aan surfaktant / *Loss of surfactant***
- B Verhoogte tempo van gasuitruiling / *Increased rate of gas exchange*
- C Verlaagde oppervlakspanning in die alveoli / *Decreased surface tension in the alveoli*
- D Vergroting van die alveoli / *Expansion of the alveoli*

(2)

Vraag 3 / Question 3

Blokkering van pulmonêre bloedvloei deur 'n klont of soortgelyke obstruksie lei tot hierdie toestand. / *Blockage of pulmonary blood flow by a clot or similar obstruction leads to this condition.*

- A Emfiseem / *Emphysema*
- B Anoksia / *Anoxia*
- C Pneumotoraks / *Pneumothorax*
- D **Pulmonêre embolisme / *Pulmonary embolism***

(2)

Vraag 4 / Question 4

Watter kondisie is die resultaat van onvoldoende surfaktant produksie en lei tot atelektase? / *Which condition is the result of the inadequate production of surfactant and leads to atelectasis?*

- A Asma / *Asthma*
- B Sistiese fibrose / *Cystic fibrosis*
- C **Respiratoriese nood sindroom / *Respiratory distress syndrome***
- D Pulmonêre embolisme / *Pulmonary embolism*

(2)

vraag 5 / Question 5

Die proses waar opgeloste gasse uitgeruil word tussen die bloed en interstisiële vloeistowwe (vloeistof in weefsel) staan bekend as? / *The process by which dissolved gases are exchanged between the blood and interstitial fluids (fluid in tissues) is known as?*

- A Pulmonêre ventilasie / *Pulmonary ventilation*
- B Eksterne respirasie / *External respiration*
- C **Interne respirasie / *Internal respiration***
- D Asemhaling / *Breathing*

(2)

Vraag 6 / Question 6

Wat is die verhouding tussen intrapulmonêre en atmosferiese druk wanneer daar GEEN lugbeweging is nie? / *What is the relationship between intrapulmonary and atmospheric pressure when there is NO air movement?*

- A **Hulle is gelyk / *They are equal***

- B** Intrapulmonêre druk is groter as atmosferiese druk / *Intrapulmonary pressure is greater than atmospheric pressure*
- C** Intrapulmonêre druk is kleiner as atmosferiese druk / *Intrapulmonary pressure is greater than atmospheric pressure*
- D** Geen van die bogenoemde / *None of the above* (2)

Vraag 7 / Question 7

Boyle se wet stel dat die druk van 'n gas: / *Boyle's law states that the pressure of a gas is:*

- A** Direk eweredig is aan die volume van die houer / *Directly proportional to the volume of its container*
- B** Altyd hoër is in die atmosfeer as in die longe / *Always higher in the atmosphere than in the lungs*
- C** Direk eweredig is aan die temperatuur / *Directly proportional to temperature*
- D** **Omgekeerd eweredig is aan die volume van die houer / *Inversely proportional to volume of its container*** (2)

Vraag 8 / Question 8 Wat sal gebeur as die druk binne die longe 763 mmHg is? / *What will happen if the pressure inside the lungs is 763 mmHg?*

- A** Hiperventilasie / *Hyperventilation*
- B** **Ekspirasie / *Exhalation***
- C** Apnee / *Apnea*
- D** Inspirasie / *Inspiration* (2)

Vraag 9 / Question 9

Watter faktore beïnvloed long kompliansie (meegewendheid)? / *Which factors affect lung compliance?* (3)

- (1) **Bindweefsel struktuur van longe (emfiseem; ↑kompliansie) / *CT structure of lungs (emphysema; ↑compliance)***
- (2) **Hoeveelheid surfaktant (RNS; ↓kompliansie) / *Amount of surfactant (RDS; ↓compliance)*** (3) **Toraks se mobiliteit (arthritis; ↓kompliansie) / *Thoracic cage's mobility (arthritis; ↓compliance)*** **Vraag 10 / Question 10**

Noem die primêre funksies van die respiratoriese sisteem. / *Name the primary functions of the respiratory system.* (6)

