Guidelines for the use of open education resources in open distance learning for teacher professional development in Gabon

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iD

Thesis submitted in fulfilment of the requirements for the degree *Doctor of Philosophy in Education Management* at the Vaal Triangle Campus North-West University

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Dedication

I dedicate this thesis to you, my loving father, Mendene Biyoghe Pierre.

Acknowledgements

I would like to thank and acknowledge the following people and institutions for their contributions to the success of this thesis:

Abstract

During the first twenty years after independence, the Gabonese government settled the issues related to education in Gabon with the help of France, its former coloniser. Ecole Normale Supérieure (ENS) was established to ensure the training of teachers. Before then there was not sufficient opportunity in Gabon for teachers to enhance their pedagogical knowledge and content knowledge. Teacher professional development (TPD) was not on the forefront of educational change and very few TPD initiatives have been presented in Gabon in recent years. Moreover, the use of information and communication technologies (ICTs) is still untapped and unexploited, and distance learning (ODL) was implemented in only one course which phased out in 2004. As a result, no research, guidelines or policies exist pertaining to implementation of TPD through ODL in Gabon. The purpose of this study was to create guidelines for the use of open education resources in open distance learning for teacher professional development in Gabon. The research aimed through Stoner's life phases of learning technology integration to ascertain: (i) how the existing TPD curriculum in Gabonese educational system fits with the course objectives in Gabon as stipulated in policies; (ii) what are the appropriate OERs in ODL which can be used as LT for TPD in Gabon; and (iii) how can OERs be used in the design integration of ODL for the TPD of Gabonese teachers. A purposeful sample was used to understand the existing TPD curriculum in Gabon and how OERs could contribute towards teaching English as a foreign language. A qualitative bounded case study with design research was the appropriate research design and methodology for this research. The design research included two iterative cycles: (i) a pilot workshop at the Vaal Triangle Campus of the North-West University to test the selection of the OERs and establish the design principles and technology innovations, and (ii) a training workshop with English Foreign Language (EFL) lecturers, technology experts, and pre-service teachers at the teacher training college (ENS) in Libreville. The data were analysed by means of a constant comparative method in Atlas.ti™. The findings of the first iterative cycle enabled me to re-design the workshop for Gabon, to adapt the OERs, and change the structure of the workshop. The findings from the training workshop in Gabon (second iterative cycle) were conceptualised as design principles and technology innovations. Thereafter the design principles were re-organised as five themes: ODL, TPD, ICT, Education system, and OERs, which were then structured as guidelines for the use of OERs in ODL for TPD in Gabon. The guidelines could benefit and support the Gabonese Education System, policy makers and academic institutions, lecturers, pre-service and in-service teachers in their quest to implement, integrate and use OERs in ODL for TPD in Gabon.

Keywords

Opsomming

Tydens die eerste twintig jaar nadat Gabon onafhanklik geword het, het Frankryk, as vorige kolonialiseerder, Gabon gehelp om die tekorkominge in die onderwysstelsel aan te spreek. Ecole Normale Supérieure (ENS), 'n onderwyskollege, is gevestig om die onwikkeling van onderwysers te verseker. Voor die vestiging van ENS was daar nie voldoende geleenthede vir onderwysers om hul pedagogiese en inhoudskennis te verbreed nie. Onderwysers professionele ontwikkeling (OPO) was nie prioriteit byn opvoedkundige veranderinge nie, en die afgelope jare was daar baie min OPO geleenthede vir onderwysers in Gabon. Verder was die gebruik van inligtingskommunikasie tegnologie (IKT) onontgin, en oop afstandsleer (OAL) was slegs in een program geïmplementeer wat in 2004 geëindig het. As gevolg hiervan bestaan daar geen navorsing, riglyne, of beleidsdokumente wat die implementering van OPO deur OAL in Gabon bewerkstellig nie. Die doel van hierdie studie was om riglyne vir die gebruik van oop onderwysbronne (OOB) in OAL vir OPO te ontwikkel. Die navorsing het, met behulp van Stoner se lewensfases van inligtingstegnologie-integrasie, bepaal: (i) hoe die huidige OPO kurrikulum in die Gabonese onderwysstelsel inpas by die kursusdoelwitte soos beskryf in die beleid, (ii) wat die gepaste OOB in OAL is wat gebruik word as leertegnologie vir OPO in Gabon, en (iii) hoe OOB gebruik word in die ontwerpsintegrasie in OAL vir OPO van onderwysers in Gabon. 'n Doelgerigte steekproef is gebruik om die huidige OPO kurrikulum in Gabon te verstaan, asook hoe OOB tot die onderrig van Engels as vreemde taal (EVT) kan bydra. 'n Begrensde gevallestudie met ontwerpnavorsing is gekies as die gepaste navorsingsontwerp en metodologie vir die studie. Deur middel van twee iteratiewe ontwerpsiklusse is: (i) 'n loodswerkswinkel by die Vaal Driehoekkampus (VDK) van Noordwes Universiteit gehou om die seleksie van OOB te toets en onwerpsbeginsels asook tegnologie-innovasie te bevestig, (ii) 'n opleidingswerkswinkel met EVT onderwysers, onderwysstudente, en tegnologiekenners by ENS in Lebreville gehou. Die data is geanaliseer met behulp van 'n konstante vergelykende metode in Atlas.ti™. Die bevindinge van die eerste ontwerpsiklus het my in staat gestel om die OOB aan te pas, en die struktuur van die opleidingswerkswinkel in Gabon te verbeter. Die bevindinge van die opleidingswerkswinkel (tweede ontwerpsiklus) is as ontwerpsbeginsel en tegnologie-innovasie gekonseptualiseer. Daarna het ek die ontwerpsbeginsels in vyf sentrale temas (OAL, OPO, IKT, Onderwysstelsel, en OOBs) gerangskik, en daarvolgens het ek riglyne ontwikkel. Die riglyne kan die Gabonese Onderwysstelsel, die beleidmakers, akademiese instellings, dosente, onderwysstudente, en onderwysers ondersteun in hul pogings om OOB in OAL vir OPO in Gabon te implementeer, te integreer, en te gebruik.

Sleutelwoorde

Gabonese Onderwysstelsel, Engels as vreemde taal (EVT), oop onderwysbronne (OOB), oop afstandsleer (OAL), onderwys professionele ontwikkeling (OPO), inligtingskommunikasie tegnologie (IKT), ontwerpnavorsing (ON)

Solemn Declaration

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I declare herewith that the thesis / dissertations / mini-dissertation entitled:

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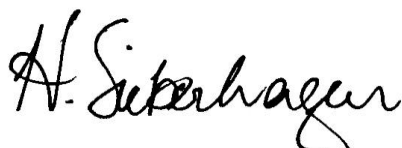
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I hereby declare that I have linguistically edited the thesis

submitted by Jean-Louis Ndoutoume Mendene for the PhD degree.

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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

Prof LA
Du Plessis

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Prof Linda du Plessis
Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)

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List of Acronyms and Abbreviations

ACE	Africa Coast to Europe
ADSL	Asymmetric Digital Subscriber Lines
AJOL	African Journals Online
ANINF	l'Agence Nationale Des Infrastructures Numeriques Et Des Frequences, (the National Digital Infrastructure Agency And Frequencies)
AUF	l'Agence Universitaire de la Francophonie
AVU	African Virtual University
CAPC	College Teacher Training Certificate
CAPES	Secondary school Vocational Training Certificate
CMS	Content Management Systems
CoL	Commonwealth of Learning
CPDT	Continuing Professional Development for Teachers
CT	Communication Technology
DBR	Design-Based Research
DE	Distance Education
DI	Design Integration
DISA	Digital Information South Africa
DL	Distance Learning
DVDs	Digital Video Disks
EFL	English as a Foreign Language
ELATE	eLearning and Teacher Education
EMCCA	Economic and Monetary Community of Central Africa
EMIS	Educational management information systems
ENA	National College of Administration
ENS	Ecole Normale Supérieure (Teachers Training College)
ENSET	Ecole Normale Supérieure de l' Enseignement Technique (Teachers training college for the teachers of vocational and technical education)
ESL	English as a Second Language
FOSS	Free and Open Source Software
FS	Free Software
FSF	Free Software Foundation
GATE	Global Alliance for Transnational Education
GPL	General Public Licence
HEI	Higher Education Institutions
IAI	African Institute for Computer Technologies
ICT	Information Communication Technology

IIDRIS	L'Index international et dictionnaire de la réadaptation et de l'intégration sociale (The International Index and Adaptation and Social Integration Dictionary)
IRI	Interactive Radio Instruction
IT	Information Technology
ITA	Institute of Advanced Techniques
ITE	Initial Teacher Education
IUSO	University Institute of Management
LEE	Lycée d'Etat de l'Estuaire (Libreville-Gabon)
LMD	Licence, Master and Doctorate
LMS	Learning Management System
LNLM	Lycée National Leon Mba (Libreville-Gabon)
LT	Learning Technology
LTNOB	Lycée Technique National Omar Bongo (Libreville-Gabon)
MIT	Massachusetts Institute of Technology
Moodle	Modular Object-oriented Dynamic Learning Environment
MORIL	Multilingual Open Resources for Independent Learning
NEPAD	New Partnership for Africa's Development
NWU	North-West University
OCW	Open CourseWare
OCAM	Common Organisation of Africa and Madagascar
ODL	Open Distance Learning
OERs	Open Education Resources
OPL	Open Participatory Learning
OSI	Open Source Initiative
OSS	Open Source Software
OU	Open University
OUNL	Open Universiteit Nederland
PCs	Portable Computers
PD	Professional Development
PLoS	Public Library of Science
SACE	South African Council for Educators
SADC	Southern African Development Community
Saide	South African Institute of Distance Education
TESSA	Teacher Education in Sub Saharan Africa
TPD	Teacher Professional Development
TTISSA	Teacher Training Initiative for Sub Saharan Africa
UCEP	Underprivileged Children's Educational Programmes
UFE	French University in Egypt
UFPDG	Women's Union of the Gabonese Democratic Party
UK	United Kingdom

UMU	Uganda Martyrs University
UNESCO	United Nations Education, Science and Culture Organization
UNISA	University of South Africa
UOB	University Omar Bongo
USA	United States of America
USS	Health Sciences University
USTM	Sciences and Technology University of Masuku
UWC	University of Western Cape
VTC	Vaal Triangle Campus
WASC	West African Submarine Cable
WWW	World Wide Web

Chapter One

Stoner's Systems Life Phases of Learning Technology Integration: An Overview

1.1   Introduction

France colonised many countries in sub-Saharan Africa, and even today the influence of the French is visible in the politics, economics and education of these countries. Gabon is a sub-Saharan francophone country that democratised from its French colonisation in 1960 Gabon is located in the centre of Africa and belongs to a group of six former French colonies which constitute Central Africa: the Central African Republic (Republique Centre Africaine), Cameroon (Cameroun), Republic of Congo (Republique du Congo), Chad (Tchad), Equatorial Guinea (Guinee Equatoriale), and the Republic of Gabon (Republique du Gabon). They are all part of the Economic and Monetary Community of Central Africa (EMCCA) and share a common currency, the CFA franc (Centre for Affordable Housing Finance in Africa, 2012:155). Gabon borders on Equatorial Guinea in the North-West, on Cameroon in the North, on the Atlantic Ocean in the West and on the Republic of Congo in the South and East of the country (Ndinga-Koumba Binza, 2006:1). Gabon is a small country of 267 66km^2 and its population comprises about 1.5 million people (Globserver, 2012). Gabon has followed the French education system since its independence from 1960; from pre-primary to high schools the Gabonese education system is modelled on the French education system. The duration of schooling is divided into three education sections, like in France. The primary school lasts five years; the secondary education lasts seven years; and higher education level, LMD (Licence, Master's and Doctorate) levels are available to students according to qualification specifications. The Education Law 16/66 of August 1966 regulates the Gabonese education system. This Gabonese education system acknowledges information and communication technology (ICT) developments and aims to adopt these new technologies into its education (Republique du Gabon 1966).

Forty eight years after independence in 1960, criticism is often heard that the Gabonese education system does not address the demands from the labour market. This is the result of no national policy that clearly defines the modalities of training for continuing education, as well as little or no political will to provide resources necessary to effect the objective of continuing education in Gabon (Obono Mba, 2008:51). In French sub-Saharan Africa the output of scholars in distance learning (DL) is not recognised and little is available on local DL, despite the availability of the Internet and other ICTs. However, there is a dire need for DL in Gabon, and particularly at l'Ecole Normale Supérieure (ENS), a teacher training college for general education in Gabon, to address the needs of Gabonese teachers who do not have the opportunity to leave their work and further their professional development.

Reviewing the literature we encountered a scholar that researched issues relating to the use of distance learning (DL) in Gabon. Obono Mba, a lecturer at ENS, previously used qualitative methods to describe context-sensitive issues concerning open distance learning (ODL) in Gabon in her study titled, *Distance education: challenges and opportunities* (*La formation a distance: Enjeux et Perspectives*). A recommendation was the development of a flexible and up-to-date system of ODL based on the use of open education resources (OERs) through the use of ICTs during the delivery of ODL in Gabon at the Centre de Formation a Distance des Enseignants Gabonais du Secondaire, the centre of distance learning for Gabonese teachers at grammar schools (Obono Mba, 2008:355). This finding and recommendation provided the gap—the academic puzzle—for my research on the implementation of OERs for ODL for teachers' professional development (TPD) in Gabon. Stoner's framework was applied throughout each process of the research.

1.2   Motivation and Problem Statement

During my higher education studies at ENS, I noticed that, although that ICT has many affordances for teaching and learning, we had insufficient knowledge about ICT, and that many students discontinued their studies after obtaining a *Baccalaureat* because they did not know about the possibilities and affordances of DL. In addition, the Gabonese government does not encourage the Gabonese to use DL. However, DL could be an opportunity and a solution for attaining TPD in terms of time, space and means (money)—challenges that many pre-service and in-service teachers face. While other African countries open their doors to DL, Gabon has not yet grasped the opportunity to use DL for developing the competency of pre-service and in-service teachers ready to improve their knowledge and skills.

Gabon has two teacher training colleges—one for vocational training and one for grammar school training. These colleges are ENS (teacher training college for the teachers of general education) and ENSET (teacher training college for the teachers of vocational and technical education). The colleges have computers available to students for learning and there is also a growing phenomenon of mobile learning in the country (Nygren *et al.*, 2012). Yet, the use of new technologies to enhance and sustain innovative methodologies of teaching and learning with ICT is not adequate to sustain teaching and learning at these colleges. Teachers at the colleges are not adequately prepared to use new teaching and learning technologies effectively, nor are they competent. They are also not ready to change to an e-learning mode of education delivery as they are comfortable with their traditional face-to-face delivery methods (Ndoutoume, 2012:88).

After the exploration of the l'Agence Universitaire de la Francophonie (AUF) at the University Omar Bongo (UOB) in Libreville, the researcher noticed that the organisation uses DL effectively. Gabon should review its position regarding the acceptance of DL in the country. Through a convention signed between Gabon and the AUF, the AUF was constituted as education institution in 2003 at

the UOB (Fall, 2007:5). This institution has systems and support in place to assist colleges to install what they require relating to DL, as well as to assist students in promoting their professional development. Although AUF uses the Internet at their campuses, connectivity via 3G/4G is expensive (Zeb Khan, 2014).

During a fact-finding visit in June 2014, I observed that ENS and ENSET use the search engines Google and Yahoo and that they have websites that provide information to students (ens.ga and ensetgabon.ga). ENSET subscribes to the Internet via asymmetric digital subscriber lines (ADSL) with 2G. However, ENS was waiting for the l'Agence Nationale Des Infrastructures Numeriques Et Des Frequences, the National Digital Infrastructure Agency And Frequences (ANINF), to provide stable Internet access to the institution. These search engines are the only web-based resources students currently have available for research, academic tasks and professional development. Neither college makes use of connectivity to 3G/4G owing to the high costs involved. These colleges face challenges relating to capturing data and information on their insufficient and inadequate servers, which consequently hamper the initiation of the use of OERs at the colleges.

Despite their mandate to provide DL, the AUF in Libreville does not offer TPD to the Gabonese pre-service teachers via ODL. In addition, the Gabonese government does not actively support the provision and management of ICT tools, software or the programmes to be used at this institution. The Gabonese government provides limited assistance to teachers to develop their profession. Nevertheless, the use of OERs for TPD could benefit and support the Gabonese education system and academic institutions during the training of their students and in-service teachers. The use of OERs could supplement teacher-training programmes and assist students who have difficulty in affording textbooks and/or have limited access to formal higher education.

The Gabonese government is aware of the absence of ODL and TPD in attempts of the education system to implement ODL as stipulated in "*Les Etats Generaux de L'Eduaction, de la Recherche et de l'Adequation Formation Emploi*" (Ndoutoume, 2012:42), but the implementation thereof is completely non-existent. The Gabonese government and policy makers should be made aware of the expansive opportunities that OERs afford. Gabon would benefit from the use of ODL for TPD using OERs. OERs could provide to Gabonese lecturers, at low or little cost, access to the tools and content necessary for in-service training.

From the above, the question this research aimed to address was: *What are the guidelines for the use of open education resources in open distance learning for teacher professional development in Gabon?*

1.3 Overview of the Literature

Training deals with developing specific teaching skills: how to structure a lesson or how to teach creative writing whereas development, on the other hand, is more individualised to enhance certain skills (assessment practices) that can lead to job improvement and personal and professional growth (Bayrakci, 2009:10). Teacher Professional Development (TPD) has become a policy priority for all nations across the globe. Many countries have explicit policies to improve the level of qualification, to establish meaningful forms of career-long professional development and to enhance the status and education level of teachers. Therefore, the quality of education and training of teachers becomes central to the success of the *Education For All* (EFA) campaign worldwide and schools and teachers remain central to the achievement of a quality education process (Shohel, 2012). To raise the standard of education within a system, the Department of Education should create opportunities for pre-service and in-service teachers to participate in TPD initiatives. During research for my Master's dissertation we identified that very few initiatives for TPD exist in Gabon, especially at ENS in Libreville. Through this research we explored the TPD initiatives in Gabon so that we could identify the gaps pertaining to TPD, particularly at ENS.

ODL holds to the following characteristics: (i) separation of teacher and learner, (ii) institutional accreditation, (iii) use of mixed-media software, (iv) multi modal communication, (v) possibility of face-to-face meetings for tutorials, and (vi) use of commercial processes. By means of ODL many barriers such as time differences, geographical setting, economic status, social disparities, education and community distances can be overcome, subsequently enabling students to communicate with their institution, faculty, peers and the curriculum (UNISA, 2008). The shortage of human and financial resources in many education systems also may lead to ODL being employed as a solution.

OERs include learning content, software tools to develop, use and distribute content, and implementation resources such as open licences (Goorah *et al.*, 2013:3). Through the use of OERs, academics worldwide can develop their pedagogical knowledge, content knowledge, and technological knowledge. In Gabon there is a shortage of resources for teachers to use, and OERs which are open and freely available can add value to teaching and learning. OERs can be implemented in any context with very little financial resources. OERs have the ability to enhance student teaching and learning experience (D'Antoni, 2009:29), especially in Gabon where there are numerous limitations. This research explores and identifies which OERs can complement the teaching and learning of pre-service teachers at ENS and inspire lecturers to be more creative in their teaching endeavours.

1.4 Conceptual Framework for this Research

This system analysis and design life phase approach set out the main stages in the integration of learning technology within teaching (Figure 1.1). Most research reports cast the problem statement within the context of a *conceptual* or *theoretical* framework. A description of this framework contributes to a research report in at least two ways as it (i) identifies research variables, and (ii) clarifies relationships among the variables. Linked to the problem statement, the conceptual framework *sets the stage* for presentation of the specific research question that drives the investigation being reported (McGaghie *et al.*, 2001:923).

This study focusses on the first, second, third and especially fourth phases of Stoner's systems life phase of learning technology integration (Figure 1.2). Although dated, the framework is widely used for the integration of learning technology (LT), and in this study guides the investigation on making sense of integrating TPD in ODL in the Gabonese education system. Stoner describes LT as the application of technology for the enhancement of teaching, learning and assessment. LT includes computer-based learning, the use of multimedia materials, networks and communication systems to support teaching and learning (Stoner, 1996:6).

The researcher addressed the first phase during his Master's degree, recognising the issues and possibilities of using LTs in education, as well as conducting a preliminary assessment of the situation in Gabon (Ndoutoume, 2012). The most prominent holistic findings of this study clearly pointed towards the government as the main catalyst and force in the whole process of the initiation of the integration of ICT in ODL training in Gabon, and to teachers whose roles in integrating and implementing ICT in ODL training in Gabon are also important. Some recommendations of the study included:

- The government should revisit its policy for the integration of ICT in schools and take the necessary steps to boost this whole process of ICT integration in Gabon
- The government should adopt a policy for the implementation of ODL in Gabon and act towards this policy
- The government should revisit its policy regarding the accreditation of ODL diplomas in order to acknowledge and reward graduates for successful studies undertaken
- Teachers must show an interest and willingness to embrace ICT and ODL learning for their professional development (Ndoutoume, 2012:101).

Stoner's second phase related to the analysis and the evaluation of LT implementation. Within the context of LT the first part was to (i) determine the course objectives, (ii) collect data on existing LT for TPD initiatives, resources and policies, and (iii) evaluate whether the existing LT for TPD initiatives are meeting the course objectives.

The third phase related to the searching for, or generating of alternative LT solutions; evaluating these alternatives against course objectives, and choosing LT and mode of use.

The fourth phase related to (i) the planning and designing of learning activities, (ii) the designing of assessment, (iii) re-evaluating (and adjusting) of activities and assessments, (iv) acquiring resources (LT, staff etc.), and (v) testing of LT (Stoner, 1996:6).
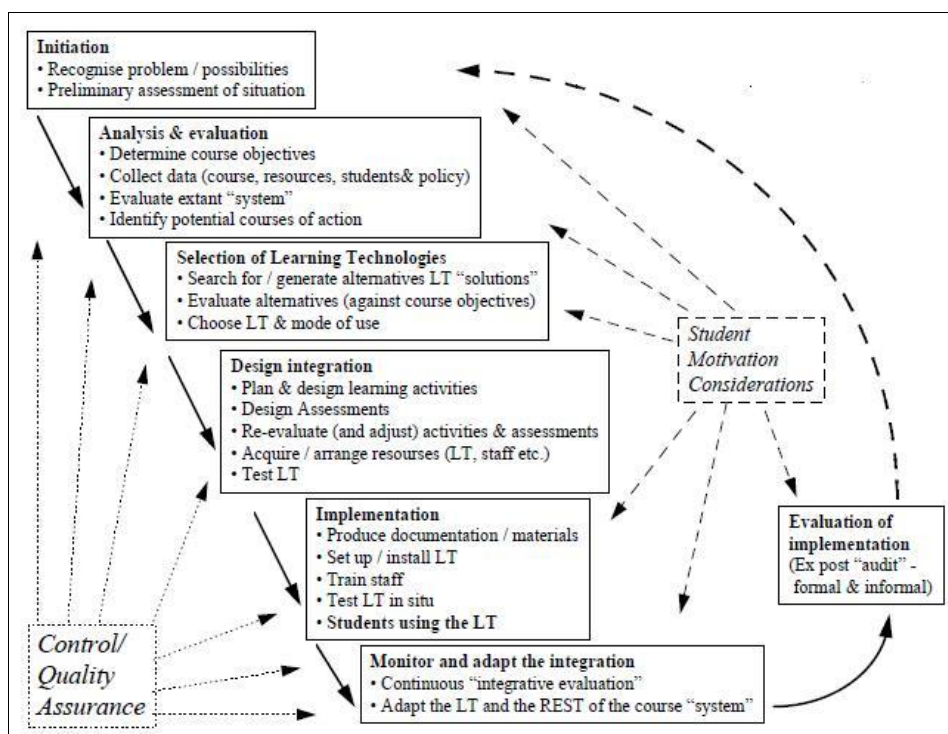
Figure 1.1:   Systems Life Phases of Learning Technology Integration (Stoner, 1996:6)

From describing the higher education teaching and learning context in Gabon (§1.2), the main overarching research question that emanated was: *What are the guidelines for the use of open education resources in open distance learning for teacher professional development in Gabon?* In order to address this overarching main research question, the following subsequent secondary questions were formulated to substantially describe the intended use of OERs in Gabon for the TPD of teachers.

From Stoner (1996) framework (Figure 1.1), the subsequent secondary questions were:
- How does the existing TPD curriculum in the Gabonese education system fit with the course objectives in Gabon as stipulated in policy? (Stone phase 2)
- What are the appropriate OERs in ODL which can be used as LT for TPD in Gabon? (Stoner phase 3)
- How can OERs be used in the design integration of ODL for the TPD of Gabonese teachers? (Stoner phase 4)

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- What are the perceptions of lecturers as first line-users of OERs in Gabon on the value of OERs?

1.5 Aims of the Study

The aims of the study were to:
- describe (analyse and evaluate) existing TPD curriculum in the Gabonese education system fit with the course objectives in Gabon as stipulated in policy
- select the appropriate OERs in ODL which can be used as LT for TPD in Gabon
- describe (plan and design) learning activities of how OERs would be used for TPD in ODL of Gabonese teachers
- describe lecturers' perceptions as first line-users of OERs in Gabon on the value of OERs.

1.6 Research Paradigm, Research Design and Methodology

To explain my theoretical position and assumptions for this research, I used Burrell and Morgan (1979) model to determine the appropriate worldview for my research. The meta-theoretical assumptions involve four paradigms: the functionalist paradigm, the radical structuralist paradigm, the radical humanist paradigm and the interpretive paradigm (Hassard, 1991:275). Studies relating to the interpretive paradigm aim to understand the world as it is, to understand the fundamental nature of the social world at the level of subjective experience through certain actions. Actions are meaningful in so far as we are able to ascertain the intentions of actors to share their experiences (Cohen *et al.*, 2007:21). The research question that drove this research investigated explanations within the realm of individual consciousness and subjectivity of those directly involved in the social process. Burrell and Morgan (1979:3) and did not rely only on external influences. The researcher aimed to obtain insight into the real issues of the context.

The most important concern was to understand the phenomena being researched from the perspective of the participant. In order to effectively understand the phenomena, the researcher became the primary instrument to collect and analyse the data, ensuring that interpretations were accurate (Merriam, 2009b:15). Qualitative research is an inquiry approach useful for exploring and understanding a central phenomenon (Burns, 2000; Denzin & Lincoln, 2005). It is an effort to understand situations in their uniqueness as part of a particular context and the interactions therein.

This research study followed the qualitative interpretive research design which used qualitative research methods, viz. workshop and interviews (Merriam, 1998) which assume that reality is socially constructed and that there are numerous realities or interpretations of a single event

(Merriam, 2009b:8). The interpretive research was informed by a concern to understand the world as it is, and strove to explain the world within the participant's frame of reference, rather than the observer's (Hassard, 1991). A qualitative interpretive research design used an investigation to obtain in-depth context sensitive data concerning the design integration of the use of OERs, if any, infrastructures, institutions and readiness of the Gabonese government for the use of OERs for TPD via ODL. Figure 1.4 represents the first four phases of Stoner's systems life cycle of learning technology integration.

Stoner phase 1(initiation): This preliminary research phase served as an important connection between pre-writing and formulating a thesis. This phase is characterised by the components of the pre-writing stage, such as gathering information from a variety of sources. Rather than thinking broadly, as in pre-writing, the goal in the preliminary research phase is to narrow things down to a reasonable scope for the topic (Bell, 2009). Challenges and enablers were the main findings of the preliminary research based on initiating ICT in ODL for TPD of Gabonese teachers. This study provided the preliminary assessment of the situation within the Gabonese education context, and laid the foundation for the future research on the analysis and evaluation, the selection of learning technology and the design integration. This foundation may not be unique, but it participates in the quest of the improvement of education in Gabon (Ndoutoume, 2012:94).

