

Analysing the use of a board game as educational tool in secondary school Accounting

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Ecclesiastes 7:12

“Wisdom is a shelter as money is a shelter, but the advantage of knowledge is this: Wisdom preserves those who have it.” (BibleGateway: New International Version, 2016)

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ABSTRACT

Recently globalisation was responsible for several changes in the Accounting profession. Research showed that Accounting education must consider these changes to meet the challenges thereof and to prepare learners for the real business world, which they would encounter, once they have graduated. Previous research indicated that learners who enter the workplace for the first time do not possess the necessary skills which are required by the Accounting profession. The reason for this could be current teaching practices which are used in Accounting classrooms. These outdated practices may well start at school. In modern Accounting education the focus is normally on subject content and although elements of effective teaching methods could be present, teaching methodologies are still content driven. The gap is increasing between performance of accountants and what teachers teach learners.

Various factors were identified which could have an influence on learners in their decision to take Accounting as a school subject. These factors include learner characteristics, gender, socio-economic status of learners, the attitude of learners towards Accounting as a profession, influence on perceptions of the profession, technical- and soft skills, the role which professional bodies play and positive correlations between Accounting studies and learners' career intentions.

This current study was undertaken to address the problems of a lack of interest in Accounting and outdated teaching methodologies, through the introduction of a board game (*Commercium*). This could be used as a teaching tool, to assist teachers in Accounting classes. The main objective of the study is to analyse if the introduction of a board game in secondary school Accounting as an educational tool, leads to a positive experience for the learners and an exposure to soft skills within the subject.

The different problems learners experience in school include out-dated education, a generation gap, the large learner-educator ratio, poor learner performance in Grade 12 examinations etc. In order to address these problems, the study provides an overview of new teaching methodologies, suggestions how to address criticism against traditional accounting education, the use of games in teaching, with specific focus on the *Commercium* board game used as a teaching tool.

The research methodology comprises of a literature review and empirical study. A mixed-methods research approach was followed to examine the research problem, as all procedures used to select and analyse both quantitative and qualitative data were available in this study. The quantitative study consisted of research questionnaires and the qualitative research

consisted of interviews with school learners and their Accounting teachers. The population of this study consisted of Grade 9 learners, who have EMS as a subject. In total the respondents in the research project was 145 learners from three schools in the North West province in SA. Factor analysis was used to interpret the questionnaires used during the study. Three main factors were identified and analysed namely: Factor A: Outcomes reached through the game; B: Feelings about & Attitudes towards the game and C: Value learners attached to the game.

During the research it was determined that girls and boys did not differ in terms of factors A: Outcomes reached through the game and B: Feelings about & Attitudes towards the game. There was a small difference between boys and girls for factor C: Value learners attached to the game. In terms of subject choice it was found that the attitude of Coloured learners had been more positive than the White learners towards the game. The only significant difference between learners of different home languages was for factor B: Attitude towards the subject, between Coloured and White learners. When learners were asked if they would consider Accounting as a possible career, the majority of learners agreed and these learners experienced the game more positively than the rest. Positive remarks provided by learners about the *Commercium* game included comments such as: "A lot is learned from the game; The game motivates people; I enjoyed the game" etc. Learners summarised the project in one word as follows: "Good, Fun, Educational, Amazing" etc. After the research project ended it was concluded that the results of the questionnaires and interviews with learners and teachers, indicated that the use of the *Commercium* game as an educational tool in Accounting was a success. Learners enjoyed the social aspects of the game and being involved in the game play and the solving of various kinds of business problems, which they had to solve through difficult financial decisions.

KEY TERMS

Accounting, Economic and Management Sciences, Soft skills, Technical skills, Competency crisis, Perceptions, Accounting education, Educational tool, Board game, Career choices, Secondary school.

OPSOMMING

Globalisering was onlangs verantwoordelik vir verskeie veranderinge in die rekeningkundige professie. Navorsing het getoon dat rekeningkundige onderrig hierdie veranderinge in ag moet neem om aan die uitdagings daarvan te voldoen. Leerders moet vir die besigheidsomgewing waarmee hulle te doen sal kry na die voltooiing van hul studies voorberei word. Vorige navorsing het getoon dat leerders wat die arbeidsmark vir die eerste keer betree nie oor die nodige vaardighede, wat vereis word in die rekeningkundige professie, beskik nie. Die rede hiervoor kan die huidige onderrig wees wat leerders tans in Rekeningkunde klaskamers ontvang. Hierdie uitgedatteeerde praktyke begin reeds op skool. In moderne rekeningkundige onderrig is die fokus gewoonlik op vakinhoud. Alhoewel elemente van effektiewe onderrigmetodes teenwoordig kan wees, is onderrigmetodes steeds inhoudgedrewe. Die gaping tussen rekenmeesters se prestasie en inhoud wat onderwysers leerders leer word al hoe groter.

Verskeie faktore wat leerders kan beïnvloed in hul besluit om Rekeningkunde as 'n vak te kies, is geïdentifiseer. Dit sluit leerdereienskappe, geslag, sosio-ekonomiese omstandighede van leerders, die houding van leerders ten opsigte van rekeningkunde as 'n professie, invloed op persepsies oor die professie, tegniese en sosiale vaardighede, die rol van professionele liggame en positiewe ooreenkomste tussen rekeningkundige studies en leerders se loopbaan intensies in.

Hierdie studie is onderneem om die probleme aan te spreek van 'n gebrek aan belangstelling in Rekeningkunde en uitgedatteeerde onderrigpraktyke, deur middel van 'n bordspel (*Commercium*). Dit kan deur onderwysers in rekeningkundige klasse as 'n onderrighulpmiddel gebruik word. Die hoofdoelwit van hierdie studie is om te bepaal of die bekendstelling van 'n bordspel as 'n opvoedkundige hulpmiddel in sekondêre Rekeningkunde sal lei tot sowel 'n

Die verskillende probleme wat leerders op skool ervaar sluit in verouderde onderrig, 'n generasiegaping, die leerder-onderwyserverhouding en swak leerderprestasies in graad 12 eksamens. Om hierdie probleme aan te spreek word 'n oorsig van nuwe onderrigmetodes en voorstelle hoe om kritiek teen tradisionele rekeningkundige metodes te hanteer verskaf. Dit sluit ook die gebruik van speletjies as 'n onderrighulpmiddel in, met spesifieke fokus op die *Commercium* spel.

Die navorsingsmetodologie bestaan uit 'n literatuuroorsig en 'n empiriese studie. 'n Gemengde-onderrigbenadering is gevolg om die navorsingsprobleem te ondersoek, aangesien alle prosedures wat gebruik is vir die insameling van kwantitatiewe en kwalitatiewe data beskikbaar was in die studie. Die kwantitatiewe studie het bestaan uit navorsingsvraelyste en die

kwalitatiewe studie uit onderhoude wat met skoolleerders en Rekeningkunde onderwysers gevoer is. Die populasie van hierdie studie het bestaan uit graad 9 leerders, wat EBW as 'n vak het. In totaal was die respondente 145 leerders vanuit drie verskillende skole in die Noordwes provinsie in SA. Drie hoof faktore is geïdentifiseer, naamlik: Faktor A: Uitkomst bereik deur die spel; Faktor B: Gevoelens en houdings teenoor die spel en Faktor C: Waarde wat leerders heg aan die spel.

Gedurende die navorsing is bepaal dat meisies en seuns nie verskil het in terme van die faktore A: Uitkomst bereik deur die spel en B: Gevoelens en houdings teenoor die spel nie. Daar was wel 'n klein verskil tussen seuns en meisies vir Faktor C: Waarde wat leerders heg aan die spel. In terme van vakkeuse is bevind dat gekleurde leerders die spel meer positief ervaar het as wit leerders. Die enigste noemenswaardige verskil tussen leerders van verskillende huistale, was ten opsigte van Faktor B: Gevoelens en houding teenoor die spel tussen wit en gekleurde leerders. By navraag of leerders Rekeningkunde as 'n moontlike loopbaan sien, het die meeste leerders saamgestem en hierdie leerders het die spel meer positief beleef. Positiewe opmerkings van leerders oor die *Commercium* projek het die volgende ingesluit: "Baie kan geleer word uit hierdie spel"; "Die spel motiveer mense"; "Ek het die spel geniet" ens. Leerders het die projek in een woord as volg opgesom: "Goed, pret, opvoedkundig, ongelooflik" ens. Bevindinge van die navorsingsprojek het gewys dat vraelyste en onderhoude met leerders en onderwysers aangedui het dat die *Commercium* spel as 'n opvoedkundige hulpmiddel in Rekeningkunde 'n sukses was. Leerders het die sosiale aspekte van die spel geniet sowel as om deel te wees van die spel en die oplos van verskeie probleme deur middel van finansiële besluitneming.

SLEUTEL TERME

Rekeningkunde, Ekonomiese en Bestuurswetenskappe, Sagte vaardighede, Tegniese vaardighede, Bevoegdheidskrisis, Persepsies, Rekeningkundige onderwys, Opvoedkundige hulpmiddel, Bordspeletjie, Loopbaankeuses, Sekondêre skool.

LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS

ABASA	Association of Black Accountants of Southern Africa
AICPA	American Institute of Certified Public Accountants
AASL	American Association of School of Librarians
AECC	Accounting Education Change Commission
ANOVA	Analysis Of Variance
APA	American Psychology Association
BS	Business simulation
CA (SA)	Chartered Accountant South Africa
CAPS	Curriculum and Assessment Policy Statement
COTS	Commercial off-the-shelf games
CSR	Corporate social responsibility
CPA	Certified Public Accountant
CPJ	Cash payments journal
CRJ	Cash receipts journal
CSP	Sage Pastel Certified Schools Programme
DGBL	Digital Game-Based Learning
DoBE/DBE	Department of Basic Education
EG	Educational games
EMS	Economic and Management Sciences
DHET	Department of Higher Education and Training
FET	Further Education and Training

GAAP	General Accepted Accounting Principles
GBL	Game-based learning
GDP	Gross Domestic Product growth rate
GUI	Graphical user interface
HEQC	Higher Education Quality Council
HSD	Honestly Significant Difference Test
IAESB	International Accounting Education Standards Board
IASB	International Accounting Standards Board
IEB	Independent Examinations Board (South Africa)
IES	International Education Standards
IFAC	International Federation of Accountants
IFRS	International Financial Reporting Standards
IMA	Institute of Management Accountants
ITC	Initial Test of Competence
JSE	Johannesburg stock exchange
King III	The King Code of Governance for SA
KMO	Kaiser-Meyer-Olkin
LAN	Local Area Network
LER	Learner-to-educator ratio
MDGs	Millennium Development Goals
MMO	Massively Multiplayer Online games
MMR	Mixed Methods Research
NAO	National Accounting Olympiad

NCS	National Curriculum Statement
NWU	North West University
OED	Oxford English Dictionary
O&T	Opportunities and threats
PBL	Problem-based learning
PCA	Principal Component Analysis
PDA	Personal digital assistant
QCA	The Qualifications and Curriculum authority
SA	South African
SAICA	South African Institute of Chartered Accountants
SARS	South African Revenue Services
SAIPA	South African Institute of Professional Accountants
SDT	Self-Determination Theory
SGBs	School governing bodies
SMD	Standardized Mean Difference
SME	Small Medium Enterprise
TPACK	Technological, Pedagogical, and Content Knowledge
UMALUSI	Council for Quality Assurance in General and Further Education and Training
UPE	Universal primary education
USA	United States of America
VAT	Value Added Tax
WWW	World Wide Web

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	I
ABSTRACT	III
OPSOMMING	V
LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS.....	VII
CHAPTER 1: INTRODUCTION TO ACCOUNTING	1
1.1 INTRODUCTION	1
1.2 BACKGROUND	2
1.2.1 The need for change.....	2
1.2.2 Changing the mind-set of Accounting learners.....	5
1.3 MOTIVATION FOR THIS STUDY	11
1.3.1 SA performance in Accounting in government schools	12
1.3.2 Out-dated Education.....	17
1.3.3 Perceptions about Accounting and accountants	17
1.3.4 The need for research on Accounting education.....	19
1.4 PROBLEM STATEMENT	21
1.5 RESEARCH OBJECTIVES	22
1.5.1 Main objective.....	22
1.5.2 Secondary Objectives.....	22
1.6 RESEARCH METHODOLOGY	22
1.6.1 Literature review:	22
1.6.2 Empirical research:	23
1.6.3 Scope of this study	24

1.7	CHAPTER LAYOUT.....	24
1.8	SUMMARY	26
	CHAPTER 2: THE SUBJECT ACCOUNTING AND THE ACCOUNTING PROFESSION	29
2.1	INTRODUCTION	29
2.2	THE FIELD OF ACCOUTING.....	29
2.2.1	Defining Accounting.....	29
2.2.2	Origin.....	30
2.2.3	Accounting knowledge and skills	30
2.2.3.1	Soft Skills (Pervasive skills)	31
2.2.3.2	School skills.....	31
2.2.3.3	Role of professional bodies.....	33
2.2.3.4	Summary of skills	35
2.2.4	The Accounting profession	35
2.2.4.1	The need for accountants and the impact on society	35
2.2.4.2	The role of accountants	36
2.2.4.3	Increased demand for accountants.....	37
2.2.4.4	Decreasing numbers of accounting learners.....	38
2.3	ACCOUNTING AS SCHOOL SUBJECT	39
2.3.1	DBE requirements for EMS in SA schools	40
2.3.1.1	Description of EMS.....	40
2.3.1.2	Curriculum Topics.....	40
2.3.1.3	Allocated time in the curriculum for EMS (Grades 7-9)	41

2.3.1.4	Assessment of learners	41
2.3.2	DBE requirements for Accounting in SA schools	43
2.3.2.1	Resources required	43
2.3.2.2	Curriculum Topics.....	43
2.3.2.3	Time allocation for Accounting in the curriculum	44
2.3.2.4	Assessment for Accounting	44
2.3.3	Summary of Accounting as school subject.....	45
2.4	CHALLENGES IN TEACHING ACCOUNTING	45
2.4.1	Out – dated Accounting education	45
2.4.1.1	Generation gap and the Net Generation (Generation Y)	46
2.4.1.2	Net Generation and the corporate environment	49
2.4.2	Other Challenges/Problems facing Accounting Education	49
2.4.2.1	Poverty & Quality of Schooling	49
2.4.2.2	Problems in SA classrooms-Learner-to-educator ratio (LER).....	50
2.4.2.3	Learner performance in Grade 12 examinations	51
2.5	SUMMARY	51

CHAPTER 3: POSSIBLE SOLUTIONS TO ADDRESS THE CHALLENGES OF TEACHING ACCOUNTING	54
3.1 INTRODUCTION	54
3.2 TEACHING METHODOLOGIES	54
3.2.1 Introduction.....	54
3.2.2 Traditional teaching versus new teaching methodologies for Accounting.....	56
3.2.3 Effective teaching & learning methods in Accounting.....	58

3.2.4	Summary on teaching methodologies.....	61
3.3	ADDRESSING THE CRITISM AGAINST TRADITIONAL ACCOUNTING EDUCATION	62
3.3.1	Possible solutions and teaching strategies for the Net generation	62
3.3.2	Games in teaching.....	67
3.3.2.1	The concept <i>play</i>	67
3.3.2.2	Games as educational tools.....	68
3.3.3	Educational games	71
3.3.3.1	Advantages, attributes of and skills developed through game playing	73
3.3.4	Factors to consider when choosing a suitable game.....	77
3.3.5	Games in Accounting & EMS.....	81
3.3.6	Board games	81
3.3.6.1	<i>Commercium</i> game	83
3.4	SUMMARY	87
CHAPTER 4:	METHODOLOGY	89
4.1	INTRODUCTION	89
4.2	RESEARCH OBJECTIVES	89
4.2.1	Primary Objective	89
4.2.2	Secondary Objectives.....	89
4.3	RESEARCH PARADIGM AND DESIGN	90
4.3.1	Paradigmatic assumptions and philosophical perspective of this study.....	90
4.3.2	The Research Design	95
4.4	RESEARCH METHODS.....	96

4.4.1	Quantitative research.....	96
4.4.2	Qualitative research.....	96
4.4.3	Mixed-methods research (MMR).....	97
4.5	STUDY POPULATION AND SAMPLE.....	98
4.6	RESEARCH INSTRUMENTS	100
4.6.1	The quantitative research questionnaire	101
4.6.1.1	Description of a questionnaire	101
4.6.1.2	Objective of the questionnaire	101
4.6.1.3	Reliability and validity	102
4.6.1.4	Constructing the research questionnaire.....	104
4.6.1.5	Grade 9 Administration of the questionnaire	107
4.6.1.6	Analysis	109
4.6.2	Qualitative research interviews	109
4.6.2.1	Description of interviews.....	110
4.6.2.2	Objectives of the interviews	111
4.6.2.3	Credibility and trustworthiness	111
4.6.2.4	Conducting the interviews.....	113
4.6.2.5	Analysis	115
4.7	ETHICAL REQUIREMENTS	116
4.8	SUMMARY	117
CHAPTER 5:	FINDINGS	120
5.1	INTRODUCTION	120

5.2	The demographic information on the respondents.....	121
5.3	EXPOSURE TO SOFT SKILLS.....	125
5.3.1	Descriptive statistics	126
5.3.2	Exploratory factor analysis.....	126
5.3.3	Association with Biographical data and Effect Sizes	131
5.3.3.1	School	133
5.3.3.2	Gender	135
5.3.3.3	Race.....	135
5.3.3.4	Experience of the game.....	138
5.3.3.5	Career option.....	138
5.3.3.6	Home language	140
5.4	PERCEPTIONS ON THE GAME.....	141
5.4.1	Descriptive statistics	141
5.4.2	Exploratory factor analysis.....	143
5.4.3	Association with Biographic data and Effect Sizes.....	147
5.4.3.1	Schools.....	147
5.4.3.2	Gender	148
5.4.3.3	Race.....	148
5.4.3.4	Experience of the game.....	152
5.4.3.5	Career option.....	152
5.4.4	Results of open-ended questions and interviews	153
5.4.4.1	Open-ended questions	153
5.4.4.2	Interviews with learners	155

5.4.4.3	Interviews with teachers	156
5.5	SUMMARY	160
CHAPTER 6:	CONCLUSION AND RECOMMENDATIONS	164
6.1	INTRODUCTION	164
6.2	REACHING THE OBJECTIVES	167
6.2.1	Secondary objective no. 1: The subject <i>Accounting</i> in the Economic and Business Management field at secondary school	167
6.2.2	Secondary objective no. 2: The soft skill requirements of the subject <i>Accounting</i>	167
6.2.3	Secondary objective no. 3: The challenges in teaching secondary school teaching and possible solutions to address these challenges	168
6.2.4	Secondary objective no. 4: Exposure to soft skills by the <i>Commercium</i> game	169
6.2.5	Secondary objective no. 5: Perceptions of the game <i>Commercium</i> game as educational tool	170
6.2.6	Secondary objective no. 6: Tools to be used in the presentation of the subject <i>Accounting</i>	172
6.3	LIMITATIONS OF THE RESEARCH PROJECT	173
6.3.1	Limited school types	173
6.3.2	Limited time	173
6.3.3	Level of gameplay	173
6.3.4	Boundaries of the study	173
6.3.5	Lack of including a township school in the study	174
6.4	AREAS FOR FURTHER RESEARCH.....	174
6.5	RECOMMENDATIONS	175

6.5.1	Recommendations regarding the subject <i>Accounting</i> in the Economic and Business Management field at secondary school (Secondary objective no. 1).	175
6.5.2	Recommendations regarding the soft skill requirements of the subject <i>Accounting</i> (Secondary objective no. 2) and the exposure to soft skills by the <i>Commercium</i> game (Secondary objective no. 4)	175
6.5.3	Recommendations regarding the challenges in teaching secondary school teaching and possible solutions to address these challenges (Secondary objective no. 3)	177
6.5.4	Recommendations regarding the perceptions of the game <i>Commercium</i> game as educational tool (Secondary objective no. 5)	178
6.6	FINAL CONCLUSION	180
6.6.1	Secondary objective no. 1	180
6.6.2	Secondary objective no. 2	180
6.6.3	Secondary objective no. 3	181
6.6.4	Secondary objective no. 4	181
6.6.5	Secondary objective no. 5	182
6.6.6	Secondary objective no. 6	182
	BIBLIOGRAPHY	186
	ANNEXURES.....	222
	ANNEXURE A: RULES OF THE <i>COMMERCIMUM</i> GAME	222
	ANNEXURE B: QUESTIONNAIRES	227
	ANNEXURE C: STRUCTURED INTERVIEW WITH LEARNERS:	232
	ANNEXURE D: LETTERS OF PERMISSION.....	237
	ANNEXURE E: PERMISSION LETTERS FROM THE NORTH WEST DEPARTMENT OF EDUCATION: DR KENNITH KAUNDA DISTRICT – OFFICE OF THE DISTRICT DIRECTOR	244

ANNEXURE F: PERMISSION LETTERS FROM THE NORTH WEST DEPARTMENT OF EDUCATION: OFFICE OF THE DEPUTY DIRECTOR GENERAL -BRANCH: DISTRICT AND PROFESSIONAL SERVICES	245
ANNEXURE G: GAME RULES	246
ANNEXURE H: ETHICAL CLEARANCE CERTIFICATE	249

LIST OF TABLES

Table 1.1:	National Curriculum Statement: Key Subjects' performance (2012 – 2015).....	16
Table 2.1:	Topics for Grade 9 EMS.....	41
Table 2.2:	Topics in the Accounting Curriculum Grades 10 – 12.....	44
Table 3.1:	Connection of Teaching Strategies to 20 Net Generation Learner Characteristics	63
Table 4.1:	Research Paradigms.....	93
Table 4.2:	Research Methods: Data selection, collection and analysis	100
Table 5.1:	Cross reference of objectives to research instruments	121
Table 5.2:	Demographic information of the schools	122
Table 5.3:	Respondents by gender	122
Table 5.4:	Respondents per grade.....	123
Table 5.5:	Response to choosing Accounting as a career option	123
Table 5.6:	Response to previous exposure to the game	124
Table 5.7:	Language indication	124
Table 5.8:	Race indication	125
Table 5.9:	Exposure to soft skills through the game	126
Table 5.10:	KMO measure of sampling adequacy, p-value of Bartlett's test of sphericity and the determinant of correlation matrix	128
Table 5.11:	Communalities questions 1 to 6	129
Table 5.12:	Total variance explained	130
Table 5.13:	Factor matrix (Questions 1 – 6).....	131

Table 5.14:	Guidelines for the explanation of effect size (d)	132
Table 5.15:	Results of ANOVA for exposure to soft skills for the three schools.....	133
Table 5.16:	Tukey's HSD test	134
Table 5.17:	Effect sizes of the difference in Mean between the 3 schools.....	134
Table 5.18:	Estimated Marginal Means: Mixed-Model Analysis for gender	135
Table 5.19:	Mixed Model Analysis for race & Effect sizes	136
Table 5.20:	Mixed Model Analysis for previous experience of the game	138
Table 5.21:	Mixed Model Analysis for career option.....	138
Table 5.22:	Mixed Model Analysis for language.....	140
Table 5.23:	Feelings & Attitudes	142
Table 5.24:	KMO measure of sampling adequacy, p-value of Bartlett's test of sphericity and the determinant of correlation matrix	143
Table 5.25:	Communalities question 7 to 11	144
Table 5.26:	Communalities question 12 to 19	144
Table 5.27:	Total variance explained questions 7 to 11	145
Table 5.28:	Total variance explained questions 12 to 19.....	145
Table 5.29:	Factor matrix (Questions 7 – 11)	146
Table 5.30:	Factor matrix (Questions 12 – 19)	146
Table 5.31:	Results of ANOVA for the three schools.....	147
Table 5.32:	Tukey's HSD test	147
Table 5.33:	Tukey's HSD test	147
Table 5.34:	Estimated Marginal Means: Mixed-Model Analysis for gender	148
Table 5.35:	Mixed Model Analysis for race & Effect sizes	150

Table 5.36:	Mixed Model Analysis for previous experience of the game	152
Table 5.37:	Mixed Model Analysis for career option.....	152
Table 5.38:	Teaching methods & tools used during Accounting/EMS classes.....	158

LIST OF FIGURES

Figure 1.1:	Contribution to accelerated performance.....	9
Figure 4.1:	Paradigmatic Assumptions.....	92

LIST OF GRAPHS

Graph 1.1:	Overall achievement rates in Accounting (2011 – 2013)	13
Graph 1.2:	Achievement distribution curves (2011 – 2013).....	13
Graph 1.3:	Learners' achievements at 30% and above in selected subjects (2008 – 2012).....	14
Graph 1.4:	Achievement distribution curves in Accounting.....	14
Graph 1.5:	Overall achievement rates in Accounting	15

CHAPTER 1: INTRODUCTION TO ACCOUNTING

1.1 INTRODUCTION

Accounting is described as the record keeping of the monetary values of transactions in an orderly and systematic way of a business or an individual, with the objective of providing financial information through financial statements, for decision making (Dekker *et al.*, 2016:34). Accounting provides information about a firm's available resources, the financing thereof and the results achieved by using the resources (BusinessDictionary, 2017):

Accounting and Accounting education are social structures and have been influenced worldwide through their historical, social, economic, political and cultural contexts. Accounting education should be globally consistent and comparable. However, various practices and many diverse audiences exist, each having their own interests and lawful strategies (Helliard, 2013:510). Hence Accounting education should be defined and combined to one world model that suits the needs of all nations (Helliard, 2013:510). Recently the International Financial Reporting Standards (IFRS) Foundation started developing profiles of application of IFRS in individual jurisdictions so as to determine the progress towards the main objective of global Accounting standards (Ojo, 2014:1-2; IFRS, 2016; Lee & Wong, 2016:193-200). The Group of Twenty (the G20) was established as the forum for international alliance on the main issues of the international economic and financial agenda (IFRS, 2016; Lee & Wong, 2016:193-200). The G20 jurisdictions has made a public dedication which supports one set of high-quality global Accounting standards and accept IFRS as the only set of international Accounting standards (Ojo, 2014:3; IFRS, 2016; Lee & Wong, 2016:193-200). The question could be asked how the diversity of the background of accountants and the eminent need for one set of accounting standards could be linked. The link starts at school. Van Romburgh (2014:2) indicated that previous research showed that the way in which learners are prepared in school contributes to their expectations of higher education. It is believed that the teaching and assessment practices learners experience at school may not be completely efficient to prepare them with more independent forms of learning which is expected in higher education (van Romburgh, 2014:2; Byrne & Flood, 2005:117-120). The question could be posed as to whether practices in South African secondary education are adequate to equip learners with the skills (technical and soft) necessary to comply with prerequisites of universities and professional bodies such as the South African Institute of Chartered Accountants (SAICA) and the South African Institute of Professional Accountants (SAIPA) (van Romburgh, 2014:2) and ultimately the international Accounting universe. In order to do this, Accounting education at school level may well need to change.

Two important terms that will be addressed in the dissertation are:

- Accounting (Refer to 1.1 above); and
- Soft skills: These skills are also known as "people skills." Soft skills are the personal characteristics that show a high level of emotional intelligence in a person. It can be applied in any job title or industry (Kandra, 2011:1-4). Examples of these skills include good manners, optimism, a sense of humour, common sense, empathy, the ability to work together and to negotiate, awareness of a situation, the ability to analyse a situation and deciding on a response with the best result for everyone, adaptability and diplomatic and respectful actions, good communication skills and interpersonal skills (Kandra, 2011:1-4.); (Refer to 1.2.2 Technical and soft skills (generic skills), below.

The following topics are addressed in this chapter: background to the study (section 1.2), motivation for this study (section 1.3), problem statement (section 1.4), research objectives (section 1.5) and research methodology (section 1.6). The chapter ends with a layout for the dissertation (section 1.7).

1.2 BACKGROUND

1.2.1 The need for change

Many years ago researchers expressed their concerns about the decrease in the numbers of Accounting learners (Fouché & Visser, 2008:606; Mathews, 2001:118; Albrecht & Sack, 2000a:1). They believed that there were many signals in the past warning that the future of accounting education is in jeopardy. Various other organizations such as the Institute of Management Accountants (IMA), American Institute of Certified Public Accountants (AICPA), Accounting Education Change Commission (AECC) and even educators warned that Accounting education was in danger over the years, but their opinions have been ignored (Gray, 2013:308-309; Fouché & Visser, 2008:606; Albrecht & Sack, 2000a:2; AECC,1990). Since Accounting educators neglected to respond to previous calls for change, four major organizations – IMA, AICPA, the American Accounting Association (AAA) and the big five professional service firms agreed to sponsor a study on the change needed in Accounting education in order for the profession to survive (Mathews, 2001:117-122). These firms include: Deloitte Touche Tohmatsu Limited, PricewaterhouseCoopers (PwC), Ernst & Young (E&Y), Klynveld Peat Marwick Goerdeler (KPMG) and Arthur Anderson, which had a fall after the Enron scandal in 2002 (Accountingverse, 2017; Mathews, 2001:117-122). The empirical evidence of the study performed by Albrecht and Sack in 2000, focused on the number and quality of tertiary students choosing Accounting as their main subject (Albrecht & Sack, 2000a:3). School

learners choose Accounting as a subject during their secondary school education, which could then open the door for further studies in Accounting (Odia & Ogiedu, 2013:89-90) at tertiary level.

On another front, globalisation has caused many changes in the Accounting profession. Accounting education must be in line with these changes to meet challenges and to ensure that learners are prepared to face the world once they have graduated (Mustapha & Hassan, 2012:1-2; Neck *et al.*, 2014:1). Fouché and Visser (2008:606) list five main areas of consideration which indicate the need for change, namely: the ever-changing corporate world (Visser *et al.*, 2001:1), the new generation of learners (Shin, 2004:368–381), lack of skills of the learners (Davidson *et al.*, 2000:53; Diller-Haas, 2006), resistance to change from Accounting educators (Boyd *et al.*, 2000:36) and the requirement of continuous improvement (Gonzalo & Garvey, 2004:432).

Several years later the need for change in the teaching and learning for Accounting as well as Entrepreneurship or Economic and Management Sciences (EMS) in SA schools, was confirmed by Fouché (2013:1) and Neck *et al.* (2014:1). It was determined that learners who enter the workplace for the first time are not equipped with the necessary skills required by the Accounting profession, and current teaching practices might be the reason for this (Fouché, 2013:1). In Accounting education the focus often is on subject content and although elements of effective teaching methods are occasionally present, teaching methodologies are still content driven (Fouché, 2013:1). The gap is increasing between what accountants do and what Accounting educators teach (Fouché, 2013:1). Neck *et al.* (2014:1) determined that the role of teachers in classrooms is challenge, as teachers need to develop an entrepreneurial spirit and a practice based mind set amongst learners and create learning environments in which practice can occur. They determined that the method of entrepreneurship requires that a set of practices are developed. The practice-based approach to learning is suggested to be used amongst learners (Neck *et al.*, 2014:13).

The Accounting world has experienced some major shifts in the past decade (Wetfeet, 2012; Brewer *et al.*, 2014:30). Accounting's role in big business has become more complex and the industry is being forced to redefine itself and not to just satisfy the new federal regulations. In the Accounting profession a new emphasis is placed on strategic input, which implies that it will be more important than ever for accountants to have a deep working knowledge of technology, leadership ability, an understanding of the broad corporate environment and communication with colleagues in diverse corporate departments and functions (Wetfeet, 2012). Greenhill (2012), the Chief Business Officer of the World Economic Forum, shares this view and indicates that the world has become increasingly hyper-connected over the past decade. The modern

environment includes immediate access to the internet and the linked services. Companies and people can communicate with each other instantly and machines are equally interconnected with each other. The result of new technology is that modern economies and societies will experience severe transformation (Greenhill, 2012).

For this reason, employers are seeking a diverse range of skills and attributes in new Accounting graduates. The reason for this is to maintain a competitive advantage, despite the fact that many countries are facing a skills shortage in the area (Kavanagh & Drennan, 2008; Birrell, 2006). The change in the Accounting profession leads researchers to answer the following two questions in terms of the competencies of accountants, namely: 1) Which competencies are currently important for success in Accounting, and 2) Whether or not these competencies (including soft skills) are developed as part of their Accounting learning programme (Brewer *et al.*, 2014:30). It is believed that a “competency crisis” (a gap between the competencies taught in modern classrooms and those needed for professional success) exists (Brewer *et al.*, 2014:30; Fouché & Visser, 2008:606). A **three-step “game plan”** is suggested as a solution to this competency crisis and with a view to ensure that Accounting students and learners are prepared for the corporate world (Brewer *et al.*, 2014:30). The **first step** in this plan is that accountants need to understand the changes that have already taken place in the Accounting profession and that they expect new changes. **Secondly**, current and future generations of accountants should be educated in order to deliver the expanding number of competencies demanded in the current dynamic business world. **Thirdly**, professional accountants need to think about how they could contribute to the Accounting profession and address the competency crisis (Brewer *et al.*, 2014:30). The study attempts to add to the literature in terms of step 2.

Some of the more detailed changes in the role of accountants include the believe that accountants have evolved from personnel who provide only support for managers, into business partners who play a performance management role with managers in an organisation (Mack, 2017:328-330; Brewer *et al.*, 2014; Mouritsen & Thrane, 2006:242). This implies that in order to gain success, accountants should become collaborators and integrated thinkers, who understand organizational strategy and have a broader set of competencies (beyond what might be considered technical or foundational knowledge), when making financial decisions. Accountants need to be educated to think like a business manager as well as integrate various Accounting competencies (Mack, 2017:328-330; Brewer *et al.*, 2014). Some of these competencies are taught from Grade 9 in Accounting such as values, abilities and knowledge, emphasizing the actions such as production, usage, financial decision making, economic and

managerial skills as well as entrepreneurship (refer to 2.4.1.3: Requirements to offer Accounting in secondary schools).

Furthermore, accountants play a major role in good corporate governance and ethics in business practices. There is a need for more transparency, corporate governance and business practices which are professional and honest (Uyar *et al.*, 2017:10; Low *et al.*, 2008:222-223). Recent business misconduct in the United States, Europe and even SA disadvantaged the morality of the Accounting profession, as well as professional behaviour and accountability to the public. Accounting education needs to change in order to maintain a strong character and a superior standard of professionalism. As indicated before this change will need to start with the training of accountants from secondary school level (Low *et al.*, 2008:222-223).

1.2.2 Changing the mind-set of Accounting learners

The above need for change should also be reflected in the way Accounting learners view the profession to assist them in making career choices. The DBE (2016a) believes that Grade 9 is an important year in the life of SA learners as they need to start thinking about possible careers. Career choices will depend on the subjects offered at various schools from Grade 10. Learners need to know the career path they want to pursue on completion of Grade 12, to be able to make the right choice of subjects at the end of Grade 9. For learners to obtain the National Senior Certificate in Grade 12 in SA, they must have 7 subjects – 4 compulsory and 3 which are chosen at the end of Grade 9, for Grades 10 to 12 (DBE, 2016a). Learners thus have to choose to take Accounting as a subject from Grade 10. It is necessary to change the mind-sets of learners before they have to decide on subject choices to ensure that more learners take Accounting as a subject. This should be an attempt to work against the decrease in the number of accounting graduates. Mustapha and Hassan (2012:12) believed that universities and teachers play a role in providing favourable information about the Accounting profession, which may attract potential tertiary students to take up the challenge. They did research on student perceptions and found that a learner's perception towards the Accounting professional examination is significantly related to his career choice as a professional accountant. This result is consistent with the earlier finding by Germanou and Hassall (2009), namely that learners' perceptions influence their intention to pursue or not to pursue a professional qualification (Mustapha & Hassan, 2012:12). The likelihood of learners' choice of Accounting as a career path was studied in Australia in order to determine which factors influence career intentions (Jackling & Calero, 2006:420). The following elements which determine learners' intention to qualify as an accountant were studied: (i) background aspects including gender, and previous studies on Accounting; (ii) learners' inborn and external interests in Accounting; and (iii) perceptions of the facets which distinguish an accountant (Jackling & Calero, 2006:420).

The results of the SA study by Baard *et al.* (2010) provide general trends to administrators at tertiary institutions in SA. The trends indicate that learners with no background in Accounting are generally less successful in tertiary Accounting studies than those that did have Accounting as a school subject (Baard *et al.*, 2010:142). It is therefore important for learners to select Accounting as a subject as it will enhance their success at university. But, as seen before, this choice of learners often depends upon their perceptions of the subject.

An Australian study on first-year Accounting learners performed by Jackling and Calero (2006:421) took into consideration the following factors which could influence learners' decision to take Accounting as a school subject:

- (1) **Learner characteristics:** Learner access courses for business degrees should be developed for learners from different socio-economic backgrounds, educative backgrounds and expertise that could influence their perceptions of the profession and also their selection of Accounting as a possible career at school level (Jackling & Calero, 2006:421).
- (2) **Gender:** The Accounting profession was previously seen as a profession controlled by males, with a minority of females qualifying for entry to professional bodies (Lewis, 2015:1,15; Byrne & Willis, 2005:374). However, Nelson and Vondrzyk (1996) in the USA, as well as Marriott and Marriott (2003:125) determined that females have exhibited more positive attitudes towards Accounting than have male learners. In Ireland female secondary school learners indicated that they see Accounting, as more precise and consent-driven than males (Byrne & Willis, 2005:374). This could lead to an increase in female learners choosing the subject. The study performed by Byrne and Willis (2005), showed that the difference between females and males is not significant in their desire to become an accountant (Byrne & Willis, 2005:374). Therefore, gender was not responsible for learners' choice to become an accountant. The findings agree with the findings of AL-Mutairi *et al.* (2017:92) that there was no significant difference between the attitudes of female and male students on how they see the subject Accounting. These findings oppose similar studies (e.g.; Marriott & Marriott, 2003; Nelson & Vondrzyk, 1996), in which it was indicated that female attitudes were more favourable towards Accounting than those of male learners.
- (3) **Socio-economic status:** In previous studies an inadequate representation of persons from socio-economically underprivileged backgrounds were found to enter higher education (Bradshaw, 2016:1-5; McMillan & Western, 2000:223-247). Former research has indicated that students' choices of major study are influenced by their educational

backgrounds (Jackling & Calero, 2006:421). Encouragement from parents and other family structure uncertainties (such as mothers that work), was the most prominent influence on the choice of students on majors (Eesley & Wang, 2017:636–650; Dandy & Nettelbeck, 2002:621–627). In a cross-cultural comparison of the expectations of parents about the Mathematics achievement of their secondary school learners it was found that the high expectations of parents can have positive consequences for learners such as improved performances in Mathematics, as the parents' attitudes are communicated naturally to their children. They determined that all parents need to monitor the study methods of their children often to improve their attitudes, skills and confidence in the learning of the subject. Parents should also encourage, motivate, and support their children to work hard to improve academic achievement (Weerasinghe & Panizzon, 2015:641).

- (4) **Learners' attitudes towards the Accounting study and profession:** Learners' anticipation of Accounting has an influence on their attitudes towards the Accounting profession (Jackling & Calero, 2006:422). These are grounded on the society's generalization, childhood experiences and how they see the profession, as well as their studying experiences of Accounting at university (Jackling & Calero, 2006:422). In previous studies it became clear that perceptions of the attributes required in Accounting are formed from the classroom experiences of introductory Accounting (Albrecht & Sack, 2000a; Andersen *et al.*, 1989). Enjoyment of the topics in the area of Accounting and course satisfaction encouraged student intention to undertake Accounting careers (Jackling & Calero, 2006:432; Albrecht & Sack, 2000a). Satisfaction with studies in Accounting was the most meaningful determiner to motivate students to become accountants (Jackling & Calero, 2006:432). This may be an area where the introduction of a board game could have a lot of value.
- (5) **Influence on perceptions – previous studies of Accounting:** The Accounting curriculum has influenced tertiary students' perceptions of the work of accountants (Jackling, 2002:62-80). It was determined that more than 50% of first-year students studying an Accounting module in Australia had negative perceptions of the Accounting profession (Jackling, 2002:62-80). The highest number of students indicated that their perception of the Accounting profession was formulated by their studies during their first year in Accounting at university (Jackling, 2002:62-80). Opposed to this, students who have studied secondary school Accounting tend to express more positive opinions about the work accountants perform (Jackling & Calero, 2006:422; Byrne & Willis, 2005:367).

The study also indicated that there are positive relationships between the choice of an Accounting career and the taking of Accounting at secondary school level (Jackling & Calero, 2006:431; Byrne & Willis, 2005:367). It was determined that learners who have studied Accounting at secondary school were more likely to choose Accounting as a career than those who did not (Jackling & Calero, 2006:431). This provides yet more support to provide learners with a positive experience and perceptions at school, so that they could choose Accounting as subject.

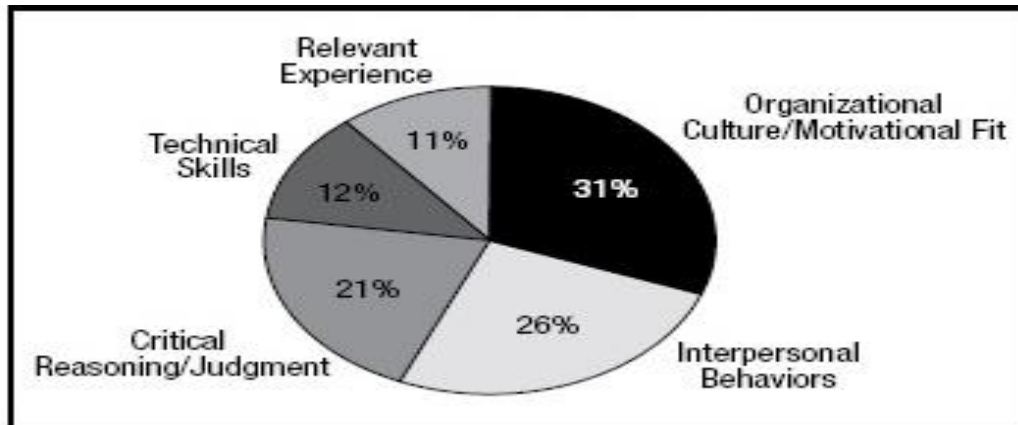
- (6) **Technical and soft skills (generic skills):** Accounting programs for undergraduate students are structured to develop a range of Accounting-specific skills and soft skills (Jackling & Calero, 2006:423). A soft skill is described as a skill which is not specific to work in a specified industry or occupation, but significant for work, education and life in general. These skills can be applied to various situations, such as Internet research skills, self-management skills or strategies of learning (IGI Global, 2017). It was determined by several researchers that although technical Accounting skills provide the foundation for an Accounting career, soft skills are responsible for career success (Duncan and Dunifon, 2012; Jackling & Calero, 2006:423). Recently employers have encouraged the move away from procedural approaches to teaching Accounting and are no longer prepared to accept graduates able to demonstrate only technical competencies (Howieson *et al.*, 2014:260-262; Jackling & Calero, 2006:423). It is expected from Accounting graduates to be able to demonstrate written and verbal skills of portraying their views (Howieson *et al.*, 2014:260-262; Jackling & Calero, 2006:423). The ability to work effectively as a group member and team participation skills are also important to employers (Howieson *et al.*, 2014:261-263; Jackling & Calero, 2006:423). These soft skills include creative problem-solving abilities and critical thinking (Howieson *et al.*, 2014:261-263; Jackling & Calero, 2006:423).

Research (Jackling & Calero, 2006:423) indicated that tertiary students perceive soft skills (e.g. people skills, verbal and written communication skills), as well as creativity, to be important attributes for an Accounting career. Such students are more likely to intend to pursue an Accounting career than students who do not view these skills as being important (Jackling & Calero, 2006:423).

In a previous study performed by North American senior leaders and the human resources department, the importance of soft skills is highlighted, when viewing the performance of a business (ISACA, 2011). It was determined that the culture and interpersonal professional behaviour of management, as well as the critical reasoning and judgment, are far more

important than the technical skills and experience of employees (refer to figure 1) (ISACA, 2011).

Figure 1.1: Contribution to accelerated performance



Source: ISACA (2011)

From the figure 1 above it can be seen that the relevant experience contributed 11% and the Technical skills 12% to the accelerated performance of the business. Soft skills consisting out of critical reasoning contributed 21%, interpersonal behaviors, 26% and the organizational culture 31% of the business's performance. The figure indicates that the combination of technical skills together with soft skills, are important for career success.

- (7) **Intrinsic and extrinsic interest:** "Extrinsic factors" is seen as factors external or outside something (Dictionary.com, 2017), or not part of the essential part thereof (English Oxford Living Dictionaries, 2017). Extrinsic influences on the choice of an Accounting career were determined by previous studies to include financial remuneration, perception of job availability, job security and opportunities for advancement (Jackling & Calero, 2006:423; Ahmed *et al.*, 1997:325-335). The intrinsic value of something is the value which the specific thing has "in itself, or "in its own right." Extrinsic value is the opposite value of intrinsic (Zimmerman, 2015). It is the basic and important characteristic of something or a person (Cambridge Dictionary, 2017). Intrinsic influences such as the need to get an interesting job, is indicated by Jackling and Calero (2006:421) as an important motivating factor when choosing Accounting as a career. Rababah (2016:25) and Adams *et al.* (1994:52) shared this view by indicating that a major influence on undergraduates' selection of an Accounting major was 'genuine interest in the field'. Intrinsic interest is important for improving the quality of learner learning. Several studies have also shown a connection between the level of interest and deep learning approaches (Jackling & Calero, 2006:424; Hasnora *et al.*, 2013:179). In the current study on the *Commercium*

game, the game was introduced with the hope of gaining learners' interest and maintaining it, in order to achieve deep learning. Previous studies have also indicated that a link exists between intrinsic interest and school subject choice (Jackling & Calero, 2006:424, Ainley *et al.*, 1995), as well as tertiary education choices (Jackling & Calero, 2006:424; Kidd & Naylor, 1991).

- (8) **Role of professional bodies:** Professional Accounting bodies in Australia tried to project a more positive image of the role of accountants through their marketing campaigns. The focus of these promotional campaigns was the provision of a problem-solving, young and vital image of Accounting and accountants to change the negative perceptions of accountants (Jackling & Calero, 2006:424). The study indicated that Accounting bodies have actively promoted the profession to first-year university students, as they often make choices at this level about major fields of study which lead to careers in Accounting (Jackling & Calero, 2006:424). The findings from the study suggest that the view portrayed in the media and advertising by the professional Accounting bodies did not significantly influence students' intention to pursue an Accounting career (Jackling & Calero, 2006:424). Although several students studying first-year Accounting have negative perceptions of the Accounting profession (Plumlee & Reckers, 2014:313-314; Jackling, 2002:62-80; Mladenovic, 2000), it was found that these views are normally not held by those who intend to pursue an Accounting career (Wilson, 2014:127; Jackling & Calero, 2006:424).
- (9) **The positive relationships between Accounting studies and career intentions:** Tertiary institutions and professional bodies both have opportunities to establish closer relationships with secondary school educators to motivate possible, interested students to study Accounting at tertiary level (Wilson, 2014:xx; Jackling & Calero, 2006:435). Accounting educators are challenged to ensure that learners choose Accounting as a major and to prepare them sufficiently for the working environment. The challenge to attract and retain the best learners in Accounting courses has important economic implications due to the significant shortages of professional accountants globally (Koh, *et al.*, 2016:264-265; Jackling & Calero, 2006:435).

The results of the above-mentioned studies show the factors which could influence the choice of Accounting as a school subject and eventually as a career choice. It is therefore important for teachers to create an interest in Accounting at school level.

1.3 MOTIVATION FOR THIS STUDY

Quick advancements in information technologies and globalisation are characteristics of the beginning of the 21st century. It has become increasingly more difficult to predict what the future entails for an individual in a globalised world, where individuals are challenged with a decrease in career prospects, together with career challenges, which are more frequent and difficult (Savickas *et al.*, 2009). In response to such changes, the requirement for a change in attitude and innovative skills toward work has developed (Maree, 2009). Secondary school learners (adolescents) are not exempt from asking questions about their future and what they will do with their lives in this fast -changing world (Savickas *et al.*, 2009). Changes in career plans can cause high levels of stress and anxiety amongst learners (Pietarinen *et al.*, 2010). As school learners in SA choose subjects at the end of Grade 9 for the final Grade 12 examinations, and to determine their tertiary studies and possible career opportunities, it is important to ensure that they are guided during their school years to make the correct decisions. Letshwene (2014:3) believes that a way to address the decrease in Accounting learner numbers, is for the SAICA to include township secondary schools in their programme on Accounting career opportunities, as that is the time when learners begin to make career choices. Therefor it is important to engage with learners at school in order to address interest in the profession.