- (1) **Voorsien 'n groot area vir gasuitruiling om plaas te vind tussen die lug in die atmosfeer en die sirkulerende bloed / *Provides large gas exchange surface area between air and circulating blood***
- (2) **Beweeg die lug na en van die gasuitruilingsoppervlakte van die longe / *Moves air to and from exchange surfaces of lungs***
- (3) **Beskerm respiratoriese oppervlakte van dehidrasie en temperatuur veranderinge en verdedig teen patogene / *Protects respiratory surfaces from dehydration and temperature changes and defends against pathogens***
- (4) **Produseer klanke wat spraak, sang en nie-verbale ouditoriese kommunikasie moontlik maak / *Producing sounds permitting speech, singing and non-verbal auditory communication***
- (5) **Verskaf olfaktoriese sensasies aan die SSS vir die reuksintuig / *Providing olfactory sensations to the CNS for the sense of smell***
- (6) **Dra indirek by tot die regulering van bloed volume, bloeddruk en pH / *Indirectly contribute to regulation of blood volume, blood pressure, and pH.***

TOTAAL/TOTAL: 25

Appendix R: Semi-structured interview schedule

Semi-structured interview schedule (lecturers)

Questions are concerned with the module that the lecturer developed for and/or teaches to first year students.

Section A: Reading

1. What academic text do you prescribe in this module?
2. What selection criteria do you use for prescribed academic text?
3. In what language is the majority of prescribed academic text in this module? Please provide a reason for your answer.
4. Do you translate any prescribed academic text for your students? Please motivate.
4. Are you of the opinion that the majority of students read the prescribed academic text? Please elaborate.
5. Are you of the opinion that the majority of students comprehend the prescribed academic text? Please elaborate.
6. Do you receive any feedback from students with regard to the prescribed academic text? If so, please give examples.

Additional comments about the apparent reading needs of students in this module.

Section B: Assignments/Tasks

1. What is the format and structure of an assignment/task that students have to complete in this module?
2. What are the reasons for the specific format and structure of the assignment/task?
3. Are you of the opinion that the format and structure of the assignment/task influence the way students read the prescribed academic text? Please motivate.
4. Do students receive any support with the assignment/task, specifically with the reading and comprehension of the academic text needed to achieve outcomes? Please elaborate.

Appendix S: Student informed consent form

7 September 2015

Dear first year student

Consent form to be completed by first year student at the Potchefstroom campus of the North-West University

INFORMATION AND CONSENT

The following information is provided so that you as a participant can make an informed decision about your voluntary participation or not.

1. Title of project: First year students' reading strategy use and comprehension: implications for academic reading support

2. Contact details of Project Head:

Name and surname: Prof. C. Nel

Contact number: (018) 2852639

Email: carisma.nel@nwu.ac.za

Researcher

Name and surname: Me Kristien Andrianatos

Contact number: 0796942977

E-mail: 13132873@nwu.ac.za

3. Purpose of this project

Reading and comprehending academic text written in English seem to be problematic for many first year university students, irrespective of their mother tongue. This project aims to discover which reading strategies first year students use to read academic text. In simple terms reading strategies are the plans you make while reading in order to completely understand what you are reading.

Not only is information about reading strategies needed, the effect of the relationship between the text, the task and the reader will also be examined, to see what students and lecturers can do to enhance reading with comprehension. With the findings of the project, the researcher plans to make recommendations for reading support which could help first year students improve their reading skills to read and comprehend academic text written in English, better.

The purpose of this study is to:

- identify the categories of reading strategies that first year undergraduate students report applying while reading academic texts in a higher education setting;
- clarify the nature of the interrelationship between student, text and activity variables on students' reading comprehension;
- determine the nature of the relationship between perceived reading strategy use, reading comprehension ability and task achievement;
- make recommendations for first year students academic reading support.

4. Requirements of participants

1. As a participant in this project, you will be required to complete a survey of reading strategies.
2. Two marks will be obtained from two of your modules. Thus one mark per module. These marks will be for an assessment you completed as part of your participation mark for the specific module. Your semester test and exam marks for the modules will NOT be obtained.
3. Your final mark from the reading laboratory as part of AGLA/AGLE 121 will also be obtained.

5. Please note:

- Participation in this project is completely voluntary and no pressure will be placed on you to take part.
- You may withdraw from this study at any time, without any consequences.
- By agreeing to take part in the project, you are also giving consent for the data that will be generated, to be used by the researcher for scientific purposes, with the caveat that it will be confidential and that **your name will not be linked** to any of the data.