Stoner phase 2 (analysis and evaluation): This phase aimed to analyse and evaluate the existing TPD curriculum in the Gabonese education system aligned with the course objectives in Gabon as stipulated in policy. The policy is to improve and develop education in Gabon. The government needs to adapt the curriculum with the evolution of education from abroad and make it fit in the Gabonese education system.

Stoner phase 3 (selection of learning technologies): During this phase I searched the scientific databases on the internet for appropriate OERs in ODL which can be used as LT for TPD suitable for use in Gabon. The government is responsible for the appointment, placement and management of teachers and lecturers (Ndoutoume, 2012), and therefore responsible for the improvement of the education system. I considered which LT to use for the improvement of the Gabonese education system (Dib, 1987).

Stoner phase 4 (design integration): The iterative design phase consists of iterations, each relating to a micro phase of research with formative evaluation as the most important research activity aimed at improving and refining the intervention (Plomp, 2006).

Stoner phase 5, not included in this research, the involvement of stakeholders is critical to implement these guidelines as part of establishing an e-learning initiative in Gabon. The Gabonese government will have to be involved extensively in this process.

Qualitative research is concerned with gathering data to build concepts, hypotheses or theories instead of deductively testing hypotheses. The product of qualitative research is abundantly descriptive because words and pictures are used rather than numbers to express what has been discovered about the phenomenon (Merriam, 2009b:16). During qualitative research the researcher could act as observer or interviewer to obtain information he/she needs from the participants. This research requires the researcher to gather information from the participants after a process of analysing LTs, evaluating LTs, planning of learning activities, and designing activities for TPD in Gabon. Design research (also known as design-based research, or design experiments) seemed a viable method as it requires more than simply gathering information about the research phenomenon. This research necessitated the researcher to move beyond a particular design exemplar to generate evidence-based claims about learning (Barab & Squire, 2004:6) in collaboration with participants in order to: (i) gather information on the research phenomenon, (ii) improve education practices through iterative analysis, design, development, and (iii) implement the practices in real-world settings (Wang & Hannafin, 2005). Real-worlds settings should be possible thanks to the use of technology in education, even though according to (Reeves, 2006) design research protocols require intensive and long-term collaboration involving researchers and practitioners.

Design research is defined as a process that integrates design and scientific methods to allow researchers to generate useful educational interventions and effective theory for solving individual and collective issues of education (Easterday *et al.*, 2012). It relies on techniques used in other research paradigms, like thick descriptive datasets, systematic analysis of data with carefully defined measures, and consensus building within the field around interpretations (The Design-based Research Collective, 2003:7).

Design research is conducted as a collaboration of researchers and practitioners in a real-world setting. Only then the two principal outputs (design principles and empirically underpinned innovative interventions) can be realized. Doing research in such a setting is challenging and demands careful research design. It is therefore important to reflect not only on the cyclical, iterative character of the systematic design of the intervention, but also because it is research-to make explicit the tenets (rigor, relevance and collaboration) that form the foundation of this type of research (McKenney *et al.*, 2006; Plomp, 2006:13).

McKenney (2001:45) summarises design research as situated in a real education context which provides a sense of validity to the research and ensures that the results can be effectively used to assess, inform, and improve practice in at least one (and likely another) context. Plomp (2006) states that several processes, namely needs or contextual analysis, design or formative evaluation of the prototype tools, a summative assessment and the systematic reflexion and documentation characterise design research.

During the investigation in the first three phases of Stoner (1996:6), the researcher performed systematic reflection and documentation to produce the required scientific harvest in the form of theories or design principles. According to Plomp (2006:6), these cycles can be represented on the horizontal axis. Each cycle consists of a number of activities which involve different groups of participants, which could include experts and/or users. The vertical axis represents the number of participants in relation to the cycles of the research (Plomp, 2006:6). This research included four phases of Stoner (1996). Stoner phase 1 (initiation) and phase 2 (analysis and evaluation) encompass two cycles, while Stoner phase 3 (selection of learning technologies) and phase 4 (design integration) include five cycles.

1.7   Selection of Research Participants

For the pilot workshop the participants were English lecturers, teaching in face to face, online and blended modalities, from the Faculty of Education at North-West University, VTC. For the training workshop the participants were lecturers, technology experts and pre-service students from Gabon. The lecturers and pre-service teachers were invited to contribute towards the design integration of OERs in the Gabonese education system. The majority of the participants were from the Department of English at ENS. Merriam (1998:9) supports that the small size will enable the researcher to have an in-depth understanding of the research phenomenon and not to seek statistical generalisation. Participants were selected on the basis of accessibility. This method of sample is used at the beginning of a project to identify the scope, major components, and trajectory of the overall process (Bryant & Charmaz, 2007:235). I also invited the directors of ENS as well as the subject adviser in the Education Department to be part of the study in order to help the research find the effectiveness of the use of OERs for the Gabonese TPD via ODL (Fraenkel & Wallen, 2009).

Tuckett (2004:3) states that sampling continues until data saturation has been reached. This indicates that the number of participants in the study is difficult to fix ahead (Merriam, 1998:97). I continued the interviews until data saturation was reached. Glaser and Strauss (1967:65) first defined this milestone as the point at which "no additional data are being found whereby the researcher can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated when one category is saturated, nothing remains but to go on to new groups for data on other categories, and attempt to saturate these categories also" (Guest *et al.*, 2006:64).

According to Ryan and Bernard (2004:77), to reach saturation depends on several things such as (i) the number and complexity of data and (ii) the experience of the investigator. In this respect, we can state that saturation is reliant on researcher qualities and has no boundaries (Guest *et al.*, 2006:77).

1.8 Data Analysis

The transcribed interviews were assigned to Atlas.ti™ computer-assisted qualitative data analysis system as an integrated data-set. I analysed the data according to a grounded theory approach as a constant comparative content analysis of the interview data. The constant comparative method of qualitative analysis as a basic grounded theory approach was used (Boeije, 2002:391). According to Tesch (1990:392), the comparison is the main intellectual activity that underlies all analysis in grounded theory. The method of comparing and contrasting is used for practically all intellectual tasks during analysis: forming categories, establishing the boundaries of the categories, assigning the segments to categories, summarizing the content of each category, finding negative evidence, etc. The goal is to discern conceptual similarities, to refine the discriminative power of categories, and to discover patterns (Boeije, 2002:392). Saldaña (2009:41-42) posits that grounded theory underpins many instances of the concepts occurring in the data. Subsequently both the research method and the output of the research process have the same name, which can be confusing (Andrews & Scott, 2013). In the case of this research, the theory is to ascertain the aspects concerned with the use of OERs in ODL for TPD in the Gabonese education system. Established qualitative researchers from the NWU assisted the researcher in the data-analysis and interpretation process. The photographs (researcher-generated documents) were used as confirmation of the context and provided context for the issues and experiences captured in the analysis (Merriam, 1998).

1.9 Ethical Aspects of the Research

The following ethical procedures were applied throughout the research process: (i) ethics approval was obtained from NWU Humanities and Research Ethics Committee (HHREC) with number NWU-HS-2015-0073; (ii) I obtained permission from ENS to present the training workshop and fit in with their schedule; (iii) the participants signed an informed consent before the pilot workshop at VTC, and the training workshop in Gabon; (iv) the letter ensured that their participation was voluntarily and anonymous in workshops and in interviews, and (v) they were given breaks and refreshments during the workshops. All names were removed before data analysis, the pictures do not show any faces, and the data obtained from the workshop are stored with a password at NWU.

1.10 Contribution of the Study

The contribution of this study is to develop a curriculum for teaching English as a Second Foreign Language in Gabon for Licencse 1, and to match the Open Education Resources for teacher professional development through Open Distance Learning in Gabon. The study provided guidelines for the use of open education resources in open distance learning for teacher

professional development in Gabon. The study contributed to the use of open education resources for the subject EFL. The subject specialist can use the curriculum I created, then refine it and adapt for the other EFL programmes. It could also assist the lecturers at ENS to make content more relevant for the students at ENS. The lecturers can integrate more ICTs and OERs in their teaching and learning and use contact sessions for more student engagement. The integration of OERs can provide access to quality teaching and learning.

1.11   Clarification of Terminology

Table 1.1 clarifies the main terminology used through this research.

Table 1.1:   **Terminology for this Research**

Term	Clarification of Term
Teacher professional development	TPD involves the acquisition and development of skills and knowledge in order to effectively practise teaching and learning (Gesci, 2006).
Open distance learning	ODL provides organisational and pedagogical methods of delivering systemic education by using multiple forms of communication technology (UNESCO, 2002).
Open education resources	OERs are teaching, learning or research materials that are in the public domain or released with an intellectual property licence that allows for free use, adaptation, and distribution (Glennie *et al.*, 2012).
English Foreign Language	EFL taught to and used by students whose first language is not English and where English is not the official language (Cambridge Dictionary, 2017).
Information and communication technology	ICT as the use of electronic information operating through an array of applications of inter alia computer equipment, multimedia productions, digital resources, mobile devices, digital video disks (DVDs), tutorial software, general software, data logging, simulations, communication software, smartboards, learning management systems (LMS), the Internet, email, modems, television, and other sophisticated laboratory equipment (Loveless & Dore, 2002).
Pre-service teachers	A period of guided supervised teaching and training before they start teaching in schools(Le Cornu & Ewing, 2008:1799).
In-service teachers	It is an organised initiative to improve the performance of teachers who are assigned positions in a school (Bayrakci, 2009:10).

Chapter Two

Stoner's Systems Life Phases of Learning Technology Integration: Initiation

2.1   Introduction

Chapter 1 states the motivation and the aim of the research problem in the context of the Gabonese Education System. This chapter relates to *Initiation* which is the first phase of Stoner's systems life phase of learning and technology integration (§ 1.3): recognising the issues and possibilities, and the preliminary assessment of the situation pertaining to TPD, ODL, and OERs.

This chapter provides insight to TPD, the TPD developments in Sub-Saharan Africa, ICTs for TPD, and TPD in Gabon. Additionally, the chapter unpacks ODL, TPD through ODL, ICTs for TPD through ODL, and the challenges and enablers of ODL. Lastly, the chapter reviews aspects pertaining to OERs: emergence of OERs, models for OERs, licences linked to OERs, OER initiatives in Africa, challenges and enablers of OERs, ICT for implementation for OERs, and the use of OERs for TPD.

2.2   Teacher Professional Development

"Professional development is defined as activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher" (OECD, 2009:49). TPD moves from training the cohort teacher to a more individualised approach of training. Yates (2007:2) states that TPD has become a priority for all countries in the world. Regarding the developed countries, the improvement of the level of qualification of teachers relies on explicit policies established by the government of each country. Their aim is to better the level of qualification of teachers enhancing their status and education level. Gaible and Burns (2005:25) state that there are three broad categories of TPD: the standardized TPD which is the most centralised approach; the site-based TPD which is an intensive learning by groups of teachers, and self-directed TPD which is independent learning, and sometimes initiated at the learners' discretion (Hooker, 2008:3). However, site-based TPD, since it addresses locally based needs and reflects local conditions, should be the cornerstone of TPD across the education systems (Infodev.org, 2015).

Regarding Gabon, a developing country, and particularly at ENS, TPD is part of the training of teachers and could be considered a site-based TPD. It addresses TPD needs based on local context (Gabon). The teachers after their training at ENS rarely attend TPD initiatives as few opportunities are offered to them. Any country seeks to develop TPD for the improvement of

teaching and learning of students in classrooms; this is also the case in Sub Saharan Africa countries and particularly in Gabon.

2.2.1 Teacher Professional Development Initiative for Sub Saharan Africa

The following sections, as backdrop to TPD initiatives, discuss Teacher Training Initiative for Sub Saharan Africa encompassing UNESCO's Teacher Training Initiative for Sub Saharan Africa (TTISSA) and Teacher Education/l in Sub Sahara Africa (TESSA).

2.2.1.1 UNESCO's Teacher Professional Development Initiative for Sub Saharan Africa

UNESCO's Teacher Training Initiative for Sub Saharan Africa (TTISSA) programme was probably the most significant regional programme. It was a high priority programme on TPD in Africa which was scheduled from 2006 to 2015. The focus was on supporting the 46 African countries in Sub Saharan Africa with the restructuration of national teacher policies and teacher education. Its main aim was to increase the number of teachers and to improve the quality of teaching in Africa (Isaacs, 2006:9).

The initiation of TESSA was ensured by the Open University (OU) in the UK and the African Virtual University (AVU) in Nairobi (Kenya). TESSA has become the largest teacher education network in Africa. Since 2005, TESSA has aimed to improve the use of OERs and extend access to school-based teacher education (Moon, 2007). TESSA focuses on researching and developing a wide range of OERs resources. Besides, it delivers advice to countries and sets up emergency training programmes for in-service teachers led by the OU and the AVU along with a consortium of African and international institutions including universities across Africa and the Commonwealth of Learning (COL) (Isaacs, 2006:13). The programme is based on some courses related to literacy, numeracy, science, life skills, social studies and the arts. The use of the programmes is supported by colleges, universities and/or local education district staff (Isaacs, 2006:13).

2.2.2 Teacher Professional Development in Gabon

In Gabon teacher training is limited to a very small number of people. This has discouraged young people from becoming teachers despite the fact that there is not enough teachers in the schools. Many students prefer to study abroad (Nze & Ginestie, 2012). The Gabonese government offers pre-service teacher training or in-service teacher training (TPD). Pre-service is a programme that develops a teacher before s/he begins working as a teacher, and in-service teacher training is when teachers are trained while working (Perraton *et al.*, 2002).During the pre-service training the programme aims to develop the content knowledge, pedagogical knowledge and understanding required for teaching a particular age range or subject (Danaher & Umar, 2010).Pre-service teacher training requires the following five points: skills with particular applications; integration into

existing curricula; curricular changes related to the use of IT; changes in teacher role and underpinning education theories (Kumar Snigh & Kumar Pandey, 2013).

In Gabon there are two systems for pre-service teacher training: Secondary School Vocational Training Certificate (CAPC) and the Certificate for Teaching in Higher Secondary School (CAPES) systems. Irrespective of the discipline, a three year programme delivers a CAPC to teach in secondary schools while the programme of five years allows students to graduate as a CAPES to teach in higher secondary schools. A Licence Degree is obtained after three years of study while a Master's Degree will be obtained after an additional two years of study. The Licence Degree allows the student to teach in secondary schools, and the Master's Degree allows the student to teach in higher secondary schools (LeGabon.org, 2012).

The in-service approach allows the individual to upgrade his or her personal education qualifications, alongside TPD, while continuing to work as a teacher. The process is part-time and primarily on-the-job (Danaher & Umar, 2010). Generally, in-service teachers, after at least five years of experience, can write competitive examinations as part of their improvement of their teaching practices. The students with CAPES can also take the adviser examination and the advisers the inspectorate examination. The training lasts two years and is full-time training which assumes that teachers, mainly English teachers, during that period, are expected to participate in TPD activities (Le Gabon.org, 2012).

Additionally, another form of in-service teacher training is the organised workshops presented by specialists from other countries to assist Gabonese teachers to improve their teaching within their specific discipline. This site-based TPD aims to address local needs and reflects local conditions, which form the cornerstone of TPD across the education system (Gaible & Burns, 2005). This training is mainly in the form of face to face TPD, focussing on developing knowledge and skills, but does not include any training relating to ICT integration for teaching and learning. As a consequence, the limited number of English teachers, once appointed, find it difficult to be part of these TPD initiatives regularly. ENS should look how to organise ICT TPD, workshops and seminars via face to face, blended learning or through ODL for the benefit of the in-service teachers. OECD (2005) states that "effective TPD is an on-going process as it includes training, practice, and feedback. It also provides adequate time and follow-up support". Even though Gabon has advocated a site-based model for TPD, it has become evident that the current model does not cater for TPD to be ongoing. With the use of online synchronous and asynchronous learning technologies and ODL more teachers can participate in TPD.

2.2.3 Information and Communication Technologies for Teacher Professional Development

Unwin (2004:4) states that ICT includes the combination of printed text materials, radio, video and face-to-face practical experiences with the use of computers and the Internet so as to make people learn effectively in ways that are appropriate to their needs. ICTs are used to access, gather, create, store, manipulate, present, and communicate information. This includes hardware (e.g. computers and other devices), software applications, and connectivity (e.g. access to the internet, local networking infrastructure, video conferencing) (Anderson & Glenn, 2003:4). These tools enable communication with ease anytime and anywhere (Meenakshi, 2013).

The use of ICTs make asynchronous learning possible with a gap between the delivery of instruction and its reception by students and, it can also make synchronous learning possible, meaning that instruction could be received simultaneously by multiple, geographically dispersed students with the use of teleconferencing technologies (Tino, 2002:6).

2.3 Open and Distance Learning

Shohel (2012) states that ODL is used as an overarching term to include both distance education and open learning. The term distance teaching is often referred to as half of the ODL equation as ODL encompasses not only teaching, but learning as well. The term emphasises the teacher's role (CoL, 2000:3) while being separated from the students. The use of openness is related to the concepts open content, open data, and open resources, involving the notions of easy access to data and information. Open education defines *open* as free, easy to copy, to remix, and without any barriers to access or interaction (Johnson *et al.*, 2013:7). Students have a choice to select a medium or media, a place of study, the pace of study, or support mechanisms that they would like to use for their training (CoL, 2000:4). ODL is defined as a "multi-dimensional concept aimed at bridging the time, geographical, economic, social and communication distance between: student and institution, student and academics, students and courseware, and students and peers. ODL focuses on removing barriers to access learning, flexibility of learning provision, student-centeredness, supporting students and constructing learning programmes with the expectations that students can succeed" (UNISA, 2008).

Moore and Kearsley (1996:6) define ODL as: (i) the sharing of learning material between the students and the lecturers who are spatially distant, and time separated, and (ii) teaching and learning which occurs mainly outside education institutions. ODL has its own didactical, logical and methodological articulation and its own purpose, causes and effects, and its own strategies and objectives (Tatkovic *et al.*, 2006). The following characteristics are generic in most ODL definitions:

- separation of teacher and student in time or place
- learning is accredited or certified by some institution or agency
- mixed-media courseware
- synchronous communication
- face-to-face meetings for tutorials, interaction, library study, and laboratory or practice sessions
- labour is divided and tasks are assigned to various role players who work together in course development teams (CoL, 2000:2).

ODL was launched in Gabon in 1962, two years after the declaration of independence in 1960, and was for the first time experimented at the beginning of the 1966-1967 academic year. This initiative was supported by the French Cooperation which encouraged their two neighbouring countries, the Republic of Congo and the Republic of Gabon, to launch courses through distance learning. In 2000 an ODL programme was organised by the University of Laval (Canada) in collaboration with the ENS. At the beginning of that programme, 37 students (secondary and temporary teachers) from different disciplines were enrolled for a Master of Arts degree in the Faculty of Education Sciences. The programme was based on two modalities: one blended and one face to face (lecturers coming over to Libreville twice per year). The programme was sustained for four years, but ended in 2004 (Obono Mba, 2008). Therefore ODL is not a new phenomenon at ENS.

2.3.1   Information and Communication Technology for Open Distance Learning

Despite the fact that teacher training and TPD need to be integrated programmes, the resources allocated to it are usually inadequate and the opportunities not sufficient to develop all the teachers. Most countries spend only about one percent of their annual education expenditure on TPD which is not adequate to empower all pre-service and in-service teachers (Perraton *et al.*, 2001:1-2).

The following are some of the ways in which TPD through ODL learning can be implemented for pre-service training:
- acquisition of basic ICT skills by students
- self-paced learning through access to resources on servers, CDs, or where available, online
- group discussion of audio and video training materials available on videos, CDs, DVDs, or even online
- filming of practice teaching sessions, followed by individual reviews and group discussions
- use of education management information systems
- development of Learning Management System (LMS) and Content Management Systems (CMS)

- group development of learning resources shared collectively
- formative and summative assessment
- introduction to the use of ICT in support of young people with disabilities in the classroom (Unwin, 2004:19).

The following could be particularly important in the delivery of African in-service teacher training programmes in the future:
- in-service training resources in digital format at teacher training colleges, secondary schools, or district education offices
- formative and summative self-testing
- use of multimedia (video and audio) in discussions of classroom practice, both individually and in groups
- tutorial feedback and support at a distance
- peer sharing of lesson plans, content and experiences through web-based tools (Unwin, 2004:20).

The implementation of ODL enables teachers to participate in TPD activities particularly in an African context; however there are many contextual challenges as well. The following section discusses the enablers and challenges of ODL.

2.3.2   Enablers and Challenges of Open Distance Learning

Two aspects which appear when dealing with ODL: challenges and enablers.

2.3.2.1   Challenges of Open Distance Learning

ODL is mostly for employers, employees, staff members and students from universities all over the world. Consequently, there are challenges in evaluating course work done at unknown institutions in other countries, and degrees earned from these institutions as well. If accreditation is controlled by individual countries, it is difficult to create accreditation and certification of learning for the globalising ODL. Therefore, the Global Alliance for Transnational Education creates a global certification and review process for education delivered across borders (Potashnik & Capper, 1998:45). The use of ODL also raises other issues, especially pertaining to culture heritage and instructional values (Potashnik & Capper, 1998:45).

Additionally, English remains the dominant language of the internet and more than eighty per cent of education software is in English. This is a serious barrier to maximising the education benefits in developing countries where English proficiency is not high (Tino, 2002:24). However, all the lecturers at ENS are English subject specialists and this barrier can be overcome.

2.3.2.2 Enablers of Open and Distance Learning

According to the study from CoL (2000:7-8), there are a number of enablers related to ODL. Issues created by distance and time, which are barriers to conventional learning, are overcome in ODL. Moon and Robinson (2003) present three types of enablers: *resource efficiency* (buildings, teaching staff and funds) reduces the cost to produce a qualified teacher, *supply (*drawing from new teachers and producing more trained teachers in a shorter amount of time), and *curriculum and training* (offer better opportunities to strengthen the relationship between theory and classroom practices.

The use of ODL involves student-centred learning, meaning that a student takes care of the teaching and the learning of the content (Thorpe & Grugeon, 1987). This entails that the student should organise his/her own learning. ODL motivates individuals for professional growth, and empowers them in their learning processes (Shohel, 2012:95). Besides, ODL is used for the training of teachers who enter programmes with primary, secondary or tertiary qualifications.

2.3.3   Teacher Professional Development through Open Distance Learning

ODL based on the system of two contacts, synchronous and asynchronous, could be adapted to any environment for the TPD of teachers. The synchronous contact could gather students at the same time from anywhere with, for example, teleconferencing meeting, and the asynchronous contact sessions at different times. To make TPD through ODL efficient and worthwhile, the following support systems should be in place:

- model learning environments adaptable to any place
- frameworks which relate to the culture in which they will be developed
- developing and exploring a wide variety of teaching and learning opportunities
- recognising and building on the variety of professional experiences of its participants
- acknowledging both the private and professional aspects of teachers' experiences and their interconnectedness in the development of learning
- a foundation in an institution of learning
- ongoing action from its induction to later phases of TPD (Leach, 1996).

Potashnik and Capper (1998:43) affirm that numerous studies have been conducted to assess the effectiveness of TPD through ODL. Some of these studies focussed on internet-based training or online communication with students. Most studies of radio instruction show that students benefit from radio learning, and that the more the benefits increase, the longer it is used. It is mentioned that the pre-packaged computer-based training for adults has demonstrated that those who learned at a distance on computers learned as well as or better than those who learned in traditional classrooms, and even at lower cost (Potashnik & Capper, 1998:43). In a study of eleven ODL TPD projects it was found that ODL programmes can be designed for teachers at a cost of

between one-third and two-thirds of conventional programmes (Perraton, 2010:385). Due to those conclusions related to the costs of ODL, the implementation of ODL could transform the education systems of developing countries and improve the TPD of teachers. Higher education institutions should be considered as a place where new models of TPD programmes are developed with ODL. Robinson and Latchem (2003) confirm that ODL is a successful and well-established teaching and learning strategy that can replace traditional face-to-face teaching and learning.

2.3.4 Information and Communication Technologies for Teacher Professional Development and Open Distance Learning

ICT includes the combination of printed text materials, radio, video and face-to-face practical experiences with the use of computers and the internet so as to make people learn effectively in ways that are appropriate to their needs (Unwin, 2004:4). They include hardware (e.g. computers and other devices); software applications; and connectivity (e.g. access to the Internet, local networking infrastructure, video conferencing) (Anderson & Glenn, 2003:4). According to Meenakshi (2013:3), the internet represents the basic element of ICT and enables communication anytime and anywhere. ICT could be also defined as the computer and internet connections used to handle and communicate information for learning purposes (Mikre 2011).

ODL uses ICTs for two purposes: the distribution of teaching material to students, and the interaction between student and lecturer or among students (Perraton, 2010:9). Computer-based technologies are used within TPD for four different functions. Firstly, they distribute teaching materials and avoid mailing costs or the time constraint of broadcasts. Secondly, computer-based learning simulates two-way communication from the lecturer (the sender) to the student (the receiver) and back to the lecturer (the sender). Thirdly, with internet access, students can communicate with their lecturers or with fellow students and will take part in e-learning. Additionally with internet access, students can download resources (Perraton, 2010:9). Guri-Rosenblit (2005) articulates that new technologies can solve three major issues linked to ODL. The new technologies could: (i) support the isolated students by providing interaction with lecturers and with other peer students throughout the study process, (ii) provide easy access to libraries and other information resources, which was impossible in the past, and (iii) assist the lecturers to update the resources on an ongoing basis (Guri-Rosenblit, 2005).

In the African context, irrespective of constraints like internet and geographical distance, universities have successfully been using ICTs. UNISA uses ICTs such as telephony, multimedia CDs and DVDs, video and audio conferencing, SMSs and MMSs via cell phones, e-mail, and discussion forums and chat facilities via myUnisa. Besides improving the communication and distribution of resources to their students, UNISA developed the web-based system of myUnisa, aiming to enhance interaction and communication between UNISA lecturers and their students (Ferreira & Venter, 2010:6).

Access to ICTs also enables access to resources, particularly OERs, for developing countries where it is very complex and time consuming to create resources for teaching and learning purposes (Freda *et al.*, 2010). The use of OERs for particular TPD has been successfully implemented in nine contexts, nineteen programmes, 690 lecturers involved in pre-service teacher training, and 303 300 students (Freda *et al.*, 2010). The extent of the use of OER in TPD is testimony to its success and can be implemented for TPD in Gabon through ODL. The following section provides an overview on OERs.

2.4   Open Education Resources

The following section encompasses: the concept of resources and openness, a description of OERs, a brief history of OERs, the existing models of OERs, and the types of licences that fit with OERs.

2.4.1   Concept of Resources and Openness

Downes (2007:31) distinguishes the types of resources, and resource media. The types of resources include software (like learning management systems), papers and monographs, courses, contacts and mentoring, animations, demonstrations, simulations, and games. The resource media contain web pages and internet services, video conference, CD-ROMs, paper-based materials, radio, television, satellite and more, all related to ICT.

Johnstone (2005) defines resources as the following:
- Learning resources: courseware, content modules, learning objects, learner support and assessment tools, online learning communities
- Resources to support teachers: tools for teachers and support materials to enable them to create, adapt, and use OERs, as well as training materials for teachers and other teaching tools
- Resources to assure the quality of education and education practices.