The AICPA indicated trends in Accounting tertiary student numbers for the 2013–2014 academic year as follows (Vien, 2015:25; The AICPA Report, 2015:2):

- Although the enrolment in Accounting programs and Master of Accounting programs, reached an all-time high after a year of quick growth, the increase of enrolments in Bachelor of Accounting programs at private universities, was much smaller (12%) and there was a 22% decrease in bachelor's degree enrolments at public universities;
- Total bachelor's and master's degrees in Accounting awarded in the 2013–2014 academic year stayed the same, with a decline less than 1%, after reaching an all-time high in the 2011–12 academic year;
- Master's degrees awarded increased by 31%, while bachelor's degrees awarded decreased by 11%;
- During this same time period, bachelor's degree hires increased 5%;
- New hires with bachelor's degrees increased with 3 % of total hires in 2014, but new hires with master's degrees decreased with 6 %;

- Total non-accounting hires increased with 2 % since the previous reporting period; and
- New hires assigned to Accounting/Auditing decreased with 4 %.

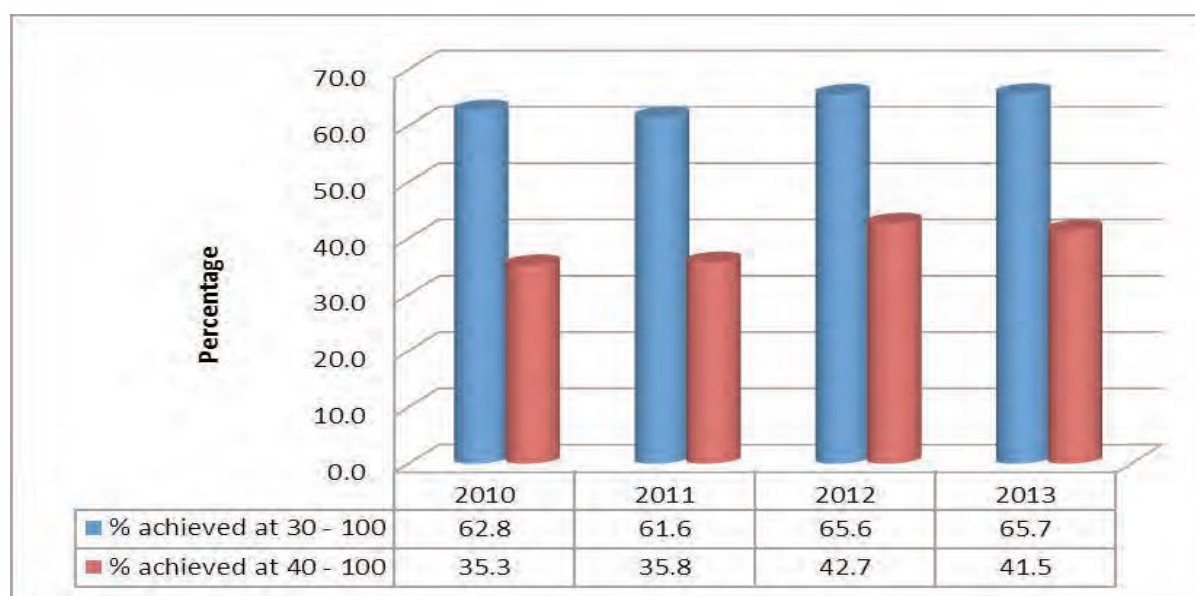
Although there are increases in some Accounting degree enrolments, there was a huge decrease in bachelor (first) degrees in Accounting (Vien, 2015:25; The AICPA Report, 2015:2). This decrease is also found at school level (Refer to 2.2.4.4 Decreasing numbers of accounting learners). In 2011 SAIPA warned that a drop in the number of Maths learners is a major threat to the Accounting profession. The institute requested the SA government to do more to improve maths teaching skills in the face of the already large shortage of professional accountants in SA (fin24 archives, 2011). When learners are forced to switch from Maths to Maths literacy, the decreasing pool of potential candidates who could enter professions where Grade 12 Maths is a requirement (such as Accounting), is reduced further. The shortage in SA at that stage was at least 26 000 professional accountants, without whom the economy was crippled (fin24 archives, 2011).

The decrease in the number of Grade 12 Accounting learners at school and also students at tertiary level in SA, is a phenomenon which is consistent with evidence of a study in Australia, which suggests that although the number of students studying business degrees in Australia is increasing, the number of learners choosing Accounting as a major study at tertiary level is declining. This occurrence was also found at school level by the DBE (Rkein, 2014:1-3; Andrea & Gosling, 2005:421; DBE, 2001). The decline in Accounting enrolments causes a shortage of university-trained professional accountants, which in Australia has rivalled the trade skills crisis (Rkein, 2014:1-3; Andrea & Gosling, 2005:421). Similar declines in Accounting majors at tertiary level were also observed in the United Kingdom (UK) (Andrea & Gosling, 2005:420) and in North Carolina (Hylton, 2002). This decrease in learners of Accounting is still occurring today (Refer to 2.2.4.2 Decreasing numbers of accounting learners). The concern regarding the decrease in learner numbers in the subject Accounting over the past years, is supported by the findings in the paragraphs below:

1.3.1 SA performance in Accounting in government schools

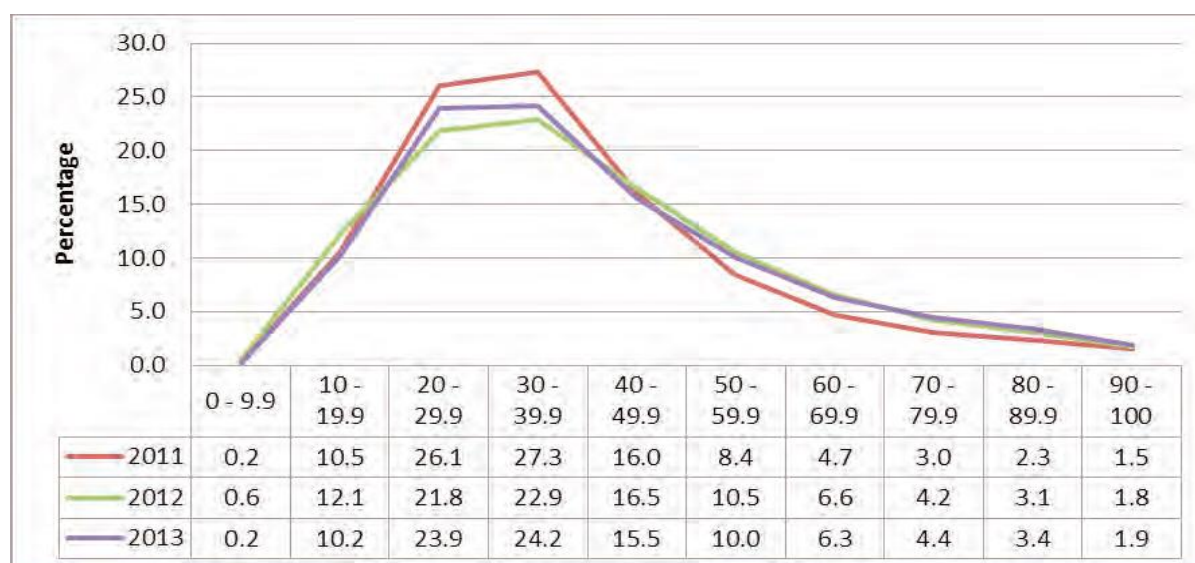
In the period 2010 to 2013 the following performance trends in SA government schools indicated that 8% more learners passed Accounting in 2013 compared to 2012 (DBE, 2013b:17).

Graph 1.1: Overall achievement rates in Accounting (2011 – 2013)



Source: DBE (2013b:17)

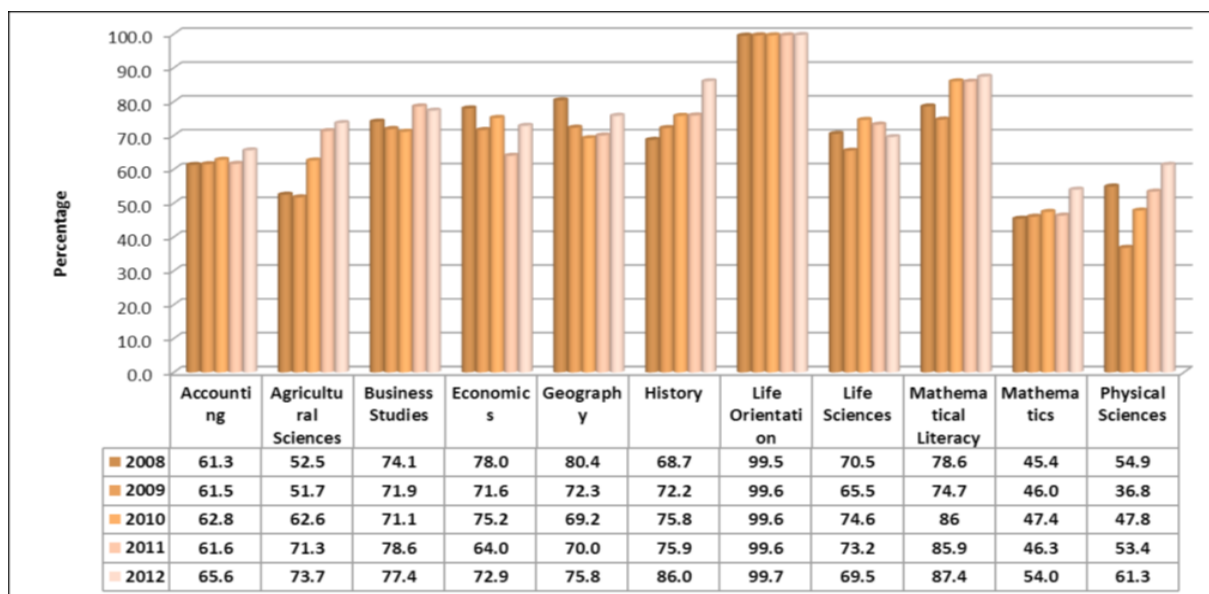
Graph 1.2: Achievement distribution curves (2011 – 2013)



Source: DBE (2013b:18)

Graphs 1.1 and 1.2 above, show that a small percentage of learners passed Accounting with marks above 40% between the years 2011 and 2013. This indicates a poor performance in Accounting and may be the reason why many learners cannot, or do not want to enrol for further education in the subject. This should be a concern for tertiary institutions and employers in the business and financial environment (DBE, 2013b:18). The DBE (2012:62) in SA provides the following results concerning pass rates in Accounting at school level:

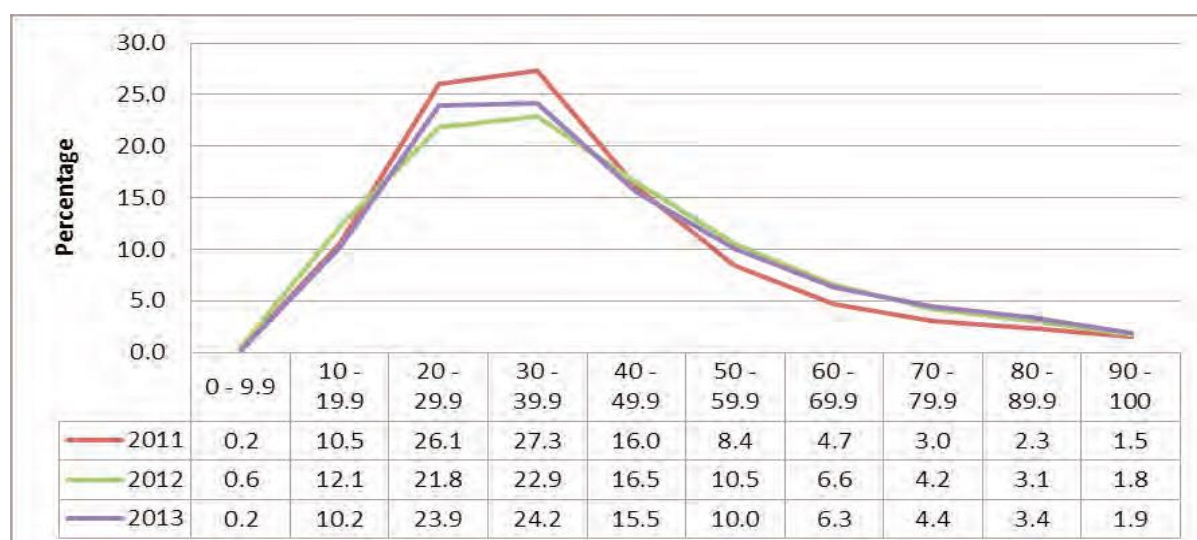
Graph 1.3: Learners' achievements at 30% and above in selected subjects (2008 – 2012)



Source: DBE (2012:62)

Judging from the 2012 results, one of the areas of weakness identified in the National Diagnostic report is Accounting as a subject area. The average number of Accounting learners' achieving 30% and above is 65.6%, compared to the 77.4% for Business studies. It is also one of the three lowest subject averages of the main school subjects.

Graph 1.4: Achievement distribution curves in Accounting



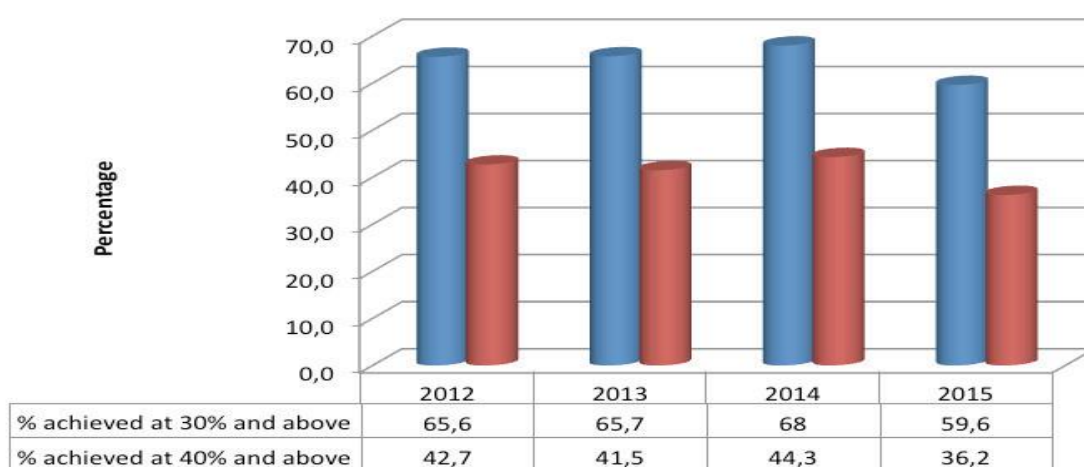
Source: DBE (2015a:9)

Trends of achievements (2012 – 2013) (Refer to graph 1.4 Achievement distribution curves in Accounting and graph 1.5 Overall achievement rates in Accounting)

When the 2012 figures are compared to those of 2013, the number of learners who achieved 30% or more in Accounting increased from 62.8% in 2012 to 66.7% in 2013 (DBE, 2013a).

When individual school results were summarised, many schools had a percentage below 60% for learners who achieved 30% or above in Accounting (DBE, 2013a). This indicates that learners in 2013 did not perform adequately in the subject (DBE, 2012; DBE, 2013a).

Graph 1.5: Overall achievement rates in Accounting



Source: DBE (2015a:9)

Trends of achievements (2012 – 2015) (Refer to Graph 1.5 Overall achievement rates in Accounting)

From the above graph, it can be seen that the average performance of learners in Accounting decreased in 2015 as indicated by 59.6% of learners who achieved 30% and higher, with 36.2% achieving 40% and more (DBE, 2015a:9). It can be concluded that after the improvement in 2014, a disappointing decline was evident in the performance of candidates in 2015 (DBE, 2015a:10).

Table 1.1: National Curriculum Statement: Key Subjects' performance (2012 – 2015)

Subject	2012			2013			2014			2015		
Accounting	Wrote	Achieved 30% & Higher	% Achieved	Wrote	Achieved 30% & Higher	% Achieved	Wrote	Achieved 30% & Higher	% Achieved	Wrote	Achieved 30% & Higher	% Achieved
	134 978	88 508	65.6	145 427	95 520	65.7	125 987	85 681	68.0	140 474	83 747	59.6

Source: Adapted from: SAOU (2015:5)

It is evident from the above table that the number of Grade 12 learners who passed the NCS examination with 30% and above decreased from 65.6% in 2012 to 59.6% in 2015. There was a slight increase between the years 2012 to 2013 and 2013 to 2014, but overall from 2012 to 2015 the numbers decreased (SAOU, 2015:5). More learners wrote Accounting in 2015 than in 2014, but fewer learners reached the minimum of 30% or higher. A reduced number of candidates are further enrolling annually in Accounting (SAOU, 2015:5-6).

1.3.2 Out-dated Education

Albrecht and Sack (2000a:1-2) expressed their concerns with Accounting education a number of years ago and mentioned the following problems: A decline in the numbers of Accounting majors and the belief of learners that degrees in Accounting are less valuable, as in the past, and of lower value compared to other business and non-business degrees; accountants in practice and educators who teach Accounting that would not choose Accounting as a major if they could pursue their education again, and the belief from current leaders in Accounting and working accountants, that modern accounting education is out-dated and imperfect with a meaningful need for change. Learners today are still expected to attend old-fashioned classrooms and to switch off all the electronic connections to the world, e.g. cell phones, music players, electronic games, Internet etc. (Muflich, 2018:4-6; Prensky, 2008:3). They are allowed to use old textbooks, out-dated equipment and handwriting. The reality is that learners are, for the most part, bored (Muflich, 2018:4-6; Allan *et al.*, 2017:101-124; DBE, 2011a:10; Prensky, 2008:3).

1.3.3 Perceptions about Accounting and accountants

Wells (2009) is of opinion that individuals with the necessary skills and competence are discouraged to enter the Accounting field because of a widespread negative perception of accountants. It is believed that if the reason why the perceptions were formed can be determined, strategies for changing them could be implemented (Wells, 2009). Research found that overgeneralized perceptions of Accounting and accountants were resistant to change for various reasons, e.g. learners lacked an understanding of the skills and capabilities of accountants and how these competencies could benefit them (Wells, 2009). The high school curriculum also has an influence on the learners' perceptions of the subject (Wells, 2009).

Wells (2009) proposed the following interventions to change the perceptions learners have of Accounting and accountants:

- The professional associations should consider information provided by the academic community on how the role of accountants and the nature of Accounting have changed.

They could incorporate some of these changes in for example practical training of accountants etc.;

- Members and the public should be made aware of these changes by aligning the diverse range of Accounting outputs with the goals of individuals;
- The changing of accountants' training to accommodate these increasing diverse roles should be explained; and
- Teachers should then reconsider how Accounting should be taught at high school level. More emphasis should be placed on how Accounting impacts everyday life and less on the scorekeeping role of accountants (Wells, 2009).

Research on the relationships between measuring behaviour and behavioural planning of learners to take Accounting as a subject, indicated that a learner's competence in technical Accounting skills has a positive effect on the learner's attitude towards Accounting (Djatej *et al.*, 2015:53, 66). This result can be attributed to the perceived image of Accounting as a desk-bound, uninteresting, numeracy subject. This can lead to an increased intention to consider Accounting as a major and future career (Djatej *et al.*, 2015:53, 66). It was determined that learners who are confident in their soft skills do not realise these skills can contribute to successful Accounting studies; therefore they do not feel a positive attitude towards the major (Djatej *et al.*, 2015:53, 66). However, soft skills at work such as communication, interpersonal skills and being a team member are seen to be essential employment skills (Djatej *et al.*, 2015:53, 66). Teachers should therefore emphasize these skills and explain to learners the importance in practise and motivate them to choose Accounting as a subject with various future possibilities.

Fouché (2006:iv) developed a board game *Commercium* to be used as a learning resource and present the subject Accounting in a fun way. When the game was previously evaluated among first-year Accounting students, the students indicated that their technical skills, understanding of the roles of the accountant, soft skills as well as knowledge of the subject content, improved as a result of playing the game. They reacted very positively to the game as it simulated the business environment and linked theory to practice. Introducing a board game to secondary school learners may well change the attitudes and negative perceptions of learners, by presenting the subject Accounting in an interesting manner, which enhance deeper learning amongst learners.

1.3.4 The need for research on Accounting education

Letshwene, (2014:3) indicates that there is a need for research on Accounting in secondary schools, as the main problem to be addressed is the attraction of more learners into Accounting careers. Teachers could also be responsible for poor performance in Grade 12 Accounting, as some teachers do not have adequate content knowledge of the subject (Ozden, 2008: 633). The reason could be that they did not receive proper training and are not equipped to teach the subject effectively (Letshwene, 2014:5). It is believed that if teachers can teach the basics of Accounting very efficiently in Grades 10 and 11 respectively, learners will not experience problems in Grade 12, so much. It is believed that teachers could also try to change learners' negative attitudes about the subject Accounting (Letshwene, 2014:4). Current changes surrounding professional accountancy education could have implications on the method of teaching the subject in secondary schools, as well as tertiary institutions (Samkin *et al.*, 2012:6). The determination of the relevance of the subject "Accounting" in New Zealand secondary schools was highlighted when the new curriculum was issued by the Ministry of Education in 2007. Accounting as an elective subject was omitted (Samkin *et al.*, 2012:6).

Limited academic research, was done on secondary school level Accounting (Samkin *et al.*, 2012:6). It seems therefor that there still is a need for research on various questions about the teaching of the subject. Van der Merwe (2014:185) indicates that future research should be done on the efficiency of educational interventions, for example by using case studies or business simulations in presenting the subject. He suggested that research be done on student experiences using more interpretive approaches such as interviews and focus groups. He suggested that it should be determined whether positive perceptions found in his and other studies correlate with actual skills improvement.

An alternative approach to the use of a traditional lecture to teach is also through the use of games (Bergner & Brooks, 2017; Haywood *et al.*, 2004:85). The use of games can make learning more fun and also helps to keep learners interested and involved in the learning process (Bergner & Brooks, 2017; Haywood *et al.*, 2004:85). In a study performed by Tanner and Lindquist in 2010, a three-week financial accounting simulation was conducted amongst university Accounting major students. The board game Monopoly was included in the curriculum as a teaching resource in cooperative learning groups (Tanner & Lindquist, 2010:139-162). The results of the study indicated that the attitudes of students toward Financial Accounting and learning, their concern for fellow students and perceived achievement were enhanced after completing this cooperative learning exercise. It was also determined that gender and student ability were impacted in the same level as those of student attitudes and their achievement (Tanner & Lindquist, 2010:139-162).

Fouché (2006:132-142, 218) identified various areas for further research in his studies on the use of a board game as a teaching aid in Accounting. The game *Commercium* was evaluated at a predominantly Afrikaans-speaking university, on Accounting tertiary students. Further research on the game could be done to test and evaluate the benefits of using the game as a teaching aid among previously disadvantaged learners, at schools and among learners without prior Accounting exposure (Fouché, 2006:132-142,218).

It seems that there is a need to explore new tools in Accounting education by introducing technological tools, games, business simulations, etc. in secondary school classrooms and in the current study this need will be researched. The AICPA for instance, provides information on new teaching tools for using in Accounting classrooms, which include the following (AICPA, 2016):

- **Livescribe:** These are smart pens with which one can record writing and speaking at the same time which can create demos for learners to watch on their own time. While writing in class, the pen captures everything and the recording can then be downloaded to a computer. Learners can then watch the teacher write and hear him talk through the problem just as in class (AICPA, 2016);
- **Educreations:** This is a whiteboard and screen casting application which helps the teacher to create a short instructional video, including writing, audio, and graphics. Learners can now watch a tutorial through Educreations, before class on any topic e.g. debt-to-equity ratios, read through the chapter and then complete a practical problem in the book (AICPA, 2016);
- **Audacity:** As most learners and tertiary students own a mobile device now days, they should be able to access content from their teachers while they're busy teaching. The app "Audacity" helps to create a podcast-style recording, which learners can listen to at home or on campus (AICPA, 2016); and
- **Lucidchart:** This is cloud-based diagramming software, which helps a teacher to create a professional-looking flowchart, in order to be able to document or model accounting systems easily. This new mobile technology can make it possible for learners to take classes with them anywhere they go and work through the information discussed in class on their own time (AICPA, 2016).

By using games as an educational tool in Accounting the above-mentioned problems could be overcome and learners may be motivated to take an interest in the subject area of Accounting.

1.4 PROBLEM STATEMENT

There are increased demands both on educators and learners in the Accounting field. The origin of the increase in demands is the four main areas mentioned above, namely: SA performance in Accounting in government schools (Refer to 1.3.1 above); out-dated education (Refer to 1.3.2 above); perceptions about Accounting and accountants (Refer to 1.3.3 above); and the need for research on Accounting education (Refer to 1.3.4 above); (Fouché & Visser, 2008:606). Urgent action is needed in order to address these areas and to improve the situation of Accounting education (Fouché & Visser, 2008:606).

Fouché (2013:147) stated that there is a shortage of new entrants into the Accounting profession. The shortage of qualified employees in Accounting and other financial subjects could be traced back to the educational methods applied for teaching Accounting (Fouché (2013:147). A study was performed by Letshwene (2014) with the main objective to find new strategies which could be used to help Grade 10 teachers to enhance the effective teaching of Accounting. The findings of the study indicated that Grades 8 and 9 lack exposure to Accounting, because of the 40% weighting allocated to financial literacy on the syllabus. This is then responsible for problems in Grade 10, in teaching and learning. Accounting teachers must use various learning and teaching strategies and help to create a classroom environment, which supports learners and enhance their interest in the subject (Letshwene, 2014:ii). Using games during teaching could provide a solution to these mentioned problems.

Learners believe **educational games (EG)** can provide many learning benefits for them due to the highly motivating nature of the games itself and the behaviour of the new generation of learners (Ibrahim *et al.*, 2011:205). It was suggested that games can be used as a different approach to teaching subjects with low motivation among learners (Ibrahim *et al.*, 2011:205-206; Nor Azan & Wong, 2008).

Therefore the question could be posed as to whether the game *Commercium* could be used as an effective educational tool in secondary schools to change learners' perceptions of the subject, as well as their attitudes, by presenting the subject to the next generation of learners in an interesting manner? A second question to address is whether the game could also be used to expose learners at an early stage to the soft skills required from accountants, by using the game as a basis in a summative assignment for Grade 9 learners, before they make their subject choices?

1.5 RESEARCH OBJECTIVES

1.5.1 Main objective

The main objective is to analyse whether introducing a board game in secondary school accounting as educational tool, leads to a positive experience for the learners and an exposure to soft skills within the subject.

1.5.2 Secondary Objectives

The main objective is supported by the following secondary objectives:

- (1) To obtain an understanding of the subject Accounting in the Economic and Business Management field at secondary school (chapter 2)
- (2) To identify and obtain an understanding of the soft skill requirements for the subject Accounting (chapter 2)
- (3) To gain an understanding of the challenges in teaching Accounting and to identify possible solutions to address these challenges (see Chapter 3).
- (4) To analyse whether the game *Commercium* exposes learners to soft skills in the subject Accounting (see Chapter 5).
- (5) Analyse if learners and teachers perceive the game *Commercium* as a positive educational tool and if the exposure to the game improves the attitude of learners towards the subject Accounting (see Chapter 5).
- (6) To provide recommendations for the use of educational tools such as the *Commercium* game in Accounting, with a view to improve learners' attitude towards Accounting and developing much needed soft skills in the process (see Chapter 6).

1.6 RESEARCH METHODOLOGY

The research methodology consists of a literature review and empirical study.

1.6.1 Literature review:

The basis for secondary research objectives 1 to 3 (paragraph 1.5.2) was a literature study of the research done in the Accounting field. This was used to identify basic skills and knowledge required in the Accounting learning process as well as to determine the value of games and the use thereof as an educational tool for teaching these skills.

1.6.2 Empirical research:

The secondary research objectives 4 and 5 were address by the empirical research.

The Research Population and sample:

The research population consisted of Economic and Management Sciences (EMS) / Accounting school learners in Grade 9. The following schools were purposefully selected for this exploratory study:

- High School A – Grade 10 EMS Afrikaans- and English-speaking learners. The learners experience learning disabilities, which is the reason for using an older age group, as the level they do EMS on is similar to that of Grade 9 learners in a normal governmental school. These learners have no previous experience of playing the game *Commercium*;
- High School B – Grade 9 EMS Afrikaans- and English-speaking learners. Some of these learners have previously played the game *Commercium*, while for others it was their first encounter with the game. Some of the learners are from previously disadvantaged communities. The game was properly discussed and explained to these learners and the language barrier was overcome, by using the *Commercium* rules which was available in all official languages in SA. Learners with previous exposure to the game were divided amongst others to explain the game to them. When results of the questionnaires were analysed, no bias were found or significant differences in the answers provided by these learners; and
- High school C - These are English-speaking girls, with no prior exposure to the *Commercium* game.

Method of selection:

The aim was to include learners in purposefully selected schools of various backgrounds and home languages, who take Accounting or EMS as a subject of choice.

Research instrument:

An adaption of an existing **questionnaire was used as a research instrument**. When the current questionnaire was compared to the questionnaire used by Fouché in 2006, the basic framework and sections were kept the same. The wording of only a few questions had been adjusted with language which is easier to understand by learners. (Fouché, 2006) described the questionnaires as follows: Two questionnaires were used for the quantitative study on the learners, namely a questionnaire learners had to complete before the playing of the game and one after the playing of the game (Refer to annexure B Questionnaire for school learners:

Before and after the game). Questionnaires were used during the interview with learners and teachers (refer to Annexure C).

Ethics

Ethics is described as “the basic concepts and fundamental principles of decent human conduct. It includes study of universal values such as the essential equality of all men and women, human or natural rights, obedience to the law of land, concern for health and safety and, increasingly, also for the natural environment” (BusinessDictionary, 2017).

- Letters of permission to do research at selected schools were developed and used. These include: Permission from the North West Provincial Government in SA, principals, teachers, parents & learners (refer to Annexure D); and
- Ethical clearance was also obtained on 11 November 2015 from the research ethics committee of the faculty of Economic and Management Sciences of The North-West University (refer to Annexure H: Ethics approval certificate of project NWU - 00379 - 15 - A4).

1.6.3 Scope of this study

The main focus of this research study was the Grade 9 EMS learners and their teachers. EMS in SA is a subject currently presented to Grades 7 to 9 learners and comprises three main sections, namely: Economy, Financial Literacy and Entrepreneurship (DBE, 2011b:23). The teaching and education of the different sections were therefore discussed throughout this study.

Three different schools were chosen in the North West Province in SA for the research project. Grade 9 learners were mostly used as they have to make subject choices at the end of the year. The game was played once in a formal session at all three schools and the research questionnaires were completed and interviews conducted. The results were gathered and analysed from only the first experience learners had with the game, to compare it more easily with those of other schools. At High School B the researcher had more time available to teach the learners. After the first playing of the game, learners had to complete an assignment which was based on the transactions and documents used in the game.

1.7 CHAPTER LAYOUT

Through this research study the following topics were addressed:

Chapter 1: Introduction

As introduction to the study the problem to solve is indicated as the determination of whether the game *Commercium* could make a difference in the way learners perceive Accounting as a subject area and see it as a possible career opportunity.

Chapter 2: The subject Accounting

In this chapter the subject Accounting and its origin is described, through the definition of Accounting and the subject. Accounting knowledge and skills are discussed and skills such as soft skills, hard skills, school skills and additional skills, described. A summary is given of the Accounting profession and especially the current need for accountants and the impact on society. The decreasing numbers of accounting learners and the changing of the negative perception about the Accounting profession is researched, while the focus is placed on the growing demand for accountants.

Chapter 3: The challenges of teaching Accounting and possible solutions

In this chapter the following issues are discussed: The components of the teaching-learning environment, a sufficient learning environment, teaching methodologies, the addressing of criticism against traditional accounting education, games as educational tools in Accounting, board games and especially the *Commercium* board game, which was used as a teaching tool in this study are also described.

Chapter 4: Methodology

This chapter explains the research methodology by focussing on the research model, the research design and methods used during the current study.

Chapter 5: Statistical analysis of results

The research findings are analysed and discussed. The statistical analysis process of the data acquired from the questionnaire, which was performed by Statistical Consultation Services of The North-West University, is described in this chapter. The demographic information on the respondents is described and analysed and the exploratory factor analysis process is discussed. The concept of reliability and the coefficient of reliability are explained.

Chapter 6: Conclusions and Recommendations

Conclusions are drawn regarding the research findings and possible areas for further research indicated. Recommendations are made concerning effective teaching methodologies and the game *Commercium* as an educational tool. Limitations of the study are also mentioned.

1.8 SUMMARY

Accounting is the record keeping of the monetary values of transactions in an orderly and systematic manner of a business or an individual. The main goal is to provide financial information through financial statements to help users with decision making. Both Accounting and Accounting education are social structures which have been influenced worldwide through their historical, social, economic, political and cultural contexts and must be consistent and comparable all over the world.

The effect of globalisation has caused the **Accounting profession to change** and therefore Accounting education must be in line with these changes, in order to prepare learners for the outside world. Five key areas which indicate the need for change must be considered, namely: the ever-changing corporate world, generation Y learners, a shortage of skills amongst learners, resistance to change from Accounting teachers and the need of continuous improvement.

The Accounting world and Entrepreneurship have experienced some major shifts in the last ten years. The role of Accounting in big business has become more complex and the industry should redefine itself. Employers require various skills and attributes in new Accounting graduates. There is a need for the Accounting industry to change in order to gain a positive reputation and grow in professionalism. **Accounting education** must also change to meet these challenges and to prepare learners to face the world. New employees in the workplace are not equipped with the necessary skills required by the Accounting profession. It is clear that a shortage is currently experienced of skilled and educated Accounting employees in SA.

A **three-step “game plan”** is suggested as a solution to this competency crisis, to prepare Accounting graduates for the corporate world and entails the following: Step 1: Accountants must understand the changes in the Accounting profession; Step 2: Education of future generations of accountants in the competencies of the corporate world and Step 3: The contribution of professional accountants to solve the competency crisis.

This need for change should be reflected in the way Accounting learners see the profession to help them in choosing careers. The DBE believes that Grade 9 is an important year for SA learners, because they need to start thinking about possible careers and make **career choices**. Research showed that **learners’ perception** towards the Accounting professional examination is largely related to his career choice as a professional accountant. Learners with no background in Accounting are generally unsuccessful in tertiary Accounting studies compared to those who had Accounting as a school subject. Learners’ choice of Accounting as a subject will increase their success at university.

Different factors have been identified which could influence learners' decision to take Accounting as a school subject, namely: learner characteristics, gender, socio-economic status, learners' attitudes towards the Accounting profession, influence on perceptions, technical and soft skills, the role of professional bodies and positive relationships between Accounting studies and career intentions. The AICPA determined in 2015 that there was a huge decrease in bachelor degrees in Accounting and this decrease is also found at school level. The decrease in the number of Grade 12 Accounting learners at school and tertiary students in SA is a phenomenon which is consistent with studies performed in other countries such as the United Kingdom and Australia.

The **SA performance in Accounting** in government schools were studied to determine possible reasons for the decline in Accounting learners. The performance trends of Grade 12 Accounting learners indicate that a small percentage of learners passed Accounting with marks above 40% between the years 2011 and 2013. This poor performance in Accounting may be the reason why many learners do not enrol for further education in the field of Accountancy. Tertiary institutions and employers should be concerned about this matter. The current research project is part of a larger project where a board game and support material were developed to assist learners and educators to gain more of the soft skills and technical knowledge required by the modern Accounting environment, in a fun way. **Educational games** can provide many learning benefits for learners because it has a motivating nature which can be used to change the behaviour of the new generation of learners. The effect of the **game *Commercium*** could be studied to determine if it could be used as a sufficient educational tool in secondary schools to change learners' perceptions of Accounting.

The **main objective** of the current study is to analyse if the introduction of a board game in secondary school Accounting, as an educational tool, leads to a positive experience for the learners and an exposure to soft skills within the subject.

The **research methodology** of this study consists of a literature review and an empirical study. The literature review is a study of research in the Accounting field. Basic skills and knowledge required in the Accounting learning process will be identified and the value of games and the use thereof as an educational tool will be determined. In the empirical research, the research population consists of EMS / Accounting Grade 9 school learners. Learners in purposefully selected schools, of different backgrounds and languages who take Accounting or EMS as a subject, is the target group. The **research instruments** were different questionnaires used before and after the playing of the game.

In chapter 2 the subject Accounting and its origin is described, by defining Accounting and discussing modern Accounting knowledge and skills required in the profession.

CHAPTER 2: THE SUBJECT ACCOUNTING AND THE ACCOUNTING PROFESSION

2.1 INTRODUCTION

In this chapter the subject Accounting is discussed, by defining Accounting and describing the origin of the subject. Accounting knowledge and skills are discussed by referring to soft skills and technical skills. An overview is given of the Accounting profession and especially the existing need for accountants and their impact on society. The problems of decreasing numbers of accounting learners and the changing of the negative perception about the Accounting profession is investigated, while the growing demand for accountants is emphasized. This addresses secondary objective one and two.

2.2 THE FIELD OF ACCOUNTING

2.2.1 Defining Accounting

The Curriculum and Assessment Policy Statement (CAPS) describes modern **Accounting** as a school discipline which measures performance and communicates financial information on economic sectors and adhere to Accounting principles such as ethical behaviour, transparency and accountability (DBE, 2011a:8). Accounting is therefore the process through which profit or loss for a given period, as well as the value and nature of a firm's assets, liabilities and owners' equity is calculated in the financial statements. It provides information on a firm's resources, financing thereof and the results achieved in using these resources (BusinessDictionary.com, 2017). Accounting is also described as a logical process, where information is systematic and accurately selected and transactions recorded. This happens through the compilation, analysis, interpretation and communication of financial statements and managerial reports, to be used for decision making by parties concerned (IEB, 2014; DBE, 2011a:8; Kumar, 2010a). Rules and principles must be set for Accounting and bookkeeping of transactions, for information to be useful to users (Kumar, 2010a). It can be concluded that Accounting is the **universal business language** and important for the following reasons: record keeping, analysis purposes, prevention and discovery of fraud, obtaining funds and loans etc. Through Accounting information is provided to investors for decision making (role of valuation) and to control conflicts of interest in a business (a role of stewardship) (Zimmerman, 2015:485; Chinweike, 2010).

2.2.2 Origin

Accounting historians over years have argued that by incorporating Accounting history in the curriculum learners could obtain a better understanding of the Accounting environment and how Accounting practices are influenced by changes therein (Sangster, 2010:23-24). When learners are aware of the history of Accounting practice it can increase awareness of the importance of Accounting processes and practices, in terms of the double-entry system. This could motivate them to learn and understand the double entry process (Sangster, 2010:23-39).

Pacioli was about 50 years old in 1494 when he returned to Venice for the publication of his fifth book (Sangster, 2017:1; Alexander, 2002:8-10). The term double-entry bookkeeping was previously used by Venetian merchants, but Pacioli first described the system of double-entry bookkeeping in his '*Summa de Arithmetica, Geometria, Proportioni et Proportionalita*' (Everything about Arithmetic, Geometry and Proportion) (Sangster, 2017:1; Alexander, 2002:8-10). It was written as a guide to existing mathematical knowledge and bookkeeping was only one of five topics covered (Alexander, 2002:8-10, Parker & Yamey, 1994). He added 'The Summa's' 36 short chapters on bookkeeping, titled '*De Computis et Scripturis*' ('Of Reckonings and Writings'). The main purpose thereof was that the subjects of the Duke of Urbino might have complete instructions for conducting business and information about his assets and liabilities (Alexander, 2002:8-10). Pacioli was the first person to describe the system of debits and credits in journals and ledgers. This forms the basis of the current Accounting systems (Sangster, 2017:1-2; Vysotskaya, 2016:3-4).

2.2.3 Accounting knowledge and skills

Until quite recently, it was mainly believed that in education at all levels, as well as in the working environment, cognitive abilities were the ones that most mattered (Kyllonen, 2013:17). However, currently in the global economy employers are seeking finance professionals with a wide range of skills, experience and personality types. Accountants are expected to fulfil more than only technical roles (Watson, 2015; Ragland & Ramachandran, 2014:113-115; Kavanagh & Drennan, 2008). The professional skills graduating Accounting students need and skills they have developed as part of their degree programmes can be divided into **2 main categories**, namely soft skills and technical skills. Technical skills are believed to be the technical knowledge and expertise needed for a job.

2.2.3.1 Soft Skills (Pervasive skills)

A **soft skill (pervasive skill/generic skill/transferable skill)** is described as a skill which is not specific to work in a specified industry or occupation, but significant for work, education and life in general. These skills can be applied to a various situations, such as Internet research skills, self-management skills or strategies of learning (IGI Global, 2017). Soft skills are also interpersonal qualities (people skills), personal attributes of an individual, and a person's level of commitment and general writing skills, which he can contribute to his place of employment (Robles, 2012:453; Mitchell *et al.*, 2010:1; Perreault, 2004; James & James, 2004). The top ten soft skills as regarded to be the most important by business executives are: integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethics and learners should be taught to practise these skills (Robles, 2012:453; Kavanagh & Drennan, 2008). In modern Accounting programs the focus is, however, still on written communication, and several of the important other skills and attributes are not prioritized in Accounting programs (Kyllonen, 2013:16-23; Kavanagh & Drennan, 2008).

Soft skills and job success in Accounting are linked to one another (Jackling & de Lange, 2009:371-372). These skills are considered by business executives as an important attribute in job seekers (Jackling & de Lange, 2013:370; Robles, 2012:453). Employers prefer new employees with strong soft skills, as well as hard skills (Watson, 2015; Robles, 2012:453; Mitchell, *et al.*, 2010:1; Perreault, 2004). Learners are becoming aware of the expectations employers have in terms of oral and written communication skills, analytical, professional, teamwork skills and ethical awareness, as well as an understanding of the interdisciplinary nature of business (Kyllonen, 2013:16-23; Mitchell, *et al.*, 2010:1; Kavanagh & Drennan, 2008; James & James, 2004). Soft skills should be taught during secondary school teaching in order to prepare learners for further education.

2.2.3.2 School skills

Accounting educators need to change the Accounting curriculum by incorporating **work-integrated learning** into programs and by equipping learners with the modern information and skills which exceed the technical Accounting expertise (Howieson *et al.*, 2014:260-262; Kyllonen, 2013:16-23; Kavanagh & Drennan, 2008;). The needs from the corporate world should be discovered first and then the necessary curriculum alterations should be made (Uyar and Gungormus, 2011:1; Fouché & Visser, 2008:607; Albrecht & Sack, 2000a:3). Recent research indicated that it is possible to teach soft skills to learners by implementing efficient programs from pre-school to the place of employment (Kyllonen, 2013:20; Leong & Kavanagh,

2013:1; Arthur *et al.*, 2003). Soft skills such as good communication, work ethic, personal responsibility, leadership, and listening, are all significant for young school learners, who will equip themselves with tertiary education and prepare themselves to enter the world of employment. If an outdated style of teaching is followed, learners won't be attentive. If these elements are added into lessons, the lack of enthusiasm could be changed (Attia, 2017). Where these skills are taught in secondary school it provide learners with a basic foundation to enter further tertiary studies and contribute to the business working environment (Watson, 2015).

In the CAPS document for Accounting (DBE, 2011a), the DBE describes the **skills** (technical- and soft skills) which Accounting school learners will develop as follows:

- Recording, evaluation and interpretation of financial data for making educated decisions;
- Communication, as well as the presentation of financial information efficiently by using GAAP (This term is still used in the CAPS document, which is used in schools). The understanding of accounting concepts; application of skills, knowledge and moralities to actual situations;
- Enter the working environment, higher education and motivation for self-development;
- Organise their own finances responsibly;
- Learn to develop the following characteristics: ethical behaviour. good judgement, to be thorough, neatness, accuracy and orderliness;
- Solve problems in a systematic manner in various situations and accounting fields; and
- Development of critical thinking and analytical abilities to deal with new situations and all the demands of an accounting occupation (manually or electronically) (DBE, 2011a:9).

The CAPS for both Accounting and EMS also include **critical cross field outcomes**, which learners should master (DBE, 2011a:6 (d); DBE, 2011b:5 (d)), namely:

- Solve problems and make decisions through critical and creative thinking;
- Work effectively individually and in groups;
- Can organise themselves together with their activities responsibly and efficiently;
- Analyse, organise and evaluate information;

- Are able to communicate effectively;
- Show responsibility towards the environment and the health of other people; and
- Understand that the world is a set of related systems and that the context of problem solving does not exist in isolation.

In **the current study** soft skills were applied in a practical situation through the use of the *Commercium* game. Skills addressed included communication, team work, self-management skills, critical thinking and problem solving in various business related situations. Technical skills such as mathematical calculations and financial skills were also used. Learners practiced different types of skills in a real business simulation and practically experienced the importance of Accounting. It was also attempted to expose learners to specific skills during the game play, namely:

- Learners had to identify and solve problems through the use of critical and creative thinking;
- They had to work with other team members;
- They had to be organised and managed themselves efficiently during the game play;
- Learners had to collect, analyse, organise and evaluate information provided during the game;
- Learners had to communicate effectively using visual and/or language skills by way of oral and/or written presentation; and
- Learners had to take various financial decisions and had to deal with a variety of business transactions (Refer to Annexure B: Questionnaire for learners: After the game).

After playing the game learners had to complete questionnaires on the game, where they were asked to indicate the soft skills which they applied during the game (Questions 1-6) (Refer to Annexure B: Questionnaire for learners: After the game). This made them aware of the skills they used in the game.

2.2.3.3 Role of professional bodies

It is believed that a possible solution to the problem of skills deficiencies in students may be to move some of the technical Accounting skill educational requirements to the professional Accounting bodies to teach (Howieson *et al.*, 2014:261; Jackling & de Lange, 2009:381). This would reduce pressure on the curriculum and would assist universities in developing a broader

course structure. It would improve education and the development of the soft skills of Accounting graduates. Accounting education will then begin with two specific phases. In the first phase, at university, the main aim of the course will be to teach and develop generic skills. In phase two, the professional Accounting bodies will 'train' graduates. In the training phase students will learn technical skills applicable to the Accounting profession. If this all-inclusive model of Accounting education is used students will first be educated and receive practical training afterwards (Howieson *et al.*, 2014:273; Jackling & de Lange, 2009:381).

Such changes can be implemented in secondary education. Teachers could focus on teaching new topics and then provide opportunities for practical application thereof. The DBE prescribe specific skills for learners which are taught from Grade 8, with the main goal of preparing learners for the practical Accounting work environment (refer to 2.2.3.2 School skills). Changes in schools differ in various countries, but common factors are found, for example governments believe that when they intermediate to reform the learning conditions of learners, they can improve conditions, increase the achievement standards and increase economic competitiveness (Evans & Popova, 2015:2; Day, 2002:678). Learner support has various meanings and can include something extra to what is already there e.g. the provision of additional money, equipment or personnel (Bojuwoye, *et al.*, 2014:2; Mittler, 2006). Support includes specialized functions to improve teaching and learning, as well as non-educational services to improve the quality and sufficiency of educational activities by minimizing learning barriers (Bojuwoye, *et al.*, 2014:2; Steyn & Wolhuter, 2008). Education support may include human, material and additional resources. Such changes could also be implemented at tertiary level. If a change takes place in Accounting education between universities and professional bodies, Accounting tertiary students can be taught to meet the employer demands in the business world (Howieson *et al.*, 2014:273; Jackling & de Lange, 2009:381).

Currently employers seek employees interested in keeping track with new developments and knowledge in the field in the ever changing workplace (Watson, 2015). In a recent SAIPA examination it became clear that industry bodies are having a positive impact on the growth and transformation of the accountancy industry (Watson, 2015). Accountants should demonstrate that they contribute more to organisations than merely their qualifications and technical skills. The role of accountants is to display a hands-on attitude within the company and when networking with potential clients to develop best practice. It is believed that accountants with the right soft skills and technical qualities will find numerous job opportunities to advance their careers (Watson, 2015).

Professional Accounting bodies have a responsibility to plan for changes in the Accounting profession to ensure that their members possess the required relevant knowledge and skills.

The main course of change is the advances in information and communication technologies (IT) (Ahadiat & Martin, 2016:23; Wessels, 2008:147). This has an effect on what accountants do, as well as on how they do it (Wessels, 2008:147).

Research was done on the important role professional accountancy bodies fulfil in setting and assessing strategic goals for the education of their future members (Howieson *et al.*, 2014:265; Wessels, 2008:170). Professional accountancy bodies require their accountants to possess a number of other skills apart from IT, which include communication skills, management skills, problem-solving skills and critical thinking skills (Ahadiat & Martin, 2016:23; Watson, 2015). These skills are taught from secondary school level and provide learners with a basic foundation to enter further tertiary studies and contribute to the business working environment (refer to 2.2.3.2 School skills) (Watson, 2015).