By placing your signature below, you declare that you are taking part in this project voluntarily. You also declare that you are fully informed of the purpose of the project and give permission that:

1. information given by you in the form of the survey of reading strategies may be used for research purposes without identifying you as an individual.
2. marks you obtained for two assignments completed in two specified modules, participation marks as well as the result of your reading test may be made available for this study.

Please provide the following personal information (for data correlation purposes only):

Student number:

--	--	--	--	--	--	--	--

Name and surname: _____

Degree enrolled in: _____

Signature of participant

Date

Yours sincerely



Prof. Carisma Nel

Appendix T: Lecturer informed consent form

7 September 2015

Dear lecturer

Consent form to be completed by lecturers at the Potchefstroom campus of the North-West University

INFORMATION AND CONSENT

The following information is provided so that you as a participant can make an informed decision about your voluntary participation or not.

1. Title of project: First year students' reading strategy use and comprehension: implications for academic reading support

2. Contact details of Project Head:

Name and surname: Prof. C. Nel

Contact number: (018) 2852639

Email: carisma.nel@nwu.ac.za

Researcher

Name and surname: Me Kristien Andrianatos

Contact number: 0796942977

E-mail: 13132873@nwu.ac.za

3. Purpose of this project

Reading and comprehending academic text written in English seem to be problematic for many first year university students, irrespective of their mother tongue. This project aims to discover which reading strategies first year students use to read academic text. In simple terms reading strategies are the plans you make while reading in order to completely understand what you are reading.

Not only is information about reading strategies needed, the effect of the relationship between the text, the task and the reader will also be examined, to see what students and lecturers can do to enhance reading with comprehension. With the findings of the project, the researcher plans to make recommendations for reading support which could help first year students improve their reading skills to read and comprehend academic text written in English, better.

The purpose of this study is to:

- identify the categories of reading strategies that first year undergraduate students report applying while reading academic texts in a higher education setting;
 - clarify the nature of the interrelationship between student, text and activity variables on students' reading comprehension;
 - determine the nature of the relationship between perceived reading strategy use, reading comprehension ability and task achievement;
 - make recommendations for first year students academic reading support
- 4. Requirements of participants**

As a participant in this project, you will be interviewed by the researcher. The interview will be semi-structured and the discussion will centre on the following topics:

1. Prescribed academic text in your module
2. Academic text selection criteria
3. Examples of tasks/assignments
4. Structure and format of tasks/assignments

5. Please note:

- Participation in this project is completely voluntary and no pressure will be placed on you to take part.
- You may withdraw from this study at any time, without any consequences.
- By agreeing to take part in the project, you are also giving consent for the data that will be generated, to be used by the researcher for scientific purposes, with the caveat that it will be confidential and that **your name will not be linked** to any of the data.

By placing your signature below, you declare that you are taking part in this project voluntarily. You also declare that you are fully informed of the purpose of the project and give permission that information given by you during the semi-structured interview may be used for research purposes.

Name and surname: _____

Module: _____

Signature of participant

Date

Yours sincerely



Prof. Carisma Nel

Appendix U: Focus group participant informed consent form

Dear first year student

Consent form to be completed by first year student at the Potchefstroom campus of the North-West University

INFORMATION AND CONSENT FOR PARTICIPATION IN A FOCUS GROUP INTERVIEW

The following information is provided so that you as a participant can make an informed decision about your voluntary participation in a focus group interview or not.

1. Title of project: First year students' reading strategy use and comprehension: implications for academic reading support

2. Contact details of Project Head:

Name and surname: Prof. C. Nel

Contact number: (018) 2852639

Email: carisma.nel@nwu.ac.za

Researcher

Name and surname: Me Kristien Andrianatos

Contact number: 0796942977

E-mail: 13132873@nwu.ac.za

3. Purpose of this project

Reading and comprehending academic text written in English seem to be problematic for many first year university students, irrespective of their mother tongue. This project aims to discover which reading strategies first year students use to read academic text. In simple terms reading strategies are the plans you make while reading in order to completely understand what you are reading.