Stallman (1986:8) defines openness as the ability to *copy*, *distribute* and *improve* software, and to be able to *exchange the changes with others*. These four abilities, or freedoms, have become a central part of the notion of openness in connection with content generally and OERs in particular (McGreal *et al.*, 2013:79). According to Downes (2011), there are four different dimensions of openness or different ways to describe this concept in the network:
- autonomy: each object in the network is self-governing open and fluid
- diversity; objects in the network are encouraged to have different states, to be different things, have different opinions, say different things

- openness: signals can be sent freely from one entity to another, and entities have access to signals that are sent from one entity to another, so that membership in the network itself is open and fluid and then finally
- interactivity: the network is not created in the signals that are sent back and forth, but is rather created holistically from the activities that the objects in the network undertake.

2.4.2   The Emergence of Open Education Resources

Toledo *et al.* (2014:30) describe OERs as "open provision of education resources are enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes or teaching, learning or research materials that are in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution." Butcher *et al.* (2011), describe OERs as closely associated with the term Open CourseWare, which means "a free and open digital publication of high quality university-level education materials." These materials are organised as courses, which include course planning materials and assessment tools as well as thematic content (Butcher *et al.*, 2011). These also include education resources such as curriculum maps, textbooks, streaming videos, multimedia applications, podcasts, and any other materials that have been designed for teaching and learning purposes and are openly available for lecturers and students to integrate in their teaching and learning. The difference between an OER and any other education resource is the *licence*. An OER as an education resource incorporates a licence to facilitate the reuse without any permission from the copyright holder (Butcher *et al.*, 2011:5).

The movement of making OERs available begins in the late 1990s and obtained worldwide recognition in 2001 when Massachusetts Institute of Technology (MIT) had instituted its Open CourseWare initiative. Before that period OERs were given names such as open content, open education content, open learning resources, open education technologies, open academic resources, and open courseware, all of which are variously used in the literature and in online and face-to-face discussions (Lane, 2011). The term *learning object* became part of the language of teachers inclusive of the idea that digital materials can be designed and produced in a manner so as to be reused easily in a variety of pedagogical situations (Wiley, 2006). Four years later, David Wiley invented the term *open content* which covers the idea that the principles of the open source or free software can be applied to content (Wiley, 2006). Then, in 2001 Larry Lessig and others founded the *Creative Commons*, a flexible set of licences that were both a vast improvement on the Open Publication Licence's confusing licence option structure and stronger legal documents. The term OERs were adopted at a UNESCO meeting in 2002 after it had been chosen during the "Forum on the Impact of Open Courseware for Higher Education in Developing Countries" (Wiley, 2006).

Since 2002, OERs have been understood as no-cost resources which could improve access to education during the coming years, "opening up what was previously *closed* to all" (Hodgkinson-Williams, 2010:6). Archer (2007)'s theory suggests that when an institution refuses to share their resources, the teacher as an active agent could create OERs (Hodgkinson-Williams, 2010:18) and use them freely. In fact, the development of OERs aims to overcome the barriers (resources protected with passwords within proprietary systems), encourage teachers to share content freely and to adapt content to suit their own needs. Through the use of OERs, academics worldwide can develop their pedagogical knowledge, content knowledge, and technological knowledge. As ICT has become more available, teachers have found an extensive number of OERs available for teaching and learning (D'Antoni & Savage, 2009:29-30). ICT OERs are digitalised resources offered freely and openly to teachers and students to use, reuse and share for teaching, learning, and research (Atkins *et al.*, 2007; D'Antoni & Savage, 2009:29-30).

Johnstone (2005) summarises OERs as the following:
- learning resources such as courseware, content modules, learning objects, learner-support and assessment tools, online learning communities
- resources to support teachers as tools for teachers and support materials to enable them to create, adapt, and use OERs, as well as training materials for teachers and other teaching tools
- resources to assure the quality of education and education practices.

OERs advocate the sharing of knowledge to increase human intellectual capacity (Evans-Gowdin & Simmons, 2008). For that purpose, UNESCO encourages the development of OERs in education, culture, and religion to enhance mutual understanding (D'Antoni & Savage, 2009:29). Larsen and Vincent-Lancrin (2005) state that in OER communities "the innovation impact is greater when it is shared: the users are freely revealing their knowledge and thus work cooperatively."

2.4.3   Models of Open Education Resources

After reviewing the history and some definitions of OER, we will present the three types of OERs: *a content-centred, a learner-centred and a creation-centred model* respectively. However, the boundaries between these different types are not always clear and sometimes a certain OER initiative might consist of more than one type of OER (Mulder, 2007:27).

2.4.3.1 Content-centred Model of Open Education Resources

A good example of a content-centred initiative is MIT's Open CourseWare™ site. This site publishes traditional course content in the public domain content without much adaptation. It consists of syllabi, lecture notes, assignments, examinations, reading lists, and samples of the students' work. As such, OpenCourseWare™ is not equivalent to an MIT education, but intended

to be a source of for teachers and self-learners around the globe (Open Universiteit Nederland, 2006:12). A characteristic of this model is that the information-flow is one-directional, as there is no direct feedback of users built into the system. Other content-centred examples of OER are for instance libraries, encyclopaedias, scientific journals, and research communities that share their books and articles online for free (Mulder, 2007:28).

2.4.3.2 Learner-Centred Model of Open Education Resources

The learner-centred model of OER is specifically aimed at the learning experience of its users. Good examples of this are for instance OpenLearn™ of the UK Open University, OpenER™ of the Open Universiteit Nederland (OUNL), and Multilingual Open Resources for Independent Learning™ (MORIL) of the European Association of Distance Teaching Universities. These focus on the offering of high-quality learning materials in a distance learning context by the OUNL *New Wave*-initiatives. The target audience consists primarily of professional people who participate in in-service training (Open Universiteit Nederland, 2006:21). The learning experience of learner-centred models could be enhanced by artificial and real teachers who interact online with students to create a more multi-directional type of OER (Mulder, 2007:28).

2.4.3.3 Creation-Centred Model of Open Education Resources

The creation-centred model is defined as the most multi-directional or most non-directional type of OER. The Connexions project, initiated by Rice University, is a good example of this. The project involves two basic components:

- content commons
- open source licensed software tools (Henry *et al.*, 2003).

The main idea of the project was to create an infrastructure that will empower teachers and students to reimagine and create new objects from those that already exist (Atkins *et al.*, 2007:10-11; Mulder, 2007:28).

2.4.4   Licences Linked to Open Education Resources

The section encompasses *copyleft*, *copyright* and *creative commons* with their six licences which are: (i) attribution, (ii) attribution share alike, (iii) attribution no derivative, (iv) attribution non-commercial, (v) attribution non-commercial share alike, and (vi) attribution non-commercial no-derivative.

2.4.4.1 Copyleft

Copyleft makes a programme or other work free. It also requires the modified and extended versions of the programme to be free as well (GNU Operating System, 2010). To make a programme free software, the users need to put it in the public domain (uncopyrighted). This allows people to share the programme and its improvements. They could make changes, and distribute the result as a proprietary product (GNU Operating System, 2010).

2.4.4.2 Copyright

According to Glennie *et al.* (2012:126-127), copyright is a legal concept, enacted by most governments giving the creator of an original work exclusive rights to it, usually for a limited time. Any form of writing, music, art or video can be covered by the copyright law. In most countries, copyright is automatic—creators do not need to register or even mark their work with a copyright (©) symbol to be granted copyright. Sometimes, authors sign over their rights to publishers, as is often the case when a researcher wants to publish in a scientific journal (Glennie *et al.*, 2012:126-127). An *open copyright licence* is an irreversible copyright licence which allows the following permissions to everyone at no cost: permission to reuse, copy, redistribute, revise the artefact as well as combine it with other artefacts (Wiley, 2011).

2.4.4.3 Creative Commons

Creative Commons are the most widely used licences in online collections of learning resources (William and Flora Hewlett Foundation, 2008). The creation of Creative Commons™ in 2001, gave a detailed set of licences that allows copyright holders to specify the rights to renounce a tool to facilitate the sharing of content (D'Antoni & Savage, 2009:21). Creative Commons™ is a licensing system permitting people to copy, adapt and distribute materials without requesting permission from the resource creator or paying licence fees. These licences do not conflict with the copyright principle; they are a modification of *all rights reserved* copyright (Glennie *et al.*, 2012:127). These licences have been developed by a non-profit organisation founded by Professor Lawrence Lessig, with the ambitious mission of realising the full potential of the Internet—universal access to research and education, and full participation in culture (Creative Commons, 2011).

An open copyright licence is an irrevocable copyright licence which grants the following permissions to everyone at no cost; to: (i) reuse the artefact (e.g., publicly display or perform), (ii) copy and redistribute the artefact (e.g., share), (iii) revise the artefact (e.g., translate or localise), and (iv) remix the artefact with other artefacts (e.g., mash-up or collage). This granting of permissions may come with restrictions. For example, a licence may restrict these permissions to those: (i) who agree to attribute the author of the OER when exercising the permissions, (ii) who agree to relicense any derivative works based on the OER under precisely the same licence, and

(iii) who agree to exercise the granted permissions in only non-commercial ways. The Creative Commons BY, BY-SA, and BY-NC-SA licences are examples of open licences.

The six Creative Commons™ licences have distinct differences in terms of rights (Creative Commons, 2011). The licence attribution permits others to reproduce, issue, adjust, and build upon your work as long as they acknowledge the original creation. The *attribution* is the most accommodative licence and users are allowed maximum distribution and use of the licensed materials. The *attribution share-alike* licence permits users to reproduce, twist, and build upon the original work even for commercial purposes, as long as they credit the creator and license the new product under the identical terms. This licence is often compared to copyleft—free and open source software licences. The initial creators' future work will carry the same licence, so any follow-ups will also allow for commercial use. The *attribution no-derivative* licence is when the creator allows others to copy, distribute, display and perform only original copies the work without modifications. If they want to modify the original work they should get permission from the creator. The *attribution non-commercial* permits others to duplicate, issue, exhibit, execute, and (unless you have chosen no-derivative) change and use the original work for any non-commercial purpose. The *attribution non-commercial share alike* allows others remix, tweak, and build upon the creators' work non-commercially, as long as they credit the authenticity and license the new creations under identical terms. The *attribution non-commercial no-derivative* licence is the most restrictive of the six licences, which allows scholars to download and share the original work with others as long as they credit the creator, but no changes can be made and used for commercial purposes (Creative Commons, 2011). Among the six mentioned above, the n*on-commercial share-alike* is the most popular licence (Downes, 2011).

2.4.5   Open Education Resources in Africa

This section discusses the attempts to establish and utilise OERs in Africa: e-Learning and Teacher Education (ELATE), adaptation of OERs for Egypt, the African Virtual Universities (AVU) OERs, and OER Africa.

2.4.5.1 e-Learning and Teacher Education

An increasing number of academic institutions are developing e-learning capabilities to bridge the gap between different languages and cultures. The continuous improvements in the quality of English provision for developing countries should be viewed as a stimulus for other languages and cultures to join the movement, to be innovative and to preserve their own cultural identity (D'Antoni & Savage, 2009:50). A memorandum of understanding was signed between the UNESCO office in Cairo and the French University in Egypt (UFE), which resulted in direct cooperation between UFE and the MIT. As is the case with many developing countries, the gap between Egypt and developed countries is wide. Measures were taken to increase the provision of tertiary education

to align with the trends in teaching and learning worldwide (D'Antoni & Savage, 2009:49). The *ELATE* initiative started in November 2003 with the aim to bridge the challenges in the Egyptian tertiary education system by (i) increasing the tertiary completion rate, and (ii) preserving cultural diversity. With the ELATE initiative there was a general increase in the economic performance and social development (Desjardins *et al.*, 2004). Cooperation was later extended to Carnegie Mellon, Rice, Al Akhawayn (Morocco) and Gamal Abdul Nasser (Guinea) Universities and the University of Mauritius (D'Antoni & Savage, 2009:50).

2.4.5.2 The African Virtual University Open Education Resources

The creation and growth of virtual campuses resulted from the increase in the number of students in most African universities. The aim of the *AVU* was to deliver programmes to universities whose student numbers increased significantly each year (D'Antoni & Savage, 2009:52). AVU is a Pan-African intergovernmental organisation with its headquarters in Nairobi, Kenya and its regional office in Senegal. It was accepted to develop access to quality higher education and training through the use of ICTs. The charter was signed by several African nations. The AVU has established partnerships with a variety of OER stakeholders involved in higher education and training in Africa which includes: (i) open content initiatives, (ii) open, distance and e-learning initiatives, (iii) FLOSS initiatives, (iv) OER policy and advocacy initiatives, (v) connectivity and infrastructure initiatives, (vi) OER governance and management initiatives, (vii) OER donor funding initiatives, and (viii) OER Africa (McGreal *et al.*, 2013:92).

2.4.5.3 Open Education Resource Africa

OER Africa was created by the South African Institute of Distance Education (Saide) and their role is to improve, use and manage OERs. The OERs relate to programmes in higher education in subjects like agriculture; health; teacher education and foundation programmes. The OER Africa courses focus on English literacy, learning, thinking skills, and life skills. This initiative is supported by national governments, intergovernmental organisations, non-governmental organisations, universities, researchers, the private sector, donors and interested individuals (Bateman, 2007). In 2006, The University of the Western Cape became the first African member of the OpenCourseWare™ Consortium and the first university in the world to actively reward staff for the creation of OERs (Mulder, 2007).

2.4.6   Challenges and Enablers of Open Education Resources

This section discusses the challenges and enablers encountered in developing countries regarding the implementation of their OERs.

2.4.6.1 Challenges of Open Education Resources

The major challenge of OERs is that education policy makers and planners from developing countries make decisions related to change in education practices (Potashnik & Capper, 1998). Education Ministries in Africa are resource-poor and almost all of their financial resources are used for teachers' salaries. When decisions are made to introduce new technologies into the classroom, real cost calculations need to be made which should take into consideration the long-term running, maintenance and replacement costs of such initiatives (Unwin, 2004:15). Regarding OERs, the challenges facing the OER movement are diverse, but can be classified into four categories:

- the challenges relating to copyright, technology, and access
- the challenges of quality, sustainability, and re-use
- the challenges of cost or benefit, impact, and policy
- the emerging challenges of open assessment, culture, and advocacy (McAndrew & Farrow, 2013:69).

These challenges that OERs can encounter in developing countries are categorised as persistent challenges, underlying challenges, sticking points, and emerging challenges as represented in the Table 2.1.

Table 2.1:   Categorisation of Key Challenges Facing the Open Education Resources

Persistent Challenges	Underlying Challenges
Copyright	Cost or benefit
Technology	Impact
Access	Policy
Sticking points	**Emerging challenges**
Quality	Advocacy
Sustainability	Culture
Re-use	Open assessment

OERs should be organised so as to be accessible to anybody who would like to use them. The main obstacle to the use of OERs in developing countries is the access to reliable ICT infrastructure, electricity and internet (D'Antoni & Savage, 2009:73). However, it is difficult to integrate OERs in areas where there is not any electricity or technology. Consequently, materials for technological use of OERs should be adapted to all cultures (D'Antoni & Savage, 2009:73-74). Language is clearly intertwined with culture and the dominant language in the use of OERs is English. Kickbusch (2001:289) wrote that "Four out of five websites are in English, while only one in ten people on this planet speaks this language." This limits the relevance and accessibility of OER materials in non-English, and non-Western contexts and languages. There is a risk that developed countries in which English is the main spoken language could be consigned more to the role of OER *consumers* rather than contributors to the expansion of OER knowledge (D'Antoni & Savage, 2009:75). Leornardi (2002) states that if we want to successfully support developing countries with OER, the language gap is a significant obstacle that needs to be dealt with. Even if OERs were to be translated to the local language of the targeted students, context adaptation

would still be needed, because if left unchanged, OERs would still not necessarily be suitable for the targeted regional context (Leornardi, 2002). Chumbow (2002) adds that "the use of national languages will be a greater stimulus to learning and this will lead to a greater and higher level of education." Carmichael and Honour (2002:3) also discuss the technical and organisational constraints that some countries in South East Asia encounter in trying to implement OERs in their respective countries. These constraints are: insufficient hardware and software with the constant upgrades available; poor national network coverage; low bandwidth, and high cost of resources. Internet access is probably the biggest challenge in Africa as in 2017 only ten per cent of people Africa had access to the Internet (Internet World Stats, 2017). Subsequently, again the gap between the *haves and the have-nots* widens (Wright & Reju, 2012:198).

Another challenge for the implementation of OERs, is that lecturers often question the quality of the OERs. However, lecturers do not appear to be as concerned about the quality and outdatedness of the resources used in traditional instruction. From their work on education projects in Africa, Wright and Reju (2012:212) confirm that lecturers are not concerned about the low cognitive objectives, quality and standard of the teaching and learning materials which do not adhere to the sociological, cultural, and economic views or backgrounds of the students.

2.4.6.2 Enablers of Open Education Resources

A vast number of existing OERs can be accessed, adapted, and used by millions of students which will minimise costs with the purchase and development of resources (Wright & Reju, 2012:2). The World Wide Web (WWW) is a platform that allows teachers and students to collaborate and participate in various activities. Web 2.0 technologies are recommended in developing countries for the implementation and the use of OERs (Atkins *et al.*, 2007:38-39). The use of Web 3.0 and Web 4.0 is expected to expand the use of OERs in developing countries. Students who use the internet to navigate through a complex situation don't expect anybody to tell them what to do and what to read. Assessing OERs enables lecturers to spend more time during contact sessions on group activities to develop the 21st century skills. In the African context, lecturers have access to new and updated resources and they do not have to make use of outdated books and learning materials. As there are numerous people involved when developing OERs, the end product is substantially better than something developed by a single individual (Wright & Reju, 2012:184-185).

2.6.7   Repositories of Open Education Resources in Africa

The African Journals Online (AJOL) is a non-profit organisation based in South Africa, and is the world's largest peer-reviewed repository of scholarly journals published on the continent. AJOL hosts more than 400 journals on its website, covering 25 disciplines of the sciences and social sciences. The Digital Information South Africa (DISA), hosted at Rhodes University in

Grahamstown in South Africa, is a freely accessible, online scholarly resource that focuses on the socio-political history of South Africa, especially the period of Apartheid from 1950 until the first democratic elections in 1994. DISA is copyrighted with what appears to be flexible *fair use* guidelines (Glennie *et al.*, 2012:312).

2.6.8 Information and Communication Technologies for the Implementation of Open Education Resources

The successful execution of OERs for teaching and learning depends greatly on access to electricity, internet and the appropriate hardware and software (Wright & Reju, 2012:189). Computers, tablets and mobile phones are some of the ICTs which could be used to access OERs. Computers and tablets are expensive for students in Africa, but mobile phones are more accessible as about ninety per cent of people in Africa have mobile phones. Therefore mobile phones with affordable Internet access will enable lecturers to integrate the OERs for teaching and learning purposes. Students can use their mobile phones to access and listen to recorded audio messages, audio-based OERs, and communicate via voice or text with their peers and lecturers (Wright & Reju, 2012:198). When there is not sufficient Internet access, OERs can be designed to fit within a small digital file and then printed. AVU, in collaboration with centres in Ethiopia, Kenya, Senegal, and Zimbabwe are creating hubs where lecturers and students can share knowledge, access, develop, modify, and remix the OERs (African Virtual University, 2017).

2.6.9 Open Education resources for Teacher Professional Development through Open Distance Learning

The centres or hubs established by AVU set the stage for TPD with OERs. These 53 hubs conduct: TPD programmes, ICT integration for teaching and learning, and also deliver and manage ODL programmes (African Virtual University, 2017). Additionally, AVU has developed an African-based TPD that could be in an OER format to: (i) establish TPD community of practice that bridge geographical and language barriers, (ii) strengthen quality assurance, (iii) facilitate staff mobility, and (iv) recognise prior learning at another institution (Wright & Reju, 2012:201). In order to sustain OER initiatives in Africa, the policies, structures, and programmes should include OERs as an enabler for ODL and TPD.

2.7 Summary of the Chapter

This chapter did a preliminary assessment of the three main concepts inclusive in the research question, *How could the use of OERs in ODL contribute to TPD in the Gabonese Education System?*. The chapter discussed TPD and the TPD initiatives in Gabon. The chapter gave an overview on ODL, ICTs for ODL, the challenges and enablers of ODL, the use of ODL for TPD in

Gabon, and ICTs for TPD in ODL. Lastly the chapter gave an in-depth discussion on OERs, when OERs originated, the different models of OERs, the licences attached to OERs, the challenges and enablers of OERs, ICTs for OERs, and the use of OERs for TPD through ODL. Chapter Three discusses the analysis and evaluation phase of Stoner's life phases for technology integration.

Chapter Three

Stoner's Systems Life Phase of Learning Technology Integration: Analysis and Evaluation of Open Education Resources in English Foreign Language Curriculum in Gabon

3.1   Introduction

This chapter relates to Stoner's phase 2 of technology integration: analysis and evaluation. The curriculum plays an important role within an education system as it is a blueprint which leads the teacher and the students to reach the desired objectives (Olga, 2011). As a result, authorities have to design it in such a way that it could lead the teacher and the student to meet the desired learning outcomes (Olga, 2011) either in a face-to-face or online mode. Regarding ENS and particularly the department of English, it seems that the use of curriculum in the department of English is not based upon a set curriculum, but on documents related to some resources that could be exploited in the level of licence 1. The lecturers of the department of English manage to find courses from resources, books and organise them according to the needs of the different levels of the department of English. The first part of Chapter Three presents some aspects related to the curriculum: the definition of curriculum, types of curriculum, the components of curriculum and the syllabus. The last part of the chapter presents the curriculum of ENS—matching the appropriate OERs in ODL which can be used as LT for TPD.

3.2   Curriculum

The language spoken during the post-medieval period was New Latin which was used mainly in churches and schools. In this New Latin, *Curriculum* means *a course of study* while in classical Latin, it meant running or course (as in race course). Wilson (1990) defines a curriculum as: "Anything and everything that teaches a lesson, planned or otherwise. Humans are born learning; thus the learned curriculum actually encompasses a combination of all of the following—the hidden, null, written, political and societal, etc. Since students learn all the time through exposure and modeled behaviors, this means that they learn important social and emotional lessons from everyone who inhabits a school—from the janitorial staff, the secretary, the cafeteria workers, their peers, as well as from the deportment, conduct and attitudes expressed and modeled by their teachers. Many educators are unaware of the strong lessons imparted to youth by these everyday contacts" (Wilson, 1990). Generally, the curriculum is related to everything that students encounter at school.

Usually, curriculum represents an organised sequence of instruction, or it is referred to a view of the student's experiences reached from the educator's or school's instructional goals (MediaWiki, 2016). Teachers organise their own curriculum covering the specific learning standards related to lessons, assignments, and other materials that they will use to teach (Great Schools Partnership, 2015). In fact, the term curriculum makes reference to the instructional content (lessons) taught in a school or in a specific programme like distance learning. The definition of the term *curriculum* can change according to the context in which it is used. For example, in the Seychelles, the curriculum means the required learning standards involving the learning environment, the resources, teaching strategies, assessment processes and methods needed for the teaching of students. These factors are interconnected to the values and spirit of the school, the relationships and behaviours among students, teachers, school leaders, and parents. The curriculum is more extensive than a syllabus which is a document that only outlines the classroom activities (UNESCO, 2013).

3.2.1   Types of Curricula

There are eleven types of curricula, but four are essentially at work in most education settings. are: the explicit, implicit, null, and extra or co-curriculum. The notions of explicit curriculum and extra-curricular activities become familiar when compared with the implicit and null curriculums (Edward *et al.*, 2011). The following sections give a description of the four core curriculums.

3.2.1.1 Explicit Curriculum

Explicit curriculum means *obvious* or *apparent*. The explicit curriculum is related to the subjects, the knowledge, and skills that the students should achieve. The explicit curriculum can be explained in terms of time on task, contact hours, credits based on the number hours of contact time (Great Schools Partnership, 2013). The explicit curriculum is based on learning objectives that are observable and measurable (Edward *et al.*, 2011).

3.2.1.2 Implicit Curriculum

The implicit curriculum is often referred to as the *hidden curriculum,* which comes from the culture of the school and the behaviours, attitudes, and expectations of those in the school. The implicit curriculum is difficult to explain, articulate, and to measure, as it is based on unwritten aspects (Edward *et al.*, 2011).

3.2.1.3 Null Curriculum

Eisner (1994:106-107) demonstrates the null curriculum as the options that students could not afford, the perspectives that they could never know and use, and the concepts and skills they could not develop to be part of their intellectual inventory (Edward *et al.*, 2011).

3.2.1.4 Extra-Curriculum

The extra-curriculum or co-curriculum is the fourth aspect of curriculum. This curriculum includes activities or programmes that are supposed to complement the academic aspect of the school experience. These extra-curricular activities are athletics, band, drama, student government, clubs, honour societies and student organisations, school dances and social events. Students are not obligated to participate as these do not contribute to grades or credits (Edward *et al.*, 2011).

3.2.2 Components of the Curriculum

The curriculum components are often used to describe the aims, goals, objectives, or plans, methods, materials, and assessments.

3.2.2.1 Aims, Goals and Objectives

The first component which involves aims, goals, and objectives can be simplified as "*what is to be done*", specifying the expectations or the outcomes for teaching and learning (Estroga, 2013). These are described as: aims which are the most general, goals which reflect the purpose with some outcomes in mind, and objectives which demonstrate, explain and reflect the most specific level of education outcomes. In terms of learning, the outcomes are what the students should be able to demonstrate after the learning process.

3.2.2.2 Curriculum Content

The second component which involves subject matter or content can be stated as *what subject matter is to be included* (Estroga, 2013). The subject matter is related to subjects like language, Mathematics, English, etc. (Cambridge.org, 2016). Content should take into consideration the teaching and learning environment, the needs of the student, and the principles of teaching and learning (Nation, 1996).

3.2.2.3 Curriculum Experience or Learning Experience

The third component which involves the learning experience which can be described as *what instructional strategies, resources, and activities will be employed* (Estroga, 2013). According to

Bobbitt (1918), the curriculum experience encompasses the entire scope of the formative deed and the experiences in and out of school that are unplanned, undirected, and intentionally directed (Bobbitt, 1918). Curriculum experience together with the different teaching strategies are the core of the curriculum. These instructional strategies and methods, the execution of the goals and the use of the content will yield an outcome (Washoeschools.net, 2015).

3.2.2.4 Curriculum Evaluation

Curriculum evaluation can be described as "*what methods and instruments will be used to assess the results of the curriculum*" (Olga, 2011). Tuckman (1985) defines evaluation as meeting the goals and matching them with the intended outcomes (Estroga, 2013), whereby a decision is made on how well the students have done what they were asked to do (Beane, 2004). Assessment is to determine the attainment of education objectives of the curriculum programme and instruction (Tyler, 1950).

The components of the curriculum is an arrangement of what is to be taught, the content, the instructional strategies, and the assessment of the curriculum. Each component influences and interacts with other components. The content is affected by the instructional strategies. The evaluation results will justify the aims and the objectives taught (El Sawi, 2013).

3.2.3   Difference between Curriculum and Syllabus

A syllabus is: "a description of the contents of a course of instruction and the order in which they are to be taught" (Richards *et al.*, 1992:368) which explain the goals and objectives of a course, the evaluation outline, the materials to be used (textbooks, software), the topics that will be covered, a schedule, and a bibliography, whereas the curriculum includes the everything the students experience at school.

3.2.4   Curriculum in Gabon

This section discusses the Gabonese curriculum, Grammar school, English as a Foreign Second Language (EFL), Time allocation to English as a Foreign Language (EFL).