2.2.3.4 Summary of skills

In **summary** it could be said that employers seek finance professionals with various skills. These can be divided into 2 categories, namely soft skills and technical skills. A soft skill is a skill not specific to work in a specified occupation, but with influence on work, education and life. There is a link between soft skills and job success in Accounting. The DBE describes the technical- and soft skills which Accounting school learners will develop through the subject, as well as critical cross field outcomes, for learners to achieve. The solution to the problem of a lack of skills among students may be to require the Accounting bodies to teach some of the technical Accounting skills. In this study soft skills were used in a practical situation, by playing the *Commercium* game. Communication, self-management skills, critical thinking and solving of problems, as well as team work, were some of the skills applied. These practical applications could help to prepare learners for the Accounting profession and all its requirements in practice.

2.2.4 The Accounting profession

2.2.4.1 The need for accountants and the impact on society

Accountants in practices are responsible for key areas of business support, which include financial accounting, tax, compliance, management accounting, auditing, financial systems, business planning, forecasting, payroll etc. (Alammar & Kohn, 2016) An accountant is a practitioner of accounting (Schmidt, 2016). They do, however, have a broader role than number crunching, bookkeeping and administrative activity, as they influence the business as well as the wider society (Liu & Li, 2017; Alammar & Kohn, 2016; Lodhia, 2003:715-716).

2.2.4.2 The role of accountants

Traditionally, an accountant is seen as a keeper of accountants in the organization by managing, updating, correcting, and reporting the organization's accounts (Schmidt, 2016; Ahadiat & Martin, 2016:23). Various accountants will be responsible for financial accounting, managerial accounting and internal auditing in medium and large companies. Public accountants are normally consultants for a number of clients (Schmidt, 2016). Financial accounting means providing information to external parties (such as shareholders, regulatory organizations, and creditors). Accountants have a wide range of experience because of their knowledge of Accounting and its related fields. Accountants therefor play important roles in businesses to improve the overall stability and progress of society (Jui *et al.*, 2013).

It is believed that there is a desire for change in the skills which are expected from future accountants and this expectation has placed a lot of pressure on teachers and Accounting learners (Ahadiat & Martin. 2016:11). Accounting learners are often only exposed to technical skills. They do not have a complete comprehension of the complex learning environment for accountants (Ahadiat & Martin. 2016:11). Nowadays professional accountants are expected to provide services to their clients and have technical and interpersonal competencies (soft skills), in the following technical areas (Association of Chartered Certified Accountants, 2016:13-15):

- (1) audit and assurance;
- (2) corporate reporting;
- (3) financial management;
- (4) strategic planning and performance management;
- (5) tax; and
- (6) governance, risk and ethics.

Audit and assurance: Professional auditors plan to enhance their technical knowledge and knowledge of new technologies, audit applications, as well as their interpersonal skills. They also want to keep good ethical standards, independence and disbelief.

Corporate reporting: In future there will be more regulation and more frequent corporate disclosures, enhanced awareness of the Interconnection between financial and non-financial reporting. Professional accountants will need to be able to communicate a more general view of corporate reporting, with integrated reporting expected to become mandatory globally.

Financial management: Financial managers will need a more complete and global view of the business and business environment. They will develop a wider range of technical financial skills as well as personal communications skills.

Governance, risk and ethics: Comprehensive approaches to corporate governance and more integrated approaches to risk management are currently being used. Professional accountants want global best practice guidance on changes in corporate reporting, as well as on risk management and on internal and external reporting.

Strategic planning and performance management: Professional accountants in this area will become more proactive than reactive; they will network and collaborate with others and develop and manage relationships with various stakeholders.

Tax: In the near future tax advice, compliance with tax regulations, reporting, risk management and tax planning, will become increasingly difficult. New challenges include: governments' attempts to collect efficient taxes to maintain their tax base, inter-governmental tax activities and changing political and public views on tax planning (Association of Chartered Certified Accountants, 2016:13-15).

2.2.4.3 Increased demand for accountants

Accounting contributes to maintaining social order through connecting financial with non-financial aspects in creative ways (Vollmer, 2003:353). It is further believed that in the near future work opportunities in accounting professions, will increase and provide more employment for learners in Accounting (United States Bureau of Labor Statistics, 2016). It is projected that employment of accountants and auditors globally will grow 10 % from 2016 to 2026. This is quicker than the average for all occupations and a result of globalization, growth in the overall economy, and an enhancing difficult tax and regulatory environment. With the growth of the economy, more employees should be required to prepare financial records and examine them (United States Bureau of Labor Statistics, 2016).

The global marketplace is also changing and new technology is increasingly being used by companies. Several years ago it was believed that traditional accountants are no longer functioning in the new marketplace (Xero, 2016:2-4; Mathews, 2001:119; Albrecht & Sack, 2000b). The reason for this could be a decrease in the recording and processing of data and the new focus on analysis of data and decision-making activities. Another reason could be the changes in technology, as well as new competition which provide alternative careers, with more satisfaction (Mathews, 2001:119; Albrecht & Sack, 2000b).

SA has experienced a major shortage of skilled workers (Rasool & Botha, 2011). This had a negative impact on the economic growth of the country and on global cooperation in SA. The shortage is a result of the failure of the national education and training system to provide necessary skills to the economy (Rasool & Botha, 2011). In 2008, research findings by the

SAICA revealed a shortage of 5 000 chartered accountants (CAs) and more than 12 000 other accountants of varying levels (Marshall, 2014). Currently in SA prospective CAs from previously disadvantaged communities pass the examinations, but their numbers remain disturbingly low. In SA the number of black CAs had increased from less than 2% in 2002 to 9% registered in 2016 (Charter, 2016; Brown, 2016). Currently in SA SAICA comprises out of more than 40 000 members who are chartered accountants. The number of black CAs (SA) is just over 24% (a quarter) of the total in the country (SAICA, 2016; Brown, 2016). There is also a lack of females in business and financial environments (Brown, 2016). These shortages result in a lack of role models for new Accounting learners (Charter 2016; Weybrecht, 2016; Myburgh, 2005:36). SAICA aims to address these shortages through presenting a national Accounting Olympiad annually, where Grade 12 secondary learners from all races and genders can compete against one another (SAICA, 2017). 'SAICA's goal with the Accounting Olympiad is to encourage transformation and growth of the chartered accounting profession in SA through the creation of interest in accountancy as a subject at school level. Through this Olympiad, a link is drawn between accounting at school and a future career in a business or an accounting field. SAICA's main strategy is to increase the number of chartered accountants and to transform the profession (SAICA, 2017).

In SA the most recent Talent Shortage Survey indicates that Accounting and finance personnel are among the top 10 positions which employers in SA find difficult to fill (Brown, 2016).

2.2.4.4 Decreasing numbers of accounting learners

The number of learners enrolled for accounting education at secondary and tertiary levels declined for years, despite the fact that there is a high demand for careers in Accounting (Buckhaults & Fisher, 2011:31). One of the reasons may be that Accounting is perceived as a boring, pencil-pushing subject that causes anxiety for both educators and learners, which may have a large effect on the effectiveness of teaching (Wells, 2015:461-479; Warren & Parker, 2009; Ameen *et al.*, 2002:16-22; Borja, 2003:28-30). New teaching methods for Accounting at the secondary and post-secondary levels, which will increase interest in accounting education, as well as diminish the anxiety have been investigated (Buckhaults & Fisher, 2011:31). In order to change this perception about Accounting, educator and learner anxiety must be addressed, through being well-prepared and understanding the material to be presented in class fully, effective Accounting instruction aids, the completion of homework exercises and problems prior to class and through good marketing of the subject Accounting (Bearden, 2004:20–22; Borja, 2003:28-32).

Research undertaken by Papageorgiou (2016) indicated that there is a major association between first-year Accounting students' academic performance and the fact that they had Accounting as a Grade 12 subject, compared to students with no prior knowledge of Accounting. It is therefore important that learners are already exposed to the subject at school level. In 2003 enrolment in both secondary and post-secondary Accounting courses in SA reached record low numbers (Kerby & Romine, 2003:30-32, 59). However, in the last few years there was a slight increase in learners enrolled for Accounting in secondary schools in SA. The number of learners who wrote Accounting, increased slightly from 23 626 learners in 2012, to 24 203 learners in 2015 (DBE, 2015d:53). The pass rate for learners for Accounting in 2012 was 68.7% and increased slightly to 70.8% in 2015 (DBE, 2015d:53). Although the number of learners enrolled for Accounting increased over time, it is still very low, with lower results, compared to other subjects (DBE, 2015d:53).

As also motivated in Chapter 1, it seems that there is a need for more learners to complete the subject Accounting, successfully at secondary and tertiary level, in order to satisfy the need for qualified accountants in SA. In a country with a high unemployment rate (26.7%) this is an important matter to consider (Statistics South Africa, 2016a:iv & xii).

2.2.4.5 Summary on the field of Accounting

Accounting is the universal business language and important for the following reasons: record keeping, analysis purposes, prevention and discovery of fraud, obtaining funds and loans etc. Accounting performs an important role in business activities through the management of accounting systems and the regulation and provision of ensuring of credibility of businesses. Accountants also have an influence in society. The SA accounting departments at universities are influenced by the SAICA, which mainly prescribes educational requirements. In the changing business environment there is a need for more skilled accountants. Accounting learner numbers have, however, at all levels declined for years even though there is a high demand for careers in Accounting. The reason could be negative perceptions about accountants, which need to be changed.

2.3 ACCOUNTING AS SCHOOL SUBJECT

The *National Curriculum Statement Grades R-12* describes the knowledge, skills and values which should be learned in SA schools. The aim of the curriculum is to make sure that learners receive and apply knowledge and skills in significant ways, which could improve their own lives. The SA curriculum enhances local knowledge as well as crucial global knowledge (DBE, 2011b:4).

2.3.1 DBE requirements for EMS in SA schools

The CAPS document prescribes the fundamental principles, which are derived from the Constitution of the Republic of South Africa 108 of 1996. It includes fundamental principles for teaching the subject, namely: social transformation, active and critical learning, increased levels of knowledge and skills, progression in teaching, human rights, inclusivity, social and environmental justice, the value of indigenous knowledge systems and credibility, quality and efficiency (Van Wyk, 2016:77).

The CAPS divide the main topics in the EMS curriculum as follows: the economy (30% of the curriculum), financial literacy (40% of the curriculum) and entrepreneurship (30% of the curriculum) (Refer to Table 2.2) (DBE, 2011b:8-9; South African College Junior School, 2018). As the focus of Accounting is on the measurement of performance, and the processing and communicating of financial information on economic sectors, it falls under the financial literacy topic in the EMS curriculum (DBE, 2011b:11).

2.3.1.1 Description of EMS

EMS is a subject about the satisfaction of people's needs and wants by effectively using various types of private, public or collective resources (DBE, 2011b:8; South African College Junior School, 2018). The impact of the use of resources on the environment and on people is discussed. It investigates the effective management of scarce resources to maximise profit. EMS is a subject that equips learners with real-life skills so that they can personally develop and contribute to the community (DBE, 2011b:8; Van Wyk, 2016:79-81).

2.3.1.2 Curriculum Topics

The topics described by the CAPS for Grades 7 to 9 are summarised in Table 2.2.

Table 2.1: Topics for Grade 9 EMS

Topic	Grade	Content
The economy	7	The development of money; necessities and desires; products and services; the manufacturing process; and poverty and inequalities.
	8	Government; the National Budget; living standards; and markets.
	9	Economic systems; the circular flow; price theory; and labour unions.
Financial literacy	7	Saving of money; budgets, earnings and expenses; and Accounting conceptions.
	8	Accounting concepts; the Accounting cycle; source documents; Cash Receipts Journal and Cash Payments Journal for a business providing services; the influence of cash transactions on the Accounting equation; General Ledger and Trial Balance.
	9	Cash Journals of a sole trader: Receipts Journal and Payment Journal General Ledger, Debtors Ledger and Creditors Ledger postings; preparation of a Trial Balance; transactions in the Debtors Journal and Creditors Journal.
Entrepreneurship	7	Entrepreneurs; starting a new venture; types of businesses; and presenting an Entrepreneur's Day.
	8	Production factors; types of ownership; management levels and functions.
	9	Economic sectors; business functions and business plans.

Source: DBE (2011b:23)

2.3.1.3 Allocated time in the curriculum for EMS (Grades 7-9)

Time allowed for EMS for Grades 7-9, is 2 hours per week. The Annual Teaching Plan requires that 1 hour per week should be used for financial literacy (DBE, 2011b:10). This shows that the teaching time for addressing financial and Accounting problems is limited.

2.3.1.4 Assessment of learners

Assessment is a process of collecting, analysing and interpreting information to assist teachers, parents and other parties, in making decisions about the progress of learners (DBE, 2011a:24). It is also seen as an act to judge something (Merriam Webster Dictionary, 2017). In education assessment is referred to as “the various methods or tools which are used by educators to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, or educational needs of students” (The Glossary of Education Reform, 2017). The assessing process comprises four steps which include: collection of information on achievement, evaluation of the evidence, record keeping of the results; and using the information for learner development in order to enhance learning and teaching (DBE, 2011b:24).

Assessment can be divided into formal and informal assessments (DBE, 2011a:40). **Formal assessment** (assessment of learning/summative assessment) is used for accountability purposes (such as unidimensional assessment used for grading, promotion and certification purposes (Shute & Kim, 2013:25). It is normally applied after an important event, such as the end of the marking period, or school year or before a big event, e.g. tertiary entry (Shute & Kim, 2013:25). **Summative assessments** are also described as assessments which are used to evaluate learner learning, the acquirement of skills, and academic performance at the end of a defined teaching period such as the conclusion of a project, unit, course, semester, program, or school year (The Glossary of Education Reform, 2017). It can be concluded that this form of assessment occurs at the end of a period of work, and includes all assessment tasks that make up a formal programme of assessment for the year. Assessment of learning is used to promote learners or for certification purposes. The DBE requires that all formal assessment tasks should be moderated for quality assurance and to ensure that appropriate standards are maintained (DBE, 2011b:24-25).

Informal assessment (Formative assessment) takes place when learners are monitored daily to determine their progress through observations, discussions, practical demonstrations, learner-teacher conferences, informal classroom interactions etc. (DBE, 2011b:24). It consists out of various methods which teachers use to evaluate the comprehension of learners, their learning needs, and the academic progress of learners in a lesson, module or unit (The Glossary of Education Reform, 2017). Learners are actively involved in assessment, when they do self-assessment and peer assessment. It allows learners to learn from and reflect on their own performance (DBE, 2011b:24).

The main objective of assessment in EMS is to focus on the knowledge, skills and values emphasizing the activities of production, usage, the making of informed financial decisions in economic and social environments. The Annual Teaching Plan prescribes seven formal assessment assignments annually in the programme of assessment for the senior phase, consisting out of 3 formal projects, 2 tests, and 2 examinations (DBE, 2011b:24-25). Grade 9 learners should do a test or an examination as one of the 2 formal assessment tasks per term. The CAPS suggests the following forms of assessment to be used: projects, tests, data reactions, examinations, oral representations, case studies, projects as well as posters (DBE, 2011b:25-26).

The goal of the programme of assessment is to distribute formal assessment tasks in all school subjects, throughout a term. The year mark (School-Based Assessment (SBA)) is added to the final examination mark, to calculate the mark for promotion. The weights of the final mark per grade in the Senior Phase are as follows: The SBA mark (year mark) for terms 1 to 3 = 40%;

and the final examination mark for term 4 = 60% (DBE, 2011b: 25, 28). The weight of the cognitive levels is 30% for lower order, 40% for middle order and 30% for higher order skills (DBE, 2011b:25-26).

2.3.2 DBE requirements for Accounting in SA schools

In South Africa the Bill of Rights determines that every citizen has the right to basic education, which include basic education for adults and further education (DBE, 2012/13:70). The DBE is responsible for all schools from Grade R to Grade 12, and adult literacy programmes, while the Department of Higher Education and Training is responsible for universities and other tertiary education and training (DBE, 2012/13:70). The main goal of the DBE in SA is improved performance of school learners and to ensure sustained education of high quality (DBE, 2012/13:70). The DBE compiled a turnaround plan to improve the quality of learning and teaching in schools, which is called: “Action Plan 2014: Towards the Realisation of Schooling 2025” (DBE, 2014; DBE, 2012/13:71). In this Action Plan, 13 objectives are set to be achieved in terms of learning and enrolment, as well as 14 areas in education that need to be improved to reach these objectives (DBE, 2012/13:71). The DBE is responsible to provide and monitor the effective usage of all resources. The educational portal www.thutong.org.za provides a variety of curriculum and learner-support material and management resources for schools etc. (DBE, 2012/13:73-74).

2.3.2.1 Resources required

In SA the school must provide specific resources for learners to offer Accounting as a subject, namely textbooks, stationery or a workbook and a calculator (DBE, 2011a:9). Teachers should have a variety of textbooks, policies e.g. summary of King Code III, partnership contracts, civil law such as Companies Act 71 (2008), conduct of professional bodies, e.g. SAICA and SAIPA codes, SARS and bank brochures, computer and Internet access (DBE, 2011a:9).

2.3.2.2 Curriculum Topics

The topics for Accounting included in Financial Literacy were shown in Table. 2.2. The main topics in the Accounting curriculum of Grades 10 to 12 are as follows:

Table 2.2: Topics in the Accounting Curriculum Grades 10 – 12

Financial Accounting (weighting 50% to 60%):
1. Accounting concepts
2. GAAP principles
3. Bookkeeping
4. Accounting equation
5. Final accounts and financial statements
6. Salaries and wages
7. Value-Added Tax
8. Reconciliations
Managerial Accounting (weighting 20% to 25%)
9. Cost accounting
10. Budgeting
Managing Resources (weighting 20% to 25%)
11. Indigenous bookkeeping systems
12. Fixed assets
13. Inventory
14. Ethics
15. Internal control

(DBE, 2011a:14-15)

2.3.2.3 Time allocation for Accounting in the curriculum

In SA the teaching time allowed for financial literacy is 1 hour per week for Grade 8 to 9 and 4 hours per week per grade for Grades 10-12 on the timetable (DBE, 2011a:9).

2.3.2.4 Assessment for Accounting

The assessment for Grade 8 to 9 was discussed in 2.3.1.4. The DBE in SA also developed a formal programme of assessment for Grades 10-12 Accounting learners, which consist out of examinations and other forms of assessment (DBE, 2011a:55-58).

- **Examinations**

When teachers set examination papers, they should ensure that 80% of the content should be for the current grade and 20% for content covered in previous Grades. Teachers should use Blooms taxonomy for deciding which cognitive levels are applicable (DBE, 2011a:44). Teachers should ensure that basic cognitive skills (e.g. the recollection of facts, understanding and

application at a lower level) should cover 30%; moderate high order skills (such as increased application, interpretation and low-level breakdown) should cover 40% and higher-order thinking skills (such as advanced analytical skills, assessment and problem-solving through creativity) 30% (DBE 2011a:44).

- **Other forms of assessment**

Projects, presentations, case studies, reports and tests are also forms of assessment. A project in each of the Grades in the FET band is mandatory. The DBE recommends one project per year per grade. Projects can contain problem solving as well as research elements. However, computerised Accounting programmes, to be used in schools, will not involve research, but rather the development of skills (DBE, 2011a:43-44).

2.3.3 Summary of Accounting as school subject

Financial Accounting falls under **financial literacy** which is part of the EMS curriculum for Grade 8 and 9 learners. The *National Curriculum Statement Grades R-12* describes the knowledge, skills and values which should be learned in SA schools. The EMS curriculum for Grade 8 and 9 consists out of 3 sections, namely the economy (30%), financial literacy (40%) and entrepreneurship (30%). EMS is a subject on the satisfaction of the needs and wants of people by using resources effectively. The time available for EMS for Grades 7-9, is 2 hours per week, of which 1 hour per week should be used for financial literacy.

2.4 CHALLENGES IN TEACHING ACCOUNTING

2.4.1 Out – dated Accounting education

In the last few years, the focus was on the change from a traditional teaching and learning model to a facilitated learning model which equals a post-millennial social world, where the demand is increased for different creative skills and abilities (Mulder & van Oordt, 2015:3; Clark & White, 2010:116). The direction of traditional teaching and learning is towards the preparation of learners for the new work culture in the 20th century. This is done by the assessing of information and solving of expected problems, or completing routine transactions. University graduates who enter the work force in the 21st century will be doing less routine information finding and transactions and will be focusing on forming relationships, addressing new challenges, and integrating major scenarios (Mulder & van Oordt, 2015:3).

Over years a variety of research has been done to improve methodology, subject content, and required skills in Accounting. In their responses the corporate world and the Accounting profession indicated that this research has not been applied practically (Mulder & van Oordt,

2015:3; Fouché & Visser, 2008:607; Muflich, 2018:4). Fouché (2006:6) concluded that Accounting educators may be one of the biggest risks to the Accounting profession, because they resist change in education. It is believed that educators resist adapting to change, because it takes time and is difficult and often in opposition to known practices (Boyd *et al.*, 2000:36). The only way around this criticism, however, is for the Accounting educators to implement the recommendations of previous research (Fouché, 2006:6, Boyd *et al.*, 2000:36). It is therefore necessary to improve teaching methodology for Accounting education in order to address the shortcomings and criticism in a practical manner. The first matter to consider in adapting the methodology is the change in the learner generation.

2.4.1.1 Generation gap and the Net Generation (Generation Y)

A **generation** is defined as all the people who were born and are living at approximately the same time (about 30 years, during which they grow up to adulthood and have children), considered all together. It is also described as a class of individual people, who occupy places on the same level in a pedigree chart. These people share common experiences and character traits (Medical-dictionary, 2017; Merriam-Webster Dictionary, 2017; English Oxford *Living* Dictionaries, 2017; Tolbize, 2008:1).

The **Net Generation (Generation Y)** is a generation which has grown up with information technology (All *et al.*, 2012:11; Prensky, 2005:8). Different names are used for this generation by authors and researchers, such as Generation Y, Net Generation, Trophy Kids, Millennials and Digital Natives (All *et al.*, 2012:11; Yun-Jo An & Charles Reigeluth, 2011:54-56; Berk, 2009:4). Their attitudes, expectations, and learning styles are a reflection of the technological environment in which they grew up. This environment differs completely from that which existed when their lecturers and teachers were growing up (All *et al.*, 2012:11; Fouché, 2006:2-3; Oblinger *et al.*, 2005:2.5-2.6).

The birth dates used to define generations varied in surveys, but there is some agreement in the literature. The **Net Generation** learners were born typically between 1980 and 1994 (Jones *et al.*, 2015:12, 38) and **Generation Z**, between 1995 and 2010 (Jones *et al.*, 2015:13, 38). These learners are now between 13 and 34 years old. For educational purposes it means that they are varying from seventh grade through to graduate school, as well as being already employed in the corporate world (Gibson, 2013; Berk, 2009:4). The Net Generation was born into an emerging world of technology and while growing up they have been surrounded by smart phones, laptops, tablets etc. Technology has become an essential part of this generation's life, because they are constantly confronted with it (Gibson, 2013; All *et al.*, 2012:11; Yun-Jo An & Reigeluth, 2011:54-56; Berk, 2009:4; Fouché, 2006:2-3).

The Net Generation's impact on education at all levels has interested researchers and educators. Members of this generation could be enrolled at tertiary institutions or part of the employment world. Employers' concerns are similar to those of educators, namely trying to understand this generation, to maximize their performance, and to negotiate and blend their professional and personal styles with those of other generations of workers. The various employees often adhere to conflicting work values (Berk, 2009:7).

The Net Generation shows the following characteristics: They are family orientated, hard-driving, members of a team, communicators, have a desire for love etc. (Gibson, 2013). Howe and Strauss (2000) describe seven main personality traits of this generation, namely: special, isolated, full of confidence, team-players, popular, pressured, and accomplishing. The current Net Generation has become departed from traditional instruction and wants different forms of information. They learn fast, through interactions with content and information, which is visual and dynamic, as well as through game-based activities (All *et al.*, 2012:11; Van Eck, 2006). They prefer inductive reasoning and these skills concur well with Digital Game-Based Learning (DGBL). These learners also prefer quick feedback. These unique characteristics challenge teachers to present Accounting in a new and fresh manner so that students could be involved in the subject area. Traditional teaching approaches are inappropriate for these learners and enhanced, innovative elements might be needed to connect with these learners in class (van Eck, 2006; Prensky, 2001). Berk (2009:8-13) expands on the above mentioned characteristics by identifying twenty additional characteristics of Net Generation learners, which have a direct influence on learning. These characteristics include the following:

- technology experts;
- trust on search engines for information;
- engage in multimedia;
- create Internet content;
- operate quickly;
- learn through inductive reasoning;
- learn through experimenting;
- are able to multitask;
- have a brief attention span;

- communicate visually;
- love social face-to-face interaction;
- are emotionally open;
- accept diversity and multiculturalism;
- prefer team work and group work;
- strive for lifestyle fit;
- feel driven to succeed;
- need feedback often;
- appreciate immediate gratification;
- respond quickly and expect fast responses in return; and
- they prefer typing to writing.

These characteristics are confirmed by other researchers (All *et al.*, 2012:11; Fouché, 2006:2-3; Prensky, 2005:8). The Net generation learners learn in a different manner than what is generally expected. The use of e-learning is common nowadays in academic institutions (Jones *et al.*, 2010:722). It was determined in the UK that the new generation of learners use a limited range of established technologies for learning and a separate restricted range for both recreation and social use (Jones *et al.*, 2010:724; Margaryan & Littlejohn, 2009). Gros *et al.* (2012:121) found that there is a clear relationship the perception of learners of using ICT resources and the uses of technologies, which their teachers suggested. It was determined that the educational model (online or personal teaching) has a greater impact on learner's perception of the usefulness of ICT support for learning, than learners being part of the net generation (Gros, Garcia, & Escofet, 2012:191). Results show that teachers in face-to-face contexts must focus on online materials, as well as the use of ICT to support learning. If teachers want learners to get the most out of learning online in traditional contexts, then teaching strategies need to they have to realise the value of interaction between the teacher and the learners (Gros, Garcia, & Escofet, 2012:208). Research by Jones *et al.* (2010:724) found that the levels of use and degrees of familiarity with some more advanced technologies and services were low, e.g. virtual worlds and publishing by individuals on the web. The playing of games is, however, popular among these learners (GameVision Europe, 2010). During 2010 a study indicated that over 70% of learners between

sixteen and nineteen years in the UK, France, Spain and Belgium can be seen as “Gamers”, which means that they played a game in the last six months (GameVision Europe, 2010). Another study in Belgium, showed that 69% of learners between twelve and fourteen years (Grades 8 and 9 learners), played more games on mobile consoles and 53% on mobile phones, than older learners (All *et al.*, 2012:11; Graffiti Jeugdienst, Jeugdwerknet & MICT- IBBT, 2010).

2.4.1.2 Net Generation and the corporate environment

The distinguishing characteristics of the new generation in the financial services profession as well as the main attraction to an organization and what makes them stay, together with their career goals and business implications were studied in the study – ‘Generation Y: Realizing the Potential’ (Perry, 2014). It was found that what really drives this generation is progression in their careers. Fast learning and progress are their goals. According to the study the following were the top attractions to this generation of accountants: career development, competitive salary, the nature of the role, job security and good reputations, with which young accountants can identify (Perry, 2014). Teachers should take note of these aspects when marketing Accounting as a subject choice.

In summary the following can be said about the new generation of learners: The Net generation consists out of learners with ages which vary from grade 7 to tertiary students, or employees up to 34 years old. They are also known as Generation Y, Trophy Kids, Millennials, and Digital Natives. Generation Y grew up with technology and their expectations from a teaching and learning environment is totally different than that of their educators. These learners have distinguished characteristics, which should be taken into account when teaching them, such as being experts in technology, are interested in multimedia, creating Internet content and are operating fast etc. These learners enjoy playing games; they learn fast and are motivated to make progress in life. Educators and employers should take note of their characteristics and factors which motivate them when promoting the subject, Accounting to them as a possible career option.

2.4.2 Other Challenges/Problems facing Accounting Education

2.4.2.1 Poverty & Quality of Schooling

The previous set Millennium Development Goals (MDGs) included the reduction of hunger and poverty and to ensure universal primary education (UPE) in SA by 2015 (Joubert, 2010:58). Some of these issues are still not resolved in SA schools, especially in poor, rural areas (Joubert, 2010:58). The rural communities in SA remain disadvantaged in comparison to their counterparts in the cities. Only a third of learners in SA schools have a chance to complete

primary school level education (Joubert, 2010:58). There are over eight million children in rural school classrooms in SA (Joubert, 2010:58). A major inequality affecting the rural poor learners is that they have unequal access to quality education, which is vital for economic and social development. Development aid includes the reduction of poverty, food security and basic education. Learners who are illiterate often experience poverty and hunger, with problems of child and maternal health, as well as increased exposure to HIV/AIDS (Joubert, 2010:58). A major lack of goods and services threatens children's rights. An environment is created which damages their total development, namely mental, emotional, spiritual and physical. There is a generally low quality of schooling in the primary and early secondary phases in SA, which causes a major drop-out before the uniform matric examination, inability to pass matric, as well as the inability to achieve a university endorsement (Joubert, 2010:58, van der Berg *et al.*, 2011:1; Timaeus, 2011:9).

2.4.2.2 Problems in SA classrooms-Learner-to-educator ratio (LER)

The ability of learners to learn is determined by the **learning environment** and available **resources** to improve the learning process (de Lannoy & Hall, 2012). Educators are valuable assets in the learning process, as learning outcomes are influenced by their qualifications and motivation. Specific **problems** are experienced in SA government classrooms. This includes the large LER (DBE, 2016a:35-36; de Lannoy & Hall, 2012). De Lannoy and Hall (2012) describe this as the expected number of learners per educator at an exact level of education or for a special type of school in a specific school year. A link exists between the LER and educational outcomes for children (de Lannoy & Hall, 2012; Australian Children's Education and Care Quality Authority, 2017). A method to improve quality in learner's education and care services is through the improvement of the LER. This will enable teachers to provide better individual care and attention and contributes to improved social and learning outcomes for learners. It helps teachers to develop more efficient and significant relationships, which will result in learners who are more involved, happy and relaxed (Australian Children's Education and Care Quality Authority, 2017).

The National Treasury indicated that the average **LER** in SA increased to 30.4:1 in 2015. This included educators employed by the state as well as those employed by school governing bodies (SGBs). If educators employed by SGBs were excluded from the calculation, the average LER increased to 32.3:1 nationally. The ratio (including educators employed by SGBs), increased to 31 learners in 2016. The result of a high LER is that when classrooms are overloaded, learners will receive less personal attention from educators to help them during the learning process (Australian Children's Education and Care Quality Authority, 2017; de Lannoy & Hall, 2012; DBE, 2016a:35-36).

2.4.2.3 Learner performance in Grade 12 examinations

Another problem to be addressed is the performance of the Grade 12 learners in the final school examinations. When their performance in the 2015 government school examinations in SA were evaluated, it was found that there was a strong relationship between reading abilities of learners and their incapability to answer questions according to the requirements (DBE, 2015b:6). It was indicated in subject reports that the poor language skills of several learners were a major reason for low results. Learners struggled to interpret questions and material provided correctly and to answer questions appropriately. Learners were unable to use and interpret terminology and definitions in specific subjects. With subjects which require the use of mathematical or calculation skills, such as Accounting, learners who did not have these skills were deprived from earning marks for questions with basic applications. This increased their struggle to respond to more difficult questions (DBE, 2015b:6). Van Romburg (2014:2) confirmed this problem by indicating that learners seem to lack basic reading and writing skills and struggle to perform basic calculations, as well as to think critically. These are essential skills for completing a degree in Accounting.

It seems that a lack of understanding of specific subject-content is also a serious proceeding problem in various schools. The origin of this problem is a lack of teaching strategies or methodologies applied by teachers, by a lack of content knowledge among teachers, or by teachers covering only part of the curriculum (Van der Berg *et al.*, 2011:9). The low standard of answers, even in lower-order questions, indicates that some of the learners have not received teaching on the relevant content. This shows that teachers' meaningful and effective interventions need to be made a major priority in SA schools (DBE, 2015b:6; Van der Berg *et al.*, 2011:9).

2.5 SUMMARY

Accounting is a school discipline which measures performance and communicates financial information on economic sectors for investors to help them with decision making. Pacioli was the first person to describe the system of debits and credits in journals and ledgers, which is the basis of the current Accounting systems.

Accountants are expected to possess a variety of skills in the modern business environment. These professional skills Accountants need, can be divided into two main categories, namely **soft skills** and **technical skills**. Accounting is important as accountants are responsible for key areas of business support, which include financial accounting, tax, compliance, management accounting, auditing, financial systems, business planning, forecasting, payroll etc. Recently

there is a change from a **traditional teaching and learning model** to a **facilitated learning model**, to comply with the demand for different creative skills and abilities. The need exists for more learners to complete the subject *Accounting* successfully, at secondary and tertiary level, to fulfil the need for qualified accountants in SA.

For Grades 8 and 9 the CAPS divide the main topics in the EMS curriculum between the economy (30%), financial literacy (40%) and entrepreneurship (30%) of the curriculum. Accounting falls in the financial literacy category. In Accounting the main topics in the curriculum for Grades 10 – 12 include Financial Accounting (50-60%), Managerial Accounting (20% - 25%) and Managing Resources (20% - 25%).

The main problems learners experience generally, and in SA classrooms are:

- disadvantaged rural communities in SA;
- unequal access to quality education;
- poverty and hunger;
- lack of goods and services;
- low quality of schooling;
- major drop-out before the uniform matric examination;
- inability to achieve a matric qualification or access to tertiary studies;
- large learner-to-educator ratio;
- poor language skills;
- lack of basic reading and writing skills and mathematical skills; as well as
- a lack of understanding of specific subject-content.

Over the last few years teaching changed from traditional teaching to facilitated learning, to fulfil the social need for different, creative skills and abilities. Learners must be prepared for the new work environment in this century. A generation gap exists between educators and the new generation of learners. The **Net Generation** is a generation which has grown up with information technology and shows the following characteristics: They are family orientated, hard-driven, team members, communicators, desire love etc. **Personality traits** of this

generation include: learners who are special, isolated, full of confidence, team-players, popular, pressured, and accomplishing. The Net generation learners learn differently, namely through e-learning as well as through the playing of games. In the corporate environment this generation is driven by progression in their careers, fast learning and progress. The top attractions to this generation of accountants are: career development, a competitive salary, the nature of the role, job security and good reputations, to be identified with.

Significant and effective interventions are needed in SA schools to address the above mentioned problems. In Chapter 3 possible solutions are considered by looking at new teaching methodologies, strategies and teaching and learning material.

CHAPTER 3: POSSIBLE SOLUTIONS TO ADDRESS THE CHALLENGES OF TEACHING ACCOUNTING

3.1 INTRODUCTION

In the previous chapter the subject Accounting, as well as the accounting profession were discussed. In this chapter the following issues are addressed: teaching methodologies, the addressing of criticism against traditional accounting education, the factors to consider when choosing a suitable game, games in Accounting and EMS, board games with specific focus on the *Commercium board game* used as a teaching tool in this study. This chapter addresses the following secondary objectives: To gain an understanding of the challenges in teaching Accounting and to identify possible solutions to address these challenges (Refer to Chapter 2.3).

3.2 TEACHING METHODOLOGIES

3.2.1 Introduction

Recently there has been a shift from **teacher-centred education**, where the focus is on the acquisition and transmission of knowledge, to a **learner-centred education**, where the responsibility to learn is on the learner (Van Wyk, 2016:81-83; Silva *et al.*, 2014:33-34). This new paradigm encourages a lifelong learning process, where the individual must be able to handle knowledge, change it, select appropriate information for a specific context, learn permanently and understand the method of learning in new and quick, changing circumstances (Silva *et al.*, 2014:33-34). These are two major approaches under which the other teaching theories resort (Nie & Lau, 2009:411-423). In the **teacher-centred approach** the focus is on the fact that the teacher (instructor) is the important figure. The teacher passes on the knowledge and information which the learners need. Direct instruction is a sub-category and includes lectures and demonstrations by the teacher. In the **learner-centred approach** the teacher is the authority figure, who advises and guides the learners to learn, but the learner plays an active role in the learning content (Van Wyk, 2016:81-83; Lumpkin *et al.*, 2015:121; Savery, 2015; Nie & Lau, 2009:411-423).

Learner-centred classrooms have the following general characteristics (An & Reigeluth, 2011:54-55):

- (1) **Customised and personalised learning**, where teachers take the unique and diverse needs and styles of learners and set personal and relevant goals, as well as the provision of personalized learning experiences and support. Teachers are sensitive to cultural issues and individual differences;
- (2) **Social and emotional support**, where teachers encourage social and emotional growth and intellectual growth by creating a supportive and positive environment, for learners;
- (3) **Self-regulation**, where teachers act as facilitators instead of transmitters of knowledge. They provide learners with responsibility for learning and give them structure without being overly directive, encourage learners' participation and empower them by sharing power;
- (4) **Learning experiences which are collaborative and authentic**. Teachers provide learners with actual learning experiences to develop real-world skills, like communication, group work, critical-thinking, thinking creatively, solving problems, and the ability to make decisions;
- (5) **Assessment for learning**, where different learners are assessed differently and assessments promote learning. Individual learners' progress is continually monitored to provide feedback on their progress. Learners reflect on their own growth and develop peer- and- self - assessment skills; and
- (6) **Integration of Technology** for instructional purposes. An and Reigeluth (2011:55-60) performed a study on technology integration. It was determined that Technological, Pedagogical, and Content Knowledge (TPACK), was introduced by Mishra and Koehler (2006, 2008) as a framework for teacher knowledge to integrate technology effectively. The framework consists out of three main components, namely: content, pedagogy, and technology and the importance of dynamic relationships among these components, is emphasized. Generally, research suggests that professional development efforts changed their focus from enhancing the isolated technical skills of teachers, to implementing technology-enhanced, learner-centered instruction. Previous research studies from 1995 to 2006 were analysed by Hew and Brush (2007). Six main categories of the barriers faced by schools when integrating technology into the curriculum for instruction were identified as: resources, knowledge and skills, institution, attitudes and beliefs, assessment, and subject culture. In Chapter 2 the Net generation was described as a

generation who grew up with technology and who expect new and creative teaching and learning methods in class (Refer to 2.4.1.1 Generation gap and the Net generation). Teachers should explore technologies in real teaching and learning contexts and must build technology skills through the designing of learner-centered learning activities in their subject areas (Brush & Saye, 2009; Hew & Brush, 2007; Mishra & Koehler, 2006; Koehler & Mishra, 2008).

In SA secondary school teaching, specified topics in the CAPS can encourage a procedural approach which is teacher- centred where only facts and figures have to be remembered. This approach can prevent learners from achieving the goals of the curriculum (Evolve, 2017). The CAPS document indicates budgets, income and expenditure and financial management, as major topics in the Grade 9 EMS Curriculum. However, these topics do not lend themselves to a teacher-driven approach as learners must be able to determine relationships between important figures and the financial statements. Therefore a **learner-centred approach** is required. Learners must be able to understand what the figures mean and use critical analytical skills to construct these financial statements and understand the results and financial position of a business (DBE, 2011a:13; Grussendorff & Booyse, 2014:53-54; Evolve, 2017).

3.2.2 Traditional teaching versus new teaching methodologies for Accounting

Various research studies (Albrecht & Sacks, 2000a; Petridou & Spathis, 2001; Mohamed & Lashire, 2003; Spathis, 2004; Fouché, & Visser, 2008; Dimitrios *et al.*, 2013; Muflich, 2018 etc.) were conducted over years to understand the way and method of providing education in Accounting. Some of these studies focussed on simulations and case studies on actual work environments etc. (Dimitrios *et al.*, 2013:73-74).

Modern Teaching Methods and tools described include the following (Dimitrios *et al.*, 2013:78):

- (1) **Software Programs:** Teachers who teach Accounting in the 21st century must have knowledge of the discipline and various accessories to inspire, motivate, and help learners with learning (Humphrey, 2014:238). Technology has influenced the development and incorporation of several recent learning tools. These tools allow instructors to provide learners with individual learning opportunities (Humphrey, 2014:239). Research showed that when computers and computer programs are used in presenting Accounting, they have a positive impact in terms of time savings, simplified instruction and the improvement of learning. Various software programs are used for the teaching of Accounting, which enable the achievement of different teaching and learning objectives (Humphrey, 2014:239; Dimitrios *et al.*, 2013:78; Wooten & Dillard-Eggers, 2013:189-198).

- (2) **Distance Learning Approaches:** Suggested approaches are interactive multimedia cd's, interactive TV for tele-education, teaching through a virtual learning environment, teaching through software tools, teaching by using ICT, and teaching by using the blackboard tool (an online proprietary virtual learning environment) (Dimitrios *et al.*, 2013:78-83).
- (3) **Participative learning**, where learners are involved in experiences to construct new knowledge, on-line course management systems, and learner response systems, are fresh methods for teaching Accounting (Raux, 2012).
- (4) **New tools with mobile technology, developed by the AICPA (2016), include the following:**
- **Livescribe** smartpens are pens that are able to record a teacher's writing and speaking simultaneously. The teacher can create demos for learners to watch on their own time, by explaining a problem in class and capturing everything while writing with the pen. The recording can be downloaded to a computer and create a unique URL to send to learners, where they can watch the recording, as if they are in class;
 - A **whiteboard and screencasting app "Educreations"** allows a teacher to create brief instructional videos which include writing, graphics and audio. This app is only available on iPad; but complete videos synchronise to the online Educreations account where the videos can be watched on other devices. The teacher can also insert pictures or charts into videos and notes can be written on them;
 - **Another app "Audacity"** allows the teacher to create a podcast-style recording that learners can listen to, while walking around or at home; and
 - **Lucidchart** is cloud-based diagramming software that allows the teacher to create professional-looking flowcharts, in order to document or model Accounting systems easily. A template can be chosen or custom diagrams can be created. Images can also be added and used with an "upload" function. Learners can share their documents and work together and distribute the final product among themselves.

Business simulation games, exercises, or software have recently become important tools in the educational process in many schools and tertiary institutions globally (Hosaka & Mat, 2017:3)

Van Wyk (2013:125, 128) determined that in previous research studies (e.g. Van Wyk, 2009; Durkin & Barber, 2002; Butler *et al.*, 2001), that although the playing of games in the classroom can't solve all educational problems, they are considered as useful tools to involve learners actively in their learning.

Teaching and learning methods that are efficient to teach Accounting are discussed in section 3.2.3

3.2.3 Effective teaching & learning methods in Accounting

Financial Accounting teachers use several methods to teach in the classroom, which ranges from exposition to inquiry (Uwameiye & Titilayo, 2004). The Inquiry method of teaching begins by providing a specific challenge to learners, e.g. experimental data to interpret, the analysis of a case study, or a difficult actual problem to solve (Abdi, 2014:37; Aditomo *et al.* 2013:1240; Prince & Felder, 2007:14; Uwameiye & Titilayo, 2004). Learners need guidance on what to do and how to do it, when they deal with new material. The teacher needs to provide the object of inquiry e.g. a theory, difficult concept or process and facilitate the learning process (Nilson, 2016:176-177; National Survey of Student Engagement, 2007). Teachers are motivated to use new inquiry-oriented approaches where learners are engaged in the subject, use appropriate techniques to collect evidence, solve problems through the use of logic and evidence, are encouraged to study further to find more detailed explanations, and write explanations based on evidence (Van Wyk, 2016:82-83; Hwang & Chen, 2017; Nilson, 2016:176; Abdi, 2014:37-40; Uwameiye & Titilayo, 2004). Distinctive qualities of this method are: learner-centred; learner-active and leader-facilitated; self-directed, focused on learning, and ask questions in order to understand (Van Wyk, 2016:81-82; Nilson, 2016:175; Justice *et al.*, 2009).

Other methods that could for part of this group include problem-based learning (PBL), business simulation (BS), guided discovery method and group learning. PBL is an efficient learning method and can be used in business and non-business areas to teach several skills e.g. flexible thinking, the solving of problems, self-directed learning, group work, and internal motivation, which are vital to the development of good ethical values (Gerstein *et al.*, 2016:103; Van Wyk, 2016:90; Dockter, 2012; Stanley & Marsden, 2012). Business Simulation can be used to determine higher levels of learning, e.g. integrated material from various sources, critically evaluation of data, the contrast and comparison of information. Teaching methods used (competency-oriented), generic competencies (cooperation and collaboration), and interpersonal skills (communication as well as organisational skills) are important for future use by Accounting professionals (Silva *et al.*, 2014:33). The guided discovery method was found to have an effect on learners' performance in financial Accounting (Uwameiye & Titilayo, 2004).

Learners use process skills to generate content information and are actively involved in first-hand real-world learning. In PBL groups, specific processes for discussing information exist, e.g. brain-storm and feedback on information. Large groups can split up into small discussion groups which are not always connected with lectures (Surgenor, 2010:9).

Kolb and Kolb (2005:194) present experiential learning as an approach that combines the functioning of a person as a whole, because of important human processes, e.g. thinking, feeling, perceiving and behaving (Rodgers *et al.*, 2017:188). In the education, of Accounting, Kolb's experiential learning approach (Kolb & Kolb, 2005; Kolb, 1984) has influenced educators by guiding them by implementing experiential learning innovations in their daily teaching (e.g. Crawford *et al.*, 2011; Ocampo-Gómez and Ortega-Guerrero, 2012). Examples are the use of case presentations (Adler *et al.*, 2004), business simulations which are computerized, and spread sheet models (Marriott, 2004), which must support learning of learners.

The exposition method of teaching is a **traditional method** and is used often in classrooms (Muflich, 2018:4-5). The distinctive qualities of this method are: leader-active, leader-centred, learner passive and the emphasis is on the subject. Examples of this method include: lectures; discussions; demonstrations; guest speakers; telling stories; dramatization and reading printouts, manuals and textbooks (Muflich, 2018:4-5; Uwameiye & Titilayo, 2004). Learners are passively taking in information through listening, the reading of slides, watching videos etc. (Muflich, 2018:4-5; Uwameiye & Titilayo, 2004).

In the current research study the focus was on a teaching tool (the *Commercium* game) which the teacher used to teach basic business and Accounting skills and concepts. The inquiry method of teaching was used, because the game was learner-centred and learners were active and took part in the game themselves. Learners investigated various methods for increasing their wealth in the game and the teacher only facilitated during game play. BS was applied as the game is a simulation of the corporate world, learners were involved in actual transactions and it could be argued that the guided discovery method was applied to discover new Accounting concepts.

Bowman (2009:51-54) describes 'The 4 Cs' instructional and delivery process, which forms part of an approach to teaching and learning, called 'Accelerated Learning'. This refers to various educational and instructional strategies which are used by educators to enhance the progress in learning, which learners who have difficulties academically, use. The aim of this approach is to move all learners in an education system, district, school, or class, further ahead, than what is expected of former education for their age or grade level (The Glossary of Education Reform, 2017). Accelerated learning involves the body and mind; it is a creative process; learning takes

place at various human brain levels; group work increases learning and competition, learning takes place through action, reflection and feedback and is improved by positive emotions as well as imagination (Bowman, 2009:51-54; Meier, 2000). 'The 4 Cs' instructional design process is a four-step instructional method consisting of the following steps (Bowman, 2009:51-54): connections, involvement, case studies and conclusions, which can be described as follows:

- (1) **Connections:** This must be made to the topic and to other learners. This could be done by using Myth/Fact activities;
- (2) **Involvement:** Learners must be involved in learning new concepts through direct instruction. Learners become aware of new information through different senses, namely hearing, seeing, discussing, writing, imagining, teaching others and participating. Learners participate in concept centres consisting of marked tables with various topics allocated to each;
- (3) **Case studies:** The trainer presents and discusses the case studies with each table group. Learners use skills actively by applying new information, reviewing the learning content and teaching each other; and
- (4) **Conclusions:** This is the closing time of teaching where conclusions are drawn. A learning log is used to summarize information and learners evaluate what they have learned and commit to using new information or skills practically (Bowman, 2009:51-54).