Not only is information about reading strategies needed, the effect of the relationship between the text, the task and the reader will also be examined, to see what students and lecturers can do to enhance reading with comprehension. With the findings of the project, the researcher plans to make recommendations for first year students academic reading support which could help first year students improve their reading skills to read and comprehend academic text written in English, better.

The purpose of this study is to:

- identify the categories of reading strategies that first year undergraduate students report applying while reading academic texts in a higher education setting;
- clarify the nature of the interrelationship between student, text and activity variables on students' reading comprehension;
- determine the nature of the relationship between perceived reading strategy use, reading comprehension ability and task achievement;
- make recommendations for first year students academic reading support.

4. Requirements of participants

4. As a participant in a focus group interview for this research project, you will be required to attend and participate in an interview with some of your peers. Your perception of your reading abilities, prescribed texts and assessed tasks of two of your modules, will be discussed.

5. Please note:

- Participation in the focus group interview is completely voluntary and no pressure will be placed on you to take part.
- You may withdraw from the interview at any time, without any consequences.
- By agreeing to take part in the focus group interview, you are also giving consent for the data that will be generated, to be used by the researcher for scientific purposes, with the caveat that it will be confidential and that **your name will not be linked** to any of the data.

By placing your signature below, you declare that you are taking part in this project voluntarily. You also declare that you are fully informed of the purpose of the project and give permission that your input as part of a focus group, may be used for research purposes without identifying you as an individual.

Please provide the following personal information (for data correlation purposes only):

Student number:

--	--	--	--	--	--	--	--

Name and surname: _____

Degree enrolled in: _____

Signature of participant

Date

Yours sincerely



Prof. Carisma Nel

Appendix V: Excerpt of bought notes, Module B, Faculty of Health Sciences

LE 1.2.

♥ spierweefsel:

◦ Patroon v. rangskikking v. miofibrille ⇒ gestreep

Verskil tsn. skeletspier & ♥ spiers

♥ spier: funksie: sirkuleer bloed
onderhou bloeddruk

- * Klein
- * Enkele, sentraal geleë nukleus
- * sille = vertak
- * Sleë in ♥
- * T-tubules = kort & breed
- * Geen triades
- * SR nie terminale sistaerna
- * Aerobiese metabolisme (↑ mioglobien & mitochondria)
- * In kontak met ander ♥ spierselle by (aanheltings) → interkalêre skynwe
↳ bevat hegte aansluitings (gap junction)

1. Beweging v. ione & klein molekules
2. Spoedige deurvoer v. impulse wat gelyktydige samebrekking moontlik maak.

Hartspier	skeletspier
* sleë in hart	* vas aan bene
* enkele, sentraal nukleus	* multi nukleus
* Hartspierselle vertak	* Lang & silindries
* onwillekeurig	* willekeurig
* effens gestreep	* baie gestreep
* Geen triades	* wel triades
* Pomp bloed uit die hart	* verskeie beweging by geringe posisie, krimp

Funkionele Verskille: tussen hartspier & skeletspier

- > trek effektief saam (o.g.v. miofibrille vasgeheg aan interkalêre skywe)
- > sonder neurale stimulasie \Rightarrow outomasiteit
- > tempo / ritme bepaal deur (pasaangeêr selle)
 - \hookrightarrow gespesialiseerd.
- > kontraksies = 10x langer as skeletspiervesels
- > \heartsuit spier kan nie tetanus (volgehoue kontraksie) ondersteun \rightarrow kan nie bloed pomp in tetanus nie
- > AP veroorsaak vrystelling v. Ca^{2+} vanuit SR EN $\uparrow\uparrow\uparrow$ deurlaatbaarheid v. selmemb. v. ekstrasel. Ca^{2+}
- > Aërobiese metabolisme \rightarrow SR \equiv
 - $\uparrow\uparrow\uparrow$ mioglobien \neq } Stoof
 - $\uparrow\uparrow\uparrow$ mitochondria } O_2

Gladdespierweefsel

f: Beweeg kos, urine en reproductiewe sekretes. Bêre diameter van arteries

- \pm selfde grootte as \heartsuit spierselle \therefore
- enkele nucleus
- amper in alle tipe organe
 - \hookrightarrow vorm spierplate, bondels / skeles om ander weefsel.
- f • om bloedvate \rightarrow bloedvloei deur: NB organe te reguleer (vernou / verwyd)
- sfinkters \rightarrow reguleer deurvloei v inhoud deur interweefsel.
- voortplanting - beweging
- respiratories - trek saam / ontspan
 - \hookrightarrow Δ lugweë se grootte.