3.2.4.1 Gabonese Curriculum

The Education system in Gabon is similar to the French curriculum since its independence in 1960. Gabon has primary schools, secondary schools and higher education. The primary school lasts for five years, the secondary education lasts for seven years, and the higher education (Licence, Master and Doctorate) which depends on the choice and the ability of the student. The licence will last three years without repeating any level, a Master's degree two or three years, and a Doctorate

will last four years. The Gabonese education system is regulated by the education law 16/66 of August 1966 (Republique du Gabon 1966). In Gabon the government administers education as well as the National Pedagogical Institute (IPN), which forms part of the Ministry of Education and deals with the curriculum of Grammar schools in Gabon.

3.2.4.2 Curriculum in the Gabonese Grammar Schools

French, mathematics, history and geography, civic education, life and earth sciences, technology, art, musical education, physical education, physics and chemistry, two modern languages (i.e.: English and Spanish) form part of the curriculum (Eduscol Education, 2013) in the Grammar schools. IPN developed the new curriculum: the topics, the functions, and the grammar points. We struggled to find resources pertaining to the curriculum in Gabonese schools.

3.2.5 English as a Foreign Language

Gabon uses English as a Foreign Language (EFL), but it is not widely used outside of the classroom. However, teachers of EFL have always paid attention to identify the needs of their students, their attitudes towards English, and their motivation to learn it (The Centre for Applied Linguistics, 1989). In Gabon, the English language is taught according to the criteria related to a foreign language in a country where French is predominant. The French language is spoken everywhere, in families, offices and in the market. The study of a foreign language should start with the language structure and the practical use of the language. The language structure could be summarised as the *surface structure* (the words and the phrases comprising a particular sentence), *deep structure* (the underlying meaning of a sentence), *phonemes* (basic speech sounds) and *morphemes* (smallest unit of language that contains meaning) (boundless.com, 2015). Students that learn EFL do not necessarily have any knowledge of the language when they arrive at the school. EFL focuses on students' ability to understand and communicate.

Generally, the EFL curriculum is structured according to the following skills:
- Listening skill: students to understand the English spoken at a normal speed. Listening is the language skill that students usually find the most difficult (Cabrera & Bazo, 2002).
- Reading skill: It is the ability to understand what is written. Students should be able to understand simple and non-technical English first, skimming through the text for general meaning or scanning it to pick out specific information. Students in the secondary school should be able to read English without many issues (Cabrera & Bazo, 2002).
- Writing skill: It is the ability to write English, respecting the grammar rules. The students when they leave high school should be able to write correct English. They are expected to write correctly on matters such as their personal experiences, interest and needs in simple English. The written activities should therefore, be based on a parallel text and guide with simple cues. The writing activities mostly appear towards the end of a unit so that

students have time to practise the language structures and vocabulary (Cabrera & Bazo, 2002).

- Speaking skill: It is the ability to speak English correctly and easily; simply and effortlessly. Students will manipulate language and express themselves in a much more personal way; I have a command over English vocabulary and a sense of correct intonation and pronunciation (Cabrera & Bazo, 2002).

Each of these four linguistic skills is closely related to one another. Thus, reading assists writing and writing assists reading. Subsequently, these skills should be developed simultaneously (Ardhendude.blogspot.co.za, 2011).

3.2.5.1 Time Allocation for English as a Foreign Language

The time allocation to EFL is generally about three hours a week per level in a French-speaking country like Gabon. However, in some Grammar schools, and particularly in the science and technical schools, the time allocated to EFL is about one hour per week. In the case of the Department of English at ENS, the English time allocation is different to the one from high school. Each topic has at least eighty hours per semester, which relates to about five hours per week (Ecole Normale Superieure, 2012).

3.2.6 English Department Curriculum in the Teacher Training College

The lecturers from the English department of ENS prepare their curriculum and work according to the English objectives they intend to obtain. The researcher presents first the general objectives of teaching English grammar and then the general objectives of teaching English at the Teacher Training College (ENS).

3.2.6.1 General Objectives of Teaching English Grammar

The basic objectives of teaching English grammar relate to:
- effective use of the language
- knowledge of the underlying rules of grammar
- insight into the structure of English language
- assimilating the correct patterns of the language
- English being taught as a rule of behaviour
- development of the ability to reason and correct observation
- development of a scientific attitude (Wordpress.com, 2011).

3.2.6.2 General Objectives in the Teacher Training College

The general objectives for teacher training at ENS stipulate that after three years of teacher training (Licence 1, Licence 2 and Licence 3 levels) the pre-service teachers should be able to:

- reinforce the acquired knowledge of the former training and combine it with the new knowledge after the three years of training
- develop autonomy of learning as he/she will work as an individual while teaching
- find and learn the basic functional notions to communicate effectively using language skills
- solve issues and make decisions with his/her students according to the rules of the Institution where he/she is working ((Ecole Normale Superieure, 2012).

3.2.7 The Subjects presented at the Teacher Training College

ENS comprises the following different departments in which the students are registered to be trained to become teachers for the high schools in Gabon (Table 3.1).

Table 3.1: Different Departments of the Teaching Training College

Education Sciences
1-Le Département Didactique (The Department of Didactics)
2-Le Département Guidance et Enseignement spécialisé (The Department of Guidance and Special Education)
Social and Human Sciences
1-Le Département Economie, Gestion et Documentation (The Department of Economics, Management, and Documentation)
2-Le Département Histoire–Géographie (The Department of History and Geography)
3-Le Département Philosophie (The Department of Philosophy)
Lettres, Languages, and Arts
1-Le Département Anglais Et l'Education Artistique (The English Department and Arts Education)
2-Le Département Espagnol (The Department of Spanish)
3-Le Département de Français (The Department of French))
Sciences
1-Le Département Mathématiques-Informatique (The Department of Mathematics and Informatics)
2-Le Département Sciences naturelles (The Department of Natural Sciences)
3-Le Département Sciences physiques (The Department of Physical Sciences)

Adapted from Obono Mba (2008:421-424)

3.2.8 Qualification Structure at the Teacher Training College

In 2010, the new system of Higher Education of Licence, Master and Doctorate (LMD) was introduced in Universities and High schools in Gabon. ENS is one of the higher Institutions that took advantage of the change to the new system of teacher training. However, it still continues to use the first system based on CAPC, CAPC 1, CAPC 2; CAPES 1, CAPES 2. Currently there are the two systems of training: the system of LMD and the system of CAPC. In the CAPC system students with their CAPC 2 could become teachers in Colleges and students with the CAPES 2 could teach in high schools. With the LMD system students obtain the degree of Professional licence at the end of Licence 3, allowing them to become teachers of Colleges or continue with

their Master's degree. When completing the Master's degree, they are allowed to teach in high schools or to continue with a Doctorate.

3.2.9   Licence 1 of English as a Foreign Language

Table 3.2 provides an overview of the structure of the topics of Licence 1, an undergraduate programme at ENS.

Table 3.2: **Licence 1 of English as a Second Foreign Language in the Department of English**

Semester 1	Semester 2
Written Language	**Literature**
English Grammar	Initiation to English literature
Written expression	Initiation to Anglo-African literature
Oral Language	Initiation to American literature
Phonetics	**Civilisation**
Oral expression	Initiation to American civilisation
Translation	Initiation to British civilisation
Theme	Initiation to Anglo-African civilisation
Version	**Options**
English of sector	Initiation to ICT/To the Gabonese literature
Initiation to English sector	Initiation to the Philosophy and Sociology of Education
Option	The History of Gabon
Expression techniques	
Spanish	

3.2.10 Outcomes of English in Licence 1 at the Teacher Training College in Gabon

At Licence 1 level students should be able to:
- master the basic functional notions
- know how to write in the past tense
- know how to describe and comment on an image
- know how to reconstruct sentences and
- identify and correct mistakes in a text (Ecole Normale Superieure, 2012).

3.2.11 Developing Curriculum Outcomes for Licence 1 at the Teacher Training College in Gabon

As seen from Table 3.2 and § 3.2.10 the structure of the aspects which should be included in Licence 1 shows characteristics of a syllabus (§ 3.2.3) and the skills (§ 3.2.5). Nowhere could we find any policy documents which outlined the programme outcomes, Licence outcomes, and sub-unit outcomes for each aspect relating to EFL (listening, reading, writing, and speaking) at ENS. We only had access to topics and the outcomes of Licence 1 at ENS (§ 3.2.6.1). As mentioned in § 3.1, lecturers at ENS structure their courses based on the documents they have. During a visit to ENS I gathered as much documentation I could find to ascertain the logical flow and structure for

the courses the lecturers presented for EFL. Additionally, I benchmarked with the South African curriculum for teacher training of second language (North West University, 2016), other similar programmes in French speaking countries and documents of other higher education institutions that offer English as foreign language to French speaking students (CSN, 2016; Felber-Smith, 2016). I had to write outcomes for each of the four aspects of teaching EFL. Table 3.3 outlines an example of the outcomes for listening, reading, writing, and speaking for semester 1 for Licence 1. The other semester plans are included as Addendum 3.1.

Table 3.3:   Example of Learning Outcomes for Licence 1 of EFL

Aspect	Learning Outcomes
Written language	
English grammar	
The use of a/an and a singular form	• Distinguish between where a/an is applicable to use in a singular form
The use of tag questions	• Know when a verb or an auxiliary is applicable to use for a tag question
The irregular comparative	• Distinguish between good and better than
Written expression	
Subordinating conjunctions	• Know a clause and subordinate the following clause to the independent element in the sentence as/when (the time, the moment: when I came into the room, he was reading) and while/as (during the time: As I was working, the telephone rang) and use them
	• Know a clause and subordinate the following clause to the independent element in the sentence as soon as (As soon as they were back home, the children turned on the TV) and Before (Before cooking lunch, she went shopping) and use them
Oral language	
Structure of language	• Know what is language and what does knowledge of a language comprise
The articulatory description of phonology	• Have knowledge about the articulatory description and transcription of phonology
Options	
Initiation to American literature	
Poetic techniques	• Know the basic terminology and practical elements of poetry
The philosophy of composition from Edgar Allan Poe	• Distinguish between the techniques behind the traditional forms of poetry and free verse
Initiation to ICTs	• Know the components of ICT and its use
Civilisation	
Initiation to American civilisation	
US History since 1877 Progressive ERA I Progressive ERA II Great War	• Distinguish between the different ERAs

The learning outcomes in Table 3.3 illustrate only examples of the learning outcomes for teaching and learning EFL at ENS. After developing the outcomes we had to pair the learning outcomes with the OERs for the presentation of the pilot workshop (Addendum 3.1). We had to appraise which search engines were available to search for the OERs to complement the learning outcomes. The following section gives a summary of the available search engines at ENS.

3.2.12 Existing Search Engines at the Teacher Training College

ENS utilises two search engines, Google and Yahoo and the websites (ens.ga and ensetgabon.ga) that provide information to lecturers and students. ENS is waiting for the (l'Agence Nationale Des Infrastructures Numeriques Et Des Frequences) National Digital Infrastructure Agency and Frequencies (ANINF), which has become Agence du Gouvernement Gabonais, the Gabonese government agency that provides stable internet access to the institution. These search engines are the web-based resources students use for their research, academic tasks and PD. ENS do not make use of connectivity to 3G/4G due to the high costs involved. ENS faces many challenges relating to capturing data and information on their servers, and these consequently obstruct the initiation and the use of OERs at ENS.

3.2.13 Matching the Open Education resources with the Learning Outcomes

During Stoner's phase 3 the appropriate OERs in ODL which can be used as LT for TPD. Table 3.4 provides an example of how the OERs were matched with the learning outcomes. Addendum 3.1 summarises the complete selection of OERs for the semesters of Licence 1.

3.3 Summary of the Chapter

This chapter addressed Stoner's phase 2 and 3, analysis and evaluation as well as selection of LTs. The chapter explained the aspects of the curriculum in detail, the components of the curriculum, the distinct differences between curriculum and syllabus, the qualification model at ENS (new and the one phasing out), the curriculum at ENS, the development of learning outcomes for Licence 1, the search engines, and the matching of OERs with learning outcomes for the test workshop at VTC and Gabon. Chapter Four describes the research design and methodology used during this research.

Table 3.4: Example of Matching the Open Education Resources with the Learning Outcomes

Topic	Outcomes	OERs	OERs downloaded	Type of OERs
Written Language				
English Grammar				
The use of *a/an* and a singular form	• Distinguish between where a/an is applicable to use in a singular form	OERs retrieved from Capital Community College http://grammar.ccc.commnet.edu/grammar/determiners/determiners.htm	S1-1.1 S1-1.1a S1-1.1b	PDF (Adapted) PDF (Adapted) PDF (Adapted)
The use of tag questions	• know when a verb or an auxiliary is applicable to use for a tag question	OERs retrieved from Capital Community College http://grammar.ccc.commnet.edu/grammar/marks/question.htm	S1-1.2	PDF (Adapted)
The comparative constructions				
Comparative/ Adjective meaning

The comparative of equality | • Know what is an adjective

• To use in the comparative of equality As + adjective + As where it is applicable (e.g: The student cannot be as clever as his teacher) | OERs retrieved from MIT open course ware https://ocw.mit.edu/courses/linguistics-and-philosophy/24-979-topics-in-semantics-fall-2002/lecture-notes/f02lec04.pdf

OERs retrieved from Capital Community College http://grammar.ccc.commnet.edu/grammar/adjectives.htm | S1-1.3a S1-1.3b | PDF (Adapted) PDF (Adapted) |
| The comparative of superiority and the superlative

Comparative of minority | • Distinguish between short and long adjectives: which adjective takes +ER + THAN and which one is MORE + adjective + THAN?
(With short adjective: fast-faster than; long-longer than; with long adjective: The teacher is more intelligent than his students)
Distinguish with comparative of superiority | OERs retrieved from Capital Community College http://grammar.ccc.commnet.edu/grammar/adjectives.htm#taller

OERs retrieved from Capital Community College http://grammar.ccc.commnet.edu/grammar/adjectives.htm | S1-1.3b S1-1.3ca S1-1.3d | PDF (Adapted) PDF (Adapted) PDF (Adapted) |

Chapter 4

Two-Cycled Design Research: Qualitative Bounded Case Study

4.1   Introduction

Research design contributes towards the rigour and the feasibility of a study and prepares the researcher for the execution—the methodology—of the research (Mouton, 2001). Researchers should plan for all the procedures, processes and strategies according to the research tradition relating to the study (Marshall & Rossman, 2011).

While Chapter Two, the literature review, clarifies terms like TPD, ODL and OERs, Chapter Three deals with an overview of the Gabonese education system and the implementation of ICT in the Gabonese education system, as well as the use of OERs in the curriculum of the teacher training college, ENS. This chapter concerns the research design and methods which guided the researcher on his research journey in order to address the research question. A research design is therefore considered as a blueprint to conduct an investigation and to negotiate the issues which may interfere with the trustworthiness of the research findings (Grove *et al.*, 2003). Research design depicts the manner of how data are obtained; describing the how, when and where of dealing with the data to be collected and analysed (Polit & Hungler, 1991). Methodology, on the other hand, deals with the strategies to conduct the actual study according to the research design.

Figure 4.1 illustrates the research design and methodology followed during this study as a flow diagram of the main methodological strategies. This chapter is presented according to the outline presented in this figure.
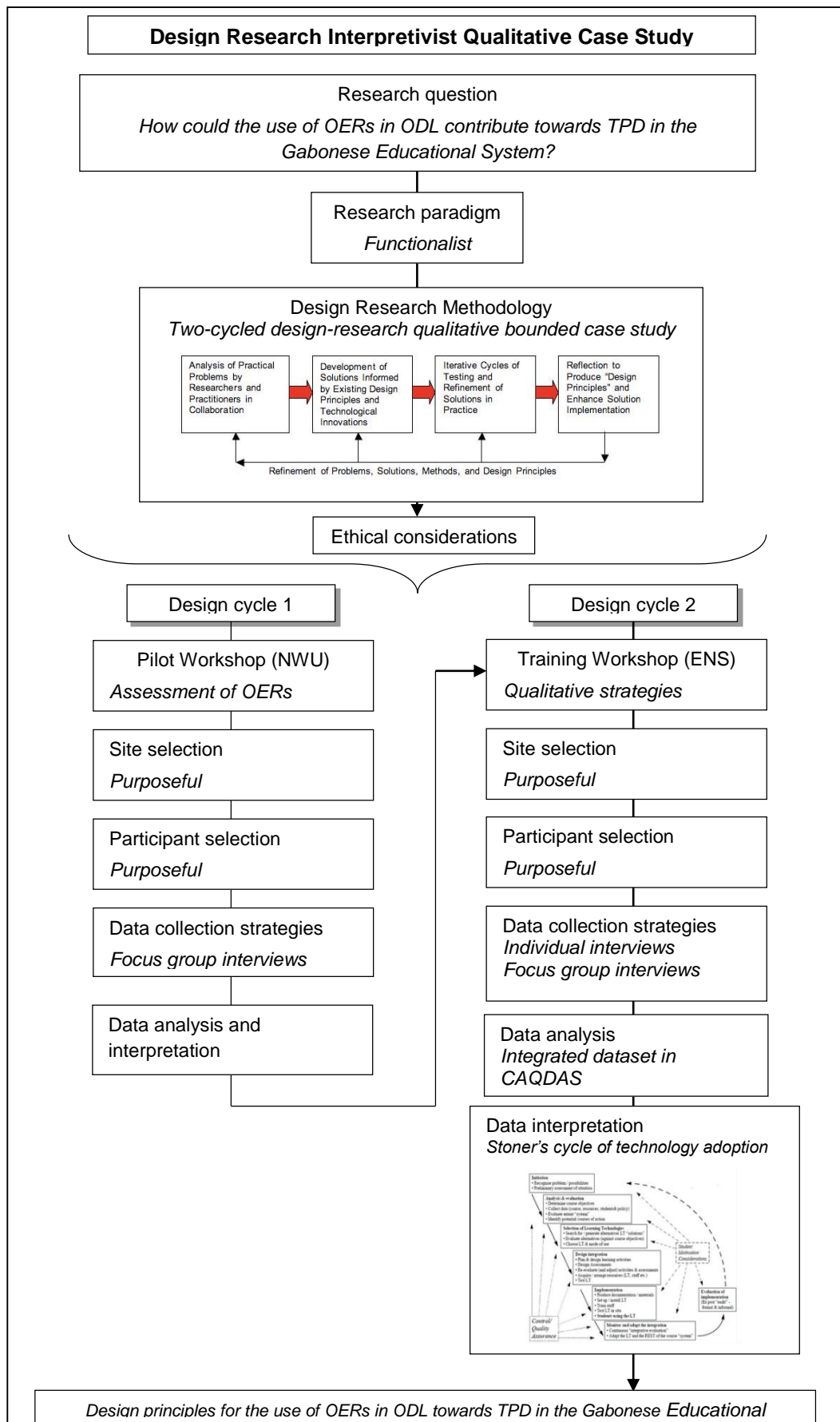
Figure 4.1: Research design and methodology followed during this study

4.2 Research Question

Parahoo (1997) states that the research question is the kingpin of a research design as it provides the point of departure for researchers to commence with their investigation. Rees (1997) maintains that the research question should match the knowledge and the understanding of the topic through a systematic process of relating and pertinent information. The current research aims to assist the researcher to uncover understanding of the use of a new curriculum of the Department of English at the ENS in Gabon who wishes to incorporate the use of OERs for TPD at ENS in Gabon.

The research question which underpins the research design and methodology for this study is: *What are the guidelines for the use of open education resources in open distance learning for teacher professional development in Gabon?* The use of OERs in ODL for TPD could benefit the Gabonese education system and academic institutions by providing support to students and in-service teachers during their training.

4.3 Research Paradigm

The term paradigm originates from the Greek word *paradeigma* which means pattern and they first used the term in the domain of science (Kuhn, 1970). Kuhn defines the paradigm as a research culture that encompasses beliefs, values, and assumptions. Babbie and Mouton (2001) claim that a paradigm provides a worldview for our observations which shapes what we observe and how we understand everything. A paradigm is "made up of the general theoretical assumptions and laws, and techniques for their application that the members of a particular scientific community adopt" (Aguilar *et al.*, 2013:19). Researchers should focus their research within the specific paradigm which relates to the assumptions that would assist them to select a research design and the methodology appropriate to their investigation (De Vos *et al.*, 2011).

In order to uphold my theoretical position and assumptions for this research, I employed the Burrell and Morgan (1979) model to determine an appropriate worldview for the current study. This model resulted from longstanding debates and makes use of four sets of assumptions relating to the world of science: ontology, epistemology, human nature and methodology—all of which relate to sociological positivism. These sociological traditions resulted in Burrell and Morgan's four distinct sociological paradigms: radical humanist, radical structuralist, interpretive and functionalist. These four paradigms, or worldviews, which define our understandings of the social system, are based on the meta-theoretical assumptions of the nature of sociology and of society (Hassard, 1991) (Figure 4.2). The figure also indicates the relative position of where I, the researcher, position myself in terms of this current study in the functionalist quadrant where the study will be conducted according to an interpretivist view on the research question.
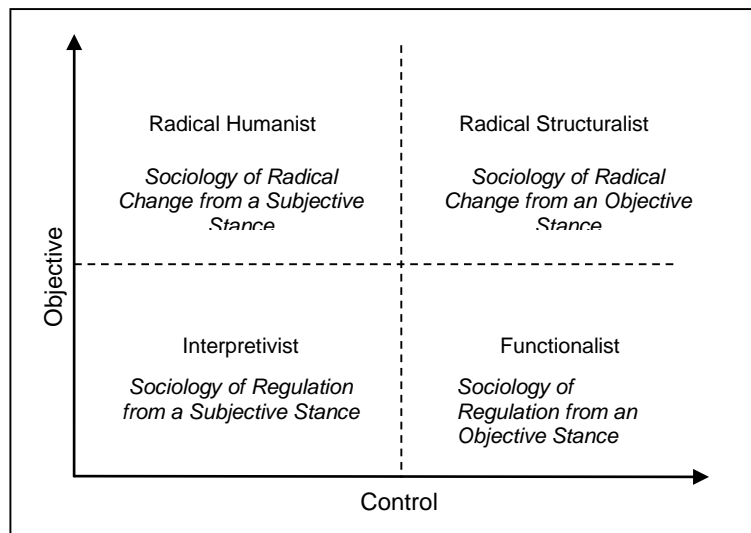
Figure 4.2:   The Four Paradigms for the Analysis of Social Theory

In order to explain the four paradigms as depicted in Figure 4.2, I briefly discuss the four quadrants: (i) the radical humanist paradigm presents the ideological superstructures which dominate the consciousness of man; (ii) the radical structuralist paradigm encompasses the beliefs which are based on the nature of societal structures which involves radical change. This indicates that contemporary society is characterized by fundamental conflicts that generate radical change through political and economic crises; (iii) the interpretivist paradigm explains the stability of behaviour from the individual's point of view. It considers the world "as it is" in terms of ongoing processes and it emphasises the spiritual nature of people; and (iv) the functionalist paradigm is based on human affairs which provide rational explanations and solutions of real-life problems (Burrell & Morgan, 1979).

As this study aims to provide a practical solution to a higher education institution, the study is plotted in the functionalist quadrant. The rationale for this positioning is that much control is operational in the teaching and learning of English on higher education level *per se*. Contrary to this high level of control of an instructional problem, little is known about the perceptions and experiences of lecturers at the ENS in Gabon pertaining to OERs and technology-enhanced learning. The study therefore has many characteristics which relate to phenomenology: working at grassroots level on a novel human issue. Therefore the positioning of the study is in the functionalist quadrant, but it has ties with the interpretivist quadrant.

4.3.1   Functionalist Paradigm

The functionalist paradigm has its roots firmly in the sociology of regulation. In its overall approach it seeks to provide essentially rational explanations of social affairs. (Burrell & Morgan, 1979). Although pragmatic in its perspective, the functionalist paradigm is concerned with understanding the society in a way which generates knowledge which could be put to use. Although rooted in

sociological positivism, the fuctionalist paradigm can easily apply rules of both natural science and social science traditions. It therefore easily assimilates concepts and relationships between objective facts and human understanding, making it versatile in terms of the use of methodologies to address research questions. The social sciences require a research philosophy which is based on three principles:

- The social world is constructed and given meaning subjectively by people. Human beings are subjects that have consciousness, or a mind; while human behaviour is affected by knowledge of the social world, which exists only in relation to human beings.
- The researcher is part of what is observed.
- Research is driven by interests (Myers, 2009; Vosloo, 2014).

When research is approached from a more interpretivist approach, the findings are not generalizable. Vosloo (2014) is of the opinion that an interpretivist approach can only be produced based on the experience of people. It cannot be repeatedly renewed each time people wish to run an experiment as human experiences hold true for that specific moment, and experiences could change. Knowledge is gained and theory is developed through initial ideas, observations and the interpretation of social constructions. The role of the researcher is to make sense of the social phenomenon. Solving problems through an interpretivist approach, as in this study, provides an understanding of social realities and they offer meaningful explanations on intricate social issues (Vosloo, 2014). This study does not aim for generalizability, but seeks a solution for a social issue at a specific site encompassed in specific boundaries (§ 4.72).

4.4   Design Research Methodology

The research methodology which will be used during this study is design research (DR) which has at its heart the addressing of real-life problems and the proposing of solutions, especially where technology plays a part in the solution (Reeves, 2006). Design research (previously also known as design-based research, or design experiments) seems a viable method as it requires more than a single collection of data on the research phenomenon. DR involves simultaneous interaction with design and research methods that allow researchers to generate useful products and build theory while solving individual and collective issues of using technology in education (Reeves, 2006). The current research necessitates that I, the researcher, move beyond other design exemplars to generate evidence-based claims about learning (Barab & Squire, 2004) with technology in collaboration with participants. The instructional solution needs to: (i) collect data on the research phenomenon, (ii) improve teaching and learning practices through iterative analysis, design, development, and (iii) implement the technology-based solution in a real-world setting (Wang & Hannafin, 2005). It therefore requires the use of technology in teaching and learning, as well as intensive and long-term collaboration involvement of researchers and practitioners (Reeves, 2006) at a specific site of implementation.

Qualitative research is concerned with gathering data to build concepts, hypotheses or theories instead of deductively testing hypotheses. The product of qualitative research is abundantly descriptive because words rather than numbers are used to express what has been discovered about the phenomenon (Merriam, 2009a). During qualitative research the researcher acts as observer or interviewer to obtain information he/she needs from the participants. This research requires the researcher to gather information from the participants after a process of analysing OERs, evaluating OERs, planning of learning activities, and designing activities for TPD in Gabon. Design research seems a viable method as it requires more than simply gathering information about the research phenomenon (Barab & Squire, 2004). It improves education practices through iterative analysis, design, development, and implementation of practices in real-world settings (Wang & Hannafin, 2005) that should be possible due to the use of technology in education. Reeves (2006) posits that DR protocols require intensive and long-term collaboration which involves researchers and practitioners.

Design research is defined as a process that integrates design and scientific methods to allow researchers to generate useful education interventions and effective theory for solving individual and collective problems of education (Easterday *et al.*, 2012). It relies on techniques used in other research paradigms, like thick descriptive datasets, systematic analysis of data with carefully defined measures, and consensus building within the field around interpretations (The Design-based Research Collective, 2003).