As the reality in SA is large numbers of learners in government school classes, group work is an essential method for organising such a group (de Lannoy & Hall, 2012). In order to have effective teaching, the presentation of skills, visual aids for teaching, communication, body language, lesson planning and time management are all very important aspects (Rajendran, 2015). Excitement should be brought back into Accounting classes as fun is seen as a reward to encourage learners to persevere (Koster, 2005:19; Cruz, 2001:31). Learners need to enjoy teaching to ensure efficient transfer of knowledge. Educators should enjoy teaching Accounting learners, in order for teachings to be appreciated by them (Rajendran, 2015; Ball & Forzani, 2009:497-511; Bennett & Carré, 2002). Teachers should therefor emphasize the use of innovative teaching practices such as IT, the Internet, including different computer programs, graphics, simulations, case studies on actual and virtual work environments, role play and collaboration in groups (Dimitrios *et al.*, 2013:73; Bonwell & Eison, 1991:1). Cruz (2001:31) agrees that teachers should discuss practices in the real business world during classes and digital media must be included when new information is presented.

Kumar (2010a) also outlines steps to teach Accounting in an enjoyable manner: Step one is to limit the scope of basic Accounting to the minimum. This can be done by dividing the total basic Accounting into the Accounting equation, double-entry system and journal entries. Step two entails increasing a teacher's creativity in Accounting. This could be done by producing Accounting songs, poems etc., which will increase the process of learning. Step three is to teach step by step by using PowerPoint presentations and image searches. During PowerPoint presentations animated and interesting slides could be used for step by step teaching and for creating an enjoyable environment for teaching basic Accounting. Step four entails giving freedom to learners to collect basic Accounting images or jokes from Google Image Search or Flickr. This could include fun in teaching and provide a creative platform for learners (Kumar, 2010a).

In the current study the game *Commercium* was incorporated as a tool to bring fun in the Accounting classroom. Several of the good practices mentioned above were incorporated by playing the game in EMS classes during the research project, namely: The main goal of helping learners to learn was achieved by explaining the game and by being available to answer questions and explain difficult concepts while playing the game practically. Accelerated learning was applied as learners used their bodies and minds to play the game and learning took place at different human cognitive levels. Group work around tables was used to enhance learning and competition. Learners were involved in the action during the playing of the game, had time for reflection and feedback on the game. Kumar's steps were also applied to teach the subject in an enjoyable manner, as set out below:

- By limiting the scope of basic Accounting to real business transactions in connection with purchases, sales, expenses and receiving other income, e.g. rent and dividend income;
- The EMS teacher had to master the theoretical rules of the game and had to be able to answer questions on the game itself before explaining it to the class;
- By using a PowerPoint presentation to explain the rules and board of the game; and
- Learners enjoyed some level of freedom in making business choices during the game.

3.2.4 Summary on teaching methodologies

A shift occurred from teacher-centred education (focussing on the acquiring of knowledge, to a learner-centred education (with the focus on the learner's responsibility to learn). The teacher-centred approach and learner-centred approach are two main approaches in education. The learner-centred approach makes use of modern teaching methods and tools, such as software

programs, participative learning, distance learning approaches, new tools with mobile technology and business simulation, including games, exercises, and software. In this study the game *Commercium* was used as a tool to bring fun in the Accounting classroom. It was attempted to have learners enjoy the entertaining aspects of the game, while experiencing practical learning of Accounting and finance.

3.3 ADDRESSING THE CRITISM AGAINST TRADITIONAL ACCOUNTING EDUCATION

The criticism against traditional accounting education was highlighted in Chapter 2.3 (refer to 2.3 Challenges teaching Accounting). This next section addresses possible solutions and strategies for these challenges.

3.3.1 Possible solutions and teaching strategies for the Net generation

The Net generation was discussed in Chapter 2 (Refer to 2.4.1.1 Generation gap and the Net Generation (Generation Y)). These learners have typical characteristics and learning needs. It is essential for a teacher to understand these characteristics, know the culture of learners and the latest technologies, in order to connect with the learners. A teacher should get to know learners individually and as a group, to form trust and credibility (Berk, 2009:13). The teacher must try to know what interests them, what their learning abilities are, their learning styles, and their way of thinking. The next step is to connect their characteristics and behaviours with teaching strategies. The teacher should reconsider each characteristic and determine which teaching techniques to use to match with learners' interests, knowledge and learning styles (Berk, 2009:13). Generic teaching strategies are suggested, which could be used to deal with the distinguished Net Generation learner characteristics. The strategies and characteristics are listed in Table 3.1 below.

Table 3.1: Connection of Teaching Strategies to 20 Net Generation Learner Characteristics

Characteristics of the Net Generation Learner	Strategies for Teaching
1. Experts on technology	Integrate technology effectively with lectures, assignments, activities, and demonstrations; Use music, video clips and games, blogs, wikis, search engines and illustrated research databases, image-based, and interconnected; Consider multiplayer virtual environments and increased reality for role playing and simulations; Digital tools, Easy accessible .
2. Relies on search engines	Develop assignments where learners use their search engine abilities & guide them to get the highest value of the search results; Provide exercises where critical thinking & interpretation of information should be applied; The focus should be on information knowledge skills; Connection of search engines to databases for research projects.
3. Engaged in multimedia	In order to connect the teacher, learners and the content music, videos, video and other games etc. could be used in lectures and assignments. Students can learn from various media simultaneously (see nr.1); use e-portfolios to organise assignments and assessments.
4. Design internet content	Provide students with opportunities to add to Websites, write their own blogs, micro blogs, and wikis, and create YouTube videos, podcasts, and video casts with necessary content.
5. Operates at quick speed	For quick learning, allow learners to operate at their own speed in as many activities, assignments, and active learning exercises as possible; students should take part in their learning, otherwise they can become bored and impatient and, as a result stop going to class.

Characteristics of the Net Generation Learner	Strategies for Teaching
6. Experiential / Kinaesthetic	Shorten lectures, enhance group-discussion and change to learner-centred teaching methods: Plan games, simulations, improvisations, and role playing with specified learning outcomes in live and virtual formats; Exercises should be practical, exploratory, and trial-and-error problem solving (see numbers 11 & 14); Learners should actively do research with different databases and must create their own e-portfolios of their work.
7. Experimenting (Trial and Error)	Assign problems where learners can solve problems alone or in groups; Use new technological methods for learners to control their own learning; Encourage brainstorming and on-the-spot problem-solving & decision making (see numbers 11 & 14)
8. Multitask	Allow learners to multitask in class (listen to the teacher, listen to music, type, play online games, and send e-mails or IM simultaneously); Don't be offended if their attention is divided rather than focused only on the teacher.
9. Brief attention span	The level of interest in activities determines students' attention span; Learners can play video games for long; Use different strategies to engage learners in different ways; Move quickly through content or, let learners move at their pace, by using technology.
10. Visually literate	Graphics, images, and visual representations must be included in presentations, e.g. videos, movies, and YouTube, to which learners can relate; Create class demonstrations with music and clips of TV programs, movie scenes, and Broadway shows to illustrate a difficult topic; Develop visual demonstrations with music to be performed in class (videos or other visual products); Use multiplayer virtual and increased reality experiences which are inviting, animated, and 3D worlds to provide role playing and simulations.
11. Personal interaction	Grant learners opportunities to interact in class in pairs and small groups, through active and group work learning activities in actual and virtual environments (see nr. 14); Work with these groups while they are working; Schedule regular individual and small group meetings in your office.
12. Emotionally open	Use live and online methods to encourage interaction and opinion sharing, such as discussion, Questions & Answers, group exercises, and digital storytelling through blogs, wikis, and social media networks (see numbers 11 & 14).

Characteristics of the Net Generation Learner	Strategies for Teaching
14. Prefers teamwork	A learning atmosphere must be provided by the teacher, who should be part of the team; Plan group activities, group review, and research projects; The learners must be encouraged to share knowledge and research, discuss and provide new ideas through using blogs, podcasts, wikis, and electronic portfolios; Virtual role playing and simulations with several players should be encouraged; Use new ideas and group learning exercises in class; Plan external small-group work with an online chat room; Group meetings can be scheduled through Wiggio; Expect learners to develop visual demonstrations, videos etc. to present in class.
15. Healthy lifestyle	Class activities, which consider work and family demands, should be planned for the new generation of learners; Classes should be worthwhile and activities outside of class unique; Consider their distance from campus when small groups for group exercises are created.
16. Pressure for success	Use different intelligences and learning styles to provide a chance of success to every learner in the course; Highlight critical thinking and deep learning exercises as opposed to remembering of facts; Assessments should be fair and agree with teaching methods; E-portfolios can be used to keep record of assignments throughout the semester.
17. Seeks feedback	Feedback must be regular, quick and productive (positive & negative). Use printed, online, and face-to-face methods. Clickers can be used to provide immediate feedback on class activities and assessments.
18. Fast gratification & rewards	Consider the desire for quick and instant gratification when providing feedback, Grades, returning assignments, providing exam scores on the Web; Teach learners to practise self-discipline and to have patience to await results.
19. Quick response	Daily response to e-mails and enquiries of students.
20. Typing preference	Motivate learners to take notes and do assignments in class on their PCs or Hand-held digital appliances; Expect learners to complete term papers, reports and articles by using Word or other word processing software.

Source: Adapted from Berk (2009:14-16)

It is clear from the strategies in the table above that the traditional transfer of information role of educators (lecturing), has changed to being a group facilitator who creates collaborative knowledge (Van Wyk, 2016:81-83; An & Reigeluth, 2011:54-56; Tapscott, 2009; Brown, 2008:16–32), or provides guidance on the side-line (Carlson, 2005). This change has occurred

over several years, because various teachers changed from **teacher-centred to learner-centred methods** (Van Wyk, 2016:81; An & Reigeluth, 2011:54-56; de Angelo *et al.*, 2009; Berk, 2009:16). Teachers, who use a learner-centred approach, encourage learners to participate in lessons and they share power with them. They help learners with developing their learning strategies and metacognitive skills. The learners are actively engaged in their own learning (Van Wyk, 2016:81-83; An & Reigeluth, 2011:54-56; Cornelius-White & Harbaugh, 2009). Lately a **learner-centered method of teaching** is recommended, where it is expected from the teacher to perform differently in various situations. The teacher should firstly guide learners; and secondly create an environment where learners are involved in the lesson, through the use of different learner-centred methods and strategies (Van Wyk, 2016:81-98).

A huge difference exists between these Net Generation learners and previous generations of learners, which indicates the importance of learner-centred techniques combined with modern technology. The integration of technology is seen as the use of technology for teaching purposes. Recently learners will not come to class and learn effectively if a lecturer or teacher does not change and adopt new techniques and technology (An & Reigeluth, 2011:54-56). Learners further need to bond with the teacher or lecturer and with one another, face-to-face, as well as online.

The methods to use for Net Generation learners to be successful are digital, visual, speed, engagement, multimedia, multitask, interactive, group work, feedback, and connection. It is important for learners to be engaged, by whatever methods the facilitator prefers, even in large groups where lecturing is used (An & Reigeluth, 2011:54-56; Tapscott, 2009; Berk, 2009:16).

During the current research project, several teaching strategies indicated in Table 3.1 were incorporated, through the development of the assignment for the Grade 9 EMS learners. The teacher, learners and EMS content were connected with each other by using the *Commercium* game during the lessons and as a basis for the assignment. Learners played the game in groups and operated at their own speed. They were actively involved and had to solve problems by applying critical thinking. The lessons were experiential as they had to do real business transactions with one another. A learner-centred teaching method was used through the game play, as the learners played the game in groups and the teacher only acted as a facilitator when they required help with the rules or business concepts. Learners made their own financial decisions on purchases, payments and sales and calculated their own profit in the end. One of the learners was responsible for dealing with the money in the bank. Brief group discussions were held after the playing of the game with a selected group of learners to determine their attitude towards and view on the game. Learners had to make important business decisions through trial and error which implied financial implications. After playing the game, the learner

with the highest profit was rewarded with a small prize (sweets). The teacher acted as a facilitator during the game and immediately addressed questions when it was necessary. Documents had to be completed based on transactions similar to those in the game and provided the opportunity of practical application of theoretical knowledge achieved

3.3.2 Games in teaching

From the previous sections it seems that games (that by its nature include simulations and role play) may be an effective educational tool. This will now be explored in more detail.

3.3.2.1 The concept *play*

The idea of the engagement of learners in games to learn is not new (de Castell *et al.*, 2017:2016; Breuer and Bente, 2010:8; Harris, 2009:24-26; Van Eck, 2007:56; Huizinga, 1944:13). Huizinga (1944:13) was one of the earliest people to define the concept *play*. Play is seen as a loose activity which stands outside normal life as not being serious, but at the same time involves the player completely. It is an activity with no significant interest or profit. It happens within its own proper boundaries of time and space according to specific rules and in an orderly manner (Neck *et al.*, 2014:25, van Eck, 2007:56). The aim of play is to develop a free mind full of imagination. This allows you to see a world full of possibilities and guides you to be more innovative and to develop entrepreneurial qualities. Play is seen as a necessary twenty-first-century quality (Neck *et al.*, 2014:25; Pink, 2005).

Enjoyment is the main objective of play and play should also be voluntary (Eberle, 2014:214-216; Neck *et al.*, 2014:26). Piaget (1962) initiated the concept *games* and considered that play could become part of his study of developmental processes. Play is believed to be spontaneous. It is for pleasure with the aim of enjoyment and expression of individuality, relatively unorganized and free of internal conflicts (Neck *et al.*, 2014:26-27; Kraus, 1971:266; Piaget, 1962). Play is believed to be the opposite of productive work (Neck *et al.*, 2014:26; Greene *et al.*, 2011:292). The process of play permits players to take impossible real-life risks. Play activates persistence, which is required for effective learning (van Eck, 2007:56). Playing is also socializing which is a learning concept of humans. Play consists out of six basic elements, which include anticipation, surprise, pleasure, understanding, strength, and poise (Eberle, 2014:214). Games use play as an instructional strategy (van Eck, 2007:56). Play has a deep biologic, transformative, significant function, which helps us to learn (de Castell *et al.*, 2017:2016; Prensky, 2001:6).

Four categories of play were previously identified, namely:

- (1) Play for exercise (play in a physical and sensual structure);
- (2) Games with rules (experience of a game, activated by participating players);
- (3) Symbolic play (learner's initiations, disguises, masks etc.); and
- (4) Games of development (construction), which is the change between symbolic play and non-playful games (serious games) (Neck *et al.*, 2014:26-27; Salen & Zimmerman, 2004:307-308; Piaget, 1962).

Play is active and can be carried out as a competition, investigation, or make-believe. Play can also be seen as part of communication, with activities which represent ordinary events that take place in a different situation with another expected outcome. There is a thin line between play and a game (Neck *et al.*, 2014:26-27; Bateson, 2006:314-328).

Play is connected with games through rules, because all play has rules and the play-world collapses if rules are transgressed. Rules provide a framework for engagement to occur so that learners can experience the game with more fun (Neck *et al.*, 2014:28, Huizinga, 1944:238). The playing of games in schools is defined as an activity which is purposeful, goal oriented, rule-based and perceived by players as fun (Djaouti, *et al.*, 2011:26; Klopfer, 2008:19, 221). The question could be asked as to how play becomes an educational practice and makes us aware of various teaching approaches necessary to enhance this practice (Neck *et al.*, 2014:28).

3.3.2.2 Games as educational tools

The Net Generation learners see games mainly as entertainment. However several authors agree that the basis of games is the learning principles (de Castell *et al.*, 2017:2016; Martin *et al.*, 2014:35; All *et al.*, 2012:11, Banarowski *et al.*, 2008). Gamification is defined as an interactional design that plays on people's ambitious instincts and often includes rewards to drive action (Willis, 2013). It is also described as: "a process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation" (Huotari & Hamari, 2012:19). If games are used with the intention of teaching information and skills rather than the motivation of specific actions, it is occasionally called 'edutainment' (Willis, 2013).

Game-based learning (GBL)

Interest in educational or serious games is increasing (Neck *et al.*, 2014:34; Breuer & Bente, 2010:14; ESA, 2008; Oblinger, 2006a). When serious games are used in learning, the correct learning modes in the game should be implemented as well as an environment, which is stimulating for learning and motivates learners. The play, interaction, rules, value system of the

games, pedagogy, the instruction and ensuring the learning outcomes are met, are all combined in the playing of games (Neck *et al.*, 2014:34; Breuer & Bente, 2010:15). Game-based learning (GBL) can be described as a part of serious games that deals with applying defined learning outcomes, which can improve training activities through involvement, motivation, role playing, and reproducibility. Tangential learning is a concept used specifically in serious games where learners have the option of receiving extra and more detailed information if they want to. This can improve self-directed, as well as proactive learning. It can also reduce scepticism against educational (serious) games (Breuer & Bente, 2010:15; Susi *et al.*, 2007:2; Corti, 2006).

It was determined that the game should not be too complicated or too easy in relation to the existing knowledge of learners and the aim should be to raise learners' inquisitiveness and motivation (Papastergiou, 2009:4).

Business simulation games are used as a significant form of business education (Faria *et al.*, 2009:484). Instead of teachers asking themselves, how to use games, as successful learning tools, the playful elements of learning should be identified first and used to design educational games. In this way games are seen as the tool to maximize learning and a way to understand and organize learning (Martin *et al.*, 2014:36; Breuer & Bente, 2010:13).

Motivation through games & relationship between entertainment and learning

Games have the ability to motivate the demotivated, as well as, intrigue motivated learners in a new way, by providing a fun experience (All *et al.*, 2012; Klopfer, 2008:19, 221). Games can also be used to entertain, educate, tell stories, resolve conflicts, solve problems etc. (DePietro, 2013:143). People have different motivations and a need for interaction or a way to express themselves (Mackay, 2013). A game designer's strategy is to motivate players through gameplay (Dovey & Kennedy, 2006). The optimal game will involve the whole person: intellectually, physically and emotionally (Dovey & Kennedy, 2006). Games are popular in education because it is a discipline which is complex, artistic, technical, and evolutionary. It changes with new technology and has a constant learning curve. It keeps education interesting, topical and progressing forward with creativity in technology, as games challenge players without being unreachable (DePietro, 2013:143; Breuer & Bente, 2010:13; Gee, 2008:36).

The criteria for an effective learning environment is resembling the criteria for a game which motivates players and include challenge, control, curiosity and fantasy (Breuer & Bente, 2010:13; Gee, 2008:36). It is believed that there should be an optimal balance between entertainment and learning, in order for players to be motivated as learners. The perfect mixture is known as the "sweet spot" of combining the scenarios for games and learning.

Three possible relationships exist between entertainment and learning:

- (1) **Linear positive (facilitator)**: Increased entertainment causes increased learning (Breuer & Bente, 2010:13);
- (2) **Linear negative (distraction)**: More entertainment causes a decrease in learning (Breuer & Bente, 2010:13);
- (3) **Inverse U-shaped (moderate entertainment)**: Entertainment increases learning up to a certain point and then decreases the learning performance (Breuer & Bente, 2010:13; Ritterfeld & Weber, 2006:406). It is believed that the third relationship is true as the enjoyment which players have from a game, influences the game's effectiveness (Breuer & Bente, 2010:13; Prensky, 2007).

The perfect educational game combines learning with entertainment, so that players (learners) do not experience learning as external to the game. When a game is designed for learning, the designer should take into account three additional (complimentary) activities namely (Breuer & Bente, 2010:13):

- To learn the game by understanding its contents and goals;
- Complimentary activities for the correction of errors; and
- To conceptualize the game as a theory of the content.

Charsky and Mims (2008:41) believed that through the above activities, teachable moments of the game must be identified.

Reward system

Rewards in education are seen as a general practice to support achievement, motivation and appropriate behavior (Filsecker & Hickey, 2014:136; Hoffmann, Huff, Patterson, & Nietfeld, 2009). Recently rewards are being used in educational games (Filsecker & Hickey, 2014:136)

The most effective way to motivate learners in education is by rewarding them, as it can encourage them to learn and improve their achievements. It can also lead to intrinsic motivation for learners (Filsecker & Hickey, 2014:136; Chang *et al.*, 2009:175). The Merriam-Webster's Learner's Dictionary (2016a) defines the word *reward* as follows: 'money or another kind of payment that is given or received for something that has been done or that is offered for something that might be done'. Mackay (2013) believes that varying assignments to include improved questions and more advanced tasks can also reward learners for good work. Research was done on a trading card game as a reward system in education (Chang *et al.*,

2009:175). The researcher developed computerized trading cards to inspire learners, by giving it as rewards. Teachers can pre-define what the relationship between the learning and reward should be and the system can automatically allocate it to learners who qualify for a reward.

3.3.3 Educational games

An educational game is a game designed to educate people about a specific skill or subject and where the experience of the game has an influence on people's real lives (Dovey & Kennedy, 2006). This includes learners' view of the world and themselves, as well as their knowledge and skills (Dovey & Kennedy, 2006). Educational games must provide both the entertainment value of commercial games, as well as an educational component (All *et al.*, 2012:12, Ritterfield *et al.*, 2009). Games with the goal to teach specific skills, knowledge and behaviour, will be more efficient if the game document is based on learning principles (All *et al.*, 2012:12, Leiberman, 2005).

Generally there is a renewed interest in games and game creators have moved from traditional, routine, learning models towards situational and constructivist (creative person) approaches (Ozkan-Canbolat & Beraha, 2015:1807; ELSPA, 2006:17). Games in education are being accepted, but are not commonly used and it is a debatable issue (ELSPA, 2006:17; Michael & Chen, 2006). It is difficult to provide research evidence of the acclaimed benefits of educational games, as it is complex and not that common (Kirriemuir & McFarlane, 2004:2). It was determined that a primary use of games in current classrooms is to trigger discussion, writing and group work (Geithner & Menzel, 2016:228-229; McFarlane *et al.*, 2002). The majority of games are based on a variety of activities which relate to the context or subject being discussed. Games provide the best results when integrated with the lesson plan, instead of replacing it. Enough evidence exists that students develop skills at all main stages which relate to the content of gaming software. Reports of teachers have been received that the social skills of learners increase because of the group work and combined decision-making which are required in games (Geithner & Menzel, 2016:230; ELSPA, 2006:17; McFarlane *et al.*, 2002).

Games as an educational tool, has become more acceptable, as teachers, governments and parents have come to realise the psychological need for it (Kirriemuir & McFarlane, 2004:3). It is, however, questionable whether mainstream games will be integrated into the curriculum and used in schools, due to several reasons, namely:

- (1) Teachers find it difficult to identify quickly how a specific game is applicable to a specific part of the statutory curriculum, as well as to determine the correctness and suitability of the game content;

- (2) The difficulty to persuade other school colleagues of the educational benefits thereof;
- (3) The limited time available to teachers to inform themselves regarding the game, and the most effective methods for producing the best results from using it; and
- (4) The number of unsuitable content or functions in a game that can't be removed or avoided and are causing valuable learning time to be wasted (Kirriemuir & McFarlane, 2004:3).

However, teachers and parents acknowledged that game play can create valuable skills, e.g.: tactical thinking, planning, communicating, using numbers, bargaining skills, group decision-making, data processing and problem solving (All *et al.*, 2012:11; Kirriemuir & McFarlane, 2004:3). It was found that the experience of playing a game, affects learners' anticipations of learning activities. Learners prefer tasks that are quick, active and experimental, and information must be provided in various parallel forms. These demands could not be met by traditional-school learning methods (Kirriemuir & McFarlane, 2004:3).

When games for education are developed, two important themes stand out, namely:

- (5) A desire to use the motivational power of games to create fun in learning (Van Wyk, 2013:125; Kirriemuir & McFarlane, 2004:4); and
- (6) The belief that learning through action in games, e.g. simulations, presents an influential learning tool (Hosaka & Mat, 2017:3-9; Van Wyk, 2013:125; Kirriemuir & McFarlane, 2004:4).

More than a hundred years before the very first American computerized business games were developed, Roux (as referred to by Touzet & Corbeil, 2015:10) (in the 1800s), suggested a learning method to be used resembling modern business games, but it was not accepted in practical education. The simulating aspect of teaching was emphasized and the fact that teachers need to avoid boredom of learners and should focus on getting their attention (Touzet & Corbeil, 2015:10). Business simulation games are especially valuable, as input, application, reflection and feedback are combined through these games. It is clear that business simulation games are providing an interactive learning environment where learners are actively engaged in simulations, experiments, role-plays, of real-world situations (Geithner & Menzel, 2016:230; Rosenorn & Busk Kofoed, 1998).

The reasons why business simulations are used have been influenced by the technological enhancements over the last years (Faria *et al.*, 2009:477). Previous studies identified nine main reasons why educators use business simulation games namely to use games for bringing experience to learners, teaching strategies, teaching learners to make decisions, achieving

learning outcomes and goals, encouraging teamwork, motivation of learners, the application of theory in a practical manner, the involvement of learners in learning and the integration of ideas (Faria *et al.*, 2009:477).

Between 1970 and 1990, the formulation of strategies was a main reason for using business games, as business games became more complicated with the advancement in technologies (Faria *et al.*, 2009:482). The main educational themes in terms of how educators use simulation games changed more dramatically over the last years, because of technological advancements. Research indicated that reasons how business simulation games are used include teamwork, games which are interactive, complexity and functionality of games, exercises for debriefing, the use of the Internet and the incorporation of quantitative skills (Faria *et al.*, 2009:482).

3.3.3.1 Advantages, attributes of and skills developed through game playing

Piaget formulated theories about the way in which learners learn (Piaget, 1962). These theories include two concepts, namely assimilation and accommodation. **Assimilation** means that new information is being used with existing categories and that information or ideas are taken in and comprehended completely (English Oxford Living Dictionaries, 2017; Rivera, 2014:52; van Eck, 2007:55-56). **Accommodation** is the process whereby we need to change our existing model of the world to include new information, not fitting previous categories. Other options for solving problems need to be considered and this process is called cognitive disequilibrium, which is part of game playing (Tuckman & Monetti, 2011; van Eck, 2007:55-56). The manner, to which games create cognitive disequilibrium without exceeding a player's ability to succeed, determines whether or not they are interacting with the game. Games consist of a cycle of the formulation of a hypothesis, the testing and revision thereof and have immediate feedback (van Eck, 2007:56-57).

Panellists at the Stanford discussion, (March 2013), believed that by using games as educational tools, deeper learning is improved, as games enhance emotional skills (**non-cognitive**) (Mackay, 2013). These skills and intelligence (**cognitive skills**) are equally important in the learning process (Mackay, 2013). The outcome teachers want in classrooms today is not only that learners should gain knowledge, but that they also learn how to make choices, interpret learning outcomes and to become independent. Assessment helps learners to learn a new topic through application of knowledge, while simultaneously learning the content (Schwartz & Arena, 2013:4-5). Patience and discipline are non-cognitive skills which are better learned from social activities during game playing than in a traditional classroom and textbook context. Learning exchanges, where traditional content is replaced by games or other innovations, can be successful if learners learn how to learn a specific subject. In *Accounting*

specifically, learners need a period of time for game play to master subject content as it takes time to master difficult concepts (Modise, 2016:296; Hergeth, & Jones, 2014:126; Klopfer, 2008:19, 221). In a study performed by Hergeth and Jones (2014), a board game (the Income/Outcome financial game) was used to train students taking courses in Textile marketing, Accounting, and Finance. Students were enrolled in the course for one and a half days and played various game rounds, in order to learn to make decisions for different business aspects (Hergeth, & Jones, 2014:127).

As indicated before, games and play have the ability to entertain, teach and change learners (Stirling, 2013). Games engage learners in content and are considered to be effective means for teaching skills and transforming thoughts. Learning nowadays is a very different process to what it was in the past (Stirling, 2013). Learners learn by applying higher-order skills, which include the ability to think through and solve complex problems, or interconnect critically by using media and language. Games provide a platform for this form of education as they have an individual structure with elements which create brainpower. Games therefor fulfil the following functions: Deliver just-in-time learning, and use information to help players understand their progress and how to continue in the game (Geithner & Menzel, 2016:230-232). Games create an important urge to know, ask questions, to evaluate, to learn and to master skills as well as knowledge (Geithner & Menzel, 2016:230-232; Stirling, 2013). Learners are allowed through games and simulations to experience situations in the actual world (Susi *et al.*, 2007:8; Corti, 2006; Squire, 2003:49-62).

Games also improve physical skills, lower-level intellectual skills and present good principles, as well as models of learning (Kirriemuir & McFarlane, 2004:3). Other meaningful skills developed through game play are tactical thinking and planning, communication, using numbers, bargaining skills, group decision making, information handling skills, analytical and spatial skills, wisdom, learning and remembering abilities, psychomotor development as well as visual selective observation (Kirriemuir & McFarlane, 2004:3; Susi *et al.*, 2007:8; Mitchell & Savill-Smith, 2004).

Games teach process skills intrinsic to the game, while learners learn the content. During game play learners learn how to collaborate, solve problems, collect and analyse data, test hypotheses and take part in debates. These skills are built into the game activities and are assessed through research. A game can be used to emphasize specific expert skills to facilitate learning in a specific subject area, through the experience (Hergeth, & Jones, 2014:127; Klopfer, 2008:19, 221). This prepares learners to navigate new content as it comes along. In games this preparation can be seen in terms of fundamental, e.g. mastery of game play

controls, mechanics and strategies, deep domain-specific concepts. If these skills are mastered, it can facilitate learning (Klopfer, 2008:19, 221).

Business simulation games are valuable as an educational tool, because they combine input, reflection, applications and feedback. This correlates with active learning through actions instead of learning only by listening (Geithner & Menzel, 2016:229-230; Van Wyk, 2013:125; Williams, 2011). Business simulations form an interactive learning environment (Kriz, 2003), as learners are participating actively in role-plays (Rosenorn & Busk Kofoed, 1998), simulations of daily employment situations, experiments etc. (Geithner & Menzel, 2016:230; Van Wyk, 2013:125). Examples of business gaming activities include reading the participant's manual, the memorisation of facts in a story, identification of management issues, analysis of situations, participation in discussions and the formulation of plans. Learners are engaged intensively and are more motivated (Geithner & Menzel, 2016:235) when the conditions in a game resemble reality. Games provide the space to make incorrect decisions and mistakes without the fear of negative results (Jeong & Bozkurt, 2014:185).

Games allow learners to practice cognitive abstract theories as well as principles while allowing them to feel personally responsible for the outcomes of the experiences (Geithner & Menzel, 2016:231; Wolfe, 1993:450). It provides learners with an opportunity to act in a fictional environment, which resembles real economic and business circumstances, where learners can apply organizational as well as management processes. This role-play can improve professional and interpersonal skills and knowledge of procedures (Geithner & Menzel, 2016:231; Van Wyk, 2013:125; Salas *et al.*, 2009; Fortmüller, 2009:68-83). Other advantages of business simulations are: learners are involved in teamwork during working and learning, learners can learn through trial-and-error, active role-playing and the exchange of knowledge (Geithner & Menzel, 2016:232; Ramazani & Jergeas, 2015; Fortmüller, 2009:68-83).

In a previous study by Geithner *et al.* (2014), the “C2” Business Simulation Game for Project Management, was tested to provide learners with first hand practice in terms of project management. The game is similar to the *Commercium* game in this study, as it is played in groups and face-to-face communication in the team is required. Learners play live in a seminar room and the game is not a computer game. It is a simulation consisting of a small group of players (6 - 13). The players are expected to learn from a real life situation that resembles a work situation. The game requires role-playing and learners are prepared before the game through a manual with the most important information on. A few individual tasks must be completed, but the most of the tasks are done in groups. The facilitators distribute the required material and worksheets. Advantages of this game include more expertise, the sharing of knowledge, increased motivation for players, increased dynamics and outcomes which are

interesting and with interaction amongst learners (Geithner & Menzel, 2016:235, Hartevelt & Bekebrede, 2011: 43-63). Van Wyk (2013:126) also did research on the positive attributes of the use of simulated games as an experiential teaching approach in the teaching of economics. The results from the study indicated the following (Van Wyk, 2013:128-129):

- Learner motivation to take part in economics games were increased by the professionalism of the educator;
- The games empowered learners to practice Business Management competency as well as ethics skills;
- The effective games created social skills and group learning;
- Opportunities were provided for collective and contextualized learning of learners; and
- Learners with simple inside games scenarios were exposed to real world economic activities.

These results are confirmed by a later study performed by Silva *et al.* (2014:43). The advantages of games can therefore be summarised as follows:

- Games create cognitive disequilibrium without exceeding the ability to succeed;
- Games enhance emotional skills (non-cognitive);
- Deeper learning is created;
- Help learners to make choices,
- Games help learners to use collective intelligence;
- Games entertain, teach and change learners;
- Engage learners in content and teach skills and transform thoughts;
- Increase higher-order skills, critical thinking and problem solving and creating of brainpower;
- Provide just-in-time learning;
- Involve questions, to evaluate, learn and achieve skills;

- Physical skills, lower-level intellectual skills and good principles are enhanced;
- Enhance tactical thinking and planning, communication, the use of numbers, negotiating skills, decision making in groups, skills to handle information, wisdom, learning and remembering abilities, psychomotor and visual development;
- Teaching of process skills intrinsic to the game;
- Active learning and interactive learning environment, with learners participating in role-plays and simulations;
- Learners are engaged intensively and motivated;
- Reality is resembled by the game;
- Teamwork, expertise, the sharing of knowledge; and
- Enhanced dynamics and interesting outcomes with interaction amongst learners.

The game *Commercium* is also a game to be played in a group of 6 to 8 players. Learners are interacting with one another and decisions can be made individually or by the group. The above mentioned advantages could also be applicable to the *Commercium* game, as learners were motivated to take part in the game play, used business skills and were exposed to actual financial and economic activities.

3.3.4 Factors to consider when choosing a suitable game

Good games require input from the learner and provide a process where the learner needs to continuously consider alternative options to solve problems presented in the game (cognitive disequilibrium). This is done by integrating new external information into completed structures (assimilation), so as to change these existing structures (accommodation), while the player is still enabled to be successful (refer to 3.3.3.1 Advantages, attributes of and skills developed through game playing) (Balakrishnan, *et al.*, 2016:204; Van Eck *et al.*, 2015:3-4; van Eck, 2007:56-57). Dovey and Kennedy (2006) confirm these ideas by describing the characteristics of the most effective educational games as games that: 1) help learners to achieve learning goals; 2) focus on learning; 3) provide sufficient feedback to learners; 4) are engaging and provide hard challenges; 5) remember player actions and provide customized contents based on the learner's level of play; 6) are persistent spaces which are accessible over time; and 7) play on various platforms and operating systems. Curiosity, fantasy and control are also key characteristics to motivate learners to learn through games (Cordie *et al.*, 2017:181).

The use of business games can be measured over main dimensions to determine their effectiveness as educational tools namely: reality, accessibility, compatibility, scale and flexibility, easy to use, support systems for decision making, as well as communication (Faria *et al.*, 2009:470-476). These factors agree with factors mentioned by various authors to be kept in mind when a suitable game is chosen for a specific subject (Faria *et al.*, 2009:472; Harris, 2009; van Eck, 2007:59). The factors identified include the following:

- (1) **Align the game with the curriculum (compatibility):** There should be a balance between the structure of the game and the requirements of the curriculum. Recent game developments makes it more simple to upgrade simulation programs through for instance the design and specification of certain modules to be included in a business simulation game (Faria *et al.*, 2009:472; Harris, 2009:24-36; Summers, 2004: 208-241).
- (2) **Align the game with the content (compatibility, reality):** Educators should ask themselves what content is covered in the game. A game could either focus on depth or breadth of a topic (Faria *et al.*, 2009:472; Harris, 2009:24-36).
- (3) **Engagement (reality):** Games designed to engage learners could privilege that aspect above accuracy and completeness of the content: Missing topics (for games which focus on depth) and left out content (for games which focus on breadth) should be considered. Teachers can use these issues to create cognitive equilibrium, through the design of activities in which students could discover new information which conflicts with the students' current knowledge and the game. A constant cycle of engagement should form part of the game cycle, which is referred to as 'flow' (Van Eck *et al.*, 2015:4; van Eck, 2007:60). 'Flow' occurs when learners are engaged in a physical, mental or at both levels in activities. A good game promotes flow, while something which causes learners to leave the game world, interrupts flow. If teachers only add traditional classroom activities, e.g. textbook reading, workbook activities, teacher hand-outs etc. which address the missing information in the game, the flow of the game will be interrupted. If the educator could connect these activities to the game by letting the characters solve the problem or use the tools of the characters, the interruption will be minimised (van Eck, 2007:60).
- (4) **Design and evaluation of the game:** When an educator has chosen a game and evaluated it for missing content, a decision should be made on what to do. If possible, learners should be used to find the missing content, so that their learning could be maximised (van Eck, 2007:59).

- (5) **Justification for potential learning (Ease of use):** Educators should ask the question as to whether the potential learning from the game justifies the work and time needed to implement it. The simplicity of use include the simplicity of understanding the method of playing of the game, the ease of make sense of the results and also the ease of determining the need for improvement of performance. Teachers must design activities which are logical extensions of the game. Learning should be part of the game and players should not step out of the game to do an activity (Faria *et al.*, 2009:472; Summers, 2004: 208-241; van Eck, 2007:60; Faria & Wellington, 2004).
- (6) **Games should be real and designed to have fun (reality):** **Realism** is the extent to which players of games experience the simulation as a real life situation. It was previously determined that there is a correlation between realism and the amount of learning from a learning experience (simulation) (Faria *et al.*, 2009:471; Adobor & Daneshfar, 2006: 151-168). A simulation which is either too easy or difficult decreases the educational effectiveness thereof, as learners can't see the link between reality and the game (Faria *et al.*, 2009:471; Summers, 2004: 208-241).
- (7) **Games should provide a good return on the investment and the time factor:** When games are used as tools in classrooms, limited time can be a problem, as periods per subject are restricted (refer to 2.4.2.2 Time allocation for Accounting and 2.4.3.3 Time allocation for EMS) (Harris, 2009:24-36; van Eck, 2007:60). Enough time should be available in the game and for additional activities to encourage flow. If a game takes longer to play, it should be evaluated for providing a good return on the time invested therein. It should be the best method to learn about a new theme. The educator can resolve this problem in advance by making use of free periods or after-school time. After investigating a game an educator must be willing to abandon a specific game if it is not suited for learning (van Eck, 2007:60; Harris, 2009:24-36).
- (8) **Games should be tools which could provide help to the teacher (support systems for decision making, as well as communication):** The effect of games aligned through their mechanics are often only realised through the playing thereof (Faria *et al.*, 2009:476). Most learners who take part in business simulation games do it in groups or teams. Previous research showed that the functioning of a team has an effect on the performance thereof. Improved communication in teams is believed to increase their performance (Faria *et al.*, 2009:476; Dasgupta & Garson, 1999: 290-292). The Internet and modern information and communication technology make it easier for group members to communicate and increase their performance as well as their individual learning. Enhanced communication amongst group members has the result of increased

learning from a simulation (Faria *et al.*, 2009:476; Adobor & Daneshfar, 2006; Dasgupta & Garson, 1999: 290-292).

- (9) **Accessibility:** The Internet and World Wide Web (WWW) made access to various simulation games easier and also made games available to global, large audiences. Learners can also access games through portable mobile devices (Faria *et al.*, 2009:472; Thomas, 2006:44-55). Economic games are also easily accessible and can be used any time in class as a teaching tool (Van Wyk, 2013:125).
- (10) **Flexibility of games and the scale they are played on:** Barton determined in 1974 that the two main components of flexibility were the ability of changing the components of a simulation by the educator and also the change of parameters (aims) of the game. If a game had this flexibility an educator could use the same game to reach various learning objectives (Tian *et al.*, 2017:1-2; Yang, 2015:721; Faria *et al.*, 2009:473).

Some of these factors were applied in the use of the *Commercium* game in Accounting classes, namely:

- The game is based on curriculum content for EMS and Accounting;
- The game is a simulation of actual business transactions;
- As the game comprises of many real transactions, it has the potential for learning prescribed Accounting content;
- The game is designed to provide fun for learners and they enjoyed it thoroughly;
- The time constriction was overcome by arranging for longer periods for the playing of game;
- The game helps the teacher to explain practical Accounting concepts to learners, as they apply many Accounting concepts;
- As the game is a board game, it is easily accessible; and
- It is flexible as the rules and level on which it can be played can be altered to fit the need of learners.

The *Commercium* game could therefore be used in presenting Accounting and EMS.

3.3.5 Games in Accounting & EMS

Entrepreneurship educators have for a length of time been recognised as innovative teachers (Neck *et al.*, 2014:37). The reason could be partly because it is a new subject and partly due to innovation and creativity which is part of entrepreneurship content and because it influences the approach to the presentation of the subject (Neck *et al.*, 2014:37). There are several uses for and examples of play and games in Accounting and Entrepreneurship education. Examples are the evaluation of a board game in introductory Accounting by Fouché and Visser (2008) and a treasure hunt used by Babson school to teach learners what is available on social media and how to use it in Entrepreneurship; a computer game: “The Sims”, with the expansion package, “Open for Business”, used to map the creation of the culture in an organisation, such as time management and money usage in businesses; and a video game developed on how entrepreneurs think under uncertain conditions (Neck & Greene, 2011:55-70). The opportunity to play games to learn about entrepreneurship begins with the younger generation and includes a variety of play (Neck *et al.*, 2014:37).

3.3.6 Board games

A board game is defined as a game played on a board, especially one that involves the movement of pieces on the board, such as chess or checkers (English Oxford Living Dictionaries, 2016a); or a game of strategy played by the movement of pieces on a board where dice are sometimes used (YOUR Dictionary, 2016). Board games can be used as an educational tool, as they are relatively small and could be used in Accounting or business-related subjects to teach business concepts.

Harris (2009) believed that board games are back in use and just what school curriculums need. Games can be divided into four major categories: 1) games of competition; 2) games of chance; 3) games of imitation, which involve role-playing; and 4) games with the objective of creating temporary craziness (Touzet & Corbeil, 2015:9). In an actual business game, all the above-mentioned elements will be present and they will define and cancel each other out. A good game’s aim is to provide a combination of pleasure and difficulties (Touzet & Corbeil, 2015:9). When board games are used in the classroom, they can be used more successfully when they are aligned with the standards of the government and national curriculum (Harris, 2009:24-26).

New designer board games can be used more effectively in classrooms as they are more closely related to the educational needs required in classrooms and libraries (Harris, 2009:24-26). Specialized designed board games are linked with the curriculum through topics or mechanics. Learners are caught up in the theme of the game and are simultaneously provided

with content which can form a basis for further learning. They are caught up in a learning environment which is unstructured and where they learn the vocabulary, concepts and ideas of the subject. This prepares them for the learning of information in later lessons (Harris, 2009; Fouche & Visser, 2008:616). Ramani *et al.* (2012) did research on the use of a theoretical based number board game as a classroom activity. They wanted to determine the following:

- (1) Whether the game could improve the numerical knowledge of learners, when they played it as a learning activity in small groups;
- (2) If the game is effective when an adult (paraprofessional) plays the game with the learners; and
- (3) If the social interaction from the game is related to the learning outcomes of the learners.

They concluded that there was an improvement in learner's number line estimation, comparison of magnitude, identification of numbers, as well as counting. The conclusions are similar to those of Ramani and Siegler (2008), where learners played the game individually with trained researchers. It was concluded that the small group format was effective for young learners to learn mathematics through the playing of a game. When learners played the game in a group with peers, the experience could have been challenging, as it required highly emotional and social skills. Learners had to wait for their turn, be in control of their emotions in terms of winning and losing and interact with friends. The results indicated however that learners remained interested in the game and their numerical intelligence increased. The board game was more fun and exciting when they played it with peers, instead of adults. It was concluded that the small group format was sufficient as learners learned from one another during the game play. Learners learned the method of playing the game, the identification of numbers on a board, as well as to count, while they watched their friends.

Generally it can be concluded that small group activities, like playing board games, are an effective manner of promoting early mathematical skills (Ramani *et al.*, 2012:669-670). The results of the study performed by Ramani *et al.* (2012) indicated that although learners played the game over multiple sessions, they remained interested and focused. Their mistakes decreased over the sessions and their comments increased after playing several times. It is evident that the learners were engaged in the game and it could be concluded that the numerical game can be used as an educational tool to help learners learn over repeated sessions (Ramani *et al.*, 2012:670).

In the same way the game *Commercium* could possibly be used to engage secondary school learners in business and accounting skills through the playing of the game in group format. The

game was developed to help learners and educators to develop more soft skills and technical knowledge as are required by the modern accounting environment (Fouché & Visser, 2008:607). A brief description of the components of the board game *Commercium* follows and the rules are provided as an abstract from the study by Fouché (2006).

3.3.6.1 *Commercium* game

The objective of playing the game

In the game the focus especially is on the roles of the accountant, technical subject content and skills development. In playing the game the learners are entrepreneurs, wanting to be successful in making money in the different ways the game allows. The learners must also manage all aspects of their businesses: manufacturing, inventory control, selling, investing, financing and cash flow. While importing and exporting the learners are exposed to global matters. To make share investments the player must act as market analyst. The players must also take on the role of sales people auctioning and selling goods among them.

The game consists of various elements as discussed below.

(a) The board

The players move around the board with play pieces and have various possibilities of transactions and actions depending on the space they land on. The following requirements were considered in developing the board game:

The subject content: Various concepts such as assets, liabilities, equity and investments are addressed in the board game. While learners play the game and move around the board they are subjected to various transactions, including: Paying for personal expenses; Buying and selling property, business investments, shares and vehicles; Buying furniture and equipment; Paying operating expenses, personnel expenses, interest, travelling costs and rent; Receiving rental income, service income, investment income (interest and dividends) and selling goods; Making profits and losses on the sale of assets; Banking money; Buying inventories, raw materials, hire labour and paying overheads; Buying and selling on credit; Taking up loans and mortgages; Importing and exporting. The transactions listed above address all the elements of financial statements, including: Inventories; Accounts receivables; Accounts payable; Cash and bank; Property, plant and equipment. By buying raw materials, hiring labour, or paying overheads, learners can manufacture complete products to sell. This exposes them to the manufacturing environment and entities. The board also features the stock exchange and the market indicators for interest rates, inflation rates and exchange rates.

Teaching methodology: By adding the board game a new teaching medium is introduced.

(b) Cards

Different cards are used in the game (opportunity and threat cards, economic news cards, investment cards, and property and debit cards). Some of the cards (opportunity and threat cards) are picked up when landing on the corresponding space on the board. The player then has to fulfil the requirements prescribed by the cards. The others are for record keeping of investments, properties and debts. The different types of cards address the requirements for the subject content, soft skills and teaching, and methodology.

The subject content: Various sets are for introducing economic and business matters when players land on the associated blocks. These include Economic news (EN) - Some of the cards expose learners to general and global economic conditions. It also alters the interest, inflation and exchange rates; Opportunities and threats (O&T) - The O&T cards introduce various business matters (including personnel matters, financing, various opportunities and threats, marketing). Contributing to the society, values and ethical considerations are addressed in some of the cards. The O&T cards include insurance contracts as well as various damages that can occur with regard to property, inventory and profit generation. There are four sets of cards that provide proof and details of investments and assets, namely: Share certificates, Property investments, Business investments as well as Investments in houses. The last two sets of cards serve as proof of debts and include Mortgages and Loans.

The soft skills

One set of cards, namely, opportunities and threats (O&T), addresses verbal and written communication skills as well as ethical behaviour.

The teaching methodology

The tasks allocated on a selection of the cards require the learners to perform certain activities. They are subsequently actively involved in the learning process.

(c) Tokens

Tokens are used to keep record of raw material and product inventory, as well as the number of labourers that are employed. Three sets of tokens are used: Raw materials - identify raw materials purchased; Labourers - identify labourers hired; Products - the learners can buy and sell products. The inventory transactions are recorded. These tokens mainly assist in the requirements regarding the subject content.

(d) Playing pieces

The playing pieces of which each player must choose one, is in the form of vehicles. Players must purchase the playing pieces at the beginning of the game at different costs. Along with buying houses, these pieces teach learners that when more money is spent on personal expenses and luxuries, less will be available for business investment purposes.

(e) Cash, cheques and bank statements

The game uses cash and bank accounts for transactions. Players have cheque books and bank accounts with overdraft facilities. This allows for cash and bank transactions (a requirement of the subject content) to be recorded. Bank reconciliations can also be performed, as a bank statement is completed throughout the game. The currency used in the game is the *Commercium Dollar (C\$)*.

(f) Rules

The rules explain the game play. It states the aim of the game and explains the different spaces on the board, the cards and tokens. The rules also explain certain terminology in the context of the game to enable learners from different backgrounds and with various levels of prior knowledge to be able to play and understand the game. The rules also explain the interaction between the different elements in the game. A copy of the rules is attached as Annexure A: Rules of the *Commercium* game. The researcher had to adjust some of the rules to simplify the game for the learners (refer to Annexure G: *Commercium* game Adjusted Rules).