Appendix W: Excerpt of lecturer notes, Module B, Faculty of Engineering

<p style="text-align: center;">29.2 Kernbindingsenergie <i>Nuclear binding energy</i></p> <ul style="list-style-type: none"> Die totale massa van 'n kern is altyd minder as die som van die massas van sy nukleone. <i>The total mass of a nucleus is always less than the sum of the masses of its nucleons.</i> Die totale energie van die kern is minder as die gesamentlike energie van die afsonderlike nukleone <i>The total energy of the nucleus is less than the combined energy of the separated nucleons</i> <ul style="list-style-type: none"> Hierdie verskil in energie word die bindingsenergie van die kern genoem <i>This difference in energy is called the binding energy of the nucleus</i> <p style="text-align: right;"><small>Section 29.2</small></p>	<p style="text-align: center;">Kernbindingsenergie <i>Nuclear binding energy</i></p> <ul style="list-style-type: none"> Definieer die bindingsenergie (BE) van 'n kern as die energie benodig (wat tot die kern gevoeg moet word) om die kern heeltemal in sy afsonderlike protone en neutrone uitmekaar te haal. <i>Define the binding energy (BE) of a nucleus to be the energy required (need to add to the nucleus) to completely disassemble the nucleus into separate protons and neutrons.</i> <p style="text-align: right;">Fig 29.4</p>
<p style="text-align: center;">29.3 Radioaktiwiteit Radioactivity</p> <ul style="list-style-type: none"> Radioaktiwiteit is die spontane straling – die resultaat van die verval, of disintegrasie, van onstabiele kerne. <i>Radioactivity is the spontaneous radiation - the result of the decay, or disintegration, of unstable nuclei.</i> <p style="text-align: right;"><small>Section 29.3</small></p>	<p style="text-align: center;">Radioaktiwiteit - Soorte <i>Radioactivity – Types</i></p> <ul style="list-style-type: none"> Drie soorte straling: <ul style="list-style-type: none"> Alfadeeltjies: heliumkerne (${}^4\text{He}$) Betadeeltjies: elektrone (e^-/β^-) of positrons (e^+/β^+) <ul style="list-style-type: none"> 'n Positron is die anti-deeltjie van die elektron. Dis soortgelyk aan die elektron, behalwe dat sy lading $+e$ is. Gammastrale: hoë energie fotone Three types of radiation: <ul style="list-style-type: none"> Alpha particles: helium nuclei (${}^4\text{He}$) Beta particles: electrons (e^-/β^-) or positrons (e^+/β^+) <ul style="list-style-type: none"> A positron is the antiparticle of the electron. It is similar to the electron except its charge is $+e$ Gamma rays: high energy photons <p style="text-align: right;"><small>Section 29.3</small> Fig 29.5</p>

Deurdringbaarheidsvermoë van deeltjies Penetrating ability of particles

- Alfadeeltjies
 - Skaars 'n stuk papier deurdring (word deur 0,01 mm lood gestop)
- Betadeeltjies
 - 'n Paar mm aluminium deurdring (word deur 0,1 mm lood gestop)
- Gammastrale
 - word deur 100 mm lood gestop
- Alpha particles
 - Barely penetrate a piece of paper (stopped by 0,01 mm lead)
- Beta particles
 - Can penetrate a few mm of aluminum (stopped by 0,1 mm lead)
- Gamma rays
 - stopped by 100 mm lead

Section 29.8

Die vervalkonstante / The decay constant

- Gestel 'n radioaktiewe stof bevat N radioaktiewe kerne. / Assume a radioactive material contains N radioactive nuclei.
- Die aantal kerne ΔN wat in 'n gegewe tyd Δt verval, is eweredig aan die totale aantal kerne N in 'n radioaktiewe stof.

The number of nuclei ΔN that decay in a given time Δt is proportional to the total number N of nuclei in a radioactive material.

$$\frac{\Delta N}{\Delta t} \propto N$$

$$\Delta N = -\lambda N \Delta t$$
- Die vervalkonstante λ bepaal die tempo waarteen kerne sal verval.