Design research is conducted as a collaboration of researchers and practitioners in a real-world setting. Only two principal outputs—design principles and empirically underpinned innovative interventions—can be realised. Doing research in such a setting is challenging and demands a careful research design. It is therefore important to reflect not only on the cyclical, iterative character of the systematic design of the intervention, but also because it is required to make explicit the tenets (rigor, relevance and collaboration) that form the foundation of this type of research (McKenney *et al.*, 2006; Plomp, 2006). McKenney (2001) summarises design research as situated in a real education context which provides a sense of validity to the research and ensures that the results can be effectively used to assess, inform, and improve practice in at least one (and likely another) context. Plomp (2006) states that four phases: (i) needs or contextual analysis; (ii) design or formative evaluation of the prototype tools; (iii) a summative assessment; and (iv) the systematic reflexion and documentation characterise design research.

During the investigation in the first three phases of the Stoner (1996) model for the use of learning technologies, the researcher performs systematic reflection and documentation to produce the required scientific harvest in the form of theories or design principles. Plomp (2006) is of the opinion that these cycles can be represented on the horizontal axis. Each cycle consists of a number of activities which involve different groups of participants, which could include experts and/or users. The vertical axis represents the number of participants in relation to the cycles of the

research. This study aims to determine how the initiation of the use of OERs in ODL could contribute towards TPD in Gabon.
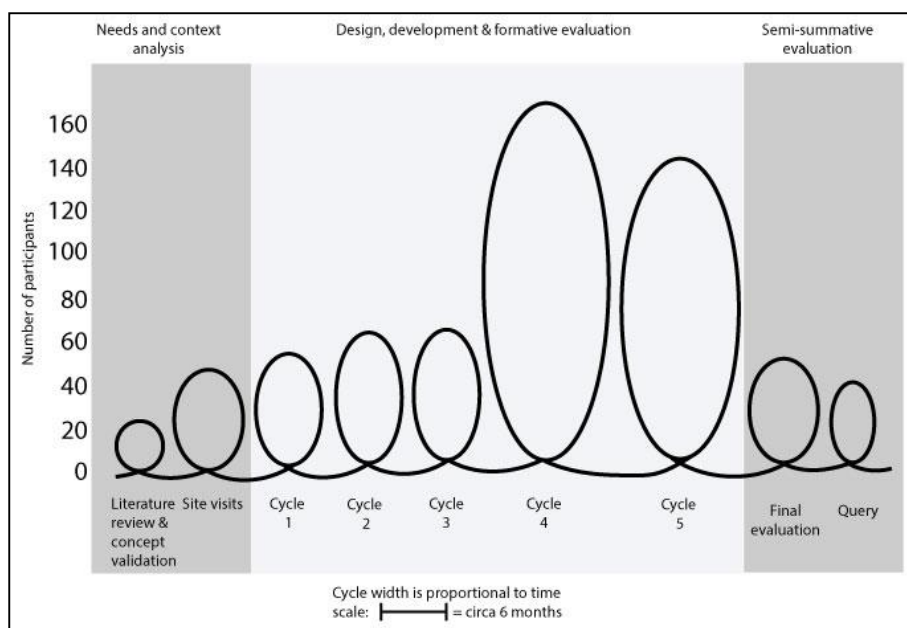
Figure 4.3:   **The Two *Design Research* Cycles of the Study ((Analysis and Evaluation, Selection of Learning Technology and Design Integration used During this Study (Adapted from McKenney (2001))**

4.4.1   Two-Cycled Design-Research Qualitative Bounded Case Study

This study makes use of a bounded case study related to a specific teacher training college in Gabon. A case study aims to provide an intensive, holistic description and analysis of a single and bounded unit situated in a specific context in order to provide understanding of a real life issue (Merriam, 2009a; Pickard, 2013; Ponelis, 2015). The characteristic which defines case study research is its focal point on *how* and *why* questions (Myers, 2009). These questions of how and why make case study appropriate for descriptive and exploratory studies (Mouton, 2001). A case study describes a process or processes, individual or group behaviour related to its environment, and/or a part of events in which the behaviour occurs (Stake, 2005). In social science research, typical units of analysis include individuals, groups, social organisations and social artefacts. The unit of analysis of this study comprises the Licence 1 lecturers at the Teacher Training College (ENS) of Gabon.

A case study is "a systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest" Bromley (1990:30). It is a description of a phenomenon of interest, e.g. education. Zucker (2009:2) clarifies the definition by stating that case study research is "an empirical inquiry about a contemporary phenomenon (e.g. a case), set within its real-life context-especially when the boundaries between phenomenon and context are not clearly

evident." The inquiry is related to a real phenomenon which is limited in time, place and people. In the current study, the bounded unit comprises the lecturers involved with Licence 1 level at the teacher training college, ENS (§ 3.6.2). The approach which will be followed during this phenomenological inquiry is a qualitative bounded case study, structured as two cycles of data collection: (i) a pilot workshop as Design Cycle 1 and an empirical workshop as Design Cycle 2 (§ 4.6.1; §.4.7.1). Reeves (2006) depicts the design research approach as illustrated in Figure 4.4.
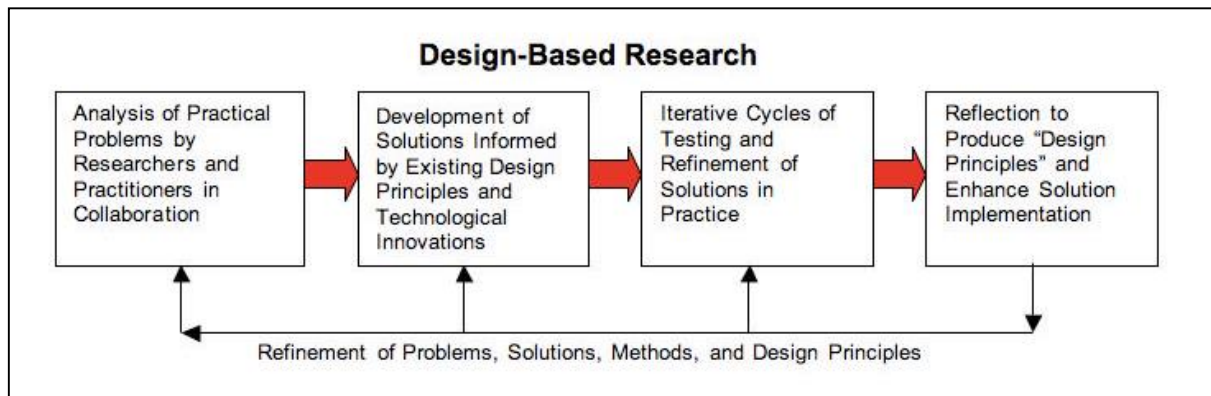
Figure 4.4:   Refinement of Problems, Solutions, Methods, and Design Principles*
(Reeves, 2000; Reeves, 2006)

4.4.1.1 Analysis of Practical Problems

The Gabonese education system is framed according to the model of the French education system. The education system is primarily based on primary, secondary and higher school teaching and learning. The Gabonese government deals with the aspects of building schools, paying salaries to teachers and lecturers, and also providing student bursaries. It is also involved in the development and improvement of curricula. During my Master's study in 2012 (Ndoutoume, 2012) I observed that there was not an established curriculum for English at ENS, and after inquiry determined that the situation has not changed, even in 2017. Lecturers manage by covering the programme as best they could with English resource documents they collect from libraries and the internet. Regarding the training of ICT, two ICT specialist lecturers provide teaching of ICT, despite frequent disturbances of internet. The head of the Department of Documentation is the person responsible for the training of ICT at ENS.

4.4.1.2 Development of Solutions

OERs provide users of available resources with the opportunity to choose between four levels of openness. Wiley (2009) identifies these as the "four Rs:" (i) reuse, (ii) redistribute, (iii) revise and (iv) remix. Reuse presents the most basic level of openness which allows people to use OERs for their own purposes (Wiley, 2009:5). As the reuse is the most adaptable option for this study due to circumstances at Gabon, I selected to adopt OERs on this level and make them available to

lecturers and students to use OERs without cost. These technology-enhanced learning materials relate to content of English in Licence 1 at ENS. The ultimate goal is that lecturers of the English Department at ENS will be enabled to use OERs as part of the facilitation of their courses. The use of OERs could motivate the Department of English to resolve the issue of no acceptable institutional curriculum in an organised way.

4.4.1.3 Development of Solutions Informed by Existing Design Principles and Technological innovations

Gabon comprises a unique culture, economy and education system. Many private businesses in Gabon use the internet and ICT devices, but the problem of insufficient knowledge on the use of ICT across education and business remains. The use of ICT in teaching and learning could improve the education of Gabonese students and consequently also the world of work.

ENS and ENSET are anticipating the improvement of internet access to their institutions. Their access to the internet is limited to 2G. ENSET subscribes to the internet via an asymmetric digital subscriber line (ADSL) with a 2G capacity. However, ENS is awaiting the l'Agence Nationale Des Infrastructures Numeriques Et Des Frequences, the National Digital Infrastructure Agency And Frequencies (ANINF) to provide stable Internet access to the institution. Due to the disputed Gabonese elections of 2016, there was no Wi-Fi available at ENS and the delivery of email and attachments were infrequent (Addendum 4.1).

ENS encompasses two computer rooms with fifteen computers each while ENSET has only one computer room with fifteen computers. The Department of Documentation at ENS comprises nine full-time and four part-time lecturers, able to train students in the use of ICT, if there is access to the internet. Access to quality learning materials, available online, is therefore extremely restricted. However, this remains an issue which the Gabonese government has to deal with as progress has been particularly limited and is long overdue (§.4.4.1.1) (Dib, 1987). Figure 4.5 depicts buildings on the ENS campus where the focus group interview took pace.

Figure 4.5:   Buildings on the ENS Campus

4.4.1.4 Iterative Cycles of Testing and Refinement of Solutions in Practices

The first iterative cycle (Design Cycle 1) of this study took place on the Vanderbijlpark campus of the North-West University in the form of a pilot study workshop. The aim of the workshop was to soundboard the curriculum I designed and the OERs encompassed in the curriculum with a group of educators across comparable sites of learning. After interaction with the compiled curriculum and OERS, the participants to the pilot workshop reflected on the curriculum and the possible use of the OERs. Figure 4.6 depicts an aerial view the Vanderbijlpark Site of Delivery of the North-West University which can be classified as a rural university with diverse students and lecturers.

Figure 4.6:   Aerial view of the Vanderbijlpark Site of Delivery of the North-West University

The second iterative cycle (Design Cycle 2) of this study took place at ENS in Gabon despite the school disturbances resulting from extensive strikes in Gabon (Addendum 4.1). I managed, with great effort and after numerous attempts, to organise an empirical workshop, despite difficult circumstances at ENS. After interaction with the compiled curriculum and OERS, the participants to the pilot workshop reflected on the curriculum and the possible use of the OERs. Figure 4.7 depicts the researcher facilitating the workshop at the NWU as part of Design Cycle 1 and Figure 4 at the ENS as part of Design Cycle 2.

Figure 4.7:   **The Researcher Presenting the Workshop at NWU during Design Cycle 1**
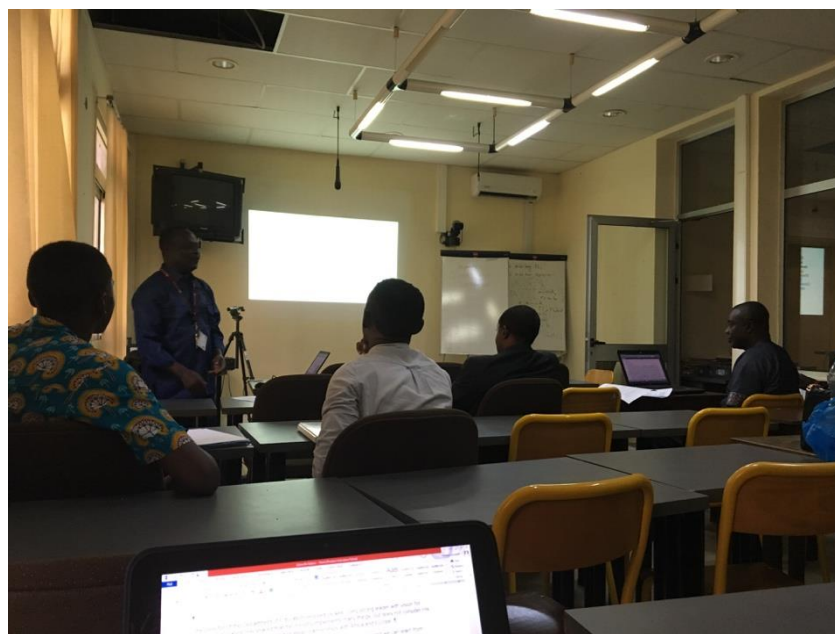
Figure 4.8:   **The Researcher Presenting the Workshop at ENS during Design Cycle 2**

4.4.1.5 Reflection on Design Cycles in order to Create Design Principles for the Enhancement of the Solution

Each design cycle resulted in a new set of design principles and theory which were implemented during the following cycle in order to improve the proposed solution. The pilot workshop performed at NWU produced a number of design principles and the empirical workshop at ENS resulted in additional design principles and new theory. Data collection comprises focus group interviews in order to compile the design principles; after these the researcher composed guidelines for the implementation of OERs in ODL for TPD in Gabon (Reeves, 2006).

4.5 Ethical Considerations

Ethical considerations refer to the quality of research procedures regarding their adherence to professional, legal, and social obligations to the research participants. It is the branch of philosophy that deals with morality (Polit & Beck, 2004). The term moral refers to the ensemble of rules governing researchers' actions and values, and which function as a norm in a society (Margot, 2009). When researchers make ethical decisions, they should consider (i) who benefits from the research, (ii) the selection of participants, (iii) the protection of confidentiality and anonymity of the participants, (iv) the obtaining of informed consent, (v) the prevention of conflict of interest, (vi) the procuring of ethical clearance, and (vii) the security and storage of the integrated dataset. The researcher has to pay particular attention to the way in which data are captured, analysed, interpreted, and presented, as well as to possible bias of the researcher. The researcher should therefore consider these aspects throughout the study and provide evidence that these were adhered to.

The direct benefits of the research relate to the lecturers' (participants in the study) newly gained knowledge and skills and their ability to use OERs in ODL in their teaching and learning—the TPD they have gained. The indirect benefit relates to the community who would benefit by the better trained education professionals who might assist in the delivery of better-informed students who in their turn, could contribute towards the social and economic development of Gabon.

The researcher purposefully selected the research participants of Design Cycle 1 according to pre-defined criteria (Addenda 4.2, 4.4 and 4.5). All participants in the study participated voluntarily and anonymously. The researcher carefully explained the research process and ethical conditions to the participants at the beginning of each design cycle. The confidentiality and anonymity of the participants were further protected as they worked in groups and no names or any personal information appeared anywhere in the study in order to protect the participants (Dunn, 2013). The main tenet was to ensure that no harm was done to the participants in the study (Patton, 2002). Before data collection, the researcher obtained formal permission and ethical clearance from the

North-West University's BASREC Ethics Regulatory Committee, Ethics number NWU-HS2015-0073. Permission and consent to conduct the research at the Faculty of Humanities (NWU) (Design Cycle 1) and at ENS (Design Cycle 2) are available as Addenda 4.3 and 4.4.

To avoid research bias, the researcher analysed data without the names of the participants and in a systematic way according to the constant comparative method of Boeije (2002). The captured data relating to the two design cycles are available on the CDROM at the back of the dissertation as an integrated dataset and presented as word document of the Atlas.ti™ hermeneutic unit (Addendum 4.5). Copies of the integrated dataset will also be stored on the P-drive of the Faculty of Humanities on the Vanderbijlpark site of delivery of the NWU for at least seven years. Each participant will receive an electronic copy of the final research report during a feedback session (Merriam, 1998).

4.6   Design Cycle 1

The Design Cycle 1 resulted in an iterative trial run, presented in the format of a pilot workshop—with participants at the NWU who were practically comparable to participants at ENS—in order to scrutinize the quality and appropriateness of OERs selected to be used in ODL for TPD at ENS in Gabon. During the Design Cycle 1 workshop, the following aspects were elucidated: (i) defining the concept curriculum, (ii) the unpacking of the curriculum compiled for the English Department at the ENS, (iii) the presentation to be introduced at the English Department at the ENS; and the implementation of the OERs at the English Department at the ENS, (iv) the possible advantages and the challenges of implementing OERs at the ENS.

4.6.1   Design Cycle 1 Workshop

In general, a pilot study comprises a small-scale version, or trial run, of the main study (Holloway & Wheeler, 2002). The purpose of the pilot study was to obtain a qualitative evaluation on how to further develop the design principles developed during Design Cycle 1. Pilot studies *per se* are seldom used in qualitative studies, but due to the format of design research, they are necessary to attain design principles and develop theory before evaluation with the target group audience. The aim of the workshop was to, in group format, ascertain, debate on, make suggestions on, and improve the OERs as the design principles resulting from Design Cycle 1. The NWU participants conclusively joined in a focus group interview to construe the design principles as the research outcomes from Design Cycle 1 (Chapter Five) from which new design principles and theory emerged.

4.6.2 Site Selection

Site selection is important as it places constraints on the research, mainly in terms of generalizability (Curtis *et al.*, 2000) as site selection should be based on a sample population. In this case, the lecturers of the Faculty of Humanities at NWU represented the participants (sample population) of the study. Although some English subjects of the Faculty of Humanities corresponded to ones presented at the Department of English at ENS in Gabon, the use of ICT at the NWU is more advanced than at ENS.

4.6.3 Participant Selection

The participants for the workshop were purposefully selected (Bryant & Charmaz, 2007). Purposeful sampling is "a method of sampling where the researcher deliberately chooses who to include in the study based on their ability to provide necessary data." The sample is often quite small. Sampling continues until data saturation has been reached Tuckett (2004). This indicates that the number of study participants, their ethnicity and gender is difficult to determine ahead (Merriam, 1998; Patton, 2002). The researcher purposefully selected the participants according to a set of criteria: they had to (i) be lecturers in English; (ii) have a good curriculum knowledge of English (Addenda 4.2, 4.3 and 4.4); (iii) have been teaching English on higher education level at least five years; and (iv) participate voluntarily (Merriam, 1998). Four female lecturers participated in the Design Cycle 1 workshop.

4.6.4 Data Collection Strategies and Data Analysis

The data collection strategy at the NWU followed the same pattern as at the ENS (Design Cycle 2) with the research participants as indicated. The analysis of the data followed the same pattern as in Design Cycle 2 (§ 4.75). The same Atlas.ti§™ hermeneutic unit was used to capture and analyse the data as during Design Cycle 1 in order to be able to indicate the progress in the design principles and theory resulting from the analysis (§ 4.7.5).

4.6.5 Data Interpretation

The interpretation of the data followed the same pattern as in Design Cycle 2 (§ 4.7.6).

After the analysis and interpretation of the data of the Design Cycle 1 workshop, new design principles emerged and a new theory was formulated which was used as basis for the compilation of guidelines for the use of OERs at the ENS in Gabon.

4.7 Design Cycle 2

During Design Cycle 2, the researcher organised a follow-up workshop at ENS in Gabon. The design principles of the first workshop comprised the basis for the presentation and documentation of the design. In Chapter Five, these aspects are indicated.

4.7.1 Training Workshop

The empirical workshop took place with lecturers and ICT experts of ENS in Gabon. The researcher and the participants were involved and contributed towards a new set of design principles and theory for the use of OERs at the ENS in Gabon.

4.7.2 Site Selection

In a qualitative research, the researcher is the key to the instrumentation process (Fraenkel & Wallen, 2009). His/her role may vary relating to the techniques to collect the data. The main functions which emerge from these techniques could be (i) participant, (ii) observer, (iii) observer as participant, or (iv) complete observer (Fraenkel & Wallen, 2009). I shifted between these roles, but primarily remained participant as observer. During the pilot study workshop at the NWU, I envisaged my role as participant observer when we, researcher, students and lecturers, were evaluating the advantages and the challenges of the design integration of the use of OERs in ODL for TPD. In Gabon, my role remained the same (participant observer) when I conducted workshops with lecturers of the ENS as research participants. During and after the workshops, I performed interviews with the research participants, elucidating their perception and lived experience on the use of OERs in their teaching and learning practices. I conducted the workshops and interviews in French, and collected data. ENS was the research site of this investigation for the initial use of OERs in ODL to improve TPD.

4.7.3 Participant Selection

Design Cycle 2 comprised nine English lecturers and five students of License 1 from ENS (Addendum 4.6). An introductory session had been held at ENS a day before the empirical workshop to let lecturers know what the workshop was about. The selection criteria were that they were: (i) lecturers of English in the department of English; (ii) lecturers of ICT in the department of documentation, or (iii) Licence 1 students from ENS. There was only one female among the interview participants.

Tuckett (2004) states that selecting research participants (sampling) continues until data saturation after analysis has been reached. This implies that the number of participants in the study is difficult to predict (Merriam, 1998). The researcher should therefore continue with interviews until

data saturation is reached. Data saturation depends on (i) the complexity of data, and (ii) the experience of the investigator (Guest *et al.*, 2006). Therefore, it is reliant on the capabilities of the researcher and also has no predictable boundaries (Guest *et al.*, 2006; Ryan & Bernard, 2004). In summary Glaser and Strauss (1967:65) define this milestone as the point at which:

> "no additional data are being found whereby the researcher can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated…when one category is saturated, nothing remains but to go on to new groups for data on other categories, and attempt to saturate these categories also."

4.7.4 Data Collection Strategies

In Gabon, I organised workshops during which I interacted with lecturers from ENS. I invited lecturers to participate in the design integration of OERs in the Gabonese education system (Addendum 4.6). I did not know the lecturers personally, or have knowledge about their areas of specialisation. Merriam (2009a) states that a small sample size will enable the researcher to have an in-depth understanding of the research phenomenon and not to seek statistical generalization. Participants were selected on the basis of availability (Bryant & Charmaz, 2007). I also approached the directors of the two colleges to request as many lecturers as possible to be part of the study in order to help the researcher establish the effectiveness of the use of OERs for the Gabonese TPD via ODL (Fraenkel & Wallen, 2009).

To ensure adequate data for data saturation, the researcher employed a strategy of focus-group interviews with open-ended questions. This allowed the participants to freely talk and share their experiences. Open-ended questions do not require the selection from a given range of responses and participants answered questions in their own way and in their own words. During the focus group interview, an interview schedule and the participant information leaflet and consent form were handed to participants to engage them in the interview and make them think about what the interview might cover (Bodgan & Biklen, 2007).

4.7.5 Data Analysis

Although English is recognised as a foreign language in Gabon, it is hardly spoken at all in everyday life. Accordingly the workshop and interviews were conducted in French. During the pilot workshop at the NWU there was no need to use a translator as all the participants could speak English. However, at ENS some participants could not speak English (Addendum 4.7). The participants checked the transcriptions for correctness and signed off on the transcriptions to confirm their contributions (Addendum 4.8). Professional translators from the ENS verbatim translated the text which was used as textual data during the analysis. The transcribed interviews were captured in Atlas.ti™ (Addendum 4.9) as a hermeneutic unit. I analysed the data and my supervisor checked the codes and categories to ensure trustworthiness of the analysis.

Established qualitative researchers from the NWU assisted me during the data-analysis and interpretation process.

I made use of a grounded-theory approach of Boeije (1990) according to the method of constant comparative content analysis of (Boeije, 2002). The method of comparing and contrasting is used for practically all intellectual tasks during analysis: forming categories, establishing the boundaries of the categories, assigning the segments to categories, summarising the content of each category, finding negative evidence, etc. The goal is to discern conceptual similarities, to refine the discriminative power of categories, and to discover patterns (Boeije, 2002).

Saldaña (2009) posits that grounded theory underpins the instances of the concepts occurring in the data. Thus both the research method and the output of the research process could have the same name, which could be confusing (Andrews & Scott, 2013). In the case of this research, the theory formed the backdrop to the aspects concerned with the initiation of the use of OERs in ODL for TPD in the Gabonese education system. The photographs (researcher-generated documents) will be used as confirmation of incidents and will provide context for the issues and experiences captured in the analysis (Merriam, 1998). Most could not be included in the study due to protection of personal information as promised during the Ethics Clearance of this study.

Glaser and Strauss (1967) developed the methodology of grounded theory in 1967 by using a research method with no *preconceived* hypothesis: "The grounded theory approach is a qualitative research method that uses a number of procedures to develop an inductively derived grounded theory about a phenomenon" (Strauss & Corbin, 1990:24). They used continually comparative analysis of data. They believed that the theory obtained by this method was truly grounded in the data. For this reason they named the methodology *grounded theory* as researchers need a method that allows them to move from data to theory. Such theories would be specific to the context in which they had been developed. Grounded theory, therefore, was designed to open up a space for the development of new, contextualized theories (Willig, 2013). He posits that grounded theory relies on method (identification and integration of category) and theory (product). As a method, grounded theory shows researchers how to make links between categories and how to establish relationships between them. As a theory, it provides researchers with an explanatory framework with which to understand the phenomenon under investigation.

I made use of Atlas.ti™, a computer-assisted qualitative data analysis system, during the analysis of the qualitative data of the Design Cycles 1 and 2 of the study. I had previously received training on how to use Atlas.ti™ (Addendum 4.10) and my supervisor, who is an ATLAS.ti™ expert, checked my coding and analysis.

4.7.5.1 Trustworthiness of the Research

Trustworthiness of the research relates to the confidence in the entire conducting of the investigation. Trustworthiness has many components like credibility, validity, dependability, and reliability.

4.7.5.2 Credibility or Validity of the Integrated Dataset

Credibility relates to the confidence we have in the quality of the data (Polit & Hungler, 1991) taking into account that the research findings originate from interactions of people who participated in the study. A demonstration of the credibility ensures the dependability of the findings to the data (Shenton, 2004). Using *overlapping methods* such as the focus group interviews makes such demonstration possible. To address the dependability issue more directly, the researcher has to report the processes within the study in detail, repeating the work and gaining the same results (Shenton, 2004).

4.7.5.3 Reliability of the Study

Analysis of findings should be logical, traceable and documented, presented in a reflexive way by means of a detailed account of the research. I explained the research from the first to the last chapter. This contributed to the reliability of the study.

4.7.6   Interpretation of the Data

The data were captured and analysed with the fourth phase of the Stoner (1996) system life cycle of learning technology integration, i.e. the design integration and its components, in mind as conceptual framework. The interpretation of the findings resulted in new design principles (Figure 1.1). This figure illustrates the cycles according to the four phases of the Stoner (1996) conceptual framework used during this study. Stoner phase 1 (initiation) and phase 2 (analysis and evaluation) encompassed two cycles. Stoner phase 3 (selection of learning technologies) and phase 4 (design integration) related to five cycles.

4.8   Summary of the Chapter

This chapter described in detail the research question, the research paradigm, and the research design methodology that were used in this qualitative exploratory of an understanding of the use of OERs in ODL for TPD of Gabonese lecturers. The research received particular attention to collect reliable and valid information aimed to the use of OERs in ODL for TPD in Gabon at NWU at the Vanderbijlpark site of Learning and at ENS in Gabon. Two workshops (a pilot workshop of Design

Cycle 1 and an empirical workshop of Design Cycle 2) were used to collect data and analyse the data to look for what could be the design principles for the guidelines of the implementation of OERs in the Gabonese Education System.

Chapter Five presents the design principles and technology innovations derived from the research findings of the first iterative cycle and the data from the focus group interviews. Chapter Five and Chapter Six will be used for the integration of the design principles in the framework of Stoner's Systems Life Phases and Technology.