(g) The assignment

The assignment paper is one of the most important documents. This sets out the outcomes, what should be done and the assessment criteria. The assignment addresses the following:

The subject content

In playing the game the learner would see the actual movement of transactions through the Accounting cycle. The assignment requires the following Accounting technicalities:

- (1) The learners are required to complete source documents for all transactions entered into during the game, the learners are required to complete the necessary subsidiary journals using the source documents they have completed;
- (2) Learners must prepare a general ledger from the subsidiary journals. The learners must also prepare a trial balance;

- (3) The assignment requires the learners to prepare bank reconciliation from the bank statement;
- (4) In the playing process, completion of the financial records, enable learners to find and resolve any Accounting errors. If they did not keep accurate records, they will also experience the effect associated with incomplete records. In this they will realise the need to keep complete Accounting records; and
- (5) Lastly, learners must do the necessary adjustments (including providing for depreciation), closing off and preparing a set of financial statements.

The soft skills

While working in groups the learners experience interaction and personal contact. By having learners work together in groups, team-building skills can be practised. As learners work together in groups they will interact with learners from other cultures.

The teaching methodology

Experiential learning takes place in continual steps as the learners move through each step in the Accounting cycle in one assignment.

(h) Exercise

The last part of the game is the actual playing thereof. Learners are allowed to group themselves around the playing board. 8 Players can play at a single board. The teacher is available to assist during the game play.

Playing the game *Commercium* could be used effectively to bring back practice into the classroom. The game simulates the real-business world with purchasing and selling of properties, stocks and shares, receiving of income such as dividends, rent income, salaries and the payment of daily business expenses etc. (refer to the *Commercium* game 3.3.2.6.1).

In the current research study the teacher mainly followed the Facilitator (activity style). The learners were encouraged by the teacher to use analytical thinking skills and gain knowledge through the game play. They played on their own and the teacher only answered questions where it was needed. As they played, purchased assets and made financial decisions to earn a profit the learners were lead to self-accomplishment. The Hybrid (blended style) was also used as the teacher's enjoyment of games was combined with the need of learners for fun and excitement, as well as the prescribed topics in the Grade 9 EMS curriculum.

3.4 SUMMARY

There are two major approaches under which the other teaching theories fall, namely teacher-centred and learner-centred approaches. A teacher-centred approach focuses on the teacher (instructor) who is the important figure. In a learner-centred approach the teacher is the authority figure, who advises and guides the learners to learn, but learners are actively involved in the learning content. Characteristics of learner-centred classrooms are: Customised and personalized learning, social and emotional support, self-regulation, collaborative and real learning experiences, integration of technology and assessment for learning.

Accounting teachers use different teaching methods, which ranges from exposition to inquiry. The Inquiry method of teaching provides a specific challenge to learners, such as interpretation of experimental data, analysis of a case study, or the solving of a real, difficult problem. Teachers often use new inquiry-oriented approaches which engage learners in the subject, use appropriate techniques to collect evidence, solve problems through the use of logic and evidence, and encourage them to study further. Qualities of this method are: learner-centred; learner-active and leader-facilitated; self-directed, focused on learning, and asking of questions to understand. Problem-based learning (PBL), business simulation (BS), the guided discovery method and group learning are other learning methods. PBL is an efficient learning method to be used in business and non-business areas to teach various skills e.g. flexible thinking, the solving of problems, self-directed learning, group work, and internal motivation. Business Simulation are used to determine higher levels of learning, e.g. integrated material from various sources, critical evaluation of data, contrasting and comparing of information. The Exposition method of teaching is a traditional method with distinctive qualities such as leader-active, leader-centred, learner passive and emphasising the subject.

There is a major difference between Net Generation learners and previous generations of learners. This shows the importance of learner-centred techniques combined with modern technology for teaching purposes. The most important differences were identified. Methods to use for Net Generation learners include: digital, visual, speed, engagement, multimedia, multitask, interactive, group work, feedback, and connection.

From the needs of the new generation it seems that games may well be able to address their learning needs. Play is a loose activity outside normal life, which is the opposite of being serious, but at the same time, involves the player completely. A game differs from informal play in that it has formal rules with variable and quantifiable outcomes. The playing of games in schools can be seen as an activity which is purposeful, goal oriented, rule-based and seen by players as fun. Edutainment is when games are used to teach information and skills rather than

motivating specific actions. GBL is a part of serious games dealing with applying defined learning outcomes, to improve training activities through involvement, motivation, role playing, and reproducibility. Several elements are important to improve learner involvement, when a game is designed, namely: Rules, clear and challenging goals, an illusion connected to the learner activity, increased levels of difficulty, interaction and learner control, non-predictive outcomes; and fast and constructive feedback. Games should also not be too difficult or too easy in relation to learners' existing knowledge with the goal to increase learners' interest and motivation.

Games as educational tools have become general, because teachers, governments and parents discovered the psychological need for it. Business simulation games are valuable, because input, application, reflection and feedback are combined through it. Several reasons why business simulation games are used include teamwork, interactive games, difficulty and functionality of games, debriefing, using the Internet and incorporating quantitative skills. The reasons why teachers use business simulation games are also to bring experience to learners, teaching strategies, decision making, achieving learning outcomes, teamwork, motivation of learners, the practical application of theory, involving learners in learning and integrating ideas.

Certain factors should be considered when choosing a suitable game, namely: Align the game with the curriculum and the content, engagement, design and evaluation of the game, ease of use, games should be real and designed to have fun and should provide a good return on the investment and time factor, games should be tools which could support the teacher, accessibility and flexibility of games and the scale they are played on.

Board games are back in use. The *Commercium board game* is introduced as a possible tool to be used in Accounting or EMS classes in secondary schools. The game consists of a board around which the players move with play pieces and have various possibilities of transactions and actions depending on the space they land on. The *Commercium board game* incorporates the majority of requirements of an effective teaching-learning environment for Accounting and brings back practical experience into the classroom.

In chapter 4 the research methodology, which was followed in this study is explained.

CHAPTER 4: METHODOLOGY

4.1 INTRODUCTION

In chapter two a literature review was provided that gives a summary on the subject of Accounting. In chapter 3 the challenges of teaching Accounting and possible solutions are discussed. This chapter explains the research methodology by highlighting applicable information in terms of the research model, research design and methods, the objectives of the study and the data selection, collection and analysis processes used during this study.

The research methodology is the main aspect of a research project, because it is used to evaluate the reliability of a study (Kallet, 2004:1229). The research must occur in a systematic manner (Saunders *et al.*, 2009:3). The decisions of the researcher concerning the correct research methods and techniques are meaningful, as the scientific approach and philosophy of the researcher have an effect on these aspects (Neuman, 2011:15; Saunders *et al.*, 2009:108). The research methodology therefore, consists of a description of the research process used for the collection of data and information for decision making.

4.2 RESEARCH OBJECTIVES

The objectives of the study were as follows:

4.2.1 Primary Objective

The main objective is to analyse whether introducing a board game in secondary school accounting as educational tool, leads to a positive experience for the learners and an exposure to soft skills within the subject (Refer to 1.5.1).

4.2.2 Secondary Objectives

The main objective of this study is supported by the following secondary objectives, as described in section 1.5.2:

- To obtain an understanding of the subject of Accounting in the Economic and Business Management field at secondary school (chapter 2);
- To identify and obtain an understanding of the soft skill requirements for the subject Accounting (chapter 2);

- To gain an understanding of the challenges in teaching accounting and to identify possible solutions to address these challenges (see Chapter 3);
- To analyse whether the game *Commercium* exposes learners to soft skills in the subject Accounting (see Chapter 5);
- Analyse if learners and teachers perceive the game *Commercium* as a positive educational tool and if the exposure to the game improves the attitude of learners towards the subject accounting (see Chapter 5); and
- To provide recommendations for the use of educational tools such as the *Commercium* game in Accounting, with a view to improve learners' attitude towards Accounting and developing much needed soft skill in the process (see Chapter 6).

4.3 RESEARCH PARADIGM AND DESIGN

4.3.1 Paradigmatic assumptions and philosophical perspective of this study

Researchers normally bring certain beliefs and philosophical assumptions into their research. These can be views about the types of problems needed to be studied, the research questions to be asked, or the method for gathering data (Saunders *et al.*, 2009:108; Creswell, 2003:6). A paradigm can be defined as fundamental conceptions of the way how to perform research in a particular field that have consequences on the theory and methodology to be used during the research process (Flick, 2014:540; Saunders *et al.*, 2009:108).

The following paradigms are some of the known paradigms:

- (1) **Positivism:** Positivists believe that there is one reality, to measure and know, and therefore they are more likely to use quantitative methods to measure this reality (Flick, 2014:540; Scotland, 2012a:2-3; Scotland, 2012b);
- (2) **Constructivism/Interpretivism:** The social reality is viewed as a result from constructive processes (Flick, 2014:535). Constructivists do not believe that there is only one reality or truth. Reality should be interpreted, and therefore they prefer to use qualitative methods to achieve those multiple realities (Scotland, 2012a:5; Scotland, 2012b); and
- (3) **Pragmatism:** Pragmatists believe that reality is continuously assessed, discussed, interpreted, and is believed to be the best method to use to solve the problem (Flick, 2014:541; Scotland, 2012b). The focus of a pragmatic model (paradigm) is on all approaches which are available to explain the research problem, instead of focussing on

particular methods (Creswell, 2013:10). It is a philosophic ground which applies to mixed-methods research as the researcher uses quantitative and qualitative assumptions when performing the research (Creswell, 2013:11). Researchers can use the methods, techniques and procedures which best address their needs (Creswell, 2013:11).

The philosophic view of this study is pragmatism, because this research process includes a qualitative and quantitative study (positivism and interpretivism). Various components form part of a paradigm, namely: ontology, epistemology, methodology, and methods (Scotland, 2012b:1). Crotty (1998:90) laid the basis for this framework. He indicated that four questions, (which form the basic elements of a research process) are addressed while creating a research study (Creswell, 2003:4-5), namely:

- (1) What methods will the researcher use?
- (2) What methodology determines the choice of methods?
- (3) What is the theoretical perspective of the researcher?
- (4) What epistemology informs our perspective?

The design of the current study includes the above four questions as follows:

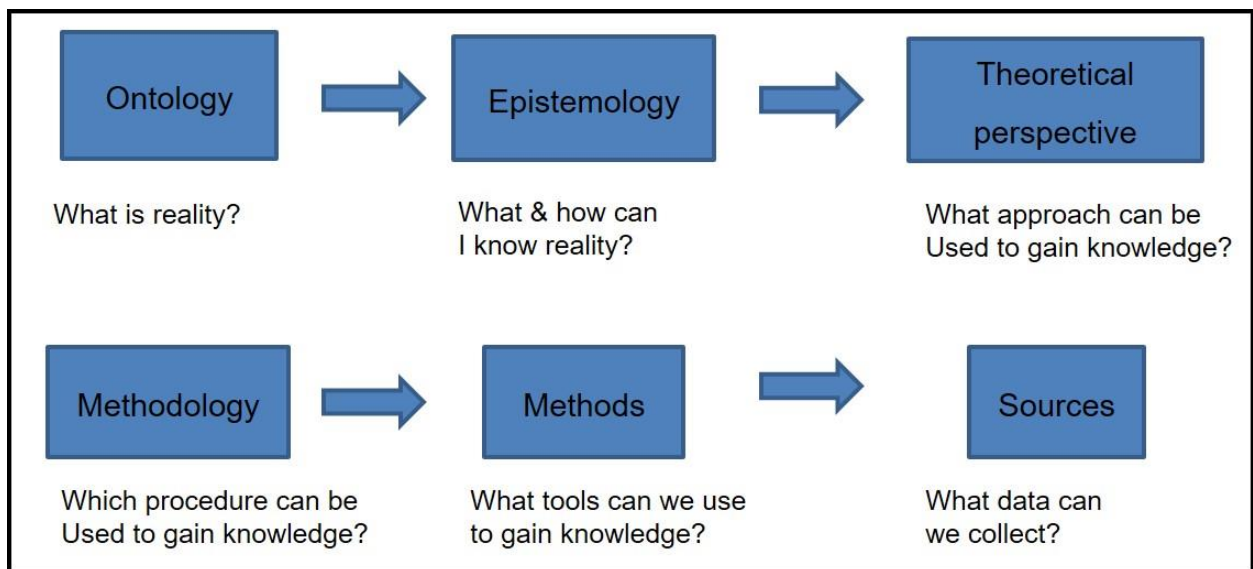
- (1) **The methods, techniques and procedures** intended to be used in the study (e.g., surveys, interrogations, focus groups, etc.) (Kawulich, 2012:1-6; Creswell, 2003:4). In the current study questionnaires and interviews with groups of learners and teachers were used to gather information. For the quantitative study data was collected through pre- and post- questionnaires, comprising out of three sections, on the views and perceptions of Grade 9 learners about the subject Accounting. Interviews with smaller groups of learners (6 – 8) and the subject teachers were used to discuss the game afterwards by answering additional questions.
- (2) **Methodology:** Methodology is seen as the method to receive knowledge of the world (Scotland, 2012b:9; Kawulich, 2012:1-6; Creswell, 2003:5; Crotty 1998:3). In this study a mixed methods approach was followed as quantitative and qualitative data was used for the study;
- (3) **Ontology:** A philosophy about the nature of things (the theoretical view that is behind the methodology in question, e.g. critical thinking theory, positivism and post-positivism, interpretivism, etc.) (Scotland, 2012b:9; Kawulich, 2012:1-6; Creswell, 2003:4; Crotty, 1998:10; Merriam-Webster dictionary, 2016b). In the current study it was the researcher's

view to get an impartial view from the learners by using the questionnaires and attempting to stay objective in the study.

- (4) **Epistemology (the theory of knowledge):** This is a branch of philosophy that addresses securing knowledge and understanding its status (the process of finding and validating knowledge) (Thomas, 2015:252; Scotland, 2012b:9; Kawulich, 2012:1-6; Gall *et al.*, 1996). In the current study the researcher attempted to stay independent in the participants.

The following diagram explains the above terms used in a research study and the relationship between them:

Figure 4.1: Paradigmatic Assumptions



Source: Adapted from Crotty (1998)

The table below summarises each of the main paradigms. The paradigms applied in the current research study are high-lighted.

Table 4.1: Research Paradigms

Paradigm (Model)	Ontology (Viewpoint)	Epistemology (Philosophy)	Theory-based perspective	Methodology (Procedure)	Research method
Positivism	There is one certainty.	It is possible to measure reality. Reliable and valid tools must be used to obtain this.	Positivism Post-empiricism (Post-Positivism)	Scientific test (Experiment) , Survey research.	Usually quantitative, must include: Sampling, Measurement & Scaling, Statistical evaluation , Survey, Focus Group, Interrogation.
Constructivist / Interpretivism	No single reality or certainty. Reality is created by individuals in a group.	Reality must be interpreted. It is used to establish the significance of reality & events.	Informative (reality must be interpreted) Phenomenology, Representative interaction, Explanatory, Analytical enquiry, Feminism.	Ethnology (values of people), Grounded Theory Method (construction of theory by analysing data, Philosophical research, Speculative inquiry, Action research, Conversation, Evaluation, Feminist, Outlook research etc.	Usually included in Qualitative research, could be: Qualitative interrogation, Awareness, Participator, Non-Participator, Case study, History of life, Commentary, Idea identification etc.

Paradigm (Model)	Ontology (Viewpoint)	Epistemology (Philosophy)	Theory-based perspective	Methodology (Procedure)	Research method
Interpretivism	Access to reality is through social constructions e.g. instruments, language, consciousness and shared meanings. The researcher is a social actor who appreciates differences between people.	Idealism: various approaches are grouped together, including social constructivism, phenomenology and hermeneutic.	Hermeneutics: this is the philosophy of interpretation and understanding. Phenomenology: The focus is on events, experiences and occurrences and disregarding external and physical reality.	Philosophical research. Qualitative research. The focus is on meaning and multiple methods can be used.	Interviews, Observations, Primary data-(has a high level of validity as data is honest and trustworthy), Secondary data research, Cross-cultural differences in organizations, Ethical issues, Leadership and analysis of factors impacting leadership.
Pragmatism (Logic)	Reality is continuously negotiated, in relation to its benefit in new, uncertain situations.	The best method resolves problems. Discovering is the method, change is the goal.	Deweyan, Logical (Pragmatism). Research through design.	Mixed methods, Design-based research (DBR) methods (theoretical claims about teaching and learning), Participatory Action research.	Combining the above-mentioned methods. Data-mining expert review, Usability testing, Physical sample.

Table adapted from various sources: Research Methodology, (2017); Scotland (2012b:9); Creswell (2003:4-5); Crotty (1998).

4.3.2 The Research Design

The research design is the type of study that will be done to provide acceptable answers to the research problem (Mouton, 2013:49). The role of a research design is to ensure that the researcher can efficiently solve the research problem with the evidence gathered to underline the research goals and the pragmatic research paradigm of the study (Mouton, 2013:49; de Vaus, 2001).

A proper research plan will achieve the following: Indicate what the research problem is and underline its selection compared to valid alternative plans that could have been used; Review and combine previously published literature that addresses the problem; Specify theories (research questions) clearly, which are essential to the research problem; Describe the data which will be necessary for effective testing of the theories and explain how such data will be gained, and explain the methods of analysis which will be used to conclude whether the theories are true or false (de Vaus, 2001). In the current study planning was performed and summarised in chapter 1 (Refer to 1.5.1 Main Objective; 1.5.2 Secondary objectives; 1.6.2 Empirical research and 1.6.3 Scope of this study).

The research design differs from the method of collection of data and is a logical framework of investigation (a plan), of how one intend to direct the research (Mouton, 2013:55). The research methodology refers to the techniques, methods and procedures used to implement the research plan (design) (Mouton, 2013:49).

Research questions are the opening of a door to the research field. The formulation of questions is important to determine if empirical activities will provide answers (Flick, 2014:145). The main criteria for research questions are their clarity and soundness and if they could be answered in the time available, or with the money available for the research process (Flick, 2014:145).

Research with interviews includes requesting people to report on their personal behaviour and attitudes (Adams & Lawrence, 2015:106). These reports help the researcher to get information on people's ideas and feelings, which are not always possible to directly observe (Adams & Lawrence, 2015:107).

4.4 RESEARCH METHODS

A researcher can use quantitative or qualitative measures to perform a study.

4.4.1 Quantitative research

Quantitative research is used when the researcher mainly asks questions instead of providing universal answers, to gain knowledge such as cause-and-effect thinking, the use of assessment and observation, and testing theories (USCLibraries, 2017). The researcher uses strategies of questioning, e.g. experiments and questionnaires, and collects standardized (statistical data) on predetermined tools such as surveys, polls, and questionnaires, or through the manipulation of pre-existing statistical data using computer software, for providing statistical data (USCLibraries, 2017; Babbie, 2010:192; Creswell, 2003:18-19). Numbers (quantitative), combined with statistical analysis are used, to analyse events, to generalise it for groups of people, or to explain a rare occurrence (Adams & Lawrence, 2015:595; Flick, 2014:542; Creswell, 2003:18-19).

The aim of a Quantitative research study is to find out what the relationship is between a specific thing (independent variable) and something else (dependent variable) in a population (USCLibraries, 2017). Quantitative research designs can be descriptive, where subjects are usually measured once or experimental where subjects are measured before and after a treatment. Associations in a descriptive study are determined between variables, while in an experimental study causality is determined. Logical, deductive and convergent reasoning is used in this type of study (USCLibraries, 2017; Babbie, 2010:52).

4.4.2 Qualitative research

Qualitative research takes place when the researcher determines a finding based mainly on constructivist/interpretivist perspectives (i.e. the various perspectives of individual experiences which are socially and historically built mainly to develop a theory or pattern, or cooperative perspectives (i.e. political, addressing issues, collective or change oriented) (Creswell, 2003:18). It is research interested in analysing the subjective meaning of events. This process sorts and summarises data from non-numerical (qualitative) measures (Adams & Lawrence, 2015:594; Flick, 2014:542). This type of research consists of meaningful interpretation practices that help a person to see the world as a series of representations; which include field notes, conversations, photographs, recordings and memos (Creswell, 2013:43-44). It begins with assumptions and the use of theoretical frameworks, which indicate the research problems. Researchers study things naturally and attempt to make sense of it in terms of the meaning people attach to it (Creswell, 2013:43-44).

Qualitative research uses general questions (open-ended) to guide a study. It is an inductive process in which a theory is developed as data unfold. The researcher is the primary instrument through which data is collected and analysed (Thomas *et al.*, 2015:22). An essential quality of this research is that the researcher should be present. The tools used to collect data are observation, interviews and researcher-designed instruments (Thomas *et al.*, 2015:22; Creswell, 2003:18).

4.4.3 Mixed-methods research (MMR)

Mixed-methods research is a practical matter, which involves using quantitative and qualitative approaches in one study and provides an improved examination of research problems in context, because of triangulation (Thomas *et al.*, 2015:391; Creswell, 2003:21). Triangulation is the combination of various methods, theoretical perspectives, study groups, as well as local and temporal settings, to deal with a specific issue under study or to answer research questions. The goal of triangulation is to allow additional knowledge e.g. it must produce knowledge on various levels, beyond knowledge made available by one approach and enhancing the quality in research (Flick, 2014:184).

Previous research indicated that quantitative data alone could not address all the questions on learner attitudes on a specific subject (Thomas *et al.*, 2015:391). While quantitative data answered questions on understanding the structure of attitude and getting the scores for learner attitudes of specific groups, other methods were needed to address questions such as what experiences influenced the attitudes of learners (Thomas *et al.*, 2015:391). The questions determine the research method to be chosen (Thomas *et al.*, 2015:391). For the reasons stated before a MMR was chosen.

Sequential mixed methods, is the most common mixed methods design, in which the quantitative or qualitative part of the study comes first and the results of the first study often influences the second (Thomas *et al.*, 2015: 393; Creswell, 2003:21). The qualitative part of a study would normally use observation and interviews to address perceptions of people in a study. **Parallel mixed-methods** research takes place when the qualitative and quantitative components occur simultaneously or independently (Thomas *et al.*, 2015: 393). In this study Parallel mixed-methods were used, as the quantitative and qualitative studies were combined.

4.5 STUDY POPULATION AND SAMPLE

A sample is described as the group of participants, handlings and situations on which the study is based. The manner in which these samples are selected is important (Thomas *et al.*, 2015:106; Adams & Lawrence, 2015:120). The main objective of all quantitative sampling methods is to retrieve a representative sample from the population so that the results of studying the sample can then be traced back to the original group (Marshall, 1996:522). The choice of an effective method depends on the goal of the study (Marshall, 1996:522). Sampling is the selection of materials for a study from a larger population or several possibilities and the generalization to the population (Adams & Lawrence, 2015:120; Flick, 2014:542; Thomas *et al.*, 2015:106; Neuman, 2013:246). Sampling can be divided into two main categories which includes probability sampling (random sampling) and non-probability sampling (Neuman, 2013:247-248).

Probability sampling is defined as a method of sampling where random selection is used in which every member of a specific population have an equal chance to be selected (Adams & Lawrence, 2015:120). Sampling bias occurs when some members of a population is overrepresented in the sample. With the performing of probability sampling, sampling bias is reduced (Adams & Lawrence, 2015:120).

Non-probability sampling (non-random sampling) is described as a sampling method which does not use random sampling (Adams & Lawrence, 2015:127). With probability sampling there is an identified probability for every element of the group to be included in the sample, while with non-probability sampling, the chance of each item to be included (to occur) is not known or the chance of some outcomes to occur is zero (Neuman, 2013:247). A serious problem in non-probability sampling is sampling bias, because there is no fixed sample size to be reached, to provide confidence that the sample will represent the population (Adams & Lawrence, 2015:127). Non-probability sampling can be used when the researcher needs descriptive feedback about the sample itself (Neuman, 2013:247). Samples could be unrepresentative of the population and therefore make it difficult to draw conclusions based on information and not generalise (Neuman, 2013:247). Some of the common non-probability sampling techniques are as follows (Adams & Lawrence, 2015:128-134; Neuman, 2013:247):

- **Quota sampling:** In this type of stratified sampling the selection in the strata is non-random. The sample of the population for particular criteria or strata is representative. As the sample is not necessarily representative for some important criteria, it could be biased. One could for example need a specific number of learners and include a class in a population (Adams & Lawrence, 2015:130);

- **Convenience sampling:** This method is easy to use, but a representative sample of the population is not always provided, since people or items are only selected for a sample when they are conveniently and easily accessible and willing to provide data. Such groups could be obtained through advertising or asking people to take part in a study, such as learners in a school (Adams & Lawrence, 2015:129);
- **Purposive sampling:** This is a **non-probability sampling technique** that is used to study a specific cultural area containing educated, specialised people (Tongco, 2007:147). This method is non-random and a specified number of informants are not required. The researcher determines what is necessary and then searches for able and eager people to provide the data through their expertise or experience. Qualitative and quantitative research techniques can be combined with the purposive sampling technique (Tongco, 2007:147; Lewis & Sheppard, 2006).

The aim of the study was to focus on Grade 9 learners, who have EMS as a subject. However one of the schools chosen for the project consisted out of learners with learning disabilities. The learners in this group was in Grade 10, but took EMS on Grade 9 level and they comprised 42% of the respondents. The learners in the other two schools were all in Grade 9 and comprised (58%) of the population (Refer to 5.2.1). Male and female learners were used in the project, with 51.1% male and 48.9% female (refer to Table 5.3).

145 learners from the three schools chosen took part in this research project. The percentages for each school from the total population were as follows:

- High School A: 42.8%;
- High School B: 45.5%; and
- High School C: 11.7% (refer to Table 5.2).

In the current study the **purposive and convenience sampling techniques** were used for the quantitative research (questionnaires) as the researcher decided on what was necessary for the project and looked for able and willing learners to take part in the project. The convenience sampling technique was used for the qualitative research (interviews), as the researcher asked learners who were willing to take part in the conducting of informal, structured interviews.

Three different secondary schools in SA were chosen in accordance with their composure of learners, availability and willingness to cooperate in the research project. The following steps in convenience sampling have been followed (Adams & Lawrence, 2015:132):

- (1) The population must be defined: The Grade 9 EMS learners were identified;
- (2) The place and time should be determined to gather a sample from the population: The dates and times were arranged by the researcher with each school participating in the project; and
- (3) Data should be collected and people who do not belong to the population should be removed: The data was limited to government secondary schools in North West province in SA. Only Grade 9 learners who take EMS had been allowed to play the game *Commercium* and had complete questionnaires and taken part in the interviews afterwards. The teachers presenting the subject were also interviewed, to determine their feelings and opinions on the game as an educational tool.

4.6 RESEARCH INSTRUMENTS

The specific methods of data selection and evaluation form a significant element in the research approach. Table 4.2 shows the possibilities for data selection which a researcher can use in a study. These methods can be organized by their degree of planned nature, utilisation of closed-ended as opposed to open-ended questions, as well as their emphasis on statistical versus non-statistical data analysis (Creswell, 2003:17).

Table 4.2: Research Methods: Data selection, collection and analysis

Quantitative Methods	Mixed Methods	Qualitative Methods
Methods are planned beforehand	Both planned and arising methods are used	General questions (open-ended) are used as methods to guide a study
Questions based on tools (Instruments)	Open- and closed-ended questions	Open-ended questions
Achievement data, attitude data, objective data, and census data	Various forms of data including all possibilities	Interrogation data, objective data, document data, and audio-visual data
Statistical distribution	Statistical distribution and text analysis	Text- and image analysis
Statistical explanation	Across multiple databases explanation	Themes, patterns explanation

Creswell (2003:17)

It is imperative that the research instruments that are used are appropriate to address the research objectives as these instruments influence the reliability and validity of the study (LoBiondo-Wood, G. & Haber, J., 2014:290-292; Kelly, *et al.*, 2016:1-2).

The following data research instruments were employed to collect data in the current study:

- (1) A quantitative research questionnaire; and
- (2) Interviews with learners and teachers.

The objective of using these mixed method instruments is to triangulate the data to gain a deeper understanding of the use of the game *Commercium* as an educational tool in secondary school Accounting. A discussion of each of the instruments follows below.

4.6.1 The quantitative research questionnaire

The questionnaire as a research instrument is now discussed.

4.6.1.1 Description of a questionnaire

A questionnaire (survey) is a technique of descriptive research where respondents answer either online or on paper, with the aim to determine current practices and opinions of a specific population (Thomas *et al.*, 2015:285; Adams & Lawrence, 2015: 108). It could be in the form of interviews, questionnaires or normative surveys (Thomas *et al.*, 2015:285). The questionnaire and interview are basically the same, except that the method of questioning differs. The main difference is that the answers of questionnaires are written and those of interviews are given orally. The limitation of questionnaires is that the results are achieved from what people say they do, believe, like or dislike (Thomas *et al.*, 2015:285). Questionnaires allow for anonymity and can diminish social desirability bias. Various respondents can complete a questionnaire in the same time so that time is saved over interviews (Adams & Lawrence, 2015: 108). Administration is done easily as questionnaires are easy to hand out. The response rate for questionnaires handed out in person is higher and the researcher can explain questions if necessary (Adams & Lawrence, 2015: 108).

4.6.1.2 Objective of the questionnaire

The researcher must decide on a specific purpose of a questionnaire and should have a clear idea of what information is needed and how each item will be analysed. The researcher should begin with research questions or objectives (Thomas *et al.*, 2015:286; Diem, 2002:1). With the main objective of this study in mind, questions in the questionnaires for the game were selected, to provide insight into learners' exposure to soft skills, their perception of the game in terms of the value of the game as educational tool and their attitude toward the subject.

The pre-questionnaire was used to collect demographic information about the learners and to determine their perception of Accounting and whether they have been exposed to the *Commercium* game before. In order to ensure that the learners provide their true comments and show their actual feelings when they play the game for the first time, the post-questionnaire has additional questions and differs from the pre-questionnaire. The post-questionnaire on the game *Commercium* was completed by learners after they played the game and consisted of questions on their exposure to soft skills and their perceptions of the game relating to the value as educational tool and their attitude towards the subject.

4.6.1.3 Reliability and validity

Reliability is the measure of consistency in the results of a measurement instrument such as a questionnaire (Kelly, 2016:2; Diem, 2002:5). Random errors in questionnaires can be reduced by removing unclear questions or changing their arrangement. Different methods can measure the reliability of an instrument, based on the type of instrument and its objective (Kelly, 2016:2; Diem, 2002:5). The questionnaires in this study were analysed and the reliability thereof measured by a specialist from the Statistical Consultation Services of The North-West University.

It is important to be concerned about the validity of the measurements used during the gathering of data on which research results are based (Thomas *et al.*, 2015:203). Validity of measurement is an indication of the extent to which the test or tool measures what it is intended to measure. It is therefore the real explanation of the scores from a test which is the main reflection of measurement (Thomas *et al.*, 2015:203). There are different purposes for various methods and different types of validity are found, namely (Thomas *et al.*, 2015:203):

- **Logical validity** is encountered when the standard (measure) obviously involves the achievement performance being measured;
- **Content validity** refers to the intensity to which a test (usually in educational settings) adequately samples the content covered in the topic;
- **Criterion validity** refers to the quality of the relation of scores test to an acknowledged criterion;
- **Construct validity** refers to the quality to which a test measures a speculative frame by relating the test results to some kind of behaviour (Thomas *et al.*, 2015:203);

- **Experimental validity** is a combination of internal and external validity assessments to find out if conclusions based on the data are free from errors and can be generalized to wider populations (Kelly *et al.*, 2016:2);
- **Internal validity** is the extent to which conclusions based on the experimental data, are free from confusing issues, causing bias like missing data and reactivity. It is assessed by examining relevant issues (Kelly *et al.*, 2016:2); and
- **External validity** is the extent to which conclusions based on the experimental data are generalized to the wider populations. It is assessed through examining age, ethnic origin, sex, socio-economic status, and so forth, of a study sample. A theoretical justification or empirical demonstration e.g. field testing and small scale “proof of concept” studies, could be used to assess this. Participant feedback should be assessed by this (Kelly *et al.*, 2016:2).

Reliability is part of validity and indicates the repeatability of a measure. If a test is not reliable, it can't be considered valid (Thomas *et al.*, 2015:208). This means that if a test is not consistent in yielding the same results, it cannot be trusted (Thomas *et al.*, 2015:208). Two types of reliability can be distinguished, namely **internal** and **external reliability** (consistency). Internal reliability is an estimate of the reliability of outcome items in a test, while external reliability refers to the degree of agreement between various measuring instruments (Thomas *et al.*, 2015:212; Neuman, 2013:220-221). **Internal reliability** applies only to measures with various items which need to be combined into one score. It means that there is consistency in the manner in which the observer responded to the various items on the scales (Adams & Lawrence, 2015:90). A researcher can obtain reliability coefficients of a scale through several internal consistency methods such as a re-test on the same day, the split-half method, the Kuder-Richardson method, and the Cronbach's alpha coefficient (Thomas *et al.*, 2015:212; Adams & Lawrence, 2015:90). Reliability of the current study was confirmed by calculating the Cronbach's alpha coefficient (Refer to chapter 5.3.2 Reliability and the Coefficient of reliability). Factor analysis is a statistical procedure that provides evidence of validity in self-reporting scales and exploratory factor analysis was performed in this study (Refer to chapter 5.3.2 Exploratory Factor Analysis). The **KMO Test**, which measures the suitability of data for Factor Analysis, was also performed. This test measures the adequacy of a sample for each variable in the model, as well as the total model. The statistic measures the proportion of variance among variables that could be general variance. The lower the proportion, the more suited the data is to Factor Analysis. If KMO returns values between 0 and 1, a rule of thumb for interpreting the statistic is as follows (Statistics How To, 2016):

- KMO values between 0.8 and 1 indicate the sampling is adequate;
- KMO values less than 0.6 indicate the sampling is inadequate and that remedial action is needed. Some authors believe this value to be at 0.5, so a researcher should use his own judgment for values between 0.5 and 0.6; and
- KMO Values close to zero means that the partial correlations are huge compared to the total sum of correlations. This means the correlations are widespread, which are a major problem for factor analysis.

Bartlett's test was done to indicate that the data is adequate and suitable. The ANOVA technique was used to determine if there are significant differences between the sample means more independent groups (Refer to 5.3.2 Association with Biographic data and Effect Sizes). An **ANOVA test** is a way to find out if questionnaire or experiment results are meaningful. They help a researcher to determine if he needs to reject the null hypothesis or accept the other hypothesis. The researcher is basically testing groups to determine if there's a difference between them (Statistics How To, 2018).

In **Chapter 5** the statistical analysis of results of the questionnaire on the game are discussed in detail to confirm the reliability and validity of the research project. This includes a discussion on the demographic data of the study and the following topics were examined: School, gender, grade, subject, career option, previous exposure of learners to the game, language and race. Descriptive statistics are also provided on the questionnaire. An exploratory factor analysis was performed and the correlation between the various factors was determined.

4.6.1.4 Constructing the research questionnaire

Questionnaires need to be well-planned and -prepared to ensure that the results are valid (Thomas *et al.*, 2015:285; Boynton & Greenhalgh, 2004:1312). **Questionnaires (Surveys)** are an important part of many types of research, and usually gather information by asking questions to a sample of people about a particular topic and then the results are generalized to a bigger population (Bennett *et al.*, 2011). Questionnaires are especially important with research topics that are difficult to assess, using different approaches. Questionnaires make often use of self-reporting, for example self-reported behaviours, e.g. beliefs, knowledge, attitudes, opinions etc. The methods used to conduct survey research can have a meaningful effect on the reliability, validity, and generalizability of the results of a study and therefore clear reporting of the methods used in surveys are necessary (Bennett *et al.*, 2011). The construction of the correct questions is not easily done. A valuable guideline is to determine the objective that each question measures and how the response will be analysed (Thomas *et al.*, 2015:288).

In the current study the questionnaire was developed based on questions used for a previous study on the *Commercium* game amongst tertiary students at The North-West University (Fouche, 2006). The questions were simplified to be used amongst school learners and the language adapted so that learners could understand it more easily.

The title of the questionnaires should inform the respondents what the study is about. A short purpose of the study can be included or a simple graphic that indicates the purpose of the questionnaire (Thomas *et al.*, 2015:285 – 296; Diem, 2002:3). In the current study questionnaires were titled to separate the different questionnaires from one another and to indicate the objectives thereof (Refer to annexure B and C). The purpose of the research study was also explained in the letters of permission which had been sent to principals, parents and learners before the project started (Refer to annexure D Letters of permission).

Language used has to be direct and simple. Acronyms should be avoided and definitions must be included if necessary (Diem, 2002:3). The Statistical Consultation Services of The North-West University in Potchefstroom, provided advice on the language usage and adaption of questionnaires used in similar studies on the game *Commercium* and therefore language usage was simplified to help school learners to understand the questions.

The questionnaire must be as short as possible (without decreasing reliability) and the focus should be on important questions (Diem, 2002:3). Questions with a double meaning that confuse respondents should be avoided (Diem, 2002:4). Diem (2002:4) suggests the use of experts and field testing to minimize “bias” in questions. The researcher analysed questionnaires used in previous studies on the game *Commercium* and shortened some of the sections to enable school learners to complete it during the time available for the research project. The wording of questions was also reviewed by the researcher and a statistical analyst to avoid questions with double meanings. Questions were individually numbered and each questions had to be answered on its own by each individual. A selected group of learners were then assembled afterwards and they completed the interview questionnaires in the same manner. A statistician from The North-West University had been used to provide information and to analyse the questions. The questionnaire before the playing of the game was also tested before the actual project. This was to determine if learners understood the questions, by using a sample group who completed the questionnaires on the game.

Respondents could be hurried to answer because of additional questions in the end. To avoid this, questions on demographic information could be included at the end so that the questionnaire is focused on the required topic (Diem, 2002:3). Questions on demographic

information were asked in the pre-questionnaire so that learners could focus on the game aspects in the post-questionnaire (refer to annexure B and C).

Scales must be used that provide the information required and are appropriate for respondents. Choices include a fixed-response or open-ended questions. Fixed responses include (Thomas *et al.*, 2015:285 – 296; Diem, 2002:3):

- Yes-No
- True-False
- Multiple Choice
- Rating Scale (e.g. Likert-type scale)
- Agree-Disagree
- Rank ordering

The researcher has to ensure that respondents are not intimidated. The first questions must be relevant to the title and easy to answer (Thomas *et al.*, 2015:285 – 296; Diem, 2002:3). Furthermore instructions are required about how to complete each section and how to mark answers (pencil/pen, circle, check, etc.) (Diem, 2002:3). In the pre-questionnaire only easy questions were required from learners to gain demographical information on the population (refer to annexure B). In the pre- and post- questionnaires, there were instructions that learners should make a cross (X) in the appropriate block or that they should answer the question in the space provided. In the Yes-No questions, the correct blocks had been provided, for respondents to tick (refer to annexure B and C). Questionnaires made use of various types of questions e.g. Yes-No questions and Scales.

In the pre-questionnaire learners had to fill in their personal information. They had to tick Yes or No to indicate whether they had played the game *Commercium* before or not. They had to select their race group with a cross. After playing the game learners had to complete the post-questionnaire. **Question numbers 1 - 6** were about the exposure to soft skills from the game and learners had to indicate whether they strongly agree, are neutral or disagree with the question. **Question numbers 7 – 11** were on the perceived value of the game as educational tool, where learners again had to indicate whether they strongly agree, are neutral or disagree with the question. **Question numbers 12-19** were for learners who had previously been exposed to the game and they had to answer questions (by using the same scale) on whether the game enhanced their business knowledge or attitude about Accounting etc. **Question**

number 20 expected learners to write down one positive and one negative element of the project. **Question number 21** expected learners to summarise the project in a single word and **Question number 22** requested learners to provide any suggestions on the game and project for future use (refer to annexure B and C).

The questionnaire should be tested in the field, in order to confirm that the developed questionnaire is appropriate for the audience. Other respondents similar to the respondents of the study could be asked to review the questions to be used and to provide valuable criticism on it, before using the final version (Thomas *et al.*, 2015:291; Diem, 2002:2-3). Unclear questions or procedures and errors could be determined beforehand. After the revision of the questionnaire respondents from the intended population must be selected for the pilot study (Diem, 2002:2-3).

One group in school B was used to do a pilot study. A non-probability convenience sample was used as the sampling method. Respondents were mainly chosen according to their availability and who volunteered to take part (Babbie & Mouton, 2012:166; Boersema, 2015:62). The advantage of this method is that the researcher had some control over the selection process, by choosing a target group for the study and facilitating the forming of groups to play the game (Tansey, 2007:768). The pilot group played the game and completed the questionnaire. A few learners volunteered to take part in the pilot study and brief questions were posed to them about their understanding of the questions in the pre-questionnaire (refer to Annexure B: Questionnaire prior to playing the game). In general it seemed that they understood the questions and found it not too difficult or time consuming to complete. The post-questionnaire was not pilot tested as it was an existing questionnaire, which had previously been used in studies on the game *Commercium* (Fouché, & Visser, 2008:588-591, Fouché, 2006:298-300). In order not to disadvantage any learners, the learners from the pilot group indeed participated in the formal playing of the game, and evaluated the game formally on the post-questionnaire for the first time (refer to Annexure B: Questionnaire after the game).

4.6.1.5 Grade 9 Administration of the questionnaire

Systematic, scientific research methods can be used to evaluate programs even if learners are subjects. Researchers should apply to the applicable authority if the primary intent of the evaluation is for publishing in scholarly journals, for scientific grants, or giving scholarly presentations etc. Research with human subjects that only have minimal risk to respondents should be approved in advance (Diem, 2002:5).

In this study letters of permission had been developed and sent to all parties involved, namely: principals, parents and learners where the necessary information on the study was explained and principals and parents had to provide consent for learners to take part in the study (refer to annexure D). Permission Letters from the North-West Department of Education in South Africa were granted to perform this study (Refer to annexure D). Ethical clearance was also obtained from the Ethics Committee of the Faculty of Economic and Management Sciences, The North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC).

A specific time was arranged with each group of Grade 9 learners participating in the research project, to complete the questionnaires after playing the game. Questionnaires were handed out during the sessions scheduled for playing the game at each school. This method was fast and effective as the information was immediately available after the playing of the game for processing by the researcher.

The questionnaires were provided by the researcher to each learner in person and they completed it in class before and after they played the game. The researcher facilitated the completion of questionnaires by the learners. Most of the learners that were requested to complete the questionnaire had not been previously exposed to the game and were not familiar with questionnaires. Questionnaires on the game were explained to the learners, before completing it. All of the learners used could speak Afrikaans or English and therefore there was no cultural or language barriers to overcome. The purpose was explained to the learners.

Learners each drew a number from a box to ensure that they remain anonymous. These were used to correspond with the pre- and post-game questionnaires, without the possibility of identifying learners. Before the game was started the teacher provided a time period for learners to formally complete the pre-questionnaires. Each learner completed a questionnaire before playing the game and a second questionnaire (post-questionnaire) after the game.

A follow-up letter is nearly always needed. Thanks could be indicated on the questionnaire, in the cover letter and a possible reward could be given for respondents (Thomas *et al.*, 2015: 294-295; Diem, 2002:4). Letters to the various principals had been sent in order to thank them for taking part in the project. After the game play and completion of questionnaires were done and collected by the researcher, learners had each been given a small reward (sweets) in their groups for participating. The winning group and players had also been given a reward (chocolate), to motivate them to try again in future. This was only to create a friendly class environment. No formal rewards had been given for participation in the project.

4.6.1.6 Analysis

The method for analysing the data should be chosen while the study is being planned. Questionnaires must be analysed with the same care and scientific insight as in the case of experimental studies (Diem, 2002:5).

When data is collected a software programme can be used to organize the data and to make sure the scale and measure used is reliable (Adams & Lawrence, 2015:96). In a statistical program data should be entered in a specific format, which should be followed (Adams & Lawrence, 2015:96).

In the current study data was analysed by the Statistics Consultation Services of The North-West University in Potchefstroom. The analyst used SPSS (IBM, 2017) and Statistica (TIBCO, 2017) to analyse the data (refer to 5.2 Analysis of the research questionnaire). The following techniques were used to analyse the data:

- The rate of occurrence and percentages of the demographic information was determined;
- The acceptability of a factor analysis on the data which had been based on Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity was discussed;
- An exploratory factor analysis was done;
- The reliability of the factor analysis was tested by using the Cronbach alpha-value; and
- A t-test and One-way analysis of variance (ANOVA) were determined to determine the influence of biographical variables on the factor scores. The effect sizes between the means of the factors for different biographical variables were also determined.

The findings of the above analysis are discussed in chapter 5.

4.6.2 Qualitative research interviews

After the completion of the quantitative study (The playing of the game) and completion of questionnaires by all learners, additional informal, structured interviews were conducted with a small group of volunteers (a group of 6 – 8 learners) per school, by using another questionnaire (Refer to 4.6.2.2 Objectives of the interviews and 4.6.2.4 Conducting the interviews).

4.6.2.1 Description of interviews

Three main types of research interviews are found, namely: structured, semi-structured and unstructured (Gill *et al.*, 2008). **Structured interviews** consist out of a general set of questions developed beforehand, which the researcher asks the respondents in the study. The researcher does not change the order of questions or the way how it is asked. Any questions asked by respondents are answered in a specific way. The reason for a structured interview is that all respondents in the study should have the same interview experiences with exactly the same questions. This reduces potential interviewer bias (Adams & Lawrence, 2015:108).

Semi-structure interviews are interviews with a more flexible structure. The interviewer has a core set of questions to be discussed, but can ask respondents to expand on their answers and explain questions where necessary, or ask additional questions. This is a huge advantage, as the researcher can discover new information, but needs extra training and good knowledge of the research topic, to reduce interviewer bias (Adams & Lawrence, 2015:108).

Interviews are known as personal conversations that are facilitated by the researcher and can take place face to face, telephonically or through e-mail. Although an interview is not anonymous, it can be confidential as the identities of the respondents are known to the researcher, but kept for his own knowledge. Interviewer bias can take place where the interviewer can lead the respondents and in that way influences the answer of the participant (Adams & Lawrence, 2015:107). However there are several advantages of interviews, namely (Adams & Lawrence, 2015:107-108):

- The face to face nature of an interview can encourage respondents to take the research seriously and enhance the rate of response and accuracy of the answers;
- Additional information can be obtained, which could be missed with other research methods;
- The researcher can observe non-verbal actions e.g. facial expressions body posture, hand gestures etc.; and
- Follow-up questions or clarification of questions can be done through interviews, depending on the structure of the interview. In the current study structured interviews were used, by making use of questionnaires to gather information.

4.6.2.2 Objectives of the interviews

In the current study after the completion of the game, a previously selected group of learners were asked to take part in additional interviews. They had to complete an extra questionnaire that had been set beforehand and discuss it with the researcher in a brief, oral interview (structured interview) (10-15 minutes). The teacher responsible for the group was also asked to complete a questionnaire and to briefly discuss it with the researcher. Their responses to the questions were summarised (refer to Chapter 6.2.4.2 Conclusion of information received from the interviews).

The main objective of the additional, structured interviews used for the interview with the learners, was to confirm the feelings, attitudes and behaviour of learners about the game *Commercium* and the subject Accounting in general. The teachers were interviewed as well to get a deeper understanding of the presentation of the subject, the resources used during classes and their perception and view on the *Commercium* game to be used as a resource. The questions were chosen to provide additional information on the secondary objectives to be reached, namely:

- The teaching-learning environment, including the challenges teachers and learners experience, as well as possible solutions for these problems (Refer to secondary objective number 1.5.2.1);
- The tools to be used in the presentation of the subject Accounting to resolve these challenges (Refer to secondary objective number 1.5.2.2);
- Evaluation of the game *Commercium* in schools to determine the impact it had on learners' perceptions of the subject, including the perceptions of teachers presenting the subject (Refer to secondary objective number 1.5.2.4); and
- Providing recommendations for the use of educational tools such as the *Commercium* game in Accounting, with a view to improve learners' attitude (their motivation and interest) towards Accounting (Refer to secondary objective number 1.5.2.5).

4.6.2.3 Credibility and trustworthiness

Lincoln and Guba (1985) believe that trustworthiness, dependability, credibility, ability to confirm information and transferability are criteria for qualitative research and that trustworthiness is the most important of all. This is confirmed by Flick (2014:487).

The researcher's goal in qualitative research is to understand the phenomenon by studying the ways in which respondents perceive and experience things to give sense to their lives. Member checks is the most important to assess the trustworthiness (Lincoln & Guba, 1985). Member checks are done when the researcher follows up with respondents of a study to ensure that the findings are a reflection of the respondents' meanings as they intended it to be (Kornbluh, 2015:397; Patton 2002; Lincoln & Guba 1985).