The decay constant λ determines the rate at which a nuclei will decay.

Section 29.3

Kernkragte en stabiliteit Nuclear forces and stability

- Daar is baie groot afstotende elektrostatiese (Coulomb) kragte tussen protone in die kern
There are very large repulsive electrostatic (Coulomb) forces between protons in nucleus
- Die kern is stabiel weens ander, kort-afstand kragte, genoem die kernkrag
 - Hierdie is 'n aantrekkingskrag wat tussen alle kerndeeltjies werk (onafhanklik van lading)
- The nuclei are stable because of another, short-range force, called the nuclear force
 - This is an attractive force that acts between all nuclear particles (independent of charge)

Section 29.1

Stabiliteit van kerne / Nuclear stability

- Ligte kerne met lae massa is mees stabiel as $N = Z$
Light nuclei with low mass are most stable if $N = Z$
- Swaar kerne is die meeste stabiel wanneer $N > Z$
 - Rede: Afstotende krag wat elke proton ervaar a.g.v. al die ander protone word só groot dat kernkragte nie die kern bymekaar kan hou nie. Meer neutrone dan nodig om protone van mekaar af te skerm om die kern stabiel te hou.
 - Heavy nuclei are most stable when $N > Z$
 - Reason: Repulsive force each proton experiences because of all other protons, become so large that nuclear force can't keep nucleus together. More neutrons are needed to shield protons from one another to keep the nucleus stable.
- Geen kerne is stabiel wanneer $Z > 83$
No nuclei are stable when $Z > 83$

Fig. 29.3
Section 29.1

Aktiwiteit (Vervaltempo) Activity (rate of decay)

- Die vervaltempo of aktiwiteit, R , word gedefinieer as die aantal vervalte (ontbindings) per tydseenheid:

$$R = \Delta N / \Delta t$$

waar ΔN die aantal vervalte is wat in Δt plaasvind.
- The decay rate or activity, R , is defined as the number of decays per unit time:

$$R = \Delta N / \Delta t$$

where ΔN is the number of decays taking place in Δt .

$$R = \left| \frac{\Delta N}{\Delta t} \right| = \lambda N$$

Section 29.3

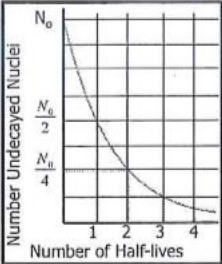
Halfleeftyd / Half-life

- Halfleeftyd (Halveringstyd) $t_{1/2}$: is die tyd wat dit neem vir die helfte van enige gegewe aantal radioaktiewe kerne om te verval.
- Aanvanklik is daar N_0 radioaktiewe kerne op $t = 0$.
Op $t = t_{1/2}$ is daar $N_0/2$ kerne oor.
Op $t = 2 t_{1/2}$ is daar $N_0/4$ kerne oor. $N = N_0 \left(\frac{1}{2}\right)^n$
Op $t = 3 t_{1/2}$ is daar $N_0/8$ kerne oor, ens...
- Half-life $t_{1/2}$: The half-life is defined as the time it takes for half of any given number of radioactive nuclei to decay.
- Originally there are N_0 radioactive nuclei on $t = 0$.
At $t = t_{1/2}$ there are $N_0/2$ nuclei left.
At $t = 2 t_{1/2}$ there are $N_0/4$ nuclei left.
At $t = 3 t_{1/2}$ there are $N_0/8$ nuclei left, etc....

Halfleeftyd / Half-life

$$N = N_0 \left(\frac{1}{2}\right)^n$$

N = aantal kerne oor
 n = aantal halfleeftye
 N = number of nuclei left
 n = number of half-lives

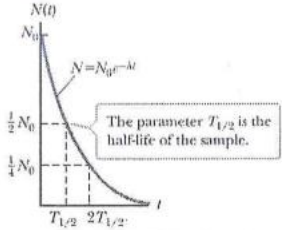


Section 29.3

Die vervalkromme The decay curve

- Die vervalkromme gee die eksponensiële verval vir radioaktiewe kerne:

The decay curve gives the exponential decay for radioactive nuclei:

$$N = N_0 e^{-\lambda t}$$
- 

Section 29.3