Chapter 5

Stoner's Systems Life Phases of Learning Technology Integration: Design Principles and Technology Innovations for Design Cycle 1

5.1   Introduction

Chapter Four described the qualitative design research methodology used in this study and the two-cycled design research qualitative bounded case study as the method for data collection. Chapter Five describes the design principles and technology innovations of the first iterative cycle—pilot workshop (Addendum 5.1) for the use of OERs in ODL for TPD in the Gabonese Education System (§ Figure 4.1). Chapter Five and Six with the design principles will integrate the 3rd and 4th phases of Stoner's Framework.

This chapter communicates the findings of the focus group interview after the pilot workshop with four English lecturers to assist me to assess the OERs for teaching English as a second foreign language. The participants have experience in teaching in face to face, blended, and distance education modalities and they were best suited to assist me to assess the selection of OERs to address the research questions for this study, *How could the use of OERs in ODL contribute towards TPD in the Gabonese Education System?* Their insights were valuable to refine the structure of the workshop before I had to present it to lecturers and pre-service teachers in Gabon (Addendum 5.2). The pilot workshop was presented in one full day. I provided refreshments and breaks to ensure that they were comfortable. To ensure trustworthiness the promoter and a peer checked the coding of the interviews.

5.2   Themes, Categories and Codes

Figure 5.1 illustrates the themes, categories and codes which materialised from the analysis for testing and refinement of design principles and technology innovations relating to the use of OERs in ODL towards TPD.

After the transcription of the focus group in ATLAS.ti™, I constructed an integrated dataset which identified six categories of data related to three themes, i.e. OERs, TPD and ODL. The six categories are: (i) Challenges of OERs, (ii) Enablers of OERs; (iii) Challenges of TPD, (iv) Enablers of TPD; (v) Challenges of ODL, and (vi) Enablers of ODL. There were fifteen codes which materialised from the analysis. Figure 5.1 shows the three themes which encompass each two

categories. The subsequent sections explicate the findings according to the three themes: Selection of OERs, TPD, and ODL.
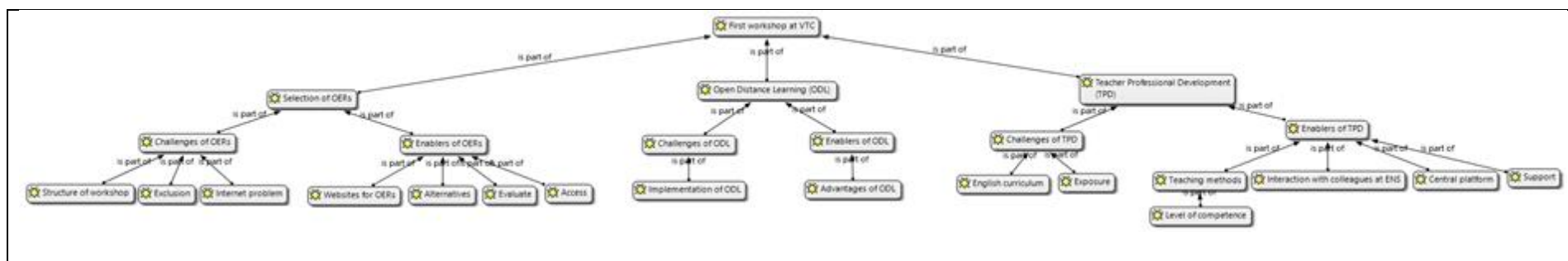
Figure 5.1:   Three Themes, Six Categories and Fifteen Codes

5.3   Selection of Open Education Resources

The selection of OERs that is the first theme encompasses the factors related to the challenges and enablers of OERs. The codes related to challenges were: structure of the workshop, exclusion of OERs and Internet access. Figure 5.2 illustrates the network view for the challenges and enablers for the selection of OERs. The following sections will discuss the challenges and enablers of the use of OERs for pre-service and in-service TPD in Gabon.
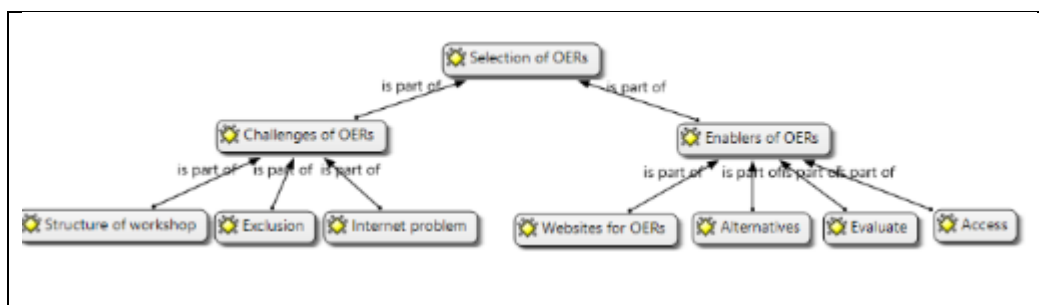
Figure 5.2:   Challenges and the Enablers of the Selection of Open Education Resources

5.3.1   Challenges of Open Education Resources

Three challenges were identified in terms of OERs: Structure of the workshop, exclusion, and internet issues.

5.3.1.1 Structure of the Workshop

Regarding the workshop, a participant found that there were some aspects that did not need to be pointed out during the workshop. These aspects were related to curriculum that the lecturers already knew. Carl (2005) states that the curriculum is developed by lecturers and they need some guidance to implement it. The participant mentioned that pointing them out was in somehow useless as, according to the participant, the lecturers knew them:

> *I'm going to say something terrible now but I *****, I mean I don't think the need; they know the curriculum, they should know what the curriculum, the hidden curriculum (P1:89).*

Some participants thought that OERs should be the focus of the workshop. OERs regarded and understood as education resources: curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and any other materials designed for use in teaching and learning that are openly available for use by educators and students (Butcher *et al.*, 2011:5). The participant argued that those additional resources did not contribute to the curriculum anyway:

> *I would make it much more focused, start make the open education resources my focal point with, ok so we have this let's take this, how*

would this contribute to the curriculum, the hidden curriculum? The
**** curriculum whatever (P1: 72).

The same participants said it would be useful or relevant to show to the students some OERs (one, two or three) rather than to give them all of these notions related to curriculum like the informal or hidden curriculum and extra curriculum (UNESCO, 2004), notions that they already know. It would be better to explain to the lecturers the *what* and the *how* of OERs during the workshop instead of wasting time giving them those notions. The participant argued that going directly to the relevant topic, OERs, would be beneficial in time and intellectually:

But more guide them at least with one or two or three of these
resources on how to decide how to use it, how to decide what would
be relevant and what not and then instead of bombarding them with
all of it and then (P1:72).

OERs will be presented to the lecturers and they can search for them through activating the given links. The participant believes that doing it that way will facilitate the understanding of the "*what and the how"* to use OERs:

G*oing and telling them, now go and look at these and I don't know,*
that would be my way of doing it, but it's a personal thing (P1: 72).

Having provided the links, they can evaluate some of the OERs. They will have time to look for them instead of going after a myriad of them that they will not be able to find. They will take care of evaluating them. Thereafter, they will use them:

G*ive them, do one or two where you guide them on how to evaluate a*
resource (P1: 72).

The participants acknowledged that the work done by me was in done depth. However, they felt that I provided too much background on the context:

Because if like, we got them now, it's quite overwhelming. Yes, we did
need the background that he gave us, but I mean most of that they
should know that living there (P1: 72).

One participant commented that the OERs selected to address the curriculum came from the same resource and some of the links could not open:

Also focusses on one resource quite a lot the MIT ones I don't know
why they wouldn't open for us so that's something he would look into
none of us could open the MIT ones there was another one of that
work so. I think he's according to me he relies a lot on one education
resource. I don't think that's a problem necessarily but there are others
available (P1: 80-81).

After arguing on the choice of one, two or three OERs, the participant would like me to invite the lecturers to work on those OERs so that they will know how to communicate them to their students.

> *Yes, which in his workshop he would have to show those lecturers that they should design, to work towards that, you know because seeing as he wants to illustrate, in order for them to learn how to convey again to their students (P1: 115).*

I need to guide the lecturers to select the OERs (Smstefan, 2016) that are important to achieve the course outcomes:

> *I really would like to say that he would help them, you would have to help them to select what is important like you said, because all of it is just too much, they will have to select and decide what is important and I think that's where they will need training most, or support or guidance call it what you want (P1: 119).*

Another participant raised the idea of context, stating that the contexts are different and that the number of and the choice of OERs depend on the learning context. The participant indicated that the selection of OERs with information was relevant. :

> *I'm not sure because there's also this idea of context, every context is different and definitely selecting with information is relevant (P1:123).*

For that reason, the focus of the workshop should change from what I have done, given that OERs are numerous and they are difficult to be found. My guidance is necessary to help the lecturers to be able to find and use OERs:

> *That brings me to what I said with the focus of the workshop, should change, should shift a bit from what was done here today, because I think all of us here are actually quite well versed in finding resources and using them, but for somebody who; If his aim is to assist them obviously their skills are not necessarily, you know at the level where they're capable of this (P1: 121).*

The same participant stated that the lecturers or the teachers did not all have sufficient pedagogical knowledge. This explains why the lecturers very often search in books and on the Internet looking for information about what they have to present to their students when preparing their courses:

> *But there's also those times where, how much must the teacher know and how do you streamline that as to this is this sort of basics that every teacher should know (P1: 123).*

It is also important to acknowledge that students have the ability to search for resources as well. Therefore, the lecturers should be well trained to be able to evaluate OERs (UNISA, 2017) so that they can select the best resources to achieve the outcomes. When the lecturers are well trained enough, they will know quickly where to find and how to use OERs in their different courses without effort:

> *Isn't that the idea that he wants, is that the view of open education resources eventually is realized and that they start realising, "when I'm faced with a question that I'm not sure myself, where do I go and find help for my students and how do I help them to..." I don't know (P1: 125).*

5.3.1.2   Exclusion

The OERs selection criteria involves content and the context Smstefan (2016). If the OERs selected do not fit with the content of the context (ENS in Gabon), the resources should be excluded from the list. The participants were concerned about the length, difficulty level, relevance, and the content of some of the text:

> *Some of the quizzes wouldn't open but you can obviously rework that, make a printable worksheet and use that in your classroom as well I'm a little concerned about the difficulty level and the length of some of the texts. It bores students and they don't want to do it and I don't know how relevant it still is (P1:15).*

5.3.1.3 Internet Issues

In Gabon the internet is controlled by the government and it is costly for students to have access to online resources (Panapress.com, 2003). Therefore it would be beneficial to make use of OERs which they can access and download:

> *If they don't have Internet, it is a problem (P1: 19-20).*

5.3.2   Enablers of Open Education Resources

The enablers identified from the integrated dataset were: websites for OERs, alternative resources, evaluation and internet access.

5.3.2.1 Websites for Open Education resources

Many websites are available in which to access OERs; this enables lecturers to probe for versatile resources to achieve the specific outcomes for teaching English as a foreign language. One of the participants mentioned some additional websites which I could access:

> *Well there was that site with the triple c's (P1:9).*

> *Also a beautiful site that I used a lot when I taught English, there was*
> *another one that I used; there are also free sites (P1: 93).*

5.3.2.2 Evaluation or Assessment

Evaluation and assessment of OERs will depend on the specific learning outcomes. Even though OERs offer opportunity for people to share, use and reuse them everywhere, they could be difficult to find and evaluate (Allen & Seaman, 2014). This was evident when one of the participants indicated that some of the OERs selected for the pilot workshop did not address the learning outcomes of the curriculum and were too easy or difficult for students to use:

> *I'm a little concerned about the difficulty level and the length of some*
> *of the texts (P1:15).*

However, if the learning outcomes are clear, the lecturer can select and assess the OERs.

5.3.2.3 Alternative Resources

Okamoto (2013) encourages, as alternative to textbooks, the use of videos that students could view until they grasp concepts. This creates the same experience as a lecturer who communicates facts or demonstrates procedures in the learning activities (Galbraith, 2004). Participants acknowledge the usefulness of videos when teaching. The videos could reduce time students spend on finding information and the contact sessions could be used for more creative activities:

> *That covers everything from like where English came from to where*
> *we are today, so that's one way to overcome 200 pages of reading,*
> *is a video (P1: 19).*

Videos, once converted, could be kept and played anytime. You do not need to have internet every time. Lecturers should be encouraged to use videos in a context where internet is still expensive (Panapress.com, 2003):

> *Videos are nice if you, because you can actually download them and*
> *convert them and then you don't always have to have the internet (P1:*
> *20).*

Videos and lyrics are good when you use them for the illustration of a course of phonetics and students play the video to grasp some pronunciation of words:

> *I think that is a marvellous video to just illustrate the concept of*
> *phonetics for students to understand it which is easier than a whole*
> *thing to read (P1: 20).*
> *You could click on and they would either read you a story or it was a*
> *song or something (P1: 13).*

As regard to the websites, one participant showed additional websites which I could access:

> *But it's also a beautiful site that I used a lot when I taught English,*
> *there was another one that I used; they are also free sites (P1:93).*

5.3.2.4 Open Access

Open access refers to the magnitude of resources that are available for students and lecturers to use. Lecturers can access the resources and use them to explain a concept to students and utilise the assessment activities if they align with the learning outcomes and assessment standards:

> *Rainbow resource; it's a nice pdf guide that you can actually print and*
> *have like a little text book, guide (P1: 36).*

5.4   Teacher Professional Development

TPD at ENS is the second theme from the integrated dataset. It comprises two challenges and five enablers relating to the use of TPD at ENS in Gabon. These factors deal with aspects like English curriculum and exposure; teaching methods; level of competence; interaction; central platform, and support.
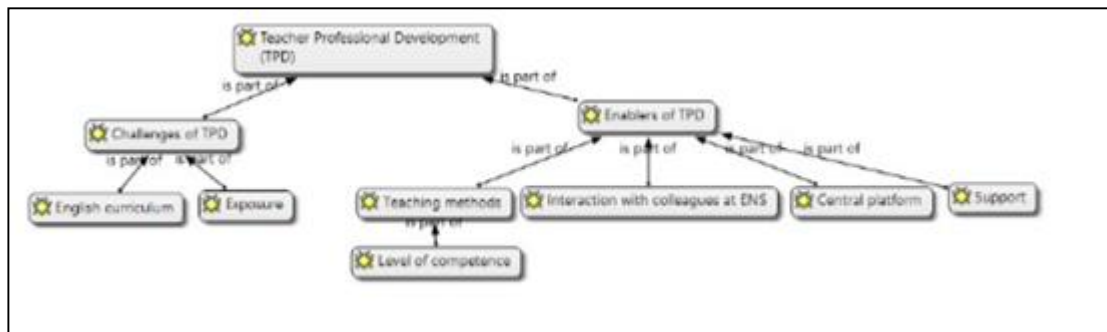
Figure 5.3:   Challenges and Enablers of Teacher Professional Development

5.4.1   Challenges of Teacher Professional Development

The challenges of TPD identified from the integrated dataset are: English curriculum and exposure.

5.4.1.1 English Curriculum

The curriculum should be restructured as is OBE in South Africa (Aston, 2008) even though the teachers do not use it. Everything that the lecturers intend to teach to the students should be part of the curriculum. It guides what would be relevant and what would not be. "*Content is what we teach and what the learner is expected to learn, that is, to know, understand or be able to do*"

(Department of Basic Education, 2011). According to the participants, a curriculum should include everything related to teaching and learning of English:

> *Definitely with designing the curriculum, deciding on the, How to*
> *expose the learners to English, what am I going to do, what am I going*
> *to teach? (P1: 24; 34).*

Therefore, the lecturers involved with in-service and pre-service teacher training should be competent to teach English at intermediate level:

> *But the teacher trainers need to know what to train the teachers for (P1: 141).*

5.4.1.2 Exposure

Skolverket (2011) states that language inside the classroom distinguishes students, stimulating some students and having the opposite effect on others. This could stand for the case of ENS where speaking English remains difficult for students either, in the classrooms or outside the classrooms. The English classroom activities should create opportunities for students to converse in English and motivate them to speak English more:

> *I think this could really work because exposure is the main problem*
> *they are not exposed to English (P1: 7).*

ENS used to send their pre-service English students for one year of training abroad to countries where English is spoken and taught as the first language or the second language like England or South Africa (Staff Writer, 2015). During this training, students were accommodated by English families for the period of the training. However, currently students do not receive funding to participate in student exchange.

5.4.2   Enablers of Teacher Professional Development

The TPD enablers identified from the integrated dataset encompass: teaching methods, level of competence and interaction, central platform and support.

5.4.2.1 Selection of Open Education Resources for Pre-Service and In-Service Training

OERs give lecturers a set of education blueprints they can use to build their own courses and to improve their pedagogy. The lecturers that will be trained on the OERs need to work through them in order to know and understand what they are going to teach. They also will have to make OERs fit with what they have to teach. The formal or traditional grammar instruction seems to be the best to use for the good understanding of the students (Jaeger, 2011) of Licence 1:

> *So I like the formal thing, you know, the rules of language and*
> *grammar and the conjunctions I think it's amazing. So I think that if*

they read this and they go through it, to teach it would be something
different (P1:7).

As mentioned above, that will be part of their daily work. Grammar also flexibility when learning it. Patterson (2001) states that teaching grammar conveys flexibility from lecturers to students, for example in the choice of the content. However, the lecturers have to know and master what to teach to students:

> *Because that would imply that they would have to select what is*
> *important, so to link it to the didactic and things like that, but for teacher*
> *I think this could work, this could really work (P1: 7).*

A participant thought that the issues of understanding and speaking that some of her colleagues mentioned before would not work here as the teaching and learning would be based on the rules of language and grammar (Jaeger, 2011). The participant continued, stating that the content of English should be related to the context relevant to the level of Licence 1. Understanding grammar is important, because students need to understand the language they speak in order to be effective communicators:

> *The approach that I think that I think we mainly take now here wouldn't*
> *work here, so this is, I think it's good (P1: 7).*

In fact, the lecturers have to know their curriculum and the level of the students so that they can adapt the training to the level. However, students should be receptive:

> *Definitely with designing the curriculum, deciding on the, what am I*
> *going to teach, how to expose the learners to English? What am I*
> *going to do? What am I going to teach? But the teacher trainers need*
> *to know what to train the teachers for (P1: 57).*

5.4.2.2 Level of Competence

Teachers are the most important school-based factor that influences students' achievement levels (Muzenda, 2013). The lecturers at the Department of English at ENS have either a Master's degree or a PhD degree. They all obtained their post-graduate qualifications at an institute where English is used as first or second language. These lecturers should know their students' expectations at the end of every training. Therefore it is clear that the lecturers at ENS are competent to teach. This substantiates the comment of one of the participants:

> *They are considered to be at an intermediate level at least, so they*
> *must have some; at least enough English skills because that brings*
> *to the difficulty, the difficulty thing so I assume that the lecturers*
> *would be slightly above intermediate level, I don't know if you've*
> *been there?*

The level of competence should contribute to enhancing both the status and attractiveness of the profession (European Union, 2009) by the improvement of the teacher professional development.

5.4.2.3 Interaction of Colleagues with Open Education Resources

Regarding the use of OERs by the lecturers, a participant claimed that I should present them at least three OERs and show them how to find and use them:

> *But more guide them at least with one or two or three of these resources on how to decide how to use it, how to decide what would be relevant and what not and then instead of bombarding them with all of it and then, going and telling them, now go and look at these and I don't know, that would me my way of doing it, but it's a personal thing is to, give them, do one or two where you guide them on how to evaluate a resource or something and then send them (P1: 72).*

According to the participant, instead of making the lecturers learn how to convey OERs to the students, I should guide the lecturers how to select the OERs so that they be able to choose them and work with them themselves:

> *Yes, which in his workshop he would have to show those lecturers that they should design, to work towards that, you know because seeing as he wants to illustrate, in order for them to learn how to convey again to their students (P1: 115).*

The one participant said that I should shift the focus of his workshop by showcasing two, three or four OERS so that they could see how they work:

> *That brings me to what I said with the focus of the workshop, should change, should shift a bit from what was done here today, because I think all of us here are actually quite well versed in finding resources and using them (P1: 121).*

According to the participant, if I guide them to select the OERs and allow them to search on their own then they would have to show how far they could be able to find and use OERs using their skills.

> *But for somebody who; If his aim is to assist them obviously their skills are not necessarily, you know at the level where they're capable of this, I don't know... what do you think C? (P1: 121).*

The level of competence of lecturers will make their interaction easy and will help them to work jointly with their students. Despite the difficulty of the use of Internet, the lecturers will find a way to make use of OERs for their students in their teaching and learning.

5.4.2.4   Central Platform

One participant stated that the use of a platform could be good. The platform would help the lecturers and the students to communicate when they have work to do. The platform should be the place where lecturers and students could share their experiments:

> *What are the possibilities of like a platform that they can constantly communicate? (P1: 68).*

5.4.2.5   Support

According to the participants, my help is necessary in the selection of OERs. D'Antoni (2009) claims that the sharing of education resources offers us a powerful means to expand learning opportunities. The lecturers should look for those OERs that are important for their programme and combine them with it. The participants stated that I should help the lecturers to select OERS:

> *I really would like to say that he would help them, you would have to help them to select what is important like you said, because all of it is just too much, they will have to select and decide what is important and I think that's where they will need training most, or support or guidance call it what you want (P1: 119).*

The participant repeated what he had already said: when the lecturers are assisted by me, they do not need any skills. However, they will need skills when there are not assisted, when they are working by themselves. From that moment, according to the participant, the lecturers do not need to waste their time on the things they already know like the curriculum:

> *That brings me to what I said with the focus of the workshop,*
> *Should change, should shift a bit from what was done here today,*
> *Because I think all of us here are actually quite well versed in finding resources and using them, but for somebody who; If his aim is to assist them obviously their skills are not necessarily, you know at the level where they're capable of this, I don't know... what do you think C? (P1: 121).*

5.5   Open Distance Learning

From the integrated dataset one challenge and one enabler emerged for ODL: the implementation of ODL and the advantages of ODL. Figure 5.4 Indicates the challenges and enablers of Open Distance Learning.

Open Distance Learning (ODL)

is part of   is part of

Challenges of ODL   Enablers of ODL

is part of   is part of

Implementation of ODL   Advantages of ODL
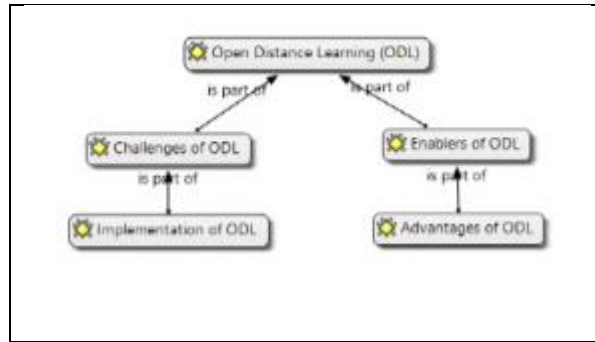
Figure 5.4:   Challenges and Enablers of Open Distance Learning

5.5.1   Challenge of Open Distance Learning

The challenge of ODL identified from the analysis was: Implementation of ODL.

5.5.1.1 Implementation of Open Distance Learning

Tino (2002:4) states that ODL is a model where there is a separation of teacher and learner in time and place or both time and place, with the use of a variety of media that allow learners and tutors to interact in occasional face-to-face sessions. In Gabon, the implementation of ODL will depend on the policy and the willingness of the government. The government should be interested in the improvement of the teaching and the learning of the Gabonese students who are in need of schools and lecturers. The crucial shortage of schools and teachers could make the government change its mind and decide to implement ODL at ENS.

5.5.2   Enablers of Open Distance Learning

The enabler of ODL identified pertains to: the Advantages of ODL.

5.5.2.1 Advantages of Open Distance Learning

The implementation of ODL could be a motivational advantage for the students who are in the situation of giving up school, increasing the number of young workless in the country. The implementation of ODL will make the Gabonese education system rise to the level of the nations that already use ODL.

5.6   Design Principles and Technology Innovations of the First Iterative Cycle

After the analysis of the pilot workshop and the focus-group interview, some relevant points appear like the cornerstones in the use of OERs at ENS in Gabon. Even though the education system, the

ICT tools and the fluidity of Internet used in South Africa are very different from those used at ENS in Gabon, the results of the pilot workshop helped me to amend the empirical workshop to be presented at ENS in Gabon. The core findings assisted me to formulate the design principles and technology innovations for the first iterative cycle. Table 5.1 lists the design principles and innovative technologies for the first iterative cycle identified during the analysis from the interview data, which was conducted after the workshop.

Table 5.1: **Design Principles and Innovative Technologies Conceptualised from the First Iterative Cycle**

Aspect	Design principles and Technology Innovations
Challenges of OERs	
Workshop Structure	Emphasising the curriculum to a lesser extend
	Focussing on OERs
	Testing the OERs before presentation
	Activating the links with the lecturers
	Guiding the lecturers to use the OERs independently after the workshop
	Capitalising on students' knowledge and skills
	Selecting the OERs to fit the context
Exclusion	Excluding the resources not applicable to achieve learning outcomes
Internet Issues	Accessing OERs for teaching English as a foreign language
Enablers of OERs	
Websites for OERs	Finding other resources and websites
Evaluation or Assessment	Searching for resources on the developmental level of students'
Alternative Resources	Accessing other Websites for finding resources
	Downloading videos for students to watch as an alternative to books
Open Access	Downloading resources as PDF documents to use for students
Challenges for TPD	
English Curriculum	Restructuring the English curriculum
	Training students to become English teachers
Exposure	Creating opportunities for students to communicate in English
Enablers for TPD	
Selection of OERs for Pre- and In-Service Training	Adapting the OERs to fit their curriculum
	Understanding grammar and the rules of the English language
	Knowing what and how to teach
Interaction of Colleagues with OERs	Studying abroad helps students to develop their English
	Interacting with the OERs
	Showcasing some OERs and then letting lecturers do their own selection
	Guiding lecturers to use OERs
Central Platform	Identifying a central platform for lecturers and students to engage in and have the OERs
	Supporting the lecturers when they select and start to use the OERs
Challenges of ODL	
Open Distance Learning	Willingness of Government to support ODL
Enablers of ODL	
	Enabling students to work and study at the same time

5.7 Adaptations to the Structure and Content of the Workshop for the Second Iterative Design Cycle

Based on the findings, I adapted the structure and content of the workshop for ENS in Gabon. Most of these adaptations address the challenges identified during the first iterative cycle of the

workshop. Table 5.2 summarises the adaptations made to the structure and content of the workshop.

Table 5.2:   **Adaptations made to the Structure and Content of the Workshop for the Second Iterative Cycle**

Aspect	Adaptions to Structure and Content of the Workshop
Workshop Structure	Made OERs the focus of the workshop
	Matched the curriculum outcomes with the OERs
	Tested all the OERs and links before the workshop
	Downloaded the PDF document which could be used in that format and uploaded it in a central place
	Ensured that the venue had good Internet access
	Included the pre-service teachers in the workshop and listened to their recommendations
Exclusion	Excluded all the resources which did not adhere to the language specification of Gabon
	Selected OERs to fit the context
Websites/Alternative Resources	Activated additional free websites to find more information
	Found more resources and other forms (songs, videos, stories) to address the outcomes
Interaction of Colleagues with OERs	Provided colleagues with the opportunity to interact with the OERs and select their own OERs with guidance
Central Platform	Created a Google Drive for lecturers and pre-service teachers to access and share the resources
	Supported lecturers to work with the OERs

5.8   Summary of the chapter

This first part of the chapter dealt with the research findings that I collected from the pilot workshop at VTC with the English lecturers (four participants) during the focus group interview process. The participants responded to the research question focusing on the use of OERs in ODL for TPD in Gabon. From the integrated dataset, the data analysis showed three important themes stemming from the research field, the Gabonese education system: OERs, ODL, and TPD at ENS in Gabon. Each of these comprised two categories: challenges and enablers. Based on the findings and the design principles identified from the first iterative cycle, the adapted workshop was presented at ENS in Gabon, the second iterative cycle of the design research. Chapter 6 presents the findings of the workshop for English lecturers and pre-service teachers at ENS in Gabon.