Researchers are often influenced by their own subjective experiences and perform research with a specific view point, which could influence their evaluation (Kornbluh, 2015:397; Kleinman 2007; Lincoln & Guba 1985). The solicitation of the participant perspective is a way for researchers to put their own personal bias to test and discover different explanations to gain a more complete understanding of the phenomenon (Kornbluh, 2015:397; Kleinman 2007; Lincoln & Guba 1985). This also helps to ensure the ethical responsibility of researchers to accurately present the actual experiences of respondents (Kornbluh, 2015:398; American Psychology Association [APA] 2015; Fossey *et al.* 2002). Kornbluh (2015:397) describes a set of actual strategies to enhance the utility of member checks as a practical technique for researchers to establish trustworthiness in a research process by applying the following strategies:

- (1) To understand the population;
- (2) To conduct the process of data analysis;
- (3) To reconstruct the data collection process and to be open to change;
- (4) The comparison of themes; and
- (5) The incorporation of member checks into data analysis.

In this study the researcher worked for a longer period amongst the learners in High School B and gained a proper understanding of the Grade 9 EMS learners. Questionnaires were used, which were based on similar questionnaires developed and tested at the NWU by Fouché (2006), to gain the required information from the target population (Grade 9 EMS) learners. In each school used in the study, the teachers were present and observed the process, while learners played the game. They had opportunities to provide comments and suggestions of the interview questionnaires. The research process was therefore open to change and to incorporate suggestions for future research.

4.6.2.4 Conducting the interviews

In the current study additional questions were developed and used to compliment the questions answered by learners in the questionnaires (refer to Annexure C: Interviews). Questions were chosen to provide a wider background on the learners and their learning environment in each school, which took part in the research project. These questions show that levels of decisions that go into the process of the development of research are interlinked. Some of the questions were asked to both the learners and the teacher, in order to determine if the information provided by teachers and learners correlate, so that the reliability and validity of the answers could be increased. The interviews were structured and the same questionnaires had been used in all three schools in order to enhance the credibility of information gained.

The format of the questionnaire was simple with various types of questions to save time in completion thereof. Yes-No questions and questions where teachers could select from a list of choices by marking with a cross (X) had been used. Questions were chosen especially on teaching and learning materials to determine the need for new resources and the current usage thereof. Questions were developed which provided additional information on the questions used in the playing of the game (refer to 4.6.2.3 Credibility and trustworthiness and Annexure B Questionnaire after the game).

The questionnaire used for the interviews with learners were designed to provide additional information on learners' perceptions and emotions regarding the game and presenting of Accounting in class and consisted out of different types of questions as follows (Refer to annexure C: Interview with learners):

- The first few questions were simple questions on the demographical information of the school;
- Question 1 is irrelevant as EMS is compulsory in Grade 9;
- Question 2 asked learners to indicate their feelings on the subject Accounting as positive, negative or neutral;
- Question 3 is a Yes-No question on whether the Accounting classes in school are presented in an interesting manner;
- Question 4 asked the learner whether he/she is happy with the Accounting mark achieved for the subject;

- Question 5 requests the learner to indicate in which category his/her mark for Accounting falls;
- Question 6 asked the learner whether the time allocated for Accounting in class is enough;
- In Questions 7.1 – 7.12 learners had to choose from a list the various teaching tools which are being used in their classrooms;
- Questions 8 – 10 were on the game *Commercium* and their enjoyment thereof;
- Question 11 requested learners' opinion on games played in class in general; and
- Question 12 asked them whether they would like to do Accounting on a computer programme during class.

The **questionnaire** used for **the interview with teachers** had been designed with different types of questions as follows (refer to Annexure C: Interview with teachers):

- In the first few questions the teacher had to complete basic demographic information on the school;
- Questions 1-4 dealt with the groups and needs of the learners in each group;
- Questions 5-6 dealt with the average, individual results learners achieved in the subject Accounting;
- Questions 7.1-7.11 teachers had to mark with a cross (X) the different teaching tools used in the presentation of Accounting;
- Questions 8.1 – 8.3 were about the general attitude of learners in the Accounting class;
- Question 9 was about the class average for the subject;
- Question 10 was a Yes-No question about the teacher's opinion on whether the school provided sufficient tools for teaching or not;
- Question 11 was an open ended question on the schools needs for teaching and learning material; and
- Question 12 requested the teacher's suggestions for the presentation of the subject Accounting in future.

During the study all the learners were tested in the same learning environment and therefore had the same teaching-learning experiences. Each learner taking part in the interviews answered a separate questionnaire from the one used after the game play. The questionnaires were then gathered by the researcher. Each question was discussed in the group afterwards to get the overall view and experience of the group and documented by the researcher. The answers provided on each question were then summarised by the researcher to get a broader picture of the feelings and attitudes on Accounting and the game. These questionnaires were additional to the post and pre-questionnaires used in the quantitative study and therefore not statistically analysed, as this was a qualitative study. One teacher per school had to answer a separate questionnaire and discuss it then with the researcher. All the answers provided by learners and teachers were documented, and the questionnaires summarised by the researcher and the conclusion thereon is therefore a reliable version of respondents' responses.

4.6.2.5 Analysis

Qualitative data analysis is a process where data is summarized from qualitative measures (non-numerical measures) (Adams & Lawrence, 2015:140). Various analytical processes are found such as:

- **Analytical induction** is a method where the hypothesis arises from the data and is changed when new information is found. There are basic steps to perform analytical induction, namely (Adams & Lawrence, 2015:140-141):
 - One case must be examined completely, e.g. a complete interview, responses from a participant or an observation. The hypothesis is then developed based on that specific case;
 - The next case must then be examined to see if the hypothesis matches it; and
 - Other cases should then be examined while the hypothesis is revised, until one hypothesis is found which matches all cases.
- **Thematic analysis:** This is a qualitative analysis process where every case is examined to find general themes (Adams & Lawrence, 2015:142);
- **Card sort method:** Various people examine the cases in a thematic analysis and identify themes and categorize it (Adams & Lawrence, 2015:142); and
- **A prior content analysis:** This is a qualitative analysis process where the researcher uses predetermined categories to code the cases (Adams & Lawrence, 2015:142).

In the current study one interview per group was conducted at a time. The Analytical induction method was used by performing a study on each school separately. The structured interviews with learners were then analysed and summarised by the researcher to determine the respondents' views on the game. No names of schools were used by the researcher and alphabetical letters were used to refer to the various schools (refer to Annexure C: Interview with learners and Chapter 5.4 (Summary of findings of interviews conducted). Data were analysed by the researcher and summarised for each school, to provide an overall picture of the learning environment in the Accounting class and also the teacher's view on games used as teaching tools.

4.7 ETHICAL REQUIREMENTS

Researchers need to consider ethics which are required at every phase of their research process, when they plan the study. They need to ensure that no harm comes to subjects of the research study (Adams & Lawrence, 2015:2-3; Foster *et al.*, 2017:299). Ethical principles are described as the moral values, as well as ideals of people and provide a general framework to analyse specific ethical dilemmas within (Syracuse University School of Education, 2017; Adams & Lawrence, 2015:4). Five ethical principles are identified which can be applied to various professions, namely: 1) Respecting the autonomy of individuals, 2) Doing no harm to others, 3) Beneficence of others, 4) Justice, and 5) Faithfulness (Syracuse University School of Education, 2017). Ethical standards are specific rules that enhance ethical principles (Adams & Lawrence, 2015:5).

In this study attention was given to anonymity by letting learners draw numbers from a closed box and using it on the questionnaires to separate each questionnaire from the rest. The researcher was unable to identify any of the respondents from the study as no record was kept of the numbers used. No names were used on the questionnaires. The researcher was the only person who collected the questionnaires from the learners and was responsible for keeping it safe. Learners only put numbers on the questionnaires to distinguish it from each other, but they could not be identified by the numbers or in any other way. No videos had been taken during the project to keep learners' anonymity safe.

Confidentiality is to preserve authorised access and disclosure of information and the protection of personal privacy (Foster *et al.*, 2017:300). People must not be studied without being informed on the topic, the procedures, advantages and disadvantages of participating in a study and only when they had provided consent. Informed consent means that respondents know what the study entails, who is performing the research, what they should do and how long it will take, the advantages and disadvantages of a study. They should also give consent to be recorded if

applicable (Adams & Lawrence, 2015:6; Foster *et al.*, 2017:300). It is better to receive written consent for proof thereof. Before the current research study could take place, permission also had to be granted by the North West Department of Basic Education: Kennith Kaunda District, as well as the various schools, teachers and parents of the school learners. Formal letters of approval for the project was provided by the DBE (refer to Annexure D: Permission letters). Letters of permission were also developed and sent out to the various parties involved and parents had to sign permission letters for their children to take part in the project (refer to Annexure D).

The research took place at the different schools in the presence of teachers, so that no harm could come to the learners. A faithful presentation was given of the information collected through the questionnaires, by using statistical analysis.

Ethical clearance for this study was also obtained from the Ethics Committee of the Faculty of Economic and Management Sciences, The North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC) and the following Ethics number was provided: N W U - 0 0 3 7 9 - 1 5 - A 4.

4.8 SUMMARY

The research methodology is a description of the research process used to collect data and information for decision making. The research design is the type of study to be done to receive good answers to the research problem. The research methodology is a description of the research process used to collect data for decision making and may include publication research, interrogations, questionnaires etc. Three types of research studies are found, namely: quantitative research, qualitative research and mixed methods research. In this study MMR was done to examine the research problem, since all procedures used to select and analyse both quantitative and qualitative data appear in one study. The quantitative study consisted of research questionnaires and the qualitative research consisted of interviews with school learners and their Accounting teachers.

The population of this study consisted out of Grade 9 learners, who have EMS as a subject. The total group of respondents in the research project was 145 learners from three schools. The percentages for each school from the total population were as follows: High School A: 42.8%; High School B: 45.5%; and High School C: 11.7%. General non-probability sampling techniques include: Convenience sampling and Purposive sampling. The purposive sampling technique was used in this research process, which is a non-random sampling method. Three different secondary schools in SA were chosen according to their composure of learners, availability and

willingness to cooperate in the research project and because of their specific different characteristics. The Grade 9 EMS learners had to split up in groups and play the game *Commercium* for a specified time period (1.5 to 2 hours). They had to complete pre- and post-qualitative questionnaires for data collection and a small group was selected by means of convenience sampling for the researcher to conduct interviews with them.

Research instruments used to collect data for the current study are quantitative research questionnaires and qualitative interviews. The main goal of using these mixed method instruments is to combine data to receive an all - inclusive overview of the learners' views of the game *Commercium* and the effect thereof.

A questionnaire is a technique of descriptive research, where respondents answer questions to determine the opinions and current practices of a specific population. The formulation of research questions is important to determine if empirical activities will provide answers. In this study a pre-questionnaire was used to collect demographic information about the learners, their perception of Accounting and if they played the *Commercium* game before. The post-questionnaire on the game *Commercium* was completed by learners after they played the game and consisted of questions on learners' exposure to soft skills and their perceptions of the game as an educational tool.

Validity and reliability are important requirements for measurement during research projects. Reliability can be divided into internal and external reliability. Four types of validity are found, including: Logical validity; Content validity, Criterion validity; and Construct validity. Internal reliability is an estimate of the reliability of outcome items in a test, while external reliability refers to the degree of agreement between various measuring instruments. One of these methods is the Cronbach's alpha technique, which was determined for all factors identified by means of factor analysis, to determine internal reliability in the current study.

A standardised questionnaire is one in which the same questions in the same format are presented to all respondents. In the current study the focus was on surveys, where questionnaires and structured interviews were used for data collection with the goal to make general conclusions from a sample to a population. Questionnaires should be well-planned and -prepared to achieve valid results. The construction of the correct questions is difficult and the researcher should determine the objective which is measured by each question and how the response will be analysed. In the current study the questionnaire was developed based on questions used in a previous study on the *Commercium* game.

The researcher conducted informal, structured interviews with a small group of volunteers as well as the teacher from each school, after they had played the game *Commercium*. The questions were chosen to provide additional information on the secondary objectives to be reached, namely: The teaching-learning environment and the challenges experienced in Accounting classes; recommendations for the use of educational tools, an evaluation of the game *Commercium* in schools to determine the impact on learner perceptions and the tools to be used when presenting Accounting.

When a study is planned, researchers need to consider ethics required at every phase of their research process. In the current study, permission was gained from parents and principals of the various schools and approval for the project was received from the NWU-IRERC. Anonymous numbers were drawn from a closed box to separate questionnaires from one another. The researcher was unable to identify any of the respondents from the study.

In the next chapter a detailed analysis of the research questionnaire findings of this study is provided.

CHAPTER 5: FINDINGS

5.1 INTRODUCTION

The main objective is to analyse whether introducing a board game in secondary school accounting as educational tools, leads to a positive experience for the learners and an exposure to soft skills within the subject (refer to 1.5.1). Secondary objectives were set to achieve this main objective (refer to 1.5.2). In Chapters 2 and 3 a literature study was done on the subject Accounting, the challenges of teaching Accounting and possible solutions to these challenges. In order to reach the set objectives, the most efficient research method was determined and discussed in Chapter 4. In this chapter the finding of the empirical study are presented.

The statistical analysis of the data acquired from the questionnaire was performed by Prof Suria Ellis from the Statistical Consultation Services of The North-West University (Potchefstroom campus). The analyst used SPSS (IBM, 2017) and Statistica (TIBCO, 2017) to analyse the data. The following techniques were used to analyse the data:

- The rate of occurrence and percentages of the demographic information was determined;
- The acceptability of a factor analysis on the data which had been based on Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity was discussed;
- An exploratory factor analysis was done;
- The reliability of the factor analysis was tested by using the Cronbach alpha-value; and
- A t-test and One-way analysis of variance (ANOVA) were determined to determine the influence of biographical variables on the factor scores. The effect sizes between the means of the factors for different biographical variables were also determined.

The empirical study addressed the following secondary objectives:

- To analyse whether the game *Commercium* exposes learners to soft skills in the subject accounting (objective 1.5.2.4); and
- To analyse if learners and teachers perceive the game *Commercium* as a positive educational tool and if the exposure to the game improves the attitude of learners towards the subject Accounting (objective 1.5.2.5).

The results of the research questionnaires and interviews are reported according to the above objectives. For ease of reference the questions in the questionnaires and interviews pertaining to these objectives are cross-referenced as follows:

Table 5.1: Cross reference of objectives to research instruments

Objective	Questionnaires	Interviews	Interviews
	Learners	Learners	Teachers
Soft skills exposure (objective 1.5.2.4) (paragraph 5.3)	Q 1-6		
Perceptions on the game (objective 1.5.2.5) (paragraph 5.4)			
Value as educational tool	Q 12-19, 20-22	Q 7-8	Q7, 10-12
Attitude towards subject	Q 7-11	Q1-6	Q 8

Source: Researcher

5.2 The demographic information on the respondents

This section presents the descriptive statistics of the biographical data. Biographic and other relevant data were interpreted for school learners from three different schools. In this study the sample group consisted of Grade 9 learners who have EMS as a school subject. Section 1 of the research questionnaire consists of the demographic information of the sample. This is necessary to compare the information to other similar studies. The following topics were examined:

- School;
- The gender of respondents;
- Grade;
- Subject;
- Career option;
- Previous exposure to the game;
- Language; and
- Race

Table 5.2: Demographic information of the schools

School	Frequency	Valid Percentage	Cumulative Percentage
A	62	42.8	42.8
B	66	45.5	88.3
C	17	11.7	100.0
Total	145	100.0	

Source: Researcher

In total 145 learners from the three schools chosen took part in the research project. The percentages for each school from the total population were as follows: High School A 42.8%, High School B 45.5% and High School C 11.7% (Table 5.2).

Table 5.3: Respondents by gender

Gender	Frequency	Valid Percentage	Cumulative Percentage
Male	67	51.1	51.1
Female	64	48.9	100.0
Subtotal	131	100.0	
Missing	14		
Total	145		

Source: Researcher

The total number of respondents who completed the question was 131, while 14 did not answer that particular question. From those who answered the question 51.1% of the population was male and 48.9% female (Table 5.3).

Table 5.4: Respondents per grade

Grade	Frequency	Valid Percentage	Cumulative Percentage
Other	1	0.7	0.7
10	61	42.4	43.1
9	82	56.9	100.0
Subtotal	144	100.0	
Missing	1		
Total	145		

Source: Researcher

The study focussed on Grade 9 learners as they need to make subject choices at the end of Grade 9. In total 42.4% of the respondents were in Grade 10 and took EMS at Grade 9 level. One learner incorrectly indicated that he was in another grade. The majority of the learners were in Grade 9 (56.9%). For this reason no further analysis was performed on the grade of the learners (Table 5.4).

Table 5.5: Response to choosing Accounting as a career option

Accounting as a career option	Frequency	Valid Percentage	Cumulative Percentage
Yes	35	25.0	25.0
No	69	49.3	74.3
Unsure	36	25.7	100.0
Subtotal	140	100.0	
Missing	5		
Total	145		

Source: Researcher

Of the 140 respondents who answered the questions only 25% indicated that they consider a career in Accounting, while 49.3% disagreed and 25.7% was unsure (Table 5.5). This is an indication that Accounting is not currently considered a favourite career option for these school learners.

Table 5.6: Response to previous exposure to the game

Previous exposure to the game	Frequency	Valid Percentage	Cumulative Percentage
Yes	51	38.3	38.3
No	82	61.7	100.0
Subtotal	133	100.0	
Missing	12		
Total	145		

Source: Researcher

From the respondents exposure to the game 38% indicated that they had indeed played the game before and 62% declared that they had not earlier been exposed to the game (Table 5.6). It was a totally new experience for the majority of learners. When the results were summarised the researcher took this into account. In the interviews with learners questions were asked on the use of games in general and also on the playing of the *Commercium* game. The results of the interview are reported in section 5.4.4 of this chapter.

Table 5.7: Language indication

Language	Frequency	Valid Percentage	Cumulative Percentage
Not indicated	57	39.3	39.3
Afrikaans	42	29.0	68.3
English	16	11.0	79.3
Sesotho	4	2.8	82.1
Setswana	19	13.1	95.2
isiXhosa	2	1.4	69.6
isiZulu	5	3.4	100.0
Total	145	100.0	

Source: Researcher

In SA there are eleven official languages. The composition of home languages of respondents in the study was as follows: 39.3% of the respondents did not indicate their home language; the majority of the learners (29.0%) spoke Afrikaans, 13.1% of learners spoke Setswana, 11.0% spoke English, 3.4% spoke isiZulu, 2.8% Sesotho and 1.4% isiXhosa (Table 5.7).

Table 5.8: Race indication

Race	Frequency	Valid Percentage	Cumulative Percentage
African	50	40.0	40.0
Coloured	16	12.8	52.8
White	51	40.8	93.6
Indian	6	4.8	98.4
Other races not specified	2	1.6	100.0
Missing	20		
Total	145	100.0	

Source: Researcher

The learners who answered this specific question were 125 and 20 learners out of the 145 respondents, chose not to answer the question on race. The learners in the study were from various races which consisted of the following: White learners were the most (40.8%) and almost equal to African learners (40.0%). Coloured comprised 12.8% and Indian 4.8% of the population. 1.6% of these learners indicated that they belong to another race group and 13.8% of the respondents did not answer the question (Table 5.8).

5.3 EXPOSURE TO SOFT SKILLS

The first empirical objective was to analyse whether the game *Commercium* exposes learners to soft skills in the subject Accounting (objective 1.5.2.4). This objective was reached by analysing questions 1 to 6 of the Questionnaire for learners: After the game (Annexure B).

5.3.1 Descriptive statistics

The descriptive statistics of the learners' exposure to soft skills are reported in table 5.9 below.

Table 5.9: Exposure to soft skills through the game

	% Disagree (1)	% Neutral (2)	% Agree (3)
1. Ek moes probleme identifiseer en oplos met kritiese en kreatiewe denke. / I had to identify and solve problems using critical and creative thinking.	11	41	48
2. Ek moes saam met ander werk as lid van 'n span. / I had to work with others as a member of a team.	17	20	63
3. Ek moes myself organiseer en bestuur op 'n verantwoordelike en doeltreffende wyse. / I had to organise and manage myself responsibly and effectively.	10	20	70
4. Ek moes inligting insamel, ontleed, organiseer en evalueer. / I had to collect, analyse, organise and evaluate information.	18	29	53
5. Ek moes doeltreffend kommunikeer deur van visuele en/of taalvaardighede gebruik te maak op mondelinge en/of geskrewe wyse. / I had to communicate effectively using visual and/or language skills by way of oral and/or written presentation.	18	30	52
6. Ek moes verskeie finansiële besluite neem en verskillende besigheidstransaksies hanteer. / I had to take several financial decisions and had to deal with various business transactions.	15	24	60

Source: Researcher

It seems that for most of the questions the majority of learners (above 50%) agreed that the different outcomes were reached. For question 1 on problem solving, 48% agreed that they used critical thinking and problem solving during the game. This was the lowest indication. 70% of all learners believed that the game helped them to organise and manage it themselves. 60% believed that the game provided them with an opportunity for making financial decisions and that they learned how to work in a team. More than 50% said that the game taught them how to collect, analyse and evaluate information and to communicate effectively (Table 5.9).

5.3.2 Exploratory factor analysis

Several variables are used to differentiate objects in scientific studies (Rietveld & van Hout, 1993). Factor Analysis shows inter-correlations between sets of variables to unite them under more common and underlying variables. It begins with the calculation of the inter-correlations of all the measures used (the correlation between all possible pairs of variables), to determine the

factors which have the optimum explanation of a group of measurements (Venkaiah *et al.*, 2015; Thomas *et al.*, 2015:151-152).

Factor analysis is normally used in education and psychology. It is a **method used to interpret questionnaires** on research subjects' behaviour and is a statistical procedure with a variety of uses (Thomas *et al.*, 2015:151; Williams *et al.*, 2014:2; Nunnally, 1978). Factor analysis is also seen as a multivariate statistical method, which is mainly used to summarise and gain clarity on data (Varmuza & Filzmozer, 2016:4). The summarised data can also be used in later analyses (Rietveld & van Hout, 1993). **Firstly**, factor analysis is used to diminish a huge large group of variables into a smaller group of variables (factors). **Secondly**, it is responsible for establishing basic dimensions between measured variables and inactive constructs. **Thirdly**, it provides evidence of validity in self-reporting scales (Thomas *et al.*, 2015:151; Williams *et al.*, 2014:2; Nunnally, 1978).

Two common **types of factor analysis** being used are:

- (1) Exploratory; and
- (2) Confirmatory analysis (Thomas *et al.*, 2015:152).

Certain statistical measures can be used to indicate whether factor analysis can be performed. The KMO Test measures the suitability of data for factor analysis. **The KMO statistic** varies between 0 and 1. The following rule is used to interpret the statistics: If the KMO values are between 0.8 and 1, it is an indication of an adequate sample and if the values are lower than 0.6, the sampling is believed to be inadequate and corrections are needed (Venkaiah *et al.*, 2015; Statistics How To, 2016). If KMO values are close to 0 it indicates that there are huge partial correlations compared to the sum of correlations (The correlations are widespread, which is a problem for factor analysis) (Venkaiah *et al.*, 2015; Statistics How To, 2016). KMO & Bartlett's test of sphericity is a measure of sampling adequacy used to check the ratio of the case to variable for the analysis being performed (Somashekhar *et al.*, 2016:589). KMO & Bartlett's test is important to accept the sample adequacy and the suitability of data. Bartlett's test of sphericity is used to measure the null assumption that the initial correlation matrix is an identity matrix. In order for factor analysis to work, some relationships between variables are required. If the R-matrix was an identity matrix, it will result in all correlation coefficients to be zero. Therefore this test needs to be significant (have a significant value of less than 0.05). A significant test means that the R-matrix is not an identity matrix; therefore, some relationships exist between the variables to be included in the analysis (Somashekhar *et al.*, 2016:589).

Cronbach's alpha coefficient calculates the interrelation between the responses between all the items in a specific scale. It can also inform us how alpha will change (decrease or increase) if an item is deleted. If Alpha is less than 0.7 an item or more can be deleted to reach the scale of 0.7 (Adams & Lawrence, 2015:90).

In the current study exploratory factor analysis was done to make sense of the questionnaires used to determine the learners' feelings and attitudes on the game *Commercium* and the subject Accounting.

Exploratory factor analysis was performed on question 1 to 6 of the questionnaire used after the game. The results of the KMO measure of sampling adequacy, *p*-value of Bartlett's test of sphericity and the determinant of correlation matrix are reported in table 5.10 below.

Table 5.10: KMO measure of sampling adequacy, p-value of Bartlett's test of sphericity and the determinant of correlation matrix

	KMO measure	Determinant of correlation	Bartlett's test of sphericity		
			Approx. Chi-Square	Df	<i>p</i> -value
Exposure to soft skills	0.774	0.113	281.196	15	0.000

Source: Researcher

The **KMO sampling adequacy** was 0.774, which is a satisfactory result, which suggests that the sample size was adequate and correlations sufficient for factor analysis. As the determinant of correlation is larger than 0.0001, a factor analysis solution is possible. For this data Bartlett's test is highly significant ($p < 0.000$) also indicating that factor analysis is appropriate (Table 5.10).

Table 5.11: Communalities questions 1 to 6

	Initial	Extraction
q1	1.000	0.564
q2	1.000	0.518
q3	1.000	0.614
q4	1.000	0.437
q5	1.000	0.601
q6	1.000	0.513

Source: Researcher

Different methods are used for **factor extraction**, such as principal components, unweighted least squares, generalized least squares, maximum likelihood, principal axis factoring, alpha factoring, and image factoring. Principal Components Analysis is a factor extraction method, which is used to form uncorrelated, linear combinations of the observed variables. The first component has maximum variance. After that other components explain progressively smaller portions of the variance and they do not correlate with each other. Principal components analysis is used to get the initial factor solution and can be used with a singular correlation matrix (IBM, 2018).

The **communalities** table as presented in table 5.11 shows the initial communalities before rotation. All of the initial communalities are above 0.30 and therefore a small sample size is not likely to distort the results (Table 5.11).

Table 5.12: Total variance explained

Factor	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.247	54.117	54.117	3.247	54.117	54.117
2	0.825	13.755	67.872			
3	0.696	11.596	79.469			
4	0.558	9.301	88.770			
5	0.404	6.739	95.508			
6	0.270	4.492	100.000			

Source: Researcher

One Eigen value is greater than 1.0, which is the common criterion for a factor to be useful. The first factor explained 54.117% of the variance. This suggests that the scale items are one-dimensional (Table 5.12).

Table 5.13: Factor matrix (Questions 1 – 6)

Questions	Component 1
q3	0.784
q5	0.775
q1	0.751
q2	0.720
q6	0.716
q4	0.661
Cronbach's Alpha	0.83
Factor mean	2.43
Factor standard deviation	0.54

Source: Researcher

The component matrix above indicates that there is a compact correlation and that the factor analysis showed one distinct factor. All the statements on this factor loaded a minimum of 0.661. It is clear from Table 5.13 that the Cronbach's alpha of the first factor used is higher than 0.7, which shows that the factor is reliable and that questions could be grouped together (Adams & Lawrence, 2015:90-91; Cortina, 1993:101). It also indicates internal consistency, as well as good reliability of data. The mean of 2.43 indicates that on average respondents strongly agree that they were exposed to soft skills.

5.3.3 Association with Biographical data and Effect Sizes

After completing the factor analysis it was necessary to determine whether important differences exist between various groups in the study.

The *t*-test is a test to explore the statistical differences between groups where there are only two groups. Analysis Of Variance (ANOVA) is an addition of the independent *t*-test where there are more than two groups. ANOVA is believed to be a technique used to determine whether there are any **significant differences** between the sample means of 3 or more independent groups (Thomas *et al.*, 2015:166; Field, 2016:4-5). A null hypothesis is used where it is assumed that there are no distinctions between the groups. The significance value of the *t*-test (*p*) is significant at $p < 0.05$. This indicates that there is a less than 1 out of 20 chance (5%) of a variance because of a sampling error, if it is assumed that the groups of respondents are from independent, random samples (Thomas *et al.*, 2015:167). If “*p*” is below 0.05 it indicates that the means differ statistically, but ANOVA cannot specify between which groups these differences appear (Thomas *et al.*, 2015:167). **Post hoc tests** therefore are necessary to protect the experiment-wise error type. In this study the **Tukey honestly significant difference**

(HSD) test for unequal sample sizes was done on factors that varied severely from others in order to investigate variations among groups and effect sizes (Thomas *et al.*, 2015:170; Field 2016:4-5).

When a research study is conducted the readers of the study should know whether the mediation's effects are large or small, worthwhile or unimportant (Valentine & Cooper, 2003:1).

Three different approaches exist to assess the **size of the effect of the mediation**, namely: a) to assess the statistical relevance of the effects, b) the assessment of the practical relevance based on the mean differences of experimental groups, and c) assessing the relative size of the effects based on uniform approximations of effect size (Valentine & Cooper, 2003:1).

To calculate effect size (d) for any comparison, the difference between the 2 group means must be divided by their average standard deviation or by the standard deviation of the control group. The outcome is a measure of the difference between the two group means expressed in terms of their common standard deviation or that of the untreated population for example a (d) of 0.25 indicates that there is one-quarter standard deviation between the two means (Valentine & Cooper, 2003:4; Cohen 1988). Table 5.14 below contains the guidelines for the interpretation of effect sizes (d).

Table 5.14: Guidelines for the explanation of effect size (d)

Value of Effect Size (d)	Explanation
0.2	Small (#)
0.5	Medium (##)
0.8	Large (###)

Source: (Boersema, 2015:94; Steyn & Ellis, 2009:113; Cohen, 1988:24)

Practical significant data is encountered where $d \geq 0.8$ as the variation has a large effect (Cohen, 1988:24; Steyn & Ellis, 2009:106-108, 113). These interpretations of the effect sizes are only guidelines. In order to distinguish between effect sizes in tables, a variety of symbols were used: A single (#) indicates a small significance, two (##) indicate a medium significance, while three (###) indicate a major effect. Effect sizes were calculated among the three factors on the following items during the study:

- School (refer to 5.3.3.1);
- Gender (refer to 5.3.3.2);
- Race (refer to 5.3.3.3);

- Experience of the game (refer to 5.3.3.4);
- Career option (refer to 5.3.3.5); and
- Home language (refer to 5.3.3.6).

5.3.3.1 School

The results of ANOVA with regard to school are presented in Table 5.15.

Table 5.15: Results of ANOVA for exposure to soft skills for the three schools

	School A	School B	School C		
Factor	Mean	Mean	Mean	Mean Square Error (MSE)	ANOVA <i>p</i> -value
Exposure to soft skills	2.76	2.10	2.51	0.193	<0.001

Source: Researcher

From the statistics displayed above in Table 5.15 it was found that for the exposure to soft skills a ***p*-value** below 0.05 was determined for all three schools. This indicates that the result is statistically significant, as $p < 0.001$ (a chance lower than one in a thousand of being wrong) (StatsDirect, 2016). **The Mean** for High School B was the lowest at 2.10. This indicates that these learners experienced the least exposure to soft skills. The mean for High School A is the highest of all three schools at 2.76. These learners experienced the highest exposure to soft skills.

Tukey honestly significant difference (HSD)

In order to determine which groups in the sample differ from one another, Tukey's HSD test is performed (Ramanan, 2015; Nugent, 2013; Tukey, 1984).

Table 5.16: Tukey's HSD test

School	Unequal N HSD; Variable: Outcomes Marked differences are significant at $p < 0.05$		
	High School A M = 2.7618	High School B M = 2.0955	High School C M = 2.5098
High School A		0.00002	0.216027
High School B	0.000022		0.016493
High School C	0.216027	0.016493	

From table 5.16 above it can be seen that **significant differences** occur between High Schools B and A, as well as C, with p -values lower than 0.05. There is, however, no significant difference between High Schools A and C. In conclusion it could be said that there is a statistically significant difference between the 3 schools, which should be taken into account in all additional analyses. This was done by performing Mixed-Model (HLM) analyses on all further data.

Table 5.17: Effect sizes of the difference in Mean between the 3 schools

School	Effect size (d)
A with B	1.31 (###)
A with C	0.62 (##)
B with C	0.82 (###)

Source: Researcher

In Table 5.17 where school A is compared with school B and B is compared to C, the **effect size (d)** of the exposure to soft skills is large as it exceeds 0.8. The effect size (d) for School A compared to School C, is medium as it exceeds 0.5. The largest difference appears between Schools A and B. The large difference between these schools implies that the specific schools should be considered when further analyses are done, as these differences could have a large impact. In the rest of the analyses, hierarchical linear models (HLM) have been used (where the dependency of learners from the same school were taken into account), to determine the effect of biographic variables.

5.3.3.2 Gender

The learners in the schools consisted of male and female learners. In both Schools A and B, the class groups consisted of boys and girls. In School C the group consisted only of girls. The effect sizes and statistically significant differences in connection with gender is summarised in Table 5.18 below.

Table 5.18: Estimated Marginal Means: Mixed-Model Analysis for gender

Factors	Mean	Mean	Mean Square Error (MSE)	2-Tailed <i>p</i> -value (<0.05) HLM	Effect Size (<i>d</i>)
	Male	Female			
Exposure to soft skills	2.45	2.48	0.175	0.690	0.06 (#)

Source: Researcher

From Table 5.18 above it can be seen that the *p*-value exceeds 0.05 and is therefore not statistically significant. The effect size (*d*) for the exposure to soft skills is 0.06, which is smaller than 0.2 and is therefore also not practically significant. The girls and boys did not differ in terms of exposure to soft skills through the game.

5.3.3.3 Race

The game was tested among learners who belong to various races in SA, in order to determine whether the various race groups had experienced the game differently. This was a limitation in previous studies on the game (Fouché & Visser, 2008:591, 600; Fouché, 2006:155). The HSD Test for race is not applicable, as there are more than two variables in this study. However, Table 5.19 below shows the means, *p*-values, effect sizes and statistically significant differences with regard to race.

Table 5.19: Mixed Model Analysis for race & Effect sizes

Factor	Mean	Mean	Mean	Mean	Mean Square Error (MSE)	HLM p -value <0.05	Effect Size (d)
	African	Coloured	White	Other			African with Coloured
Exposure to soft skills	2.408	2.499	2.425	2.585	0.193	0.371	0.17
							African with White
							0.03
							African with other not specified
							0.33
							Coloured with White
							0.14
							Coloured with other not specified
							0.04
							White with other not specified
							0.02

Source: Researcher

From the table it can be seen that the **mean score** for coloured learners is higher than that of white learners. From the above table it can be deduced that the p -value exceeds 0.05 and is therefore the differences are not statistically significant.

For factor Exposure to soft skills, the mean for Coloured (2.499) is higher than that of African (2.408) and White (2.425). However the mean for Other (2.585) exceeds the means for African, White and Coloured. The effect sizes (d) for the exposure to soft skills is 0.193 or smaller, which is smaller than 0.2 and is therefore also not practically significant.

5.3.3.4 Experience of the game

In the questionnaire completed prior to playing the game, learners were asked whether they had played the game *Commercium* before (refer to Annexure B: Questionnaire before the game). Table 5.20 below shows the effect sizes and statistical significant differences in connection with previous experience learners might have had with the game.

Table 5.20: Mixed Model Analysis for previous experience of the game

Factor	Mean	Mean	Mean Square Error (MSE)	HLM p-value <0.05	Effect Size (d)
	Yes	No			
Exposure to soft skills	2.483	2.433	0.206	0.576	0.09

Source: Researcher

From Table 5.20 above it is evident that the *p*-value exceeds 0.05 and is therefore not statistically significant. The effect sizes is small (< 0.2) and therefore also not practically significant. Any previous exposure to the game did therefor did not influence the current study. This may be because the circumstance in which the game was played was different.

5.3.3.5 Career option

The question was posed as to whether learners would consider a career in accountancy (refer to Annexure B: Questionnaire before the game). Table 5.21 shows the effect sizes and statistically significant differences in connection with career option.

Table 5.21: Mixed Model Analysis for career option

Factor	Mean	Mean	Mean	Mean Square Error (MSE)	HLM p-value <0.05	Effect Size (d)
	Yes	No	Unsure			Yes with No
Exposure to soft skills	2.607	2.451	2.387	0.180	0.108	0.29
						Yes with Unsure
						0.41
						No with Unsure
						0.19

Source: Researcher

From Table 5.21 above it is clear that the p -value exceeds 0.05 and therefore not statistically significant. The mean is the largest for learners who would consider a career in accountancy. The majority of learners indicated that they do consider accountancy as a career option and had experienced a larger exposure to soft skills through playing of the game. All effect sizes are smaller than 0.5 and one is less than 0.2. The differences between learners who selected yes compare to no and unsure is therefore moderately practically significant.

In the pre-questionnaire used in the research project learners were asked whether they consider a career in accountancy and what the reason is for the answer provided (Refer to Addendum B: Question 5 and 6). Some of the reasons provided by learners who answered **negatively** include the following:

- “I have Accounting as a school subject”;
- “I do not want the subject Business studies”;
- “I do not enjoy/like the subject”;
- “The future direction doesn’t require Accounting as a subject”;
- “I hate Accounting”;
- “I am not good in Accounting and Maths”;
- “There are too many accountants in SA”;
- “I don’t understand it most of the time”;
- “I do not like the corporate world”;
- “Unsure”;

The reasons provided for learners with a **positive** answer are as follows:

- “I like EMS/Accounting”;
- “I love doing it”;
- “My parents want me to take Accounting”;
- “I like Maths and my parents want me to be an accountant”;

- “I like the game”;
- “More opportunities in this direction”;
- “I want to start my own business”;
- “I am interested in doing it”; and
- “Unsure”.

Reasons for the answer that the learner is **unsure**:

- “Accounting can be boring, but I would like to be in the business world”;
- “I have other subject choices in mind”;
- “I have not decided on my career yet-it is changing each year”;
- “I sometimes get lost in Accounting”;

From the answers above it is clear that several learners feel negative about the subject and do not always understand it. Learners also indicated that they are unsure about future careers and this shows that Grade 9 learners could be positively encouraged about the future possibilities of a career in Accounting.

5.3.3.6 Home language

Question 9 requested learners to provide their home language. The languages indicated by them were as follows: Unspecified, Afrikaans, English and other African languages.

Table 5.22: Mixed Model Analysis for language

Factor	Mean	Mean	Mean	Mean	Mean Square Error (MSE)	HLM p -value > 0.05
	Unspecified	Afr	Eng	African		
Exposure to soft skills	2.488	2.424	2.547	2.391	0.195	0.602

Source: Researcher

In Table 5.22 it can be seen that $p > 0.05$. This indicates that there are differences between different home languages, in terms of factor A: exposure to soft skills, but that these differences are not significant.

5.4 PERCEPTIONS ON THE GAME

The second empirical objective (objective 1.5.2.5) was to analyse whether learners and teachers perceive the game *Commercium* as a positive educational tool and whether the exposure to the game improves the attitude of learners towards the subject Accounting.

This objective was reached by analysing questions 7 to 22 of the questionnaire for the learners after the game (Annexure E) as well as the interviews with the learners and teachers (Annexure C).

5.4.1 Descriptive statistics

The descriptive statistics of the learners' perceptions on the game *Commercium* as measured by their perceived value of the game and their attitude toward the game are reported in Table 5.23 below.

Table 5.23: Feelings & Attitudes

		% Disagree (1)	% Neutral (2)	% Agree (3)
7	Hou van die spel. / <i>Likeable game.</i>	14	32	54
8	Hoë gehalte spel. / <i>Good quality game.</i>	9	35	56
9	Het dit geniet. / <i>Enjoyed it.</i>	17	23	60
10	Opwindend. / <i>Exciting.</i>	11	34	55
11	Praktiese Rekeningkunde & Besigheidstransaksies / <i>Practical Accounting & business transactions.</i>	16	29	55
12	My belangstelling in die besigheidswêreld is verhoog deur die Commercium-projek. / <i>My interest in the business world has been enhanced by the Commercium project.</i>	21	37	42
13	My belangstelling in rekeningkunde is verhoog deur die Commercium-projek / <i>My interest in Accounting has been enhanced by the Commercium project.</i>	26	28	46
14	Deelname aan die projek het my siening oor die rol van die rekenmeester verbreed. / <i>Participating in the project broadened my view on the role of the accountant.</i>	23	33	44
15	Wat ek gedurende die projek geleer het sal my oor die langtermyn bybly. / <i>What I have learned during the project will stay with me on the long-run.</i>	22	26	52
16	Ek het die sosiale aspekte van die projek geniet. / <i>I enjoyed the social aspects of the exercise.</i>	8	31	61
17	Ek het die projek ernstig geneem, al was dit in die vorm van 'n speletjie / <i>I took the exercise seriously even though it was in the form of a game.</i>	15	33	52
18	Ek is gemotiveer deur die projek / <i>I was motivated by the project.</i>	18	32	50
19	Ek sou ander leerders aanbeveel om ook die spel te speel. / <i>I would recommend other learners to also play the game.</i>	17	28	55

Source: Researcher

The majority of learners (60%) agreed that they enjoyed the game and experienced a positive attitude towards it. More than 50% indicated that they liked the game and found it exciting and that the quality was good. Between 20% and 25% of the learners felt neutral about the game and the minimum learners disagreed with the questions and felt negative about it. More than 50% believed that the game consisted of practical business transactions, 29% felt neutral about the question and 16% disagreed. 61% of learners indicated that they enjoyed the social aspects of the game and 31% stayed neutral. Only 8% disagreed.

In question numbers 12 to 14 above, the highest number of learners agreed that the game had enhanced their interest in Accounting as well as the corporate world and changed their views on what accountants do. Between 20% and 30% of learners felt neutral about the game *Commercium* and between 20% and 26% disagreed on the matter. In question numbers 15 to 19 the majority of learners (more than 50%) indicated that they had enjoyed the game, had learned from it and had felt motivated by it. Overall the majority of learners indicated that the game had positive attributes.

5.4.2 Exploratory factor analysis

Exploratory factor analysis was performed on question 7 to 19 of the after the game questionnaire. The analysis was performed separately for questions 7 to 11 and 12 to 19 to distinguish between sub-sections of the empirical objective. The results of the KMO measure of sampling adequacy, p -value of Bartlett's test of sphericity and the determinant of correlation matrix are reported in Table 5.24 below.

Table 5.24: KMO measure of sampling adequacy, p -value of Bartlett's test of sphericity and the determinant of correlation matrix

	KMO measure	Determinant of correlation matrix	Bartlett's test of sphericity		
			Approx. Chi-Square	Df	p -value
Value as educational tool (questions 7-11)	0.833	0.166	273.958	10	0.000
Attitude towards subject (questions 12-19)	0.916	0.011	533.566	28	0.000

Source: Researcher

The KMO sampling adequacy was 0.833 and 0.916 respectively, which is a satisfactory result, which suggests that the sample size was adequate and correlations sufficient for factor analysis. As the determinant of correlation is larger than 0.0001 in both instances, a factor analysis solution is possible. For this data Bartlett's test is highly significant ($p < 0.000$) also indicating that factor analysis is appropriate.

Table 5.25: Communalities question 7 to 11

	Initial	Extraction
q7	1.000	0.592
q8	1.000	0.611
q9	1.000	0.701
q10	1.000	0.677
q11	1.000	0.399

Source: Researcher

Table 5.26: Communalities question 12 to 19

	Initial	Extraction
q12	1.000	0.659
q13	1.000	0.536
q14	1.000	0.600
q15	1.000	0.706
q16	1.000	0.366
q17	1.000	0.571
q18	1.000	0.674
q19	1.000	0.745

Source: Researcher

Both communalities tables (tables 5.25 and 5.26) show the initial communalities before rotation. All of the initial communalities are above 0.30 and therefore a small sample size is not likely to distort the results.

Table 5.27: Total variance explained questions 7 to 11

Factor	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,982	59.631	59.631	2.982	59.631	59.631
2	0.710	14.209	73.840			
3	0.497	9.949	83.790			
4	0.487	9.746	93.535			
5	0.323	6.465	100.000			

Source: Researcher

Table 5.28: Total variance explained questions 12 to 19

Factor	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.857	60.716	60.716	4.857	60.716	60.716
2	0.797	9.965	70.682			
3	0.536	6.697	77.379			
4	0.502	6.274	83.653			
5	0.411	5.143	88.797			
6	0.336	4.195	92.991			
7	0.320	3.996	96.987			
8	0.241	3.013	100.000			

Source: Researcher

In both instances one Eigen value is greater than 1.0, which is the common criterion for a factor to be useful. For questions 7 to 11, the first factor explained 59.631% of the variance and for questions 12 to 19, the first factor explained 60.716% of the variance. This suggests that the scale items are one-dimensional (Tables 5.28, 5.29).

Table 5.29: Factor matrix (Questions 7 – 11)

Questions	Component 1
q9	0.838
q10	0.823
q8	0.782
q7	0.770
q11	0.632
Cronbach's Alpha	0.828
Factor mean	2.4305
Factor standard deviation	0.54855

Source: Researcher

Table 5.30: Factor matrix (Questions 12 – 19)

Questions	Component 1
q19	0.863
q15	0.840
q18	0.821
q12	0.812
q14	0.774
q17	0.756
q13	0.732
Cronbach's Alpha	0.909
Factor mean	2.3221
Factor standard deviation	0.59339

Source: Researcher

The factor matrixes (tables 5.29 and 5.30) above indicate that there is a compact correlation and that the factor analysis showed one distinct factor in each instance. All the statements on this factor loaded a minimum of 0.632 and 0.732 respectively. It is clear from tables 5.29 and 5.30 that the Cronbach's alphas of the first factor used in both instances are higher than 0.7, which shows that the factor is reliable and that questions could be grouped together. It also indicates internal consistency, as well as good reliability of data. The respective means of 2.4305 and 2.3221 indicate that on average respondents strongly agree that they felt positive towards the game and that their attitudes towards the subject were positive.

5.4.3 Association with Biographic data and Effect Sizes

After completing the factor analysis it was necessary to determine whether important differences exist between various groups in the study.

5.4.3.1 Schools

Table 5.31: Results of ANOVA for the three schools

	School A	School B	School C		
Factor	Mean	Mean	Mean	Mean Square Error (MSE)	ANOVA <i>p</i> -value
Value as educational tool	2.77	2.07	2.58	0.191	<0.001
Attitude towards subject	2.73	1.79	2.44	0.159	<0.001

Source: Researcher

Table 5.32: Tukey's HSD test

School	Unequal N HSD; Variable: Attitude Marked differences are significant at $p < 0.05$		
	High School A M = 2.7734	High School B M = 2.0707	High School C M = 2.5765
High School A		0.000022	0.387702
High School B	0.000022		0.002155
High School C	0.387702	0.002155	

Source: Researcher

Table 5.33: Tukey's HSD test

School	Unequal N HSD; Variable: Value added to the game Marked differences are significant at $p < 0.05$		
	High School A	High School B	High School C
High School A		0.000022	0.083544
High School B	0.000022		0.000028
High School C	0.083544	0.000028	

Source: Researcher

From the statistics displayed above in Tables 5.31, it was found that for the value as educational tool and the attitude toward the subject the *p*-values were below 0.05. This indicates that the result is statistically significant, as $p < 0.001$ (a chance lower than one in a thousand of being wrong) (StatsDirect, 2016; Theodoratou, 2014:2035). The means for High School B for both value as educational tool and the attitude towards the subject were the lowest

as compared to the other schools. The means for High School A was the highest of the three schools for both value as educational tool and the attitude towards the subject. These learners received the highest value from the game.

5.4.3.2 Gender

As mentioned in section 5.3.3.2, the learners in the schools consisted of male and female learners. In both Schools A and B, the class groups consisted of boys and girls. In School C the group consisted only of girls. The effect sizes and statistically significant differences in connection with gender is summarised in Table 5.32 below.

Table 5.34: Estimated Marginal Means: Mixed-Model Analysis for gender

Factors	Mean	Mean	Mean Square Error (MSE)	2-Tailed p -value (<0.05) HLM	Effect Size (d)
	Male	Female			
Value as educational tool	2.50	2.46	0.197	0.590	0.08
Attitude towards subject	2.27	2.36	0.134	0.206	0.15

From Table 5.32 above it can be seen that the p -values exceed 0.05 and are therefore not statistically significant for both the value as educational tool and the attitude towards the game. The effect size (d) for the value as educational tool is 0.08 and 0.15 for the attitude towards the game. The effect sizes are smaller than 0.2 and are therefore not practically significant. It can therefore be deduced that girls and boys did not differ in terms of their perceptions of both the value of the game as educational tool and their attitude towards the game. There could, however, be a small difference for the attitude towards the game as the effect size is close to 0.2.

5.4.3.3 Race

Refer to Table 5.35 where the effect sizes for race were summarised. There is only one significant effect size, namely for factor B: Feelings & Attitudes, between Coloured and White (with a medium effect size of 0.64).

For factor A: Value as educational tool, the mean for African (2.293) is lower than that of Coloured (2.350); the means for Coloured and White learners vary the most (2.620 for Coloured and 2.294 for White learners) and the mean for White (2.330) is lower than that of Other (2.351).

For factor A: Value as educational tool there are no significant effect sizes as the MSE is 0.163, which is smaller than 0.2 and not practically significant.

In the test for **factor B: Feelings & Attitudes** between African (2.484) and Coloured, (2.620), Coloured is higher; the mean of Coloured (2.620) is higher than that of White (2.294) and the mean of White (2.294) is lower than Other (2.664). For factor B: Feelings & Attitudes, there is only one significant effect size, namely between Coloured and White (with a medium effect size of 0.64). The MSE is 0.181, which is also below 0.2. None of the other effect sizes are important in practice.

Table 5.35: Mixed Model Analysis for race & Effect sizes

Factor	Mean	Mean	Mean	Mean	Mean Square Error (MSE)	HLM <i>p</i> -value <0.05	Effect Size (<i>d</i>)
	African	Coloured	White	Other			African with Coloured
A) Value as educational tool	2.293	2.350	2.330	2.351	0.163	0.927	0.09
							African with White
							0.06
							African with other not specified
							0.09
							Coloured with White
							0.03
							Coloured with other not specified
							0.01
							White with other not specified
							0.01
B) Attitude	2.484	2.620	2.294	2.664	0.181	0.009	0.27
							African with White

Factor	Mean	Mean	Mean	Mean	Mean Square Error (MSE)	HLM <i>p</i> -value <0.05	Effect Size (<i>d</i>)
	African	Coloured	White	Other			African with Coloured
							0.37
							African with other not specified
							0.35
							Coloured with White
							0.64
							Coloured with other not specified
							0.04
							White with other not specified
							0.02

Source: Researcher

5.4.3.4 Experience of the game

The learners were asked whether they had played the game *Commercium* before. Table 5.36 below shows the effect sizes and statistical significant differences in connection with previous

Table 5.36: Mixed Model Analysis for previous experience of the game

Factor	Mean	Mean	Mean Square Error (MSE)	HLM p -value <0.05	Effect Size (d)
	Yes	No			
Value as educational tool	2.468	2.468	0.201	0.855	0.00
Attitude towards subject	2.255	2.334	0.173	0.367	0.13

From Table 5.36 above it is evident that the p -values exceed 0.05 indicating no statistical significance. Effect sizes are small (< 0.2) and therefore it is not practically significant indicating that there was no statistically or practically significant difference between the two groups of learners.

5.4.3.5 Career option

The question was posed whether learners would consider a career in accountancy. Table 5.37 shows the effect sizes and statistically significant differences in connection with career option.

Table 5.37: Mixed Model Analysis for career option

Factor	Mean	Mean	Mean	Mean Square Error (MSE)	HLM p -value <0.05	Effect Size (d)
	Yes	No	Unsure			
Value as educational tool	2.554	2.437	2.471	0.194	0.332	Yes with No
						0.21
						Yes with Unsure
						0.15
						No with Unsure
						0.10
Attitude towards subject	2.446	2.332	2.256	0.141	0.177	Yes with No
						0.19

Factor	Mean	Mean	Mean	Mean Square Error (MSE)	HLM p -value <0.05	Effect Size (d)
						Yes with Unsure
						0.31
						No with Unsure
						0.16

Source: Researcher

The means for both the value as educational tool and the attitude towards the subject are the largest for learners who would consider a career in accountancy. The majority of learners indicated that they would consider a career in accountancy and had a higher perception of the value of the game as educational tool and better attitudes towards the subject. From Table 5.37 above it is clear that the p -values exceed 0.05 and are therefore not statistically significant. All effect sizes are smaller than 0.5 and most are less than 0.2 (Table 5.35).

5.4.4 Results of open-ended questions and interviews

Three open-ended questions were asked to the learners as part of the questionnaire that was completed after the game. Structured interviews were conducted with a selected group of learners and teachers by using separate questionnaires to determine their views and feelings about the use of the game as an educational tool in Accounting. Their feedback is summarised below.

5.4.4.1 Open-ended questions

Question 20 required that learners should provide one positive and one negative comment on the *Commercium* project. The different comments are summarised as follows:

Positive comments included the following:

- “A lot is learned from the game”;
- “It was fun as we learned how to work with money”;
- “The game motivates people”;
- “I liked/enjoyed the game”;
- “The game was interesting”;

- “It was nice”;
- “I like to save the money”;
- “The game taught me how to do business”; and
- “The game is interesting to play”.

Negative comments included the following:

- “You have to know Accounting when playing the game”;
- “It was a bit confusing”;
- “I did not know how to play the game”;
- “I lost a lot of money in the game”;
- “Players made me angry”;
- “The whole group did not participate properly”; and
- “The game is too complicated”

Question 21 requested learners to summarise the project in 1 word. It is summarised as follows:

- “Saving”;
- “Good/Nice”;
- “Fun”;
- “Great”;
- “Educational”;
- “Amazing”;
- “Awesome”;
- “Entertaining”;
- “Enthusiastic”;

- “Organised”;
- “Thinking”; and
- “Challenging”.

From the above comments it can be seen that learners experienced the game as an educational tool in a positive manner.

Question 22 asked learners to provide suggestions about the project/game. It included the following:

- “Come again with another game”;
- “Provide additional time for the game”;
- “Use real money”;
- “More involvement with other players”;
- “Bring SWOT analysis in scenarios”;
- “More scenarios”;
- “Team work”; and
- “More property cards are required”.

5.4.4.2 Interviews with learners

All three schools had between three to four groups of EMS learners and the size of the groups varied between 28 to 36 learners. At **High School B** oral questions were posed to some learners in the group to determine their general attitude and view on the board game, *Commercium*. Two groups were Afrikaans-speaking and included some learners who had previously played the game. One group was English-speaking and comprised learners who mostly had not played the game before. The Afrikaans-speaking groups had more complaints and suggestions to improve the game; while the English-speaking group was very positive and indicated that they enjoyed the game (several learners come from previously disadvantaged communities and may have less exposure to educational tools).

The few complaints received from learners were mainly about the graphic looks of the game and suggestions were made to increase the size of the font on the board and to use more

professionally designed pieces (vehicles) to improve the look of the game. All the groups enjoyed the game and the social aspects thereof and only a few learners complained that it took too long. Learners who had previously played the game became bored after a while as they were only allowed to play at level one. They requested to play the game at a higher level, so that they could have more options of making money and could thus increase their business knowledge.

Comments made by learners were as follows:

- “Provide more property cards-Monopoly is better”;
- “Cards could be made more colourful”;
- “Improve the graphical look of the game, by making the font larger and the playing pieces more modern and easier to distinguish”;
- “Cards incomplete”; and
- “Rules not always so clear”.

5.4.4.3 Interviews with teachers

The teachers of all 3 schools were required to complete an interview questionnaire and this was discussed with them afterwards. The findings were as follows:

High School A

The group consisted of English- and Afrikaans-speaking learners and all the learners had learning disabilities. The teacher indicated that more or less 50% of the learners achieved marks below 40% and none above 80%. The group performance overall is between 0 – 70%. The teacher’s perceived attitude of the group towards EMS is neutral. The teacher uses a PowerPoint presentation and an interactive white board together with traditional educational tools, but no games during class. The teacher believes that the rules of the *Commercium* game at level one are difficult at first, but easier to understand once the game has been explained to the learners. She believes that it is an efficient educational tool as it triggers attention, but too difficult to grasp for learners with learning disabilities. Because of the learning disabilities of the learners the school would not be interested in using the specific game, but they would consider using other financial games, e.g. Monopoly in class.

High School B

The group consisted of English- and Afrikaans-speaking learners, including approximately 10 learners with special needs. The special needs include struggling with reading, poor eyesight, attention disorder and limited mathematical abilities.

The teacher indicated that approximately 30% of the learners achieved 80% and above for EMS and 10 learners achieved less than 40%. The overall group performance was 65% and the group's perceived attitude was positive towards the subject. Traditional teaching tools as well as PowerPoint presentations, a document camera, an interactive white board and games were being used during classes. The teacher believes that teaching tools are sufficient to meet their needs, but would like to have more games available for EMS classes. She also suggested that the Pastel school programme could be incorporated in EMS classes.

The teacher indicated that the rules of the *Commercium* game are easy to understand, but that the concept *shares*, is too difficult for Grade 9 learners. She believes that level 1 (Service provision and property rental) is acceptable for Grade 8 and 9 learners and that level 2 (Adding inventory) could be used for Grade 10 learners. Level 3 (Adding manufacturing) could be used for grade 11 and level 4 (adding financial markets) could be used for Grade 12 learners. She was of the opinion that learners enjoyed playing the game and that it had a positive influence on their perceptions of the subject. She would like to use the game, if it is affordable.

High School C

The teacher has four groups of twenty eight girls per group. They are Afrikaans-and English-speaking. No learners with special needs form part of this group. Approximately 20% achieves 80% or above for EMS and 10% of the learners achieves less than 40%. The teacher indicated that the overall group performance is 60% and that the group has a perceived positive attitude towards the subject. The teacher uses traditional tools, as well as PowerPoint presentations during classes. The teacher feels that level 2 (including inventory) could also be suitable for Grade 8 and 9 learners. She indicated that Level 3 (Adding manufacturing) could be used for Grade 10 and 11 learners and that level 4 (Adding financial markets) could be added for Grade 12 learners. The teacher believes that the learners enjoyed the game and that it had a positive effect on their attitudes towards the subject. It was indicated that the school would be interested in purchasing the game. It is her opinion that the school programme is very busy and that the learners will not have time during school classes to incorporate a computer programme, e.g. Pastel.

Conclusion of information received from the interviews:

In Table 5.36 below an extract (refer to Annexure C: Structured interview with teachers) is provided from the teaching tools, which the teachers in the research project indicated as being normally used by them in their EMS classes. Included in the questionnaire used to interview teachers, a question is taken up that addresses the teaching methods and tools teachers use in presenting their lessons. The results from the feedback from all the schools are summarised below.

Table 5.38: Teaching methods & tools used during Accounting/EMS classes

Questions	Schools which indicated that they use the tool (High School A, B, C)
7. Which of the following teaching methods and tools does the teacher use during classes? (Choose the correct option) (x)	
7.1 PowerPoint presentation.	A, B, C
7.2 Transparencies.	A
7.3 Use of textbook during classes (Oral presentation and written assignments).	A, B, C
7.4 Extra textbooks or worksheets.	B, C
7.5 Class tests.	A, B
7.6 Use of computer programmes during classes.	B
7.7 Use the internet for research in class (Cell phones or computers).	B
7.8 Use of games during classes.	B
7.9 Use of financial magazines.	None
7.10 Use of an interactive white board.	A, B
7.11 Any other teaching methods or tools used during classes. Give examples	A – Other magazines; B – Document camera

In **High School A** the teacher believes that the rules of the *Commercium* game are too difficult for learners who struggle to learn. The game did trigger learners' attention and they were very excited and enthusiastic during the game play, although they did not have all the skills to play the game effectively. Although the teacher mostly used traditional teaching methods and tools such as the transparencies, a whiteboard, textbooks, worksheets and copies provided by the teacher, as well as PowerPoint, she was inspired to incorporate games in classes.

The learners from **High School B** were mostly positive about the subject. They were used to traditional teaching tools such as textbooks, the normal white board and worksheets. PowerPoint Presentations, a document camera, an interactive white board and games in the

presentation of classes were also used. The teacher is of opinion that teaching tools are sufficient to meet their needs, but would like to have more games available such as the *Commercium game*, as well as training to use Pastel in class.

In **High School C** the learners also exhibited a positive attitude. Traditional teaching methods including textbooks and worksheets, as well as Power Point Presentations and an interactive whiteboard were being used in classes. Games were not previously used in the EMS class. The need for more relevant magazines and newspapers were indicated to be used as a tool in class. The teacher was positive about the prospects of the game and was of opinion that it had a positive effect on learners' attitudes towards the subject.

In the questionnaire used for the interview with teachers they were asked what the general attitude of the group was in class and the responses were as follows:

- Group A: Positive;
- Group B: Positive; and
- Group C: Positive.

Teachers were also asked if they thought that the game had a positive effect on learners' attitudes and perceptions towards Accounting as a subject and they responded as follows:

- Group A: "Yes";
- Group B: "Yes"; and
- Group C: "Yes".

Teachers were asked what the school's needs for teaching materials were and their answers included the following:

- Group A: "Subject magazines and newspapers";
- Group B: "Practical games"; and
- Group C: None.

When teachers were asked if they would consider to buy the game for their learners as a teaching aid, their responses included the following:

- Group A: "Yes"
- Group B: "Yes, but it is very expensive"; and
- Group C: "No, this school is too busy!"

5.5 SUMMARY

The **main objective** of this study is to analyse whether introducing a board game in secondary school accounting as educational tools, leads to a positive experience for the learners and an exposure to soft skills within the subject. The researcher did a study and the statistical analysis of the data acquired from the questionnaire was performed by the Statistical Consultation Services of The North-West University. The **biographic and other relevant data** that had been interpreted for school learners from three different schools in North West can be summarised as follows:

- A **total of 145 learners** from the three chosen schools took part in the research project of which High School A comprised 43%, High School B 45% and High School C 12% of the total;
- 51% of the sample group population was **male** and 49% **female**;
- 43% of the respondents were in Grade 10 and took the subject EMS at **Grade 9 level**, however, the majority of the learners were in Grade 9 (57%);
- 77% of the learners indicated that they had the **subject Accounting at school level** and 23% indicated that they didn't;
- 25% of 140 respondents indicated that they were **considering a career in Accounting**, while 49% were not interested and 26% were unsure;
- 38% of the respondents indicated that they **played the game before** and 62% indicated that they had no prior exposure to the game;
- The **home language** of learners were indicated as follows: 29% spoke Afrikaans, 13% spoke Setswana, 11% spoke English and 8% indicated another African language as their home language;
- The **racial composition** of learners consisted out of 41% White learners, 40% African learners, and 18% Coloured and Other races of the population. 1% did not answer the question; and
- The **measuring instrument was a questionnaire** which was divided into three different groups of questions, namely: Section A: Exposure to soft skills; Section B: Attitudes towards and feelings about the game; and Section C: Value attached to the game.

Questions 1 - 6 covered **outcomes reached** by playing the game. It was determined that the majority of learners (above 50%) agreed that the different outcomes were reached and that the game helped them to use soft skills e.g. critical thinking etc.;

Questions 7 – 11 dealt with the **respondents' attitudes** towards and feelings about the game. The majority of learners (60%) agreed that they enjoyed the game and had felt positive about it; and

Questions 12 – 19 contained information about the **value of the *Commercium* game**. 61% of learners indicated that the social aspects of the game were enjoyed and over 40% of the learners agreed that the game had increased their interest in the subject *Accounting*, the business world and on the work of accountants.

Factor analysis is a **method used to interpret questionnaires** on the behaviour of research subjects and is a statistical procedure with various uses. Two common **types of factor analysis** include: 1) Exploratory; and 2) Confirmatory analysis. **Exploratory factor analysis** was performed on the questionnaire used after the game. From the **Principle Component Analysis** the following could be concluded:

- **Q1-6 (A: Exposure to soft skills):** The KMO sampling adequacy was 0.774, which is good. The first factor (Identify problems) explained 54% of the variance, which indicated that the scale items are one-dimensional;
- **Q7-11: (B: Attitude and Feelings):** The KMO sampling adequacy was 0.833, which is good and the first factor (Likeable game) explained 59% of the variance. The scale items are therefore one-dimensional; and
- **Q12-19: (C: Value of the *Commercium* game):** The **KMO sampling adequacy** was 0.774, which is a satisfactory result, which suggests that the sample size was adequate and correlations sufficient for factor analysis. The initial communalities are all exceeding 0.30 and therefore a small sample size will not likely distort the results.

One Eigen value exceeds 1.0, which is the general criterion for a factor to be useful. The first factor explained 54.117% of the variance, which is an indication of a one-dimensional scale item. The component matrix above indicates that there is a compact correlation and that the factor analysis showed one distinct factor. **The Cronbach's alpha** of the above mentioned factors used was higher than 0.7, which was a favourable outcome, showed internal consistency, and indicates the data is reliable.

After completing the factor analysis it was determined if there are important differences between various groups in the study. ANOVA is a technique used to determine whether there are any **significant differences** between the sample means of three or more independent groups. The results from the **ANOVA test** indicated that all three sections tested (A: Exposure to soft skills, B: Feelings & Attitudes and C: Value of the game), had a p -value below 0.05 for all three schools. It can be concluded that the results differ between the schools and are statistically significant. The mean for High School A was the highest of all three schools at 2.76 for A: Outcomes, 2.77 for B: Attitudes and Feelings and 2.73 for C: Value of the game. It was determined that, of all the participating learners, those of High School A received the most benefit from the game.

During the research it was determined that **girls and boys** did not differ in terms of factors A: Exposure to soft skills through the game and B: Feelings about & Attitudes towards the game. For factor C: **Value learners attached to the game**, there was a small difference between boys and girls. In terms of **subject choice** the mean score for Coloured learners was often higher than that of White learners, although not statistically significant. This could mean that the attitude of Coloured learners had been **more positive** than the White learners towards the game. In terms of **subject choice**, the p -values were all large, exceeding 0.05, although not statistically significant. The means for “Yes” for all three factors were higher than “No”. This could be an indication that more learners who would choose *Accounting* in Grade 10 as a subject, had experienced the game more positively than those who would not take it. When **previous experience of the game** was tested, the p -values were all large and exceeded 0.05, although not statistically significant. The mean for factor C: Value was lower for “Yes” compared to “No”. It can be concluded that less children had played the game before than those with no previous experience. The **home languages** indicated by learners include Afrikaans, English and other African languages and the only significant effect size was for factor B: Attitude towards the subject, between Coloured and White (0.64).

In terms of **Accounting as a future career**, the majority of learners indicated that they considered Accounting as a career option and they experienced the game more positively than the rest. The coefficient of correlation were all large and above 0.06 in this study. This is an indication of a positive relation between the three sections (factors) on the questionnaire.

In the Mixed Model Analysis for career option learners were asked if they consider a career in accountancy and to provide a reason for their answer. Negative answers on the subject include “I hate Accounting, do not understand Accounting, Maths or Business subjects” etc. Positive answers are: “I like EMS/Accounting, my parents want me to take Accounting, I like the game, more opportunities in this direction” etc.

In **Question 20** learners were required to provide one positive and one negative comment on the *Commercium* project. **Positive comments include the following:** “A lot is learned from the game; It was fun ...; The game motivates people; I liked/enjoyed the game” etc. **Negative comments** included the following: “You have to know Accounting when playing the game; It was a bit confusing; I lost a lot of money in the game; Players made me angry” etc. **Question 21** requested learners to summarise the project in 1 word. They summarised it as follows: “Saving, Good/Nice, Fun, Educational, Amazing, Entertaining etc. The majority of learners agreed that they enjoyed the game and felt positive about it. **Question 22** requested learners for suggestions about the project/game. The following were given: “Come again with another game; Provide additional time for the game; Use real money; More involvement with other players; Bring SWOT analysis in scenarios etc.

Structured interviews had been conducted in all three schools with learners and EMS teachers. Suggestions made by the learners include: “Provide more property cards-Monopoly is better; Cards could be made more colourful; Improve the graphical look of the game, by making the font larger and the playing pieces more modern and easier to distinguish” etc.

One teacher believes that the rules of the *Commercium* game at level one are difficult at first, but becomes easier once the game has been explained to the learners. She sees it as an efficient educational tool because it triggers attention, but feels that it is too difficult for learners with learning disabilities. Another teacher believes that they have sufficient teaching tools, but would like to have more games available for EMS classes. She believes that the rules of the *Commercium* game are easy to understand, but that the concept *shares*, is too difficult for Grade 9 learners. The third teacher feels that level 2 (including inventory) could be used for Grade 8 and 9 learners. She believes that Level 3 (Adding manufacturing) could be used for Grade 10 and 11 learners and that level 4 (Adding financial markets) could be used for Grade 12 learners. Overall the game *Commercium* was believed to be a **good educational tool**.

In **chapter 6** conclusions are made in terms of all the secondary objectives set, as well as the reaching of the main objective of this study.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

The game *Commercium* was originally developed by Fouché (2006) as an educational tool and tested at tertiary level. The results of the research were very positive as students indicated that the game was a simulation of the real corporate world and that it linked theory in the subject *Accounting* to general Accounting and business practice (Fouché, 2006:iv). In 2014, a decision was made by the researcher to also test the game at secondary school level in order to determine the value thereof as an educational tool in Accounting.

In the previous chapters knowledge was gained on various aspects in the teaching-learning environment. Attention was given to the following significant elements:

- An introduction and background to Accounting was given, including the need for change and changing the mind-set of Accounting learners (Chapter 1);
- A motivation for this study was provided, by referring to SA performance in Accounting in government schools, out-dated education, perceptions about Accounting and accountants and the need for research on Accounting education (Chapter 1);
- The problem statement for this study was formulated, namely if the game *Commercium* could be used as an effective educational tool in secondary schools to change learners' perceptions of the subject, as well as their attitudes, by presenting the subject to the next generation of learners in an interesting manner. A second question was determined, namely if the game could also be used to expose learners at an early stage to the soft skills required from accountants, by using the game as a basis in a summative assignment for Grade 9 learners (Refer to chapter 1.4 Problem statement);
- The main objective of the current study, namely to analyse whether introducing a board game in secondary school accounting as educational tool, leads to a positive experience for the learners and an exposure to soft skills within the subject (Chapter 1);
- The subject Accounting and the Accounting profession was discussed by defining Accounting, explaining the origin of Accounting, explaining Accounting knowledge and skills required and discussing the Accounting profession (Chapter 2);
- The challenges of teaching Accounting and possible solutions have been discussed by referring to teaching methodologies, including traditional teaching versus new teaching

methodologies for Accounting and effective teaching & learning methods in Accounting (Chapter 3); and

- The addressing of the criticism against traditional accounting education was discussed by referring to the following:
 - Possible solutions and teaching strategies for the next generation,
 - Games in teaching,
 - Educational games,
 - Factors to consider when choosing a suitable game,
 - Games in Accounting & EMS, and
 - Board games (including the *Commercium* board game) (Chapter 3).

The following topics were addressed in terms of research methodology and results:

The research methodology together with the research objectives (Chapter 4);

- The research paradigm and design, including the paradigmatic assumptions and philosophical perspective of this study and the research design (Chapter 4);
- The research methods were discussed by referring to quantitative research, qualitative research and mixed-methods research (Chapter 4);
- The study population and sample, as well as the research instruments, which include the quantitative research questionnaire and qualitative research interviews were described (Chapter 4);
- Ethical requirements for this study (Chapter 4);
- The demographic information on the respondents was discussed under the following headings: School, The gender of respondents, Grade, Subject, Career option, Previous exposure to the game, Language and Race (Chapter 5);
- Learners' exposure to soft skills were analysed by referring to descriptive statistics, exploratory factor analysis and association with biographic data and effect sizes (Chapter 5); and

- Learners' perceptions on the game were explained by referring to descriptive statistics, exploratory factor analysis, association with biographic data and effect sizes and the results of open-ended questions and interviews conducted (Chapter 5).

In Chapter 1 it was indicated that the main objective could be reached through the following secondary objectives in connection with the game *Commercium* as an educational tool (refer to section 1.5.2 Secondary objectives):

Secondary objective no. 1: To obtain an understanding of the subject Accounting in the Economic and Business Management field at secondary school (addressed in chapter 2). These findings are discussed in 6.2.1.

Secondary objective no. 2: To identify and obtain an understanding of the soft skill requirements for the subject Accounting (addressed in chapter 2). These findings are discussed in 6.2.2.

Secondary objective no. 3: To gain an understanding of the challenges in teaching Accounting and to identify possible solutions to address these challenges (addressed in chapter 3). These findings are discussed in 6.2.3.

Secondary objective no. 4: To analyse whether the game *Commercium* exposes learners to soft skills in the subject Accounting (addressed in chapter 5). The findings on this objective are discussed in 6.2.4.

Secondary objective no. 5: Analyse if learners and teachers perceive the game *Commercium* as a positive educational tool and if the exposure to the game improves the attitude of learners towards the subject Accounting (addressed in chapter 5). The findings on this objective are discussed in 6.2.5.

Secondary objective no. 6: To provide recommendations for the use of educational tools such as the *Commercium* game in Accounting, with a view to improve learners' attitude towards the subject (motivation and interest of learners) and to develop much needed soft skills in the process (addressed in chapter 6, section 6.5). The findings on this objective are discussed in 6.2.6.

The remainder of the chapter will conclude on the findings by indicating the results of the secondary and primary research objectives. The limitations and areas for further research will also be addressed.

6.2 REACHING THE OBJECTIVES

The secondary objectives mentioned above were reached as follows:

6.2.1 Secondary objective no. 1: The subject *Accounting* in the Economic and Business Management field at secondary school

The first secondary objective was to obtain an understanding of the subject *Accounting* in the Economic and Business Management field at secondary school. This was achieved in Chapter 2, by looking at different definitions of Accounting and describing where Accounting originated from, by referring to Pacioli (the first person to develop a system of debits and credits) (Refer to Chapter 2).

In Chapter 1 information was obtained about Accounting, by referring to the following topics:

- SA performance in Accounting in government schools (Refer to 1.3.1);
- Out-dated Education (Refer to 1.3.2);
- Perceptions about Accounting and accountants (Refer to 1.3.3); and
- The need for research on Accounting education (Refer to 1.3.4).

A wide perspective was given on how Accounting is presented in secondary governmental schools in SA and what the requirements for this subject are.

6.2.2 Secondary objective no. 2: The soft skill requirements of the subject *Accounting*

Different types of knowledge and skills were discussed such as soft skills and technical skills and critical cross field outcomes prescribed in the CAPS document for school learners. The skills (technical- and soft skills) which are prescribed in the CAPS document for Accounting learners to develop, were discussed (Refer to Chapter 2).

In the CAPS document for Accounting (DBE, 2011a), the DBE describes the **skills** (technical- and soft skills) which Accounting school learners will develop as follows:

- Recording, evaluation and interpretation of financial data for making educated decisions;
- Communication, as well as the presentation of financial information efficiently by using GAAP (This term is still used in the CAPS document, which is used in schools). The understanding of accounting concepts; application of skills, knowledge and moralities to actual situations;

- Enter the working environment, higher education and motivation for self-development;
- Organise their own finances responsibly;
- Learn to develop the following characteristics: ethical behaviour. good judgement, to be thorough, neatness, accuracy and orderliness;
- Solve problems in a systematic manner in various situations and accounting fields; and
- Development of critical thinking and analytical abilities to deal with new situations and all the demands of an accounting occupation (manually or electronically) (DBE, 2011a:9).

The CAPS for both Accounting and EMS also include **critical cross field outcomes**, which learners should master (DBE, 2011a:6 (d); DBE, 2011b:5 (d)), namely:

- Solve problems and make decisions through critical and creative thinking;
- Work effectively individually and in groups;
- Can organise themselves together with their activities responsibly and efficiently;
- Analyse, organise and evaluate information;
- Are able to communicate effectively;
- Show responsibility towards the environment and the health of other people; and
- Understand that the world is a set of related systems and that the context of problem solving does not exist in isolation.

6.2.3 Secondary objective no. 3: The challenges in teaching secondary school teaching and possible solutions to address these challenges

A literature study on the challenges of secondary school teaching and the effects thereof was done in Chapter 2 (Refer to 2.4.2 Challenges in teaching Accounting), as well as Chapter 3 (Possible solutions to address the challenges of teaching Accounting). The change from a traditional teaching and learning model to a facilitated learning model which is similar to the modern, social world, with an increased demand for different creative skills and abilities, were discussed. Out-dated Accounting education was studied and it was found that teachers with a resistance to change could be part of the problem in Accounting classrooms. The existence of a generation gap between teachers and the new generation of learners was determined. The Net-

generation learners learn differently from what would be expected, as they nowadays generally tend to use e-learning, but it was found that in most schools teachers do not apply new teaching methods and tools in classrooms.

Specific problems are experienced in SA government classrooms (Refer to 2.4.2 Challenges in teaching Accounting), as well as Chapter 3 (Possible solutions to address the challenges of teaching Accounting). This includes the large LER and overloaded classrooms where learners receive less personal attention and assistance from educators to learn. The performance of the candidates of the 2015 examinations were evaluated and it was found that there was a strong relationship between reading abilities of learners and their incapability to answer questions according to the requirements. Learners had poor language skills and a lack of understanding of specific subject content. The origin of this problem is mostly a lack of teaching strategies or methodologies applied by teachers, limited content knowledge from teachers, or teachers covering only part of the curriculum. Teaching time for addressing Accounting is limited, especially in Grade 9 where Accounting is only a section in the EMS Curriculum.

It was recommended that teachers must get to know learners individually and as a group to form trust and credibility and to establish what interests them, what their learning abilities are, their learning styles, and their way of thinking, in order to connect with these learners. It was also indicated that using games, and especially board games, could assist in addressing the criticism against traditional accounting education.

6.2.4 Secondary objective no. 4: Exposure to soft skills by the *Commercium* game

In order to reach this objective questions 1 to 6 of the Questionnaire for learners: After the game (Annexure B) were analysed (Refer to 5.3.1 to 5.3.3). The descriptive statistics of the learners' exposure to soft skills were reported in table 5.9 and from that it was concluded that for most of the questions the majority of learners (more than 50%) agreed that the different outcomes were reached.

Factor analysis was applied to the data, in order to **interpret the questionnaires** on research subjects' behaviour, so that the results could be clarified. **Exploratory factor analysis** was performed on question 1 to 6 of the questionnaire used after the game. The results indicated the following: The **KMO sampling adequacy** was 0.774 and a satisfactory result. The result implies that the sample size was adequate and correlations sufficient for factor analysis. From the communalities table it could be seen that all of the initial communalities were above 0.30, which means that a small sample size will not likely distort the results. One **Eigen value** was found to be greater than 1.0 (the common criterion for a factor to be useful) and the first factor explained

54.117% of the variance. This indicates that the scale items have one dimension. The **component matrix** above indicates that there is a compact correlation and that the factor analysis showed one distinct factor. All the statements on this factor loaded a minimum of 0.661. It was determined that the **Cronbach's alpha** of the first factor used was higher than 0.7, which is an indication of a reliable factor and that questions could be grouped together.

There was a statistical significant difference in the perceptions of the learners between School B and that of School A and C. The girls and boys did not differ in terms of exposure to soft skills through the game. The game was tested among learners who belong to various races in SA, in order to determine whether the various race groups had experienced the game differently. This was a limitation in previous studies on the game. Coloured learners appeared to have perceived the biggest exposure to soft skills. Any previous exposure to the game did therefor did not influence the current study. The majority of learners indicated that they do consider accountancy as a career option and had experienced a larger exposure to soft skills through playing of the game. There are no differences between different home languages.

6.2.5 Secondary objective no. 5: Perceptions of the game *Commercium* game as educational tool

On secondary objective number 5 - Analyse if learners and teachers perceive the game *Commercium* as a positive educational tool and if the exposure to the game improves the attitude of learners towards the subject Accounting.

In order to evaluate the data statistically in this study the researcher used the following techniques:

- Demographic analysis;
- Description of the collective results of all questions in the questionnaire;
- Determining the correctness of the data based on Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity;
- Factor analysis;
- Using the Cronbach alpha-value & the trustworthiness of the factor analysis; and
- One-way analysis of variance (ANOVA) and effect sizes between the means of factors extracted.

The majority of learners (60%) agreed that they enjoyed the game and experienced a positive attitude towards it. The most learners agreed that the game had enhanced their interest in Accounting as well as the corporate world and changed their views on what accountants do.

Exploratory factor analysis was performed on question 7 to 19 of the after the game questionnaire. The analysis was performed separately for questions 7 to 11 and 12 to 19 to distinguish between sub-sections of the empirical objective. The KMO sampling adequacy was 0.833 and 0.916 respectively, which is a satisfactory result, which suggests that the sample size was adequate and correlations sufficient for factor analysis. As the determinant of correlation is larger than 0.0001 in both instances, a factor analysis solution is possible. For this data Bartlett's test is highly significant ($p < 0.000$) also indicating that factor analysis is appropriate. All of the initial communalities are above 0.30 and therefore a small sample size is not likely to distort the results. In both instances one Eigen value is greater than 1.0, which is the common criterion for a factor to be useful. For questions 7 to 11, the first factor explained 59.631% of the variance and for questions 12 to 19 the first factor explained 60.716% of the variance. This suggests that the scale items are one-dimensional (Tables 5.28, 5.29). It is clear from tables 5.29 and 5.30 that the Cronbach's alphas of the first factor used in both instances are higher than 0.7, which shows that the factor is reliable and that questions could be grouped together.

The means for High School B for both value as educational tool and the attitude towards the subject were the lowest as compared to the other schools. The means for High School A was the highest of the three schools for both value as educational tool and the attitude towards the subject. These learners received the highest value from the game. It can be deduced that girls and boys did not differ in terms of their perceptions of both the value of the game as educational tool and their attitude towards the game. The means for Coloured and White learners vary the most, with the mean of coloured learner being the highest. There was no statistically or practically significant difference between the learners that played the game before and those that played for the first time. The means for both the value as educational tool and the attitude towards the subject are the largest for learners who would consider a career in accountancy.

Structured interviews were conducted with a selected group of learners and teachers by using separate questionnaires to determine their views and feelings about the use of the game as an educational tool in Accounting. From the comments it can be seen that learners experienced the game as an educational tool in an overall positive manner. The game was described as:

- "Saving";
- "Good/Nice";

- “Fun”;
- “Great”;
- “Educational”;
- “Amazing”;
- “Awesome”;
- “Entertaining”;
- “Enthusiastic”;
- “Organised”;
- “Thinking”; and
- “Challenging”.

6.2.6 Secondary objective no. 6: Tools to be used in the presentation of the subject *Accounting*

In order to address the above-mentioned problems, new teaching approaches, methods and tools are encouraged. The CAPS in SA encourages active and critical learning as a general teaching and learning style. It was found that learners' behaviour can be influenced by various factors such as social influences, internal pressures, attendance, or interaction between learners. When teachers know what motivates learners, their actions can encourage and motivate them through the program.

Modern teaching methods suggested to be used in classrooms were for instance watching videos, interactive whiteboards, role playing, basic modelling etc. Other Accounting and finance education tools suggested to be used include audio, games, assignments, surprise quizzes, case studies, research projects, group discussions, seminar presentations, guest lectures, workshops, written exams on computers, evaluations through software, industrial visits, good communication skills, infrastructure of the classroom, digital libraries, laptops with internet connection, monitoring and scrutinizing, transparency, overall evaluation etc. Games were introduced for training and education and two major areas of game playing were identified, namely using video games for significant education (serious games) and the use of other reality games (Chapter 3).

In the research study (Chapter 5) teachers indicated that they still mostly use traditional teaching tools such as textbooks, worksheets and a traditional white board, as well as PowerPoint Presentations. One of the schools also uses an interactive whiteboard and games during lessons. The findings indicate a real need to enhance the use of new teaching methodologies and tools.

6.3 LIMITATIONS OF THE RESEARCH PROJECT

In addressing the secondary objectives, the following limitations were identified while performing the research project:

6.3.1 Limited school types

The research was conducted at Model C government schools in SA in the North West Province. The principals of some schools were not helpful to provide time for the project and therefore the game could not be played by more learners.

6.3.2 Limited time

Because of the overloaded school schedules, there was not sufficient time for all learners to complete all the necessary documents while playing the game. Some learners indicated in the interview that they would like to complete all the documents during the game. The game should therefore be incorporated as part of the syllabus for a longer period in order to be used effectively as a tool.

6.3.3 Level of gameplay

The level at which the game was played at High School B (level 1) was too easy as some learners had previous exposure to the game and became bored and wanted a bigger challenge. At High School A the level learners played on (level 1) was a bit too difficult, as it was a school with learners with learning disabilities and the rules had to be simplified for the learners to grasp. Basic calculations, e.g. the calculation of interest or total assets and net assets, had to be done by the teacher. Learners had to use calculators to do basic calculations. At High School C a framework for the basic calculations was supplied by the researcher which enabled the learners to do the calculations.

6.3.4 Boundaries of the study

The findings of this study cannot be generalized outside the boundaries of the study, because of the non-random techniques used in the sampling.

6.3.5 Lack of including a township school in the study

The unsuccessful attempts of the researcher to include a township school in the study, is also a limitation as circumstances in such a school could not be investigated. Addressing this limit could be a possibility in a future study (refer to 6.4 Areas for further research).

Although there were a few obstacles to overcome, the experience in general was still positive at all the schools and the majority of learners gave positive feedback.

6.4 AREAS FOR FURTHER RESEARCH

In addressing the secondary objectives, the following additional areas for further research involving games were identified:

- Additional methods for providing access to educational games and the impact thereof on educational value could be analysed; and
- The language which should be used in educational games in SA and the influence thereof on education could be analysed (Botha, 2014:187)

Other areas of research could also be possibilities for the future, namely:

- Determining whether learners who play the game *Commercium* over a longer period of time achieve better academic results;
- The *Commercium* game could be adapted to create an electronic game to adjust to the current technological development and to incorporate the needs of the new-generation learners. The effect of such a game can then be tested among school learners;
- The game could be tested at private and rural schools, so that learners' attitudes and results can be compared with those of learners in other government schools; and
- The assignment could be done by learners on computers by using Excel or another Accounting programme, to make the application thereof more practical and aligned with the reality in the corporate world. The effectiveness of incorporating information technology exposure can be analysed.

The possible areas identified for research, indicate a great need for investigation and research so as to find financially feasible educational tools and learning materials which could improve the teaching of the subject area.

6.5 RECOMMENDATIONS

The section addresses the last secondary objective namely to provide recommendations for the use of educational tools such as the *Commercium* game in Accounting, with a view to improve learners' attitude towards the subject and to develop much needed soft skills in the process. The findings suggest that the *Commercium* board game is a teaching instrument that can address various aspects of the criticism against traditional Accounting education. The project could help to keep more learners in the Accounting field by creating a more positive perception and attitude towards the subject among the learners. The **findings agree** with the study of Fouché and Visser (2008:617) that found that the implementation of the project and use of the board game in Accounting, would improve the technical and soft skills expected from accountants in a practical and efficient manner.

Based on the findings in the current study the following recommendations are provided by the researcher, in terms of the first five secondary objectives set as follows:

6.5.1 Recommendations regarding the subject *Accounting* in the Economic and Business Management field at secondary school (Secondary objective no. 1).

In Chapter 1 of this study it was indicated that the change in the Accounting profession leads accounting educators, to answer questions on which competencies are currently important for success in Accounting and if these competencies (including soft skills) are incorporated in the learners' Accounting program. It was determined that there is a gap between the competencies taught in modern classrooms and those needed for professional success in Accounting classrooms. It is therefore recommended that more games should be incorporated to present *EMS* and *Accounting* in secondary schools, so that excitement could be brought back into the subject. The game *Commercium* could be used as such an educational tool.

6.5.2 Recommendations regarding the soft skill requirements of the subject *Accounting* (Secondary objective no. 2) and the exposure to soft skills by the *Commercium* game (Secondary objective no. 4)

In Chapter 2 it was found that all over the world employers are currently seeking finance professionals with a wide range of skills. It was determined that skills which Accounting learners need can be divided into two main categories, namely soft skills and technical skills. It was indicated that the main 10 soft skills as regarded to be the most important in practice are: integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethics. In the CAPS document for Accounting, the DBE specifies the skills which learners will develop as part of the Accounting program as follows:

- Recording, evaluation and interpretation of financial data;
- Communication;
- Self-development;
- Organising of their own finances in a responsible manner;
- Ethical behaviour, good judgement, thoroughness, tidiness, accuracy and orderliness;
- Solve problems in various situations and accounting fields; and
- Development of critical thinking and analytical abilities.

Critical cross field outcomes, which learners should master is also indicated in the CAPS as the ability of learners to:

- Solve problems and use critical and creative thinking;
- Work effectively individually and in groups;
- Organise themselves and their activities responsibly;
- Analyse, organise and evaluate information;
- Communicate effectively;
- Are responsible towards the environment and other people; and
- Understand that the world is a set of related systems with combined problems.

The *Commercium* game was used in this study to apply several of the above mentioned skills to reach the critical cross field outcomes as prescribed by the CAPS document. Skills applied in the game included communication, group work, self-management skills, problem solving with critical thinking in different business situations. Technical skills applied included mathematical calculations and financial skills, such as the recording of different transactions. Learners practiced skills such as using good judgement to make financial decisions, they had to organise their own finances and make accurate calculations in a real business simulation. In this way learners practically experienced how important the subject *Accounting* is.

It is therefore recommended that the game *Commercium* with its educational value, should be brought under the attention of the Department of Education and a formal request should be

made to use it in EMS and Accounting classes at secondary school level. This could be a written suggestion or request that the game should become a requirement in the CAPS document, to become a practical tool used in Accounting or EMS classes.

6.5.3 Recommendations regarding the challenges in teaching secondary school teaching and possible solutions to address these challenges (Secondary objective no. 3)

In Chapter 2 of this study, it was indicated the Net generation learners learn in a different manner than what is generally expected. It was determined that a generation gap exists between teachers and the Net generation of learners. The main problems learners experience generally, and in SA classrooms were identified as:

- disadvantaged rural communities in SA;
- unequal access to quality education;
- poverty and hunger;
- lack of goods and services;
- low quality of schooling;
- major drop-out before the uniform matric examination;
- inability to achieve a matric qualification or access to tertiary studies;
- large learner-to-educator ratio;
- poor language skills;
- lack of basic reading and writing skills and mathematical skills; and
- a lack of understanding of specific subject-content.

In order to overcome these challenges it was determined in Chapter 3 that there is currently a shift from teacher-centred education, with the focus on acquiring and transmission of knowledge, to learner-centred education, where the learner is responsible to learn and learning becomes a lifelong process. **Characteristics of learner-centered classrooms** were identified as:

- Customised and personalised learning;

- Social and emotional support by teachers;
- Self-regulation, with teachers as facilitators of learning and not transmitters of knowledge;
- Collaborative and real learning experiences;
- Assessment for learning, where learners are assessed differently and assessments promote learning; and
- Integration of Technology for classroom instruction.

Major topics indicated in the CAPS document include budgets, income and expenditure and financial management, in the Grade 9 EMS Curriculum. These topics can't be taught by following a teacher-driven approach, as learners must be able to determine relationships between important figures and the financial statements, understand what the figures mean and use critical thinking and analytical skills to compile these financial statements and analyse the results and financial position of a business.

In the **current research study** the inquiry method of teaching was used, to create such a learner-centred classroom. Learners took actively part in the *Commercium* game and used different methods to increase their wealth, while the teacher only facilitated during game play. BS was applied as the game is a simulation of the corporate world and learners were involved in actual transactions. It was determined that the guided discovery method was applied to discover new Accounting concepts. The teacher provided social and emotional support to learners where needed and integrated technology to explain the game to learners.

It is therefore recommended that a learner-centred approach should be followed in teaching Accounting and EMS to school learners and that new teaching tools such as games (e.g. the *Commercium* game), as well as technology, should be incorporated in class to overcome some of these challenges. Programmes should be developed to assist teachers in following such a learner-centred approach in accounting education.

6.5.4 Recommendations regarding the perceptions of the game *Commercium* game as educational tool (Secondary objective no. 5)

In Chapter 5 the perceptions of learners about the *Commercium* game were determined through statistical analysis on questionnaires on the game and structured interviews performed after they played the game.

Learners had to summarise the project in a singular word and indicated that the game was good, nice, fun, great, educational, amazing, challenging etc. From the comments provided it is clear that these learners experienced the game as an educational tool, in a positive manner.

Learners were also required to provide **suggestions** about the project/game. Comments provided included the following:

- “Come again with another game”
- “Provide additional time for the game”
- “Use real money”
- “More involvement with other players”
- “Bring SWOT analysis in scenarios”
- “More scenarios”
- “Team work”
- “More property cards are required”

It is therefore **recommended** that the game be used as a tool and that the appearance of the game could be enhanced in the following ways:

- Increase the font used on the board to make it more visible;
- Use brighter colours for names of properties on the board to make it easier to read; and
- Change the look and texture of the moving pieces (vehicles). Learners commented that it was a bit out-dated.

The rules of the game could perhaps be simplified for level one to be used at schools, e.g. by determining fixed amounts for rent for all business properties without deed cards, as well as for interest on loans or dividends on shares.

In general the following recommendations can be made:

- Accounting bodies e.g. SAICA and SAIPA as well as Accounting firms could be included in the project to introduce the game to schools and perhaps by presenting a competition

among learners who play the game at various levels. This could bring prestige to the project and inspire teachers to incorporate the game as a teaching tool in class; and

- Sponsors could be found to help produce the game at a more affordable price. This could involve the public to help in changing the perceptions about the subject *Accounting*.

6.6 FINAL CONCLUSION

The main objective is to analyse whether introducing a board game in secondary school accounting as educational tools, leads to a positive experience for the learners and an exposure to soft skills within the subject. This main objective was reached by achieving the following secondary objectives (refer to section 6.2):

6.6.1 Secondary objective no. 1

To obtain an understanding of the subject *Accounting* in the Economic and Business Management field at secondary school (addressed in chapter 2).

A literature review was conducted on the challenges of secondary school teaching and the effect it could have on first year Accounting at tertiary level (refer to Chapter 2). It was found that since the teaching of Accounting experiences several problems at school level and a negative perception exists with regard to Accounting and accountants in general, the number of learners who choose the subject *Accounting* at secondary and tertiary education level is not sufficient to meet the need for more accountants. The number of students who specialise in Accounting at tertiary level is insufficient to provide in the demand for accountants in the corporate world.

6.6.2 Secondary objective no. 2

To identify and obtain an understanding of the soft skill requirements for the subject *Accounting* (addressed in chapter 2).

The skills (technical- and soft skills) which Accounting school learners should master were discussed as it is summarised in the CAPS document for Accounting by the DBE, namely: The recording and interpreting of financial data, communication, self-development, organising of personal finances, learning of ethical behaviour and good judgement etc., the solving of problems and developing of critical thinking and analytical abilities (Refer to chapter 2.2.3).

6.6.3 Secondary objective no. 3

To gain an understanding of the challenges in teaching *Accounting* and to identify possible solutions to address these challenges (addressed in chapter 3).

A literature study was conducted on tools to be used in the presentation of the subject *Accounting* to resolve these challenges (refer to Chapter 3). It was found that in SA secondary governmental schools, *Accounting* is currently presented by using mostly traditional, out-dated methods and tools. Although some schools might occasionally use games as an educational tool, it is not the norm and the manner in which the subject is presented is mostly in a theoretical manner. Teachers included in the study indicated that they would like to use the game *Commercium* as an educational tool since it evokes enthusiasm among learners.

6.6.4 Secondary objective no. 4

To analyse whether the game *Commercium* exposes learners to soft skills, in the subject *Accounting* (addressed in chapter 5).

It was determined through descriptive statistics (Refer to 5.3.1 Descriptive statistics) that the *Commercium* game exposed learners to various soft skills. The descriptive statistics of the learners' exposure to soft skills were reported in Table 5.9 and included the following questions, which learners had to answer:

- I had to identify and solve problems using critical and creative thinking.
- I had to work with others as a member of a team.
- I had to organise and manage myself responsibly and effectively.
- I had to collect, analyse, organise and evaluate information.
- I had to communicate effectively using visual and/or language skills by way of oral and/or written presentation.
- I had to take several financial decisions and had to deal with various business transactions.

For the majority of the questions more than 50% of the learners agreed that the different outcomes were reached. 48% of the learners agreed in question 1 that they used critical thinking and problem solving during the game. 70% of all learners agreed that the game helped them in organising themselves. 60% believed that the game gave them opportunities for financial decision making and group work. More than 50% agreed that the game taught them

how to effectively collect, analyse, evaluate and to communicate information. The results of the statistical analysis prove that the game exposed learners to various soft skills.

6.6.5 Secondary objective no. 5

Analyse if learners and teachers perceive the game *Commercium* as a positive educational tool, and if the exposure to the game improves the attitude of learners towards the subject *Accounting* (addressed in chapter 5).