Chapter 6

Stoner's Systems Life Phases of Learning Technology integration: Design Principles and Technology Innovations for Design Cycle 2

6.1   Introduction

Chapter Five described the findings from the first iterative design cycle (pilot workshop at VTC) in order to ascertain the design principles and technology innovations. Additionally I was able to do the adaptations to the structure and content for the workshop at ENS in Gabon. This chapter describes the findings of the second iterative cycle—design principles and technology innovations for, *How could the use of OERs in ODL contribute towards TPD in the Gabonese Education System?* The workshop was conducted in one day as it was the amount of time the Department of English at ENS could spare to accommodate me in their busy academic schedule. The workshop was presented in English. The group encompassed six English lecturers, three Information Technology Specialists, and four pre-service teachers at Licence I level. I invited the lecturers from ENSET as well, but none of them were able to attend. The focus group interview was conducted in both English and French as I wanted the pre-service teachers to be comfortable to share their views in a language which was familiar to them. I provided them with refreshments and a break to ensure that they were comfortable. The focus group interview was recorded and transcribed by an independent peer (Addendum 6.1). The Head of the Department at ENS assisted me to check whether the translations were correct. The data were analysed in Atlas.ti™.

The following sections present the findings of the focus group interview, and outline the design principles and technology innovations of the second iterative cycle of the research.

6.2   Themes, Categories and Codes

After the transcription of the focus group interviews in ATLAS.ti™, I had an integrated dataset with eight categories of data related to four themes, i.e. Education context at ENS in Gabon, OERs at ENS in Gabon, ODL at ENS in Gabon, and TPD at ENS in Gabon. The eight categories are: (i) Challenges of Education context at ENS in Gabon, (ii) Enablers of Education context at ENS in Gabon, (iii) Challenges of OERs at ENS in Gabon, (iv) Enablers of OERs at ENS in Gabon; (v) Challenges of ODL at ENS in Gabon, and (vi) Enablers of ODL at ENS in Gabon, (vii) Challenges of TPD at ENS in Gabon, and (viii) Enablers of TPD at ENS in Gabon. Fifteen codes materialised

from the analysis. Figure 6.1 illustrates the themes, categories and codes from the inductive analysis.
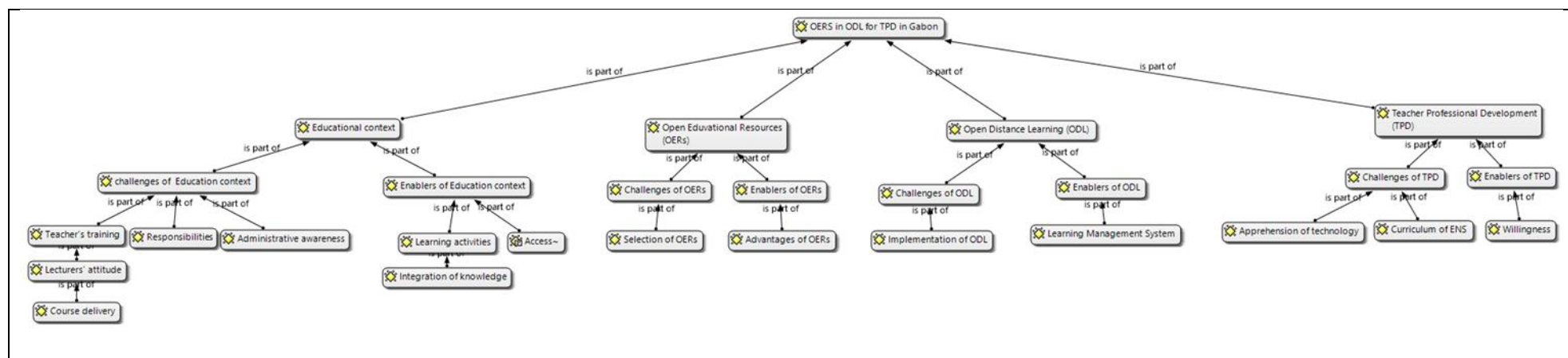
Figure 6.1:   Four Themes, Eight Categories and Fifteen Codes

The following sections explicate the findings according to: (i) Education Context, (ii) OERs, (iii) TPD, and (iv) ODL.

6.3 Education Context

The first theme encompasses Education Context with a sub-theme of Challenges of Education Context and Enablers of Education Context. Figure 6.2 illustrates the Challenges and Enablers of the Education Context.
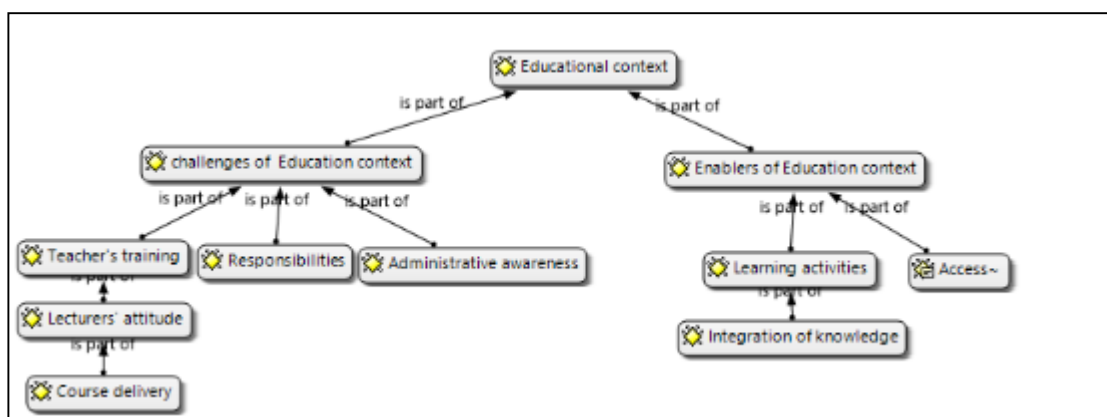
Figure 6.2:   Challenges and Enablers of the Education Context

6.3.1   Challenges of Education Context

The Challenges for the Education Context are as follows: Teacher Training (lecturers' attitude, and course delivery), responsibilities, and administrative awareness.

6.3.1.1 Teacher Training

Most of the lecturers at The Department of English are close to retirement and there are not any new English lecturers appointed and trained for contingency purposes. The lecturers are discouraged by the methods which the Gabonese government applies to organise and deliver education. Moreover, teacher training through ODL is the only option at ENS as many in-service teachers cannot leave their jobs to attend PD. In order to establish ODL as a mode to deliver teacher training, access to internet is imperative. Unfortunately, internet access at ENS is problematic. Besides, the participants acknowledged that lecturers do not have a positive attitude regarding ICT PD, and some lecturers refuse to take part in the training.

> *There is a problem of training (training problem)[1] (P2:12).*

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[1] il y a un problem de formation[1]

The level of competence of teachers depends on the training of the teachers and their work with students in the school. A competence is "a complex combination of knowledge, skills, understanding, values, attitudes and desire which lead to effective, embodied human action in the world, in a particular domain" (Deakin Crick, 2008). The European Commission (2013) states that "The knowledge, skills and commitment of teachers, as well as the quality of school leadership, are the most important factors in achieving high quality education outcomes." The lecturers should have all the necessary requirements for the benefits of students. However, some participants state that some lecturers may not have a Master's degree which is the required level of proficiency in English to teach.

> *The teacher is not at the level (the teacher's level)[2] (P2:25).*

According to some participants, teachers will improve their teaching instruction when the TPD remodels the traditional teaching (Jerald, 2012) and this will influence teachers' classroom practices, enhancing student achievement (Richardson, 1999). However, the improvement of TPD depends on the quality of the training.

> *What you are talking about you are mostly speaking of the improvement of the quality of training [3] (P2:38).*

The participants stated that the introduction of ICT alone in teaching will not change the learning process. The use of ICTs should enable teachers to transform their teaching practices despite that teachers refuse the use of ICT. As regards ENS, participants find it difficult to make lecturers interested in ICT, given that they refuse to attend training. However, some participants do not want to give up and still continue to invite lecturers and teachers to TPD.

> *…encourage if there are some colleagues that are not interested [4]*
> *we have to attract (ask) them to come or we tell them to be retired by*
> *anticipation[5] (P2: 16).*

6.3.1.2 Lecturers' Attitude

Some ICT specialists from ENS expressed their despondence with lecturers that are not interested in using ICT. The lecturers were invited to take part to the ICT TPD and they often quit before the end of the lecture programme.

> *They were less than ten lecturers and they started to be absent (ICT*
> *training at ENS)[6] (P2: 14).*
> *It is a more complex problem[7] (P2: 14).*

---

[2] l'enseignant n'est pas au niveau[2]
[3] il s'agit plutôt d'améliorer la qualité d'enseignement et d'apprentissage[3]
[4] Les encourager s'il ya des collègues qui ne veulent pas s'intéresser à ça [4]
[5] bein on les attire ou bien on leur dit ha écouter prenez la retaite anticipée[5]
[6] ils sont venus peut-être moins de dix pourtant ils sont nombreux[6]
[7] et ils ont commencé à s'absenter c'est un problem beaucoup plus complexe[777]

Participants continued stating that trust is a fundamental human experience, necessary for society to function and for any person to be relatively happy (Zak *et al.*, 1998). According to some participants, Gabonese people have developed scepticism and are often afraid of being part of any initiatives:

> *We have to take into account our mentalities, Gabonese people are*
> *very sceptic [8] (P2:21).*

6.3.1.3 Course Delivery

Renewal of resources is a big issue in Gabon and especially at ENS where the lecturers need to use the same resources as those of institutions abroad. Agaba *et al.* (2004) claim that ICT might provide links to the outside world and increase Intra-African exchange of information. Apart from the use of ICT that is not developed at the Gabonese universities yet, the different libraries in those universities should be provided with new resources that the students and lecturers could use for teaching and learning purposes. In fact, the Gabonese education system needs to pay attention to the resources they propose to the students in the schools and universities as the systems are linked to the other education systems abroad where their students go to continue their studies. Some participants state that lecturers always use the same document for years because of insufficient resources:

> *We are glued to a document, it is the same document during the whole*
> *career (the course delivery)[9], if we are not told that it is not anymore*
> *the same, we do not realize it[10] (P2:40).*

MindShift (2012) states that classrooms were designed for lecture and crowd control and the teacher was the central figure of knowledge and authority. Even though the structure of the classroom has not changed, there is a magnitude of OERs for students to learn and share knowledge. The participants claimed that that it would be difficult to use new teaching with OERs at ENS:

> *In the old days, the teacher was considered as the depositary centre*
> *of knowledge[11] the limits that are at the level of ENS; to do what our*
> *brother is proposing are difficult[12] (P2:38).*

6.3.1.4 Responsibilities

The Gabonese government is responsible for education and should ensure quality education for each Gabonese citizen (Republique du Gabon 1966). Gabonese people expect the government to

---

[8] il faut tenir compte de nos mentalités, les gens sont très sceptiques[8]
[9] Lorsqu'on est colle a un ouvrage c'est le meme toute la carrière[9]
[10] tant qu'on ne nous dit pas ce n'est plus cela on ne s'en rend pas compte[10]
[11] Autrefois, l'enseignant était considèré comme le centre dépositaire des connaissances[11]
[12] les limites qu'il y a au niveau de l'école normale supérieure pour faire ce que le frère est entrain de proposer les idées sont là les ressources sont également là sauf que les conditions sont difficiles[12]

settle any problem related to education, like internet. The government is responsible for all the sectors in the country: education, economics, politics, etc. Therefore, the participants think that the government should provide schools with the necessary resources to improve the quality of teaching and learning. The participants recommended communicating with the role players in government in order to let them know about their issues:

> *Let's try to be closer to the politics for some lasting solutions I think it*
> *is a challenge that at the level of administration those who have the*
> *power to influence those who decide they have to help us so that ENS*
> *be equipped (the impact of the decision-makers)[13] (P2:7).*

Regarding ENS, the participants admitted the difficult conditions in which they are working there. According to the participants, their wish is to have these educational matters solved so that they could have better working conditions for students and even themselves, especially improving internet access at ENS:

> *The conditions are difficult and we need more than two ears which*
> *can exactly do what you have just said to go to the decision-makers*
> *to tell them to make the internet functional[14] (P2:20).*

Currently there is one computer laboratory with fewer than ten computers at ENS for students with internet access. Figure 6.3 represents an image of this facility. The Gabonese government has to provide more capital for infrastructure (computers) so that lecturers, in-service and pre-service teachers can access the OERs and TPD initiatives.

Figure 6.3:   Computers for Students to Access

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[13] Essayons de nous rapprocher des politiques pour quelques solutions durables je pense que c'est un défi que au niveau de l'administration ceux qui ont le pouvoir d'influencer les décideurs il faudrait vraiment qu'ils nous aident pour que vraiment l'ENS soit équipée[13]

[14] Les conditions sont difficiles et on a besoin de plus de deux oreilles qui peuvent justement faire ce que vous venez de dire, dire aux décideurs de faire parce que là c'est important problem d'accès il faudrait que l' internet soit fonctionel[14]

6.3.1.5 Administrative Awareness

The Gabonese government does not provide the universities with resources to incorporate in their teaching and learning. Even though old books or other resources are still available in the library at ENS, the library books should be renewed and additional new resources should be added to align with the trends and innovation in education across the world. The participants claimed that there are no new resources at ENS:

> *As lecturers or teachers, we are exposed to a problem of documents (documents' exposure)[15], we should know that most of us we have studied here[16] (P2:3).*

The participants stated that after their training abroad they return to Gabon without accumulating any form of resources which they can use to enhance their teaching:

> *We come back without any documents [17] (P2:5).*

The only place where they could find books at a lower price is in the second-hand (Gare Routière) bookstore:

> *Because to have the documents we do not need to go to Gare Routiere (place to buy second hand[18] (P2:3).*

The participants acknowledge that teaching in Gabon is a difficult task, and especially so at ENS where lecturers are supposed to give to the students the best of themselves. However, the lecturers should have at least some of the required resources (ICT and internet) necessary for the teaching. The students will become teachers at grammar schools and need to be well trained. To be well trained means that the students should access and use the internet for their research. However, this is not the case in Gabon:

> *There is a problem of tools all the problems of the world how to do[19] (P2:5).*

School books and other resources need to be renewed to allow the students and the lecturers to be at the same level as others across the world. Participants state that books and other resources become outdated when they are not renewed (Campo Yagüe *et al.*, 2012). Teaching tools ranged from the use of the blackboard and chalk pre-eighties, using slides and overhead projectors in the eighties, using presentation software in the nineties, and incorporating video, interactive whiteboards, learning management systems, and currently iPads and smartphones. The participants' stated that the resources used at ENS should be renewed regularly:

---

[15] Entant que enseignants, nous sommes exposés à un problème de documentation[15]
[16] il faut comprendre que pour la plupart nous avons fait des études ici[16]
[17] malheureusement nous revenons souvent sans documentations[17]
[18] parce que pour avoir des ouvrages on ne va pas se contenter de la gare routière[18]
[19] il y a un problème d' outlis tous les problèmes du monde comment faire[19]

Even if we order the documents from abroad they will be obsolete[20] (P2:5).

The participants argued that the issue of training students does not only concern the students doing Licence 1 at ENS, but all the students from any Gabonese university:

That doesn't only concern the teachers of Licence 1, it goes very far and it doesn't stop at ENS, it goes to the UOB and the Ministry of Education.[21] (P2:12).

6.3.2   Enablers of Education Context

The context enablers identified from the integrated dataset are: Learning Activities, Integration of Knowledge, and Access.

6.3.2.1 Learning Activities

The implementation of any resource requires some relevant objects, tools and technical support that will make it possible (Olsen, 2017). Participants acknowledge that they could work with OERs, but the successful implementation depends on the support of the government:

The ideas are there; the resources are also there[22] (P2:20).

The participants stated that the use of OERs in their context can be implemented with the improvement of internet at ENS and obviously with the agreement of the government:

How to transmit using what you have presented there[23] (P2:12).

However, there are lecturers who do find courses on the internet and make use of them in their teaching:

But today a student can find a course of his teacher which is already elaborated online[24] (P2:38).

Ferrero (2002) states that young people, often called the Net Generation, usually succeed in mastering these technological devices better than adults do. Many refer to this as a digital divide. Generations Y and Z currently in our university system adapt quickly to technological changes and feel at ease with new technologies:

---

[20] même si on fait venir des ouvrages les ouvrages seront obsélètes[20]

[21]ça ne s'arrête pas seulement au niveau des enseigants de licence, ça va plus loin et ça ne s'arrête pas au niveau de l'ENS ça touche l'UOB, ça touche le ministère de l'éducation nationale[21]

[22] les idées sont là les ressources sont également là[22]

[23] comment transmettre en utilisant ce que vous avez présenté[23]

[24] mais aujourd'hui un élève ou un étudiant peut tomber sur un cours de son professeur qui est déjà élaboré[24]

There is a lot; there is a generation that is coming like these young
colleagues that know how to use Google, Moocs, and the weblor[25]
(P2:12).

6.3.2.2   Integration of Knowledge

The lecturers at ENS need to improve their technological, pedagogical and content knowledge to ensure that they select the appropriate OERs for teaching. The ICT colleagues are discouraged as they do not know how to convince the lecturers to participate in the TPD:

We have to find the ways and means to constrain the colleagues to
come. It is really necessary to federate the different opinions and
ideas[26] (P2:16).

The participants agreed that the integration of OERs at ENS will prepare the lecturers to comprehend how OERs can improve the teaching and learning experience. The lecturers will experiment with the OERs before they will implement them at ENS:

What we need first if we need to start (begin) by experimenting this
from data we will see how the teachers will use them, then we will see
how to move to the next step [27].
The paradigm shift we are talking about is really concrete (concrete
paradigm) here and we have to make it more concrete. [28].
Indeed, the good teacher is not the one who takes only good content[29]
(P2:44).

6.3.2.3 Access

Since 2002 many universities and other training organisations have been making use of OERs for PD initiatives (Wiley, 2006). That means that web-based tools have become a method to teach or to learn by oneself or via the institutions that use ODL. Access in Gabon is not an issue as there is an undersea cable which links Africa to Europe. However, the government developed the broadband internet for their own benefit so as to control everything from every sector of administration through internet (Le Gabon.org, 2012). This is confirmed by the participants:

We should know how to use internet in order to do the research [30]

---

[25] il ya beaucoup il ya une génération qui arrive comme les jeunes collègues qui savent utiliser google + qui savent utiliser les Moocs ou bien le weblor[25]
[26] il nous faut trouver des voies et moyens pour contraindre des collègues pour qu'ils viennent il est vraiment nécessaire de fédérer les différentes opinions et idées[26]
[27] C'est tout ce qu'il faut s'il faut d'abord commencer par expérimenter cela à partir de cette banque de données on va voir comment les enseignants vont l'utiliser après on verra comment aller à une autre étape [27]
[28] Le changement de paradigme dont on parle est vraiment concret ici et nous devons le concretiser [28]
[29] Effectivement le bon enseignant ce n'est pas celui qui emmène uniquement un bon contenu. Il faut savoir transmettre ce contenu là[29]
[30] Encore il faut savoir faire la recherche à l' internet[30]

Could we have a good connection?[31]

In the solutions that we can propose is that we need high speed
internet[32]

We do not have the connections, there is a problem of connection,[33]
(P2: 3).

The improvement of internet access will allow pre-service teachers to explore on using OERs for teaching English. Then they can improve their content knowledge and the lecturers can spend less time on content and more on preparing their students for teaching:

I think that if the students have the possibility to go to internet where
the documents and the courses are actualised they will tell their
teacher that we have found this and this[34] (P2:40).

Even though Gabon has sufficient broadband and the use of OERs can add value to the teaching and learning of pre-service and in-service teachers, the Gabonese Government must commit to improving internet access at institutions.

6.4   Open Education Resources

The theme OERs encompasses one challenge (Selection of OERs) and an enabler (Advantage of OERs). Figure 6.4 illustrates the challenge and enabler of OERs.
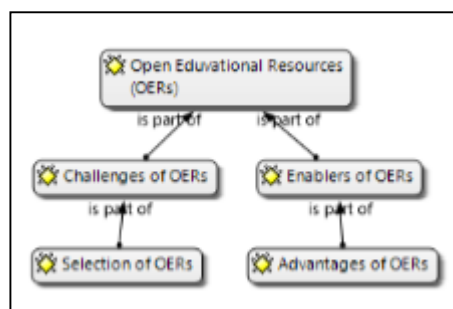
Figure 6.4:   Challenges and Enablers of Open Education resources

6.4.1   Challenges of Open Education resources

The following section discusses the challenge of OERs: Selection of OERs (Figure 6.4).

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[31] Est-ce qu' on pourrait avoir une bonne connection[31]
[32] Dans les solutions qu' on peut proposer c'est qu' il faut internet haut débit[32]
[33] On n' a pas de connections, il y a un problem de connection[33]
[34] je pense que si les étudiants ont la possibilité d'aller sur internet parce que les ouvrages et les cours sont actualisés ils ont la possibilité dans l' internet de dire Mr nous avons découvert ceci et cela[34]

6.4.1.1 Selection of Open Education Resources

Many of the participants raised the issue of selecting the appropriate OERs to match the curriculum for Licence 1. Additionally the participants were concerned about selecting the OERs when the curriculum changes. When I started my research to select the OERs for teaching English as a second foreign language I could not find any formal curriculum for ENS. I had to develop a curriculum for teaching pre-service teachers at ENS. The participants acknowledged my contribution, and agreed that to select OERs was the first step of the initiation of the use of OERs at ENS. However, the participants were apprehensive about the data needed to select these OERs:

> *We start by the first step which is the one to put in place the data*
> *because there we are only on the resources that have been selected*
> *from internet[35] (P2:23).*

6.4.2   Enablers of Open Education Resources

The enabler of OERs is the advantages of OERs. The following section discusses the *Advantages of OERs* (Figure 6.4).

6.4.2.1 Advantages of Open Education Resources

OERs have advantages in the teaching of English at ENS (Krelja Kurelovic, 2016) as OERs enable free and accessible teaching and learning to everyone. OERs are freely accessible, can be reused, modified and shared and can be integrated into higher education to improve the quality of curricula and teaching, and reduce the costs of education (UNESCO, 2011).

The pre-service teachers and the lecturers of ENS will be pioneers in the Gabonese education system to integrate OERs. The advantages can be found at different levels. The participants classify the access of OERs to be the most important advantage. Then, lecturers and pre-service teachers can adapt the OERs to align to their curriculum, the one which is used by the lecturers in their context. The lecturers are confident that sooner or later the government will change its mind and will look for the improvement of internet in schools and universities to make studies easy:

> *We only have advantages [36]*
> *We could speak of the advantages of the access to the resources [37]*
> *This point that will be very advantageous.[38]*

---

[35] On commence par la première étape qui est celle de mettre en place une banque de données
qui a été selectionnée à l' internet[35]

[36] il n' y aura ques des avantages[36]
[37] on pourrait parler des avantages de l' accès à ces ressources[37]
[38] Ce point ce sera très très avantageux[38]

> *I would like to speak a lot more about the benefits[39]*
>
> *You have put to the disposal of teachers these tools, resources in relation (according) to the current curriculum (programme)[40]*
>
> *Among these advantages it arises that we have them already and that we have seen the relevance of their contents; it is accessible it is fluid there is not too many difficulties for the students to have them (P2:5).*

6.5   Teacher Professional Development

The third theme relates to the challenges and enablers of TPD. The challenges of TPD are: *Apprehension of Technology*, and the *Curriculum of ENS*, and the enabler of TPD is *Willingness* (Figure 6.5).
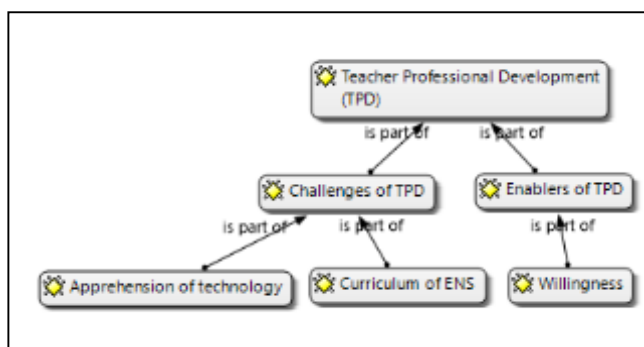
Figure 6.5:   Challenges and Enablers of Teacher Professional Development

6.5.1   Challenges of Teacher Professional Development

This section discusses the challenges of TPD: *Apprehension of Technology* and *Curriculum of ENS*.

6.5.1.1 Apprehension of Technology

Isaacs (2006) confirms that the introduction of ICTs into teaching has improved TPD for the pre-service teachers in developed countries. TPD in ICT is not just about how to use new technologies, but also about why and when to use them in transforming practices (Isaacs, 2006). At ENS some lecturers still ignore the advantages of these new technologies. They are reluctant to attend ICT TPD and do not want to send their students to attend TPD initiatives as well. The improvement of ICT at ENS could make some lecturers and students conscious of the value and role of ICTs in education:

---

[39] Je voudrais beaucoup plus parler en termes des avantages[39]

[40] Vous avez mis à la disposition des enseigants ces outils ces ressources par rapport au programme actuel[40]

It is from that time that they will learn how to go and look for information

and OERs[41]

There are the departments that are against (hostile to) of sending their

students to come and be trained in ICT. [42]

They have their judgement (a priori)[43]

There is problem of teaching and learning ICT at ENS [44] (P2:27).

Some participants stated that ICT TPD should be mandatory to the pre-service teachers of ENS (Le Gabon.org, 2012):

ICT should be the obligatory courses mostly for the scientists[45] (P2:31).

6.5.1.2 Curriculum of l'Ecole Normale Supérieure

According to the participants, ENS does not have a structured curriculum for English. Lecturers in the Department of English manage to work on the resources either in books or on the internet. The lecturers are responsible for their own curriculums. They organise their curriculum according to their students' needs and level:

The curriculum (programmes) are not fixed[46] (P2:10).

I can affirm this as I had to develop a curriculum for ENS to be able to select the OERs for the first and second iterative cycle. Gabonese people like taking advantage of situations in which they are involved. They are not used to work if there is not any advantage for their own benefit:

Are the Gabonese people interested in it [47] (P2:23).

6.5.2   Enablers of Teacher Professional Development

The enabler of TPD is: *Willingness.*

6.5.2.1 Willingness

Some participants stated that the resources the lecturers would use could be obsolete when they are not renewed. Therefore, the lecturers should have the opportunity to change the resources when they think that those that they have been using are outdated:

---

[41] C'est a partir de la qu'ils verront comment aller chercher les resources en ligne[41]
[42] Il y a des départements qui sont hostiles à envoyer leurs étudiants pour venir suivre la formation à l'informatique.[42]
[43] Ils ont déjà des apriori[43]
[44] ça pose le problème d'enseignement des NTIC à l'ENS[44]
[45] Il faut que se soient les cours de base obligatoires surtout pour les scientifiques[45]
[46] Les programmes ne sont pas figés[46]
[47] Est-ce que les Gabonais seront interesses?[47]

The possibility (opportunity) to go and look for the resources much
more relevant[48] (P2:10).

Figure 6.6 shows an image of one of the computer training facilities at ENS.

Figure 6.6:   Computer Facilities at ENS

There are two computer venues for training purposes, each with fifteen computers (Figure 6.6).
This is adequate to train all the pre-service and in-service teachers at ENS.

6.6   Open Distance Learning

The fourth theme is ODL and encompasses one challenge and one enabler: *Implementation of ODL* (challenge) and as an enabler *Learning Management System*. Figure 6.7 illustrates the challenges and enablers of ODL.
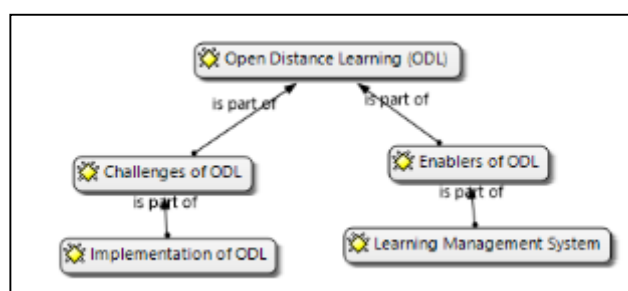
Figure 6.7:   Challenges and Enablers of Open Distance Learning

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[48] Il faut leur donner la possibilite eux mêmes d'aller chercher à la source chercher l'information
des documents qui semblent beaucoup plus pertinents[48]

6.6.1 Challenges of Open Distance Learning

The following section discusses the challenge of ODL: *Implementation of ODL* (Figure 6.6).

6.6.1.1 Implementation of Open Distance Learning

Moore (1993) opines that ODL involves a great portion of teaching and learning outside education institutions. It therefore requires ICTs that are executed through electronic and other forms of media (Ferreira & Venter, 2010). There are some challenges that hinder the implementation of ODL in Gabon. Most of the tools known like Facebook, RSS feeds, wikis, blogs, podcasts, tagging and Myspace (Ekoja, 2011) which are useful for ODL are not familiar to lecturers at ENS. When the government started to check and control every degree and diploma coming from abroad, ODL disappeared from the system. It is obvious that until today, the Gabonese government still controls the education system. Therefore, the implementation of ODL depends on their willingness and their interest as well:

> *How to implement open distance learning at ENS it is there the big*
> *problem[49] (P2:3).*

6.6.2 Enablers of Open Distance Learning

The one enabler of ODL identified is: *Learning Management System.* This section discusses the enabler for ODL.

6.6.2.1 Learning Management System

It appears that without any improvement in the connection of internet, it will be difficult or impossible to implement ODL at ENS. The participants acknowledged the necessity and the importance of ODL in their institution, particularly in the Department of English where the intake of pre-service teachers is not sufficient to serve the schools. Furthermore, many of the lecturers are close to retirement and there are not any replacements for those lecturers. The implementation of a platform appears necessary to provide pre-service teachers, in-service teachers, and lecturers with good user experience (Hwang, 2012). The participants acknowledged the importance of a central platform where resources can be shared. The request for the implementation of ODL and a platform for ENS:

> *Could we have a platform? [50]*

---

[49] Comment implementer la formation à distance à l' ENS c' est là le vrai problème[49]
[50] Est-ce que peut avoir une plateforme?[50]

> *But how to get this tool here a platform where the students and the*
>
> *teachers could do to go and find the human resources[51] (P2:5).*

6.7 The Design Principles and Technology Innovations of the Second Iterative Design Cycle

Table 6.1 summarises the design principles and technology innovations of the second iterative cycle.

Table 6.1   Design Principles and Innovative Technologies Conceptualised from the Second Iterative Cycle

Aspect	Design Principles and Technology Innovations
Education Context: Challenges	
Teacher Training	Accessing internet is anissue
	Refusing to participate in ICT TPD
	Acquiring knowledge, skills
	Committing to PD
	Remodelling traditional teaching
	Enhancing student achievement through TPD
	Improving the quality of TPD
	Encouraging teachers to attend TPD
Lecturers' Attitude	Quitting TPD initiatives
	Trusting TPD initiatives
Course delivery	Availing resources to students
Responsibilities	Providing schools and universities with the necessary resources
	Communicating with role players in government
	Improving internet access at ENS
	Finding sustainable solutions for ENS regarding ICT
Administrative awareness	Sourcing for second-hand resources
	Upgrading the existing resources
	Adding new resources
	Adapting resources with time trends
Education Context: Enablers	
Learning Activities	Implementing OERs without training
	Using online materials or courses
Integrating knowledge	Improving technological, pedagogical, and content knowledge of lecturers
	Experimenting with OERs before implementing in teaching and learning
Access	Focussing less on content and more on preparing for teaching
	Improving internet access
Open Education resources: Challenges	
Selection of Resources	Selecting appropriate OERs to match the curriculum
	Utilising the OERs
	Having data to access the OERs
Open Education resources: Enabler	
Advantages of OERs	Adapting the OERs to align with the context
	Benefitting from OERs for English teaching
Teacher Professional Development: Challenges	
Apprehension of Technology	Accepting ICTs for TPD

---

[51] Mais comment faire pour avoir cet outil ici une plateforme ou les etudiants et les enseignants pourraient faire pour aller trouver les resources humaines[51]

Curriculum of ENS	Missing curriculum
Teacher Professional Development: Enabler	
Willingness	Utilising the training facilities at ENS for TPD
Open Distance Learning: Challenges	
Implementation of ODL	Executing TPD through ODL
	Willingness of Government to take ownership
Open Distance Learning: Enabler	
Learning Management System	Implementing a platform for engagement
	Using a central space to share resources

Based on the above design principles and technology innovations pertaining to the focus group interviews, I can complete Stoner Phase 4 (design integration) and provide the guidelines for the implementation of OERs in ODL for TPD in the Gabonese education system.

6.8 Summary of the Chapter

This chapter explicated the research findings from the workshop conducted at ENS in Gabon and the focus group interview. Four themes stemmed from the findings: Education context at ENS in Gabon, OERs at ENS in Gabon, ODL at ENS in Gabon, and TPD at ENS in Gabon. Each of these comprised two categories: challenges and enablers. The 3rd and the 4th phases (Selection of Learning Technology and Design Integration) of Stoner's framework matching with the design principles facilitated their implementation at ENS. I will present the guidelines in Chapter Seven based on the findings and the design principles and technology innovations identified from the second iterative cycle.

Chapter Seven

Guidelines for the Implementation of Open Education Resources in Open Distance Learning for Teacher Professional Development in the Gabonese Education System

7.1   Introduction

This study was underpinned by the research question, *How could the use of OERs in ODL contribute towards TPD in the Gabonese education system?* This chapter provides a comprehensive overview of the first four phases of Stoner's life phases of learning technology integration: initiation, analysis and evaluation, selection of LTs, and design integration. I also provide a summary of the first six chapters of this research, and provide the guidelines for the implementation of ODL for TPD in the Gabonese education system (§ 1.5). I discuss the contribution this study made to the field of teaching EFL and will deliberate on the limitations of the research. I will also present future research questions and reflect on my research journey.

7.2   Summary of the Chapters

The following sections (7.2.1-7.2.6) provide a summary of the first six chapters of this research.

7.2.1   Chapter 1: Stoner's Systems Life Phases of Learning Technology Integration: An Overview

Chapter One described the problem statement and the motivation for the research, as well as the aim of the qualitative bounded case study. I provided a background to the Gabonese education system and how the research addressed pertinent issues in Gabon pertaining to TPD, ODL, and OERs. The chapter also introduced Stoner's life systems phases of learning technology integration as conceptual framework for the research. I disclosed the sub-secondary research questions and indicated how Stoner's life systems linked with each of the sub-secondary research questions. I also explicated the research design and methodology used during this research. I provided a brief description of design research and the cyclical, iterative character of the systematic design of the intervention and the ethical aspects related to research of this nature. This chapter also included a list of terminology pertinent to the research and revealed the contribution this study can make towards TPD in Gabon.

7.2.2 Chapter 2: Stoner's Systems Life Phase of Learning Technology Integration: Initiation

This chapter reported on the initiation phase of Stoner's systems life phase which dealt specifically with recognising problems and possibilities as well as doing a preliminary assessment of the situation pertaining to TPD, ICT, ODL, and OERs. These themes were explained to get a profound understanding of the aspects of the research. The chapter discussed the three approaches to TPD (standardised, centralised, and site-based) and the dominant approach (site-based) in Gabon. The discussion included the TPD initiatives in Sub-Saharan Africa, TTISSA and TESSA, which aimed to escalate the number of teachers and to improve the quality of teaching in Africa. It also perused the ICT for TPD and the TPD programmes for pre-service and in-service English teachers in Gabon. The chapter looked at the history of ODL in Gabon and the successful programme implemented for TPD. It also addressed the challenges and enablers of ODL as well as the value of TPD through ODL. This chapter also evaluated the ICTs for TPD through ODL. The last section of the chapter discussed OERs in detail: description of OERs, the four dimensions of openness, the history of OERs, the models of OERs, licences linked to OERs, the OER initiatives in Africa, the challenges and enablers of OERs resources, ICT for OERs, and OERs for TPD.

7.2.3 Chapter 3: Stoner's Systems Life Phase of Learning Technology Integration: Analysis and Evaluation of Open Education Resources in the English Foreign Language Curriculum in Gabon

This chapter addressed the subsequent secondary question, *How does the existing TPD curriculum in the Gabonese education system fit with the course objectives in Gabon as stipulated in the policy?* It looked at the aspects of a curriculum. Through probing for the EFL curriculum, I realised that there was not a structured curriculum for EFL at ENS and that the lecturers based their lessons on content they find mainly from books and some internet resources. There were no outcomes which the lecturer could use to measure the competency of the pre-service teachers. Then, I broadly evaluated the Gabonese education system and the ICTs available in Gabon. I developed a curriculum for EFL then matched the OERs with Licence 1 of EFL at ENS.

7.2.4 Chapter 4: Two-Cycled Design Research: Qualitative Bounded Case Study

This chapter described the two-cycled design research qualitative bounded case study. It explicated the two cycles of data collection: the pilot workshop as Design Cycle 1 (NWU VTC) and an empirical workshop as Design Cycle 2 (Gabon). The chapter explained the participant selection (English lecturers), the data collection strategies (focus group interviews), and the development of the design principles and technology innovations for the two cycles. I elucidated on the rationale for the participants and site selection for the pilot workshop. I deliberated on the training workshop in Gabon and the difficulties I experienced to conduct the training workshop. I explained the ethical

aspects and the ethical approval obtained for the workshops (pilot and training). In this chapter I discussed the grounded approach followed for the analysis of the focus group data in Atlas.ti™. Additionally, I explained the trustworthiness of the dataset, credibility and validity of the integrated dataset.

7.2.5 Chapter 5: Stoner's Systems Life Phase of Learning Technology Integration: Design Principles and Technology Innovations for Design Cycle 1

Chapter Five discussed the findings of the pilot workshop at NWU VTC conducted to ascertain the design principles and technology innovations for the use of OERs for TPD in Gabon. From that pilot workshop, three themes emerged and each theme comprised two categories—challenges and enablers.

The first theme related to the challenges and enablers of OERs. The following challenges were identified from the integrated dataset: structure of the workshop, exclusion of OERs and internet access. The participants advised me to: structure the workshop with OERs as the focus and not to spend so much time on the curriculum, to test the links before the workshop, to select OERs to fit with the Gabonese context, to exclude the resources not applicable to achieve the outcomes of EFL, and to capitalise on the knowledge and skills of the participants. The identified enablers: websites for OERs, alternative resources, evaluation and Internet access. The participants recommended that I select OERs which the lecturers can download and reuse, and that I should probe for OERs from the magnitude of websites for EFL. They also gave me numerous examples of OERs which I could access for the training workshop in Gabon.

The second theme, TPD, comprised two challenges and five enablers which related to the use of TPD at ENS in Gabon. The challenges of TPD identified from the integrated dataset were: English curriculum and exposure. The lecturers discussed the competency level of the lecturers involved with in-service and pre-service teacher training, and that the lecturers should make use of activities to motivate students to converse in English. The enablers identified: teaching methods, level of competence and interaction, central platform and support. The lecturers should adapt the training to the curriculum and the level of students' competency and the TPD initiatives must enhance both the status and attractiveness of the teaching profession. The participants advised me not to select OERs for the lecturers, but to guide them to select their own OERs. They asked me to create a central platform where the lecturers can access the OERs in their own time and provide them with support to select and use the appropriate OERs.

The participants did not make any contributions to the last theme. However, derived from literature I added one challenge and one enabler of ODL: the implementation of ODL and the advantages of ODL. I realised that the implementation of ODL will depend on the policy and the willingness of the

government to fund the initiative. TPD through ODL will bridge the geographical barriers and increase the number of graduates in Gabon.

The chapter concluded with the design principles and technology innovations derived from constructs in design cycle 1. I used the design principles to adapt the workshop I presented in Gabon for design cycle 2.

7.2.6   Chapter 6: Stoner's Systems Life Phase of Learning Technology Integration: Design Principles and Technology Innovations for Design Cycle 2

This chapter discussed the findings from the training workshop at ENS in Gabon and the conceptualisation of the design principles and technology innovation for design cycle 2. From the data analysis eight categories of data related to four themes: Education context at ENS in Gabon, OERs at ENS in Gabon, ODL at ENS in Gabon, and TPD at ENS in Gabon, emerged.

The first theme was Education Context sub-divided into Challenges of Education Context and Enablers of Education Context. The challenges identified were teacher training, responsibilities and administrative awareness. The participants were not satisfied with the existing model for teacher training in Gabon. They felt that the lecturers will improve their teaching when the TPD does not model traditional teaching. More importantly, they stated that the Gabonese government should take responsibility for TPD, and that TPD is co-dependent on the quality of the training. The participants thought that Gabonese teachers are not committed and they often abandon TPD initiatives without justification. The resources in Gabon are outdated and the renewal of resources for teaching and learning of EFL is a concern in Gabon. The classroom structure is not conducive to ensure quality teaching and learning, and access to computer infrastructure and internet is limited. They acknowledged that OERs will enable them to access alternative resources than the outdated books and other resources at ENS. The participants acknowledged the skills of the Generation Y and Z pre-service teachers at ENS, who access resources from the internet without any support from the lecturers. It was emphasised that lecturers should develop their Technological Pedagogical Content Knowledge (TPACK) and understand that OERs can improve the teaching and learning experience.

The second theme OERs encompassed one challenge (Selection of OERs) and one enabler (Advantage of OERs). The participants were concerned about the selection of OERs if the curriculum changes. However, they realised that access to OERs is an advantage and that they could adapt the OERs to align to their curriculum.

The third theme dealt with about the challenges and enablers of TPD. The challenges of TPD were: Apprehension of Technology, and the Curriculum of ENS, and the enabler of TPD was Willingness. The teachers in Gabon do not want to attend ICT TPD programmes, they structure

their curriculum according to what they think is important for students to learn, and they want to be able to change and adapt outdated resources.

The last theme encompassed ODL with one challenge and one enabler: Implementation of ODL (challenge) and as an enabler (Learning Management System). It was obvious that the Gabonese government due to their controlling powers should initiate change. The employment of a central platform where pre-service teachers, in-service teachers, and lecturers with a good user experience could share their experiences. From the constructs I was able to develop design principles and technology innovations which I used to address the main research question.

7.3   Addressing the Research Questions

In order to answer the main research questions, the following four subsequent questions were posed to gain insight pertaining to, *How could the use of OERs in ODL contribute towards TPD in the Gabonese Education System?* The subsequent questions were as follows:

- How does the existing TPD curriculum in Gabonese education system fit with the course objectives in Gabon as stipulated in policy? (§ Stone phase 2)
- What are the appropriate OERs in ODL which can be used as LT for TPD in Gabon? (§ Stone phase 3)
- How can OERs be used in the design integration of ODL for the TPD of Gabonese teachers? (§ Stone phase 4)
- What are the perceptions of lecturers as first line-users of OERs in Gabon on the value of OERs?

Figure 7.1 illustrates a summary of the main findings and processes when I addressed the subsequent research questions within Stoner's systems life phases of technology integration.
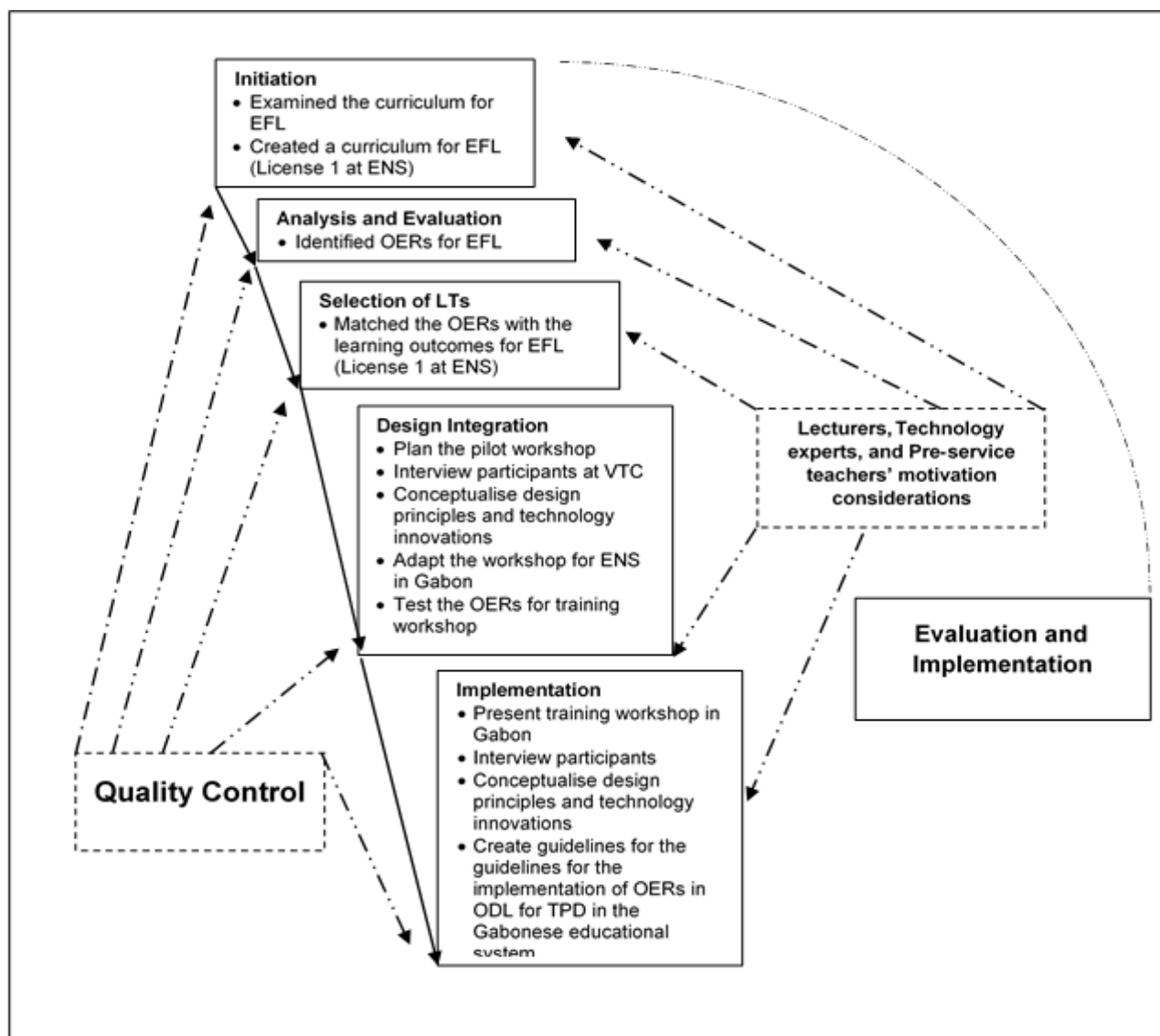
Figure 7.1:   Summary of the Subsequent Questions and Main Processes in each Phase of Stoner's Systems Life Phase of Technology Integration

The first subsequent question, *How does the existing TPD curriculum in Gabonese education system fit with the course objectives in Gabon as stipulated in policy?,* was addressed in Chapter Three of this research where I examined the curriculum and the education system in Gabon. I also created a curriculum for Licence 1 of EFL at ENS.

The second subsequent question, *What are the appropriate OERs in ODL which can be used as LT for TPD in Gabon?*, was addressed in Chapter Three where I matched the OERs with the outcomes of the curriculum I developed for Licence 1 of EFL at ENS.

The third subsequent question, *How can OERs be used in the design integration of ODL for the TPD of Gabonese teachers?* was addressed during the two iterative cycles of the design research. I compiled design principles and technology innovations.

The fourth subsequent question, What are the perceptions of lecturers as first line-users of OERs in Gabon on the value of OERs?, was addressed in Chapter Six when the lecturers, technology experts and pre-service teachers shared their views on the use of OERs for TPD in ODL.

In order to address the main research question, *How does the existing TPD curriculum in Gabonese education system fit with the course objectives in Gabon as stipulated in policy?* I created a list of all the design principles that emerged during the study. I have re-organised the design principles into six themes which emerged during the study: TPD, OERs, ODL, ICT, Education system, and curriculum. Table 7.1 summarises the guidelines for the implementation of OERs in ODL for TPD in the Gabonese education system (§ 1.5).

Table 7.1:   Guidelines for the Implementation of Open Education resources in Open Distance Learning for Teacher Professional Development

Prevalent themes	Guidelines for the implementation of OERs in ODL for TPD
TPD	• ENS lecturers should remodel their traditional teacher training
	• Create TPD opportunities that are innovative and motivate engagement between participants
	• Make TPD programmes attendance compulsory for in-service and pre-service teachers when they enrol
	• Ascertain the TPD needs from the participants (in-service and pre-service teachers) to ensure they participate willingly
	• Indicate the outcomes for the TPD initiatives
	• Develop TPD to enhance student performance
	• TPD programmes should include aspects of TPACK to improve lecturers' competencies
	• Utilise facilities at ENS for TPD
	• Develop TPD programmes to fit the context
	• Improve the quality of TPD programmes
OERs	• Have a central platform where lecturers, in-service and pre-service can access and experiment with the OERs before implementing it in their teaching and learning activities
	• Use the OERs effectively so that contact sessions could be used for engagement
	• Lecturers, pre-service and in-service teachers must get an opportunity to search for and test the OERs
	• Allow the students to have access to the resources
	• Lecturers have to make sure that when they select the OERs it should align with the outcomes
	• English lecturers can benefit from selecting versatile OERs from various websites
	• Students at ENS should have internet access or data so that they search for OERs
ODL	• Execute existing TPD through ODL
	• Develop or use a platform where role players can engage to ensure ODL programmes are successful
	• Use the resources (human and infrastructure) at ENS to establish ODL
	• Uncover why the previous ODL programme stopped and address the shortcomings so that forthcoming ODL initiatives can maintain their momentum

Prevalent themes	Guidelines for the implementation of OERs in ODL for TPD
ICT	• Lecturers should embrace ICT for TPD at ENS
	• Utilise the two computer laboratories at ENS more for TPD and teaching of EFL
	• Use the skills of the pre-service teachers to maximise the integration of ICT for teaching and learning and other TPD activities
	• Find sustainable solutions for ENS and institutions alike
Education system (Gabonese government)	• Provide the funds for the development of resources at higher education institutions
	• Collaborate with lecturers and ENS administrators to ascertain the needs of the institution
	• ENS must take initiative to communicate their needs to government and substantiate that with evidence
	• Share the internet available to universities and institutions like ENS
	• Take ownership of their role to ensure quality teaching and learning in Gabon to be measurable with any institution in Africa
	• Provide incentives for pre-service teachers to remain in Gabon after graduation
Curriculum	• Develop a curriculum with outcomes so that all the pre-service teachers graduate with a foundational set of knowledge and skills
	• Lecturers should make sure that they have a curriculum so that their colleagues could sustain good quality teaching and learning in EFL even if they leave and retire
	• Develop assessments aligned with the outcomes so that students know how their performance is measured
	• Use the curriculum developed for Licence 1 (micro level) and expand it to meso level (programme level) and then later to macro level (qualification level)

The guidelines in Table 7.1 summarise the key aspects which should be addressed and some existing practices which can be improved. Fundamentally, any initiative pertaining to enhancing the quality of teaching and learning should have the support from government to ensure its success. In Gabon the government is accountable for quality teaching and learning at all levels. The government should provide the funds for TPD initiatives in ODL to ensure that more pre-service and in-service teachers participate irrespective of geographical hindrances. The government should make the teaching profession in Gabon attractive for young people so that they want to teach in Gabon after graduation. Many of the lecturers at ENS are close to retirement, and there is a shortage of qualified lecturers at ENS and other higher education institutions. TPD in ODL can assist with shortage of human capital as one lecturer can teach more students via ODL.

To increase TPD programmes or initiatives, ENS should evaluate their previous and existing endeavours and find alternative means and incentives to make it attractive and viable for pre-service and in-service teachers to complete the programmes. The pre-service and in-service teachers must get an opportunity to communicate their TPD needs. This will ensure that they take ownership of their professional development.

The use of OERs can add value to teaching and learning in Gabon. Lecturers and students can access the resources, modify them to fit their context, and use them to measure the outcomes of the curriculum. The successful implementation of OERs in Sub-Saharan Africa is an example for ENS and other institutions in Gabon that their successful use is possible.

The Gabonese government must be more involved in the provision of resources and access in higher education in Gabon. There must be a partnership between the Ministry of Education and the lecturers at ENS. Education in Gabon must be a shared responsibility and each role player must be accountable for his contribution towards quality teaching and learning.

7.4   Contribution of the Study

The study contributes to the subject area and the discipline of EFL in the following manner:
- A structured curriculum was developed for EFL at ENS which can be used in other similar institutions in Gabon.
- The OERs were selected and matched with the learning outcomes.
- A centralised platform was created where the lecturers can access the OERs and add more resources.
- The study identified the gaps in terms of access to resources and internet for lecturers and students in Gabon.
- The research made the institution aware of the fact that there is a shortage of lecturers at ENS and that the institution does not have a contingency plan for TPD in management.
- The lecturers and students were given an opportunity to interact in a workshop where they were all participants.
- The lecturers could listen to the ideas of the students and realise that the students can be co-creators of the curriculum.
- The lecturers could share their frustrations in a safe space.
- The design principles in the first iterative cycle assisted to refine the training workshop in Gabon.
- The design principles in the second iterative cycle supported the development of the guidelines.
- Many of the lecturers and students engaged with OERs for the first time.
- The study will contribute towards research of OERs in the African context and particularly in Gabon.
- The institution can implement the OERs and refine the curriculum, and use it as a blueprint to develop a curriculum for the other programmes.

7.5   Limitations of the Study

The limitations of the study pertain to two levels: methodological and practical. In terms of methodology, the study as a bounded case study could only use the subjective views of a limited number of participants (one institution in Gabon). It would have been beneficial if ENSET had joined the training workshop. In order to sensitise more people on the value of OERs for TPD in

ODL, the group should have been larger. However, the participants' added value to the study and data saturation was achieved. On a practical level, the political instability during the training workshop made it difficult for me to set the date for the training workshop and it took a lot of negotiation for me to be able to get the participants to give some of their academic time to present the workshop. I wanted to have time for a follow up session, but the lecturers at ENS were pressured to finish their academic year as many months were lost due to the protest against the ruling government. If the political situation had been better, the attitude of the Gabonese people would have been more positive. The non-existence of a structured curriculum was an initial limitation, but it created an opportunity for me to contribute significantly to the Department of English at ENS. It appears that the integration of the use of OERs and the implementation of ODL depend on the government as it has the responsibility to manage all the sectors of Education.

7.6   Future Research Questions

- What are the factors that hinder English lecturers from implementing OERs for TPD in ODL?