The game *Commercium* was evaluated in three different schools in the North West Province in SA with a view to determine the effect it had on the learners, including the perception of teachers presenting the subject (refer to Chapters 5 and 6). Teachers as well as learners indicated that they enjoyed the game and that it had a positive effect on their perception of the subject. It was determined through the descriptive statistics of the learners' perceptions on the game *Commercium* that 60% of all learners agreed that they enjoyed the game and experienced a positive attitude towards it. More than 50% indicated that they liked the game and found it exciting and that the quality was good. The majority (more than 50%) believed that the game consisted of practical business transactions. The majority of learners also agreed that the game had enhanced their interest in Accounting as well as the corporate world and changed their views on what accountants do. More than 50% of learners indicated that they had learned from the game and had felt motivated by it. Overall the majority of learners indicated that the game had positive attributes (Refer to 5.4.1 Descriptive statistics).

6.6.6 Secondary objective no. 6

To provide recommendations for the use of educational tools such as the *Commercium* game in *Accounting*, with a view to improve learners' attitude towards the subject and to develop much needed soft skills in the process (addressed in chapter 6, section 6.5).

Recommendations were made for the use of educational tools in Accounting (refer to Chapter 6.5). The researcher came to the conclusion that if more games could be incorporated in the presentation of Accounting at school level, attitudes and perceptions of learners and teachers could be changed by bringing back fun and enjoyment into the classroom. This could result in long-term improvement of results and passing rates of learners (motivation and interest of learners), if used effectively.

It seems that overall the EMS teachers believed that the game brought excitement into the classes and that it had a positive effect on the feelings of learners towards the subject. In the pre-questionnaire used in the research project the question was asked if the learners consider a

career in accountancy and what the reason is for their answer. Positive reasons provided included answers such as: “I like EMS/Accounting, I love doing it, I like Maths and my parents want me to be an accountant, I like the game and more opportunities in this direction”, etc. The majority of learners also indicated that the game exposed them to various soft skills (Refer to 6.6.4 on secondary objective no. 4). This is confirmed by the results of the Mixed Model Analysis for career option, where the majority of learners also indicated that they do consider accountancy as a career option and had experienced a larger exposure to soft skills through the game play (Refer to 5.3.3.5 Career option).

This study started with a description of Accounting. From the literature it was determined that Accounting is seen as the record keeping of the monetary values of transactions in an orderly and systematic way of a business or an individual, with the objective of providing financial information through financial statements, in order to make decisions. Information is provided on the available resources of companies, the financing thereof and the results achieved by using the resources. Accounting and Accounting education were described as social structures influenced worldwide through their historical, social, economic, political and cultural contexts and it was concluded that Accounting education should be globally consistent and comparable.

In Chapter 1 the need for change in accounting education was established and especially the need to change the mind set of learners about the subject Accounting. It was concluded that globalisation was responsible for many changes in the Accounting profession. It was determined that Accounting education should be in line with these changes, to meet challenges and to ensure that learners are prepared to face the working environment. The need for change in the teaching and learning for Accounting or EMS in SA schools was confirmed. It was concluded that learners entering the workplace for the first time are not equipped with the required skills needed in the Accounting profession, and that current teaching practices could be the cause of this problem. It was determined that there is a shortage of new entrants into the Accounting profession, which could originate from the educational methods applied to teach the subject. Games could be used during teaching, to provide a solution to these mentioned problems.

In Chapter 2 it was shown that the number of learners enrolled for Accounting education at secondary and tertiary levels declined for years, although there is a high demand for Accounting careers. It was determined that negative perceptions about accountants, could be responsible for the decline and that it should be changed. Accounting as a school subject was discussed and it was determined that Financial Accounting falls under **financial literacy** which is part of the EMS curriculum for Grade 8 and 9 learners. In *The National Curriculum Statement Grades R-12*, the EMS curriculum for Grade 8 and 9 consists out of 3 sections, namely the economy

(30%), financial literacy (40%) and entrepreneurship (30%). EMS was described as a subject on the satisfaction of the needs and wants of people through the effective use of resources. The time available to teach this in schools is limited to 2 hours per week, consisting of 1 hour per week for financial literacy.

Problems which learners experienced in *Accounting* classrooms were determined as: out – dated Accounting education, a generation gap, poverty & the quality of schooling, the LER and learner performance in Grade 12 examinations. It was concluded that the origin of this problem is a lack of teaching strategies or methodologies applied by teachers in classrooms.

In Chapter 3 these problems were addressed by discussing new teaching methodologies to be used. It was shown that a shift occurred from teacher-centred education (with the focus on the acquiring of knowledge), to a learner-centered education (with the focus on the learner's responsibility to learn). A learner-centred approach is recommended as it involves learners actively in the learning process. Games as an educational tool were introduced. It was concluded that games have the ability to motivate and intrigue learners in a new way, through the provision of fun. A board game was defined as a game played on a board, involving the movement of pieces on the board. It was indicated that board games are back in use and a necessity for school curriculums.

Factors to consider when evaluating a game as an educational tool were determined as: alignment of the game with the curriculum and the content, engagement, design and evaluation of the game, ease of use, designed for fun, a good return on the investment and the time factor, support systems to teachers, accessibility, flexibility of games and the scale they are played on.

The *Commercium* game as an educational tool was introduced in *Accounting* classrooms. It was determined that the content of the game agreed with the topics in the EMS and Accounting curriculums, it was easy to use in class and was flexible as the levels of play could be changed according to the age and ability of learners. In Chapter 4 the research process was discussed and in Chapter 5 the results of the *Commercium* project was analysed statistically.

It can therefore be concluded that after performing a literature review on the subject *Accounting* and analysing the results of the questionnaires and interviews with learners and teachers, the use of the *Commercium* game as an educational tool in Accounting was successful. Learners enjoyed playing the game and were challenged to solve problems by making difficult financial decisions. The main objective was reached by reaching the above mentioned secondary objectives. The game *Commercium* holds many possibilities for improving the presentation of the subject and if the advantages could be brought to the attention of the Department of

Education and of teachers in SA or globally, it could be used successfully in classrooms as an educational tool. The outcomes of this study agree with the findings of Van Eck *et al.* (2015:1) that games are highly efficient learning tools.

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ANNEXURES

ANNEXURE A: RULES OF THE *COMMERCIUM* GAME

The rules explain the game play. It states the aim of the game and explains the different spaces on the board, the cards and tokens. Certain terminology was also explained in the rules (given the context of the game) to enable learners from different backgrounds and with various levels of prior knowledge to be able to play and understand the game. The rules also explain the interaction between the different elements in the game.

A copy of the English rules is attached.

RULES - ENGLISH



The game of **Commercium™**
...the business world simulation game by Jäco Fouché

The Game

The aim of the game is to run the most profitable business by means of manufacturing, distributing and investing. All this real-world simulation takes place around the **Commercium** board. Players move around the board according to the throw of a dice. The game includes two dice and players may decide to use either one or two during any turn. A great deal of effort was put into making the game as realistic, entertaining and amusing as possible. However, to illustrate the effects of interest rates, inflation, etc. in the short time the game is played, these rates and changes thereto were inflated, and their effects are therefore more dramatic than in reality.

The game will not only provide an educational experience of the wheeling and dealing of the business world, but will also provide hours of fun for family and friends.

Setting Goals

As the game has no preset goals, players may set their own goals. Four kinds of goals can be set to give the game a fixed ending:

- 1) playing a certain number of rounds, e.g. 24
- 2) working towards a monetary goal, e.g. the first player to have net assets of C\$1 000 000
- 3) playing for a set time, e.g. 2 hours
- 4) playing until all Economic News cards have been covered.

Levels of play

The game may be played at different levels of complexity.

Level 1 Services provision and property rental

- Only property and other investments are made.
- Players may decide to exclude the effects of inflation and interest rate changes. In this case players will not use the Economic News cards.

Level 2 Adding inventory

- Retailing (buying and selling) products (finished goods) is added. Players may now also buy products from wholesalers and sell them to retailers.
- Players may decide to exclude the effects of inflation and interest rate changes. In this case players will not use the Economic News cards.

Level 3 Adding manufacturing

- Players may decide to take part in the manufacturing of products as well. Players buy raw materials, hire labour and sell finished products to wholesalers.
- Players may decide to exclude the effects of inflation and interest rate changes. In this case players will also not use the Economic News cards.

Level 4 Adding financial markets

- Players may decide to play the stock market and to participate in imports and exports.
- Players may further decide to allow selling and buying on credit among one another and/or taking up loans from the bank.

Contents

The equipment of the game includes:

- 1 Game board

- 40 Economic News cards
- 1 Economic News cover card
- 40 Opportunities and Threats cards
- 1 Opportunities and Threats cover card
- 7 Property Investment cards
- 3 Business Investment cards
- 8 House cards
- 7 Mortgage cards
- 8 Loan cards
- 16 Share Certificate cards
- 8 Play pieces (vehicles)
- 8 Bank statements
- 8 Cheque books of 5 pages each
- 2 Non-permanent pens
- 24 Raw-material tokens
- 24 Labourer tokens
- 24 Product tokens
- 7 Market tokens (round)
- 100 COM dollar (C\$) notes
- 1 Rules booklet
- 2 Dice

Adaptations to the rules

Various adaptations to the rules are possible. Players may decide to amend rules by mutual consent. Here are a few possibilities:

- Players may decide to buy assets and auction these themselves.
- Two or more players may merge their businesses to survive or even to try preventing another player from winning.

TERMINOLOGY

The following are some of the terms used in the game. These terms are freely defined as follows, specifically in line with the game:

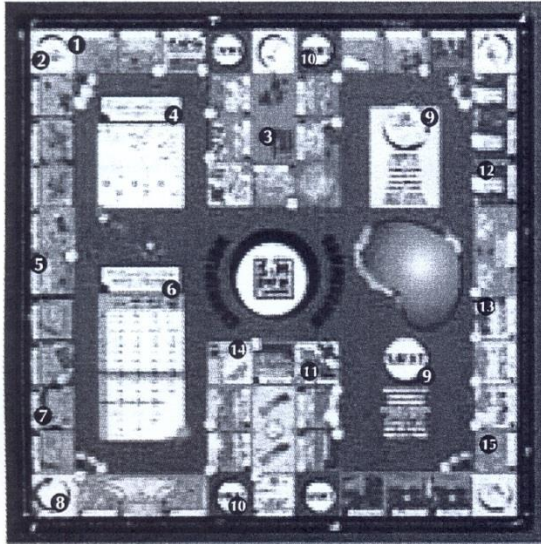
- **Appreciate** To increase in value or to become stronger.
- **Bad debt** Debt that people are unable to pay or do not pay.
- **Capital structure** The amount of debt and own money used to finance the business determines the capital (funding) structure of the business.
- **Credit provision** Extending credit or loans.
- **Deflation** When prices decrease.
- **Demand** The need for products and services.
- **Depreciate** To decrease in value or to become weaker.
- **Dividends** When companies make a profit they distribute some of these profits to the owners (shareholders) by way of dividends paid to the owners.
- **Exchange rate** How much of a country's money is necessary to purchase another country's money unit.
- **Inflation** An increase in prices and costs. The inflation rate can be indicated as a percentage increase over a period such as a year.
- **Insolvent** Bankrupt. Having more liabilities (amounts owed to others) than assets (money, property, etc.).
- **Interest** The amount received or paid by someone on a cash investment or loan. The interest rate can be indicated as a percentage increase over a period such as a year.
- **Money supply** The amount of money available in the economy.
- **Nationalise** When the government takes a property by way of law.
- **Overdraft** A facility at a bank to spend more money than you have in the bank. It is a form of debt.
- **Recession** A time when the economy is not growing and

things are difficult.

- **Speculate** When a person ventures a guess about what will happen in the future and makes investments, etc. based on that prediction in an effort to make bigger profits.
- **Subsidy** A grant (amount given) by the government.
- **Supply** The provision of goods or services.

The board

The board consist of the following areas:



1. Playing area (blocks)
2. Economic News blocks
3. Manufacturing area
4. Interest/Inflation and exchange rate indicator
5. Retail blocks
6. Stock exchange indicating share prices
7. Residential area
8. Bank (start)
9. Place for putting Economic News and Opportunities and threats cards
10. Opportunity and threats blocks
11. Import/Export blocks
12. Investment property blocks
13. Other payments
14. Vehicle block
15. Business investment blocks

Start of the game

- Place the board on the table and place the Economic News cards and Opportunities and Threats cards on the board. Put the market tokens on the highlighted squares in the market indicator and stock exchange sections.
- At the beginning of the game each player receives an amount of C\$150 000 (COM dollars). C\$100 000 is received in cash, while the remainder of the money is deposited in the bank account. Initial bank charges of C\$5 000 are charged immediately. Each player also has an initial overdraft facility of C\$20 000.
- Players take turns to throw one dice. The player with the highest score starts the game and play continues clockwise.
- Each player must choose a vehicle to start with, beginning with the player selected to start the game. The initial costs are:
Sedan C\$10 000
4X4 C\$15 000
Limo - C\$25 000

- All players start at the block with the red arrow and move in the direction of the arrow.
- Each player's first aim is to occupy a house to live in and from which to run his/her business. If a player has completed a turn through the residential area and has still not purchased a house, rent of C\$10 000 must be paid every time the start block is passed without owning a house.
- All transactions and action take place from the first round.
- Before play starts the players must select a banker who will act on the bank's behalf.

Spaces (Blocks) on the board

BANKING

- This block also serves as the start block.
- When a player lands on this block he/she may take out a loan. These loans may be repaid at any stage. At redemption (repayment) final interest as indicated on the board's market indicators must be paid. A single player may have a maximum of two loans at any time. Only eight loans are available (indicated by Loan cards). Players will have to wait for another player to first redeem (pay) his/her loan when no Loan cards are available.
- Interest on outstanding loans and mortgages is paid every time players land or pass here. Interest is paid at the rate indicated on the board.
- Every time a player passes here he/she receives C\$20 000 in service income as well as dividends at 10% of market value on shares held on the stock exchange. The player also receives interest on money in the bank account at an interest rate half of the rate indicated on the board. Amounts are rounded to the nearest C\$1 000.
- Every time a player passes this block an Economic News card must be picked up and the terms executed where necessary.

HOUSING



- To have housing is a requirement. If a player does not own a house and lands on a residential block, that property must be purchased. If a player does not land on a residential block, rent of C\$10 000 must be paid each time the start block is passed.
- The houses are indicated by a transport deed that a player receives upon purchase. No mortgages are allowed on houses.
- Houses may be sold at the market value less 10% commission during a player's turn, but a player must have purchased another house first during a previous turn.
- A house can only be bought if a player lands on the specific block.

TRAVELLING



- By paying the required amount a player may move to any block on the board and execute the requirements of that block during his/her current turn.

VEHICLES



- A player may decide to purchase a new vehicle when landing on this space. The prices are:
Sedan C\$10 000
4X4 C\$15 000
Limo C\$25 000
- Players receive the following trade-in on used vehicles:
Sedan C\$4 000
4X4 C\$6 000
Limo C\$10 000

- ## AUCTIONS



- ## PLAYING GOLF



- ## OPPORTUNITIES AND THREATS



- ECONOMIC NEWS



- ## PROPERTY AND BUSINESS INVESTMENT



- ## Nelson's Place

(Don't let us forget you!)

100% customer complete satisfaction

McCart's products

Tennis equipment

Ski equipment

Soccer equipment

Basketball equipment

Swimming equipment

Skiing equipment

Ski boots

Ski poles

Ski helmets

Ski goggles

Ski socks

Ski gloves

Ski pants

Ski jackets

Ski boots

Ski poles

Ski helmets

Ski goggles

Ski socks

Ski gloves

Ski pants

Ski jackets



100% customer complete satisfaction

McCart's products

Tennis equipment

Ski equipment

Soccer equipment

Basketball equipment

Swimming equipment

Skiing equipment

Ski boots

Ski poles

Ski helmets

Ski goggles

Ski socks

Ski gloves

Ski pants

Ski jackets



RAW MATERIAL PURCHASES



-

PAYING OVERHEADS



- This block is only applicable when playing with manufacturing (Level 3 and up).
- The player landing on this block must pay the required overheads. Economic News cards may alter the price.

HIRING LABOUR



- This block is only applicable when playing with manufacturing (Level 3 and up).
- The player landing on this block may hire labour at the indicated price. Economic News cards may alter the price.



- The player receives a token for each labourer hired.
- A maximum of five labourers may be hired during a single turn unless Economic News cards indicate otherwise.
- If there is no token to purchase, a labour shortage occurs and the players will have to continue with the game until tokens become available.

WHOLESALE



- This block is only applicable when playing manufacturing and/or inventories (Level 2 and up).
- Manufacturers sell finalised products here at the indicated price (one finished product item consists of 1 raw material token and 1 labourer token.).
- Retailers purchased products here at the same indicated price. A token is received for each item purchased.
- A maximum of 5 products may be sold or bought during a single turn unless economic news cards indicate otherwise.
- If there is no token to purchase a stock out occurs and the players will have to continue with the game until tokens become available.



RETAILING



- 
- The blocks are only applicable when playing with products (inventory)(Level 2 and up).
 - Products purchased at wholesalers are sold to retailers on these spaces once a player lands on it.
 - The price received is indicated on the block. Economic News cards may alter the price.
 - A maximum of 5 products may be sold during a single turn unless Economic News cards indicate otherwise.

EXPORTING AND IMPORTING

- When a player lands here raw materials and finished goods may be bought at the following prices multiplied with the exchange rate:
 - Importing Raw materials @ US\$ 2 000. For eg. If the exchange rate is 1:1.5 is means that 1 US\$ equal 1.5 C\$ and 1 raw material will then cost C\$ 3000 (C\$ 2 000 x 1.5)
 - Importing Finished goods @ US\$ 6 000.
- Finished goods may also be sold at the following prices multiplied with the exchange rate:
 - Exporting Finished goods @ US\$ 30 000.
- A maximum of 5 products may be imported or exported during a players turn. They player may also only complete one import or export transaction during a turn.



Stock market

A player may purchase shares at any time during his turn. A broker fee of C\$ 1000 is payable for each purchase no matter the number of shares bought in the company.

Company	Share Price	Market Value	Dividend	Interest
ABC	100	10000	10	10
DEF	200	20000	20	20
GHI	300	30000	30	30
JKL	400	40000	40	40
MNO	500	50000	50	50
PQR	600	60000	60	60
STU	700	70000	70	70
VWX	800	80000	80	80
YZA	900	90000	90	90
BCD	1000	100000	100	100
EFG	1100	110000	110	110
HIJ	1200	120000	120	120
KLM	1300	130000	130	130
NOP	1400	140000	140	140
QRS	1500	150000	150	150
TUV	1600	160000	160	160
WXY	1700	170000	170	170
ZAB	1800	180000	180	180
CD	1900	190000	190	190
EF	2000	200000	200	200

A player may also sell shares at any time during his turn. A broker fee of C\$ 1000 is payable for each purchase no matter the number of shares bought in the company.

Players will receive a corresponding share certificate. The number of shares is indicated on the certificate. A limited number of shares are available.

The share price (market) token is placed at level 0 (highlighted) at the start of the game and move up or down as indicated by the Economic news cards.

The price indicated is for 1 share.

Interest, inflation and exchange rates



Interest Rate	Inflation Rate
5	0
10	5
15	10
20	15
25	20

The market tokens are put on the highlighted blocks at the beginning of the game and move up or down as indicated by the Economic news cards.

The interest rate level influences the market price of properties and business investments. It will also affect the interest received and paid when passing the start block.

The inflation rate influences the rent and service fee income for property and business investments.

The exchange rate influences the price at which goods are imported and exported.

Cash flow problems and bankruptcy

If a player cannot pay any amount owed to another player or the bank that player will have to sell his/her shares, property and other investments. This may be done to other players or the bank. Raw materials, labourers and products may only be sold to other players. Debt payments may also take place in the form of any of the above as agreed between the parties.

If the player still not has enough money the player must sell his/her house.

If the player still has insufficient funds he/she is regarded insolvent and has to remove their playing piece from the board.

Bankers and the bank

The player selected to be the banker will handle cash and other transactions on behalf of the bank. This player will also keep the bank statement of the other players up to date.

The following bank charges are applicable:

- C\$ 5 000 per chequebook of 5 pages. Cash can only be withdrawn by issuing a cheque. The first chequebook is charged at the beginning of the game.
- C\$ 1 000 per cash deposit.



About Commercial

Developer: Jaco Fouché
Graphic design studio: dcomm

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Commercial is a registered trademark of Sim Entertraining (Pty) Ltd

Contact details: PO Box 20118
NOORDBRUG 2522
SOUTH AFRICA
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Cell: (+27) 82 924 4948

ANNEXURE B: QUESTIONNAIRES

Questionnaire for learners: Before

Number

Geagte leerder / Dear learner

Die volgende vraelys vorm deel van my navorsing in Rekeningkunde onderrig met die doel om dit te verbeter. U insette word waardeer.

The following questionnaire is part of research in Accounting education with the purpose of enhancing it and your input is valued.

U word daarom versoek om die vraelys eerlik en na die beste van u vermoë te voltooi. Al die inligting bekom sal vertroulik bly. U deelname is vrywillig.

You are therefore requested to complete it honestly and to the best of your ability. All the information obtained from this questionnaire will remain confidential. Your participation is voluntary.

U deelname word waardeer.

You participation is appreciated.

Me. C.E. Minnaar

Voltooi asb. deur 'n kruisie (X) te maak in die toepaslike blokkie of deur die spasie in te vul.

Please complete the questionnaire by making a cross (X) in the appropriate block or filling in the space provided.

1	My geslag is: / My gender is:	Manlik/Male	1	Vroulik/Female	2
2	Ek is in graad: / I am in grade:	9	1	10	2
3	Ek het rekeningkunde as vak op skool / I have accounting as subject in school	Ja/Yes	1	Nee/No	2
4	Ek gaan skool in die volgende provinsie: / I go to school in the following province:	Oos-Kaap/ Eastern Cape	1	Vrystaat/Freestate	2
		Gauteng	3	Kwazulu Natal	4

		Limpopo	5	Mpumalanga	6
		Noord-Kaap/ <i>Northern Cape</i>	7	Wes-Kaap/ <i>Western Cape</i>	8
		Noordwes/ <i>North-west</i>	9	Buiteland/ <i>Outside RSA</i>	10
5	Ek oorweeg 'n beroep in 'n rekeningkundige rigting / <i>I consider a career in accountancy</i>	Ja/Yes	1	Nee/No	2
6	Wat is die rede vir jou antwoord hierbo? / <i>What is the reason for your answer above?</i>				
7	Hoe voel jy oor vandag se sessie? / <i>How do you feel about today's session?</i>				
8	Ek het al van tevore (voor vandag) die <i>Commercium</i> spel gespeel / <i>I have played the Commercium game before (before today)</i>	Ja/Yes	1	Nee/No	2

Questionnaire for learners: After the game

Number

Geagte leerder / Dear learner

Die volgende vraelys vorm deel van my navorsing in Rekeningkunde onderrig met die doel om dit te verbeter. U insette word waardeer.

The following questionnaire is part of my research in Accounting education with the purpose to enhance it and your input is valued.

U word derhalwe versoek om die vraelys eerlik en na die beste van u vermoë te voltooi. Al die inligting deur u verskaf sal vertroulik bly. U deelname is vrywillig.

You are therefore requested to complete the questionnaire honestly and to the best of your ability. All the information entered on this questionnaire will remain confidential. Your participation is voluntary.

U deelname word waardeer.

Voltooi asb deur 'n kruisie (X) te maak in die toepaslike blokkie of deur die spasie in te vul/Complete please by marking the correct block with a cross (X) or by filling in the space.

Die volgende uitkomst is bereik met die spel: / The following outcomes are attained with the game:				
		Verskil sterk / Strongly disagree	Neutraal / Neutral	Stem heelhartig saam / Strongly Agree
1	Ek moes probleme identifiseer en oplos met kritiese en kreatiewe denke. / I had to identify and solve problems using critical and creative thinking.	1	2	3
2	Ek moes saam met ander werk as lid van 'n span. / I had to work with others as a member of a team.	1	2	3
3	Ek moes myself organiseer en bestuur op 'n verantwoordelike en doeltreffende wyse. / I had to organise and manage myself responsibly and effectively.	1	2	3
4	Ek moes inligting insamel, ontleed, organiseer en evalueer. / I had to collect, analyse, organise and evaluate information.	1	2	3
5	Ek moes doeltreffend kommunikeer deur van visuele en / of taalvaardighede gebruik te maak op mondelinge en / of geskrewe wyse. / I had to communicate effectively using visual and/or language skills by way of oral and/or written presentation.	1	2	3
6	Ek moes verskeie finansiële besluite neem en verskillende besigheidstransaksies hanteer. / I had to take several financial decisions and had to deal with various business transactions.	1	2	3

Adapted from Fouché (2006:300-302) and more understandable for school learners.

Dui jou gevoel en gesindheid teenoor die bordspel aan. Op 'n skaal van 1 tot 3 word een as negatief, twee as neutraal en drie as positief beskou. Indicate your feelings and attitude towards the game. On a scale of 1 to 3, one is seen as negative, two as neutral and three as positive.				
		Verskil sterk / Strongly disagree	Neutraal / Neutral	Stem heelhartig saam / Strongly Agree
7	Hou van die spel / <i>Likeable game</i>	1	2	3
8	Hoë gehalte spel / <i>Good quality game</i>	1	2	3
9	Het dit geniet / <i>Enjoyed it</i>	1	2	3
10	Opwindend / <i>Exciting</i>	1	2	3
11	Praktiese Rekeningkunde & Besigheidstransaksies / <i>Practical Accounting & business transactions</i>	1	2	3
Adapted from Kays Computer Attitude Measure, as used by Fouché (2006:302)				

Voltooi die volgende vrae indien jy al aan die Commercium projek deel geneem het. / Complete the following questions if you have already participated in the Commercium project.				
		Verskil sterk / Strongly disagree	Neutraal / Neutral	Stem heelhartig saam / Strongly Agree
12	My belangstelling in die besigheidswêreld is verhoog deur die Commercium-projek. / <i>My interest in the business world has been enhanced by the Commercium project.</i>	1	2	3
13	My belangstelling in die rekeningkunde is verhoog deur die Commercium-projek / <i>My interest in Accounting has been enhanced by the Commercium-project.</i>	1	2	3
14	Deelname aan die projek het my siening oor die rol van die rekenmeester verbreed. / <i>Participating in the project broadened my view on the role of the accountant.</i>	1	2	3
15	Wat ek gedurende die projek geleer het sal my oor die langtermyn bybly. / <i>What I have learned during the project will stay with me on the longrun.</i>	1	2	3
16	Ek het die sosiale aspekte van die projek geniet. / <i>I enjoyed the social aspects of the exercise.</i>	1	2	3
17	Ek het die projek ernstig geneem, al was dit in die vorm van 'n speletjie / <i>I took the exercise seriously even though it was in the form of a game.</i>	1	2	3
18	Ek is gemotiveer deur die projek / <i>I was motivated by the project.</i>	1	2	3
19	Ek sou ander leerders aanbeveel om ook die spel te speel. / <i>I would recommend other learners to also play the game.</i>	1	2	3

Adapted from Fouché (2006:302)

20. Skryf een positiewe en een negatiewe element van die projek neer /
Write down one positive and one negative element of the project.

+

–

21. As jy die projek in een woord moes opsom, wat sal dit wees? /
If you have to summarize the project in one word, what would it be?

22. Enige voorstelle / *Any recommendations.*

ANNEXURE C: STRUCTURED INTERVIEW WITH LEARNERS:

Name of School		
Subject		
Grade		
Teacher		
Date		
Questionnaire:		
Why did you choose Accounting as a subject?	(Choose the correct option) (x)	
1.1 Parents made the choice for you.		
1.2 You are interested in the subject and consider a career in a financial field.		
1.3 You think there are many career possibilities for someone educated in Accounting.		
1.4 There was no other possible subject choice in your school.		
1.5 Any other reason: Explain.		
2. How do you feel about this subject?	(Choose the correct option) (x)	
2.1 Positive: I like the subject and am interested in financial numbers.		
2.2 Negative: I do not like this subject.		
2.3 Neutral: I feel that this subject is presented in an average manner and understand the content.		
3. Are the classes presented in an interesting manner?	Yes	No
4. Are you satisfied with the mark you achieved in this subject?	Yes	No
5. In which category does your mark fall?	(Choose the correct option) (x)	
5.1 Above the norm (80% and above)		
Average (50-79%)		
5.3 Low (40-49%)		
5.4 (Below 40%)		
6. Do you have enough time to cover the curriculum in this subject?		
7. Which of the following teaching methods and tools does the teacher use during classes:	(Choose the correct option(s)) (x)	
7.1 PowerPoint presentation		
7.2 Transparencies		
7.3 Use of textbook during classes (Oral presentation and written assignments)		
7.4 Extra textbooks or worksheets		

7.5	Class tests		
7.6	Use of computer programmes during classes		
7.7	Use the internet for research in class (Cell phones or computers)		
7.8	Use of games during classes		
7.9	Use of Financial magazines		
7.10	Use of an interactive white board		
7.11	Posters and pictures		
7.12	Any other teaching methods or tools used during classes	Give examples	
8.	Did you enjoy the game <i>Commercium</i> ?	Yes	No
9.	Did you understand the rules of the game?	Yes	No
10.	Did the game <i>Commercium</i> help you to understand Accounting and Business concepts more clearly?	Yes	No
11.	Do you think games played during class time would influence your feelings about the subject in a more positive manner?	Yes	No
12.	Would you like to do Accounting on a computer programme during classes?	Yes	No

Structured interview with teachers:

Name of School	
Subject	
Grade	
Teacher	
Date	
Questionnaire:	
How many groups (classes) for this age group in Accounting?	
How many learners in the group?	
Are there any learners with special needs in this group? How many?	
What are the special needs, if any?	
How many students have results above the norm? (80% and above)	
How many students have marks below 40%?	
Indicate the teaching methodologies and tools used during classes:	(Choose the correct option(s) (x))
7.1 PowerPoint presentation	
7.2 Transparencies	

7.3	Use of textbook during classes (Oral and written assignments)			
7.4	Extra textbooks or worksheets			
7.5	Class tests			
7.6	Use of computer programmes during class			
7.7	Use the internet for research in class (Cell phones or computers)			
7.8	Use of games during classes			
7.9	Use of Financial magazines			
7.10	Use of an interactive white board			
7.11	Use of any other teaching methods or tools			
Attitude of group in class:		(Choose the correct option) (x)		
8.1	Positive			
8.2	Negative			
8.3	Average			
Group performance (Class average)				
Does the school have sufficient teaching and learning materials for this subject?		<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No
Yes	No			
What are the school's needs for teaching and learning materials?				
Make any suggestions to improve the presentation of the subject <i>Accounting</i> in future classes.				

Evaluation of the game *Commercium* by teachers:

Name of School					
Subject					
Grade	9	10	11	12	
Teacher					
Date					
Questionnaire:					
Are the rules of the game easy to understand?					
Do you think the game is an efficient educational tool to use at secondary school level?					
At which of the four levels did the learners in your class play the game?					
(Choose the correct option) (x)					
Level 1: Service provision and property rental					

Level 2: Adding inventory		
Level 3: Adding manufacturing		
Level 4: Adding financial markets		
Indicate the level of the game you would think is suitable for the following grade learners in accounting/EMS	(Mark the suitable level) (x)	
Grade 8/9	Not suitable at all	
	Level 1: Service provision and property rental	
	Level 2: Adding inventory	
	Level 3: Adding manufacturing	
	Level 4: Adding financial markets	
Grade 10	Level 1: Service provision and property rental	
	Level 2: Adding inventory	
	Level 3: Adding manufacturing	
	Level 4: Adding financial markets	
Grade 11	Level 1: Service provision and property rental	
	Level 2: Adding inventory	
	Level 3: Adding manufacturing	
	Level 4: Adding financial markets	
Grade 12	Level 1: Service provision and property rental	
	Level 2: Adding inventory	
	Level 3: Adding manufacturing	
	Level 4: Adding financial markets	
Did the learners enjoy playing the game?	Yes	No
Did the game have a positive effect on the following aspects:		

6.1 Learners' attitudes and perceptions towards the subject <i>Accounting</i> and the business environment	Yes	No
6.2 Learners' final marks	Yes	No
Would your school be interested in purchasing the game <i>Commercium</i> for future use as an educational tool?	Yes	No
Would your school be interested in using the <i>Pastel</i> School Programme (Based on CAPS & IEB Curriculum Gr 10-12), as an educational tool?	Yes	No
Is there any other game or computer programme you could recommend for use as an educational tool in Accounting?		

ANNEXURE D: LETTERS OF PERMISSION

CE Minnaar
The North-West University
15 January 2016

Attention:

(DBE Chief Director for Curriculum Assessment and Examinations)

RE: Permission for research in Accounting at Secondary Schools in North West Province

Dear Sir

I am a Master's Degree student at The North-West University in Financial Accounting. **The aim of my research is to test a financial board game *Commercium* in Secondary Schools in North West Province**, to determine whether it could be used as an effective educational tool in Financial Accounting. The game was developed by Prof Jaco Fouché and was translated in all eleven official languages in South Africa and therefore I believe it could be very useful in Accounting classrooms.

I would like to play the game with grade nine learners of various schools in North West Province and ask the learners to complete questionnaires concerning the game and discuss it briefly to determine whether or not they enjoyed the game and found it a useful educational tool.

I previously obtained permission to gather information on Accounting marks and anything else which might be needed for the research. (see the letter attached). My supervisor is Prof S Van Rooyen TEL 018-299 1458. You can contact me at:
Cell nr 072-6013731 or connie.minnaar02@gmail.com

I would appreciate it so much if you could provide me with a letter of permission to conduct the research in Secondary Schools in North West Province.

Mrs CE Minnaar
The North-West University: School of Financial Accounting
24140376

CE Minnaar
The North-West University
15 January 2016

High School

Attention: The Principal

RE: Research Accounting Game

Dear Sir/Madam

I am presently conducting my Master's degree studies in Financial Accounting through The North-West University.

The purpose of this proposal is to test the effectiveness of an Interactive board game *Commercium* (newly developed by The North-West University) for the Further Education and Training (FET) phase for accounting learners. This game was developed in order to stimulate interest and learning in finances and to enhance learner-centred training.

Your school has been identified to provide an appropriate context in which data may be collected. I am therefore writing this letter to you to request permission to conduct this study inviting participation by students enrolled in FET phase accounting at your school.

The study will involve the following aspects:

1. Site visits and conducting the game *Commercium* in the school's accounting class with the learners while monitoring the viability of this game in a school class context, together with pre- and post-implementation questionnaires to assess the learners' attitudes towards the game.
2. Teacher and learner surveys and interviews to determine the success of the game application within the educational context.

I anticipate that this study will be undertaken for about 2 hours per group during 2015. There are no perceived benefits or disadvantages to the learners being involved in this study. Participation of learners in this study is voluntary. The learner may discontinue participation at any time without any explanation or penalty.

Confidentiality of respondents and the identity of the school are assured. Random numbers will be allocated to each learner to be used during collection of data. No student will be identifiable from the

written records of the research. The collected data (field notes, questionnaires and pre– and post-implementation tests) from this study will be available only to the principal supervisor and researcher. This data may be accessed for the purpose of undertaking work in related areas, namely workshops, presentations and publications in educational and research journals. Following completion of the research project, the data will be used solely for presenting work in educational and research forums.

A letter of approval to do research in the North West Department of Education is appended. Also included are the information/consent forms that will be provided to students.

Should you agree to participate in this research project, I will require your written consent to that effect. Once this has been obtained, I will provide the form to learners and their parents/guardians that outline the proposed research, and seek their written consent. I will also provide a brief outline of the proposed research for inclusion in your communication with parents. It is anticipated that interviews will be undertaken during 2015.

Should you wish to discuss this proposal or raise concerns about its conduct, I may be contacted directly on mobile phone 072 601 3731 or via connie.minnaar02@gmail.com. Alternatively you may contact my supervisor, Professor S Van Rooyen, at (018) 299 1458.

I would be grateful for your favourable consideration to participate in this project.

Yours sincerely

Connie Minnaar
(Researcher)

Encl.

Note of approval from DoE (North West Province) to conduct research

High School:

Attention: Teacher Grade 9 EMS

RE: Research Accounting Game

Dear Teacher

I am presently conducting Master's degree studies in Financial Accounting through The North-West University.

The purpose of this project is to test the effectiveness of an Interactive board game *Commercium* (newly developed by The North-West University) for the FET phase in accounting learners. This game was developed in order to stimulate interest and learning in finances and to enhance learner-centred learning.

Your school has been identified to provide an appropriate context in which data may be collected. I would like to request permission to conduct this study involving students enrolled in grade nine Economic & Management Sciences at your school. **The study will entail the following:**

1. Site visits and conducting the game *Commercium* in the school's accounting class with the learners while monitoring the viability of this game in a school class context, together with pre- and post-game questionnaires to determine the learners' attitudes towards the game. I anticipate that this study will be undertaken for **about 2 hours per group during 2016.**
2. Teacher- and learner-surveys and -interviews to determine the success of the game application within the educational context. The interviews will involve focus groups of approximately 6-8 learners. Each interview is expected to take between 10-15 minutes. There are a number of tasks that I need to complete. These include:
 1. Providing FET phase accounting students with information and consent forms.
 2. Collecting consent forms from students and determining the number of participating students.
 3. Organizing respondents into interview groups.
 4. Identifying an appropriate venue in which the interviews may be conducted.
 5. Identifying an interview schedule that may be best suitable for your school and the respondents.
 6. Meeting with you to discuss the nature and extent of the game to be used as part of your school's Accounting curriculum.
 7. Playing the game *Commercium* with the learners in a time slot for more or less two hours during school time or after school as will be arranged.

I would be happy to discuss the most efficient way of undertaking these tasks with you. I will greatly appreciate your help for this research project. You can contact me at 072-601 3731 or via email: connie.minnaar02@gmail.com

Yours sincerely

Connie Minnaar

CE Minnaar
The North-West University
15 January 2016

Attention: Parents/Guardians: EMS Learners

RE: Research Accounting Game

Dear Parent / Guardian

Your child has been selected and invited to take part in a research study of The North-West University (NWU). Before you decide to let your child participate in this study, it is important for you to understand why the research is being done and what it will entail. Please take the time to read the following information carefully.

NWU is currently developing and testing a board game *Commercium* in order to improve teaching of Accounting in class. The purpose of this study is to test the effectiveness of the board game *Commercium* within the Secondary phase in Accounting. This game includes various financial aspects and how to conduct business.

Study Procedure:

The expected time commitment for this study with your child is approximately 2 hours. Your child will play a game with pre- and post-implementation questionnaires and may take part in an interview. This study will not assess your child's progress, but your child will be part of a group to play and evaluate the game *Commercium*. Nothing about this study can harm your child. There will be no direct benefit to you or your child by participating in this study. However, we hope that the information obtained from this study may break ground for future accounting teaching methods.

Random Numbers will be allocated to each child by the researcher and will be used in the pre- and post-implementation questionnaires. The responses will be recorded anonymously. The interviews will be transcribed. Numbers for learners will be used at all times to ensure anonymity. Confidentiality will also be maintained during interviews, presentations or articles. The identity of your child will be masked at all times. Notes, interview transcriptions and any other identifying participant information will be kept in the personal possession of the researcher. The questionnaires or notes will be kept in safe storage at The North-West University after the study. When it is no longer needed for research, all materials will be destroyed.

Participation in this study is voluntary. It is up to you and your child to decide whether or not to take part in this study. If you do decide to let your child take part in this study, you will be asked to sign the consent

form below. There are no foreseen risks anticipated; no costs to you and there is no monetary compensation to you or your child for participating in this study. Your child may withdraw at any time if he or she chooses to do so. Should you have any questions concerning the research or any related matters, please contact me, Connie Minnaar at Tel 072-601 3731 or e-mail me at connie.minnaar02@gmail.com. Your child will also be granted the opportunity of asking questions before participating in this study. We are looking forward to conducting this research.

Kind regards

Connie Minnaar
(Researcher)

**ANNEXURE E: PERMISSION LETTERS FROM THE NORTH WEST
DEPARTMENT OF EDUCATION: DR KENNETH KAUNDA DISTRICT –
OFFICE OF THE DISTRICT DIRECTOR**



Education and Sport Development

Department of Education and Sport Development
Departement van Onderwys en Sport Ontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko

NORTH WEST PROVINCE

Temane Building
8 O.R. Tambo Street, Potchefstroom
Private Bag X1256,
Potchefstroom 2520
Tel.: (018) 299-8216
Fax: (018) 294-8234
Enquiries: Mr H. Motara
e-mail: hmotara@nwpg.gov.za

DR KENNETH KAUNDA DISTRICT

OFFICE OF THE DISTRICT DIRECTOR

02 February 2016

Mrs C E Minnaar
Student Number: 24140376
North West University – Potchefstroom Campus

**PERMISSION TO CONDUCT RESEARCH “FINANCIAL GAME “COMMERCIMUM” AT
SECONDARY SCHOOL – TLOKWE AREA OFFICE IN DR KENNETH KAUNDA DISTRICT**

The above matter refers.

Permission is hereby granted to you to conduct your research at secondary schools – Tlokwe Area Office in Dr Kenneth Kaunda District under the following provisions:

- **The activity you undertake at the schools should not tamper with the normal process of teaching and learning; and will take place after school hours.**
- **You inform the principals of your identified school of your impending visit and activity;**
- **You provide my office with a report in respect of your findings from the research; and**
- **You obtain prior permission from this office before availing your findings for public or media consumption.**

Wishing you well in your endeavour.

Thanking you

**MR H MOTARA
DISTRICT DIRECTOR
DR KENNETH KAUNDA DISTRICT**

cc Ms S S Yssel – Area Manager: Tlokwe

**ANNEXURE F: PERMISSION LETTERS FROM THE NORTH WEST
DEPARTMENT OF EDUCATION: OFFICE OF THE DEPUTY DIRECTOR
GENERAL -BRANCH: DISTRICT AND PROFESSIONAL SERVICES**



education

Lefapha la Thuto la Bokone Bophirima
Noordwes Departement van Onderwys
North West Department of Education
NORTH WEST PROVINCE

Garona Building, Mmabatho
1st Floor, East Wing,
Private Bag X2044,
Mmabatho 2735
Tel.: (018) 388-3411 / 388-3433
Fax.: 086 514 0126
Cell: 071-474-3121
e-mail: motlhabanej@nwpg.gov.za

**OFFICE OF THE DEPUTY DIRECTOR-GENERAL
BRANCH: DISTRICT AND PROFESSIONAL SERVICES**

Telephone: 018 388 3411
E-mail: motlhabanej@nwpg.gov.za

16 May 2014

To: Ms C. Minaar
NWU

From: Ms S.M. Semaswe
Acting Superintendent General

SUBJECT : REQUEST FOR INFORMATION ON GRADE 12 ACCOUNTING STATS

Dear Ms Minaar

YOUR LETTER OF REQUEST DATED 15 MAY 2014 HAS REFERENCE.

Permission is hereby granted to receive information on grade 12 accounting. You are further advised to liaise directly with Dr Myburgh, Chief Director for Curriculum, Assessments and Examinations at these numbers: 018 384 3016/018 388 0802

We hope your research will be of importance and assist the department in improving learner performance in accounting; and wish you well in your endeavour.

S.M. SEMASWE
ACTING SUPERINTENDENT GENERAL

CC DR J.A. MYBURGH: CHIEF DIRECTOR:G/FET



"Towards Excellence in Education"

ANNEXURE G: GAME RULES

Commercium Game/Spel Grade 9 EMS/EBW Adjusted Rules/Aangepaste reëls

- Goal/Doel: To make the most profit/Om die meeste wins te maak.
- Add up your Assets and subtract Loans at the end of the game and calculate Net Assets as follows:

Tel jou Bates op en trek alle Laste af aan die einde van die spel en bepaal Netto Bates soos volg: \$

House/Huis	
Car/Voertuig	
Shares/Aandele	
Business Properties/Besigheidspersele	
Cash/Kontant	
Total Assets/Totale Bates	
Less Loans (xxx)/Min Lenings	
Less Starting Capital/ Min Openingskapitaal	(150 000)

Opening Capital/Aanvangskapitaal:

Every player receives \$150 000 (\$100 000 in cash and \$50 000 bank deposit).

Elke speler ontvang \$150 000 (\$100 000 in kontant en \$50 000 as 'n bank deposito).

Information & adjusted rules/Inligting & Aangepaste reëls

Start/Begin: Buy a car/Koop 'n kar: \$

Sedan:	10 000
4x4	15 000
Limo	25 000

Houses/Huise:

- Hand out a house card to each and pay the "sad face price" (in the middle of the card).
Deel 'n huiskaart vir elkeen uit en betaal "sad face"-prys (in die middel van die kaart).
- Without a house-pay a \$10 000 each rand if you pass Start.
Sonder 'n huis betaal \$10 000 elke keer as jy verby Begin gaan.

Bank block (Start)/Bank blok (Begin):

- Borrow money (Loans) & pay interest thereon (10%) each time when you pass Start.
Leen geld & betaal rente daarop (10%) telkens wanneer jy verby Begin gaan.
- Receive \$20 000 for Services rendered if you pass Start.
Ontvang \$20 000 vir Dienste gelewer as jy verby Begin gaan.

Auctions/Vendusias:

- Sell any property to a player or Bank at cost price.
Verkoop enige eiendom aan 'n speler of Bank teen kosprys.

SWOT (Red Block) or Economic News (Yellow Block)**SWOT (Rooi Blok) of Ekonomiese Nuus (Geel Blok):**

- Pick up SWOT Card and do what it tells you to do. Leave out any manufacturing/products.
Tel SWOT-kaart op en doen wat dit sê. Laat vervaardiging/produkte uit.

Business Properties/Besigheidseiendomme:

- With white circled price - pay that price to buy. Other players pay \$2 000 each time they land on it.
Met witsirkel-prys - betaal die prys om te koop. Ander spelers betaal \$2 000 telkens wanneer hulle daarop land.
- Without a price - Receive a card. Pay "Sad face price" and receive "Happy face" price for rent income in the middle of the card.
Sonder prys - Kry kaartjie en betaal "Sad face" prys. Verdien "Happy face" huurinkomste in die middel van die kaartjie.

Debt/Skuld:

- Subtract at end of game from assets.
Trek af van bates aan die einde van die spel.
- If your money is finished and you can't pay; then sell any asset.
As jou geld op is en jy kan nie betaal nie; verkoop dan enige bate.

Cashier/Bankier

- Deal with all cash receipts and payments, and Bank Statements of players.

Hanteer alle kontantontvangste en – betalings, en Bankstate van spelers.

Share certificates/Aandeesertifikate:

- Pay the green price on the board per share and receive a small certificate.

Betaal groen prys op bord per aandeel en ontvang 'n klein aandeesertifikaat.

- Receive 10% dividends on cost price of shares each time you pass Start.

Ontvang 10% van die kosprys van aandele telkens wanneer jy by Begin verby gaan.

ANNEXURE H: ETHICAL CLEARANCE CERTIFICATE



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ETHICS APPROVAL CERTIFICATE OF PROJECT

Based on approval by the Ethics Committee of the Faculty of Economic and Management Sciences, the North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC) hereby approves your project as indicated below. This implies that the NWU-IRERC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title: THE EFFECT OF A BOARD GAME AS AN EDUCATIONAL TOOL IN FINANCIAL ACCOUNTING ON STUDENT'S PERCEPTIONS AND PERFORMANCE.															
Project Leader: Prof Surika van Rooyen															
Student: CE Minnaar															
Ethics number:	N	W	U	-	0	0	3	7	9	-	1	5	-	A	4
	Institution			Project Number						Year		Status			
Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation															
Approval date: 2015-11-11					Expiry date: 2016-11-11					Category: N/A					

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principle investigator) must report in the prescribed format to the NWU-IRERC:
 - annually (or as otherwise requested) on the progress of the project,
 - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-IRERC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-IRERC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-IRERC retains the right to:
 - request access to any information or data at any time during the course or after completion of the project;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the project are revealed or suspected,
 - it becomes apparent that any relevant information was withheld from the NWU-IRERC or that information has been false or misrepresented,
 - the required annual report and reporting of adverse events was not done timely and accurately,
 - new institutional rules, national legislation or international conventions deem it necessary.

The IRERC would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the IRERC for any further enquiries or requests for assistance.

Yours sincerely

Linda du
Plessis

Digitally signed by Linda du Plessis
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Prof Linda du Plessis

Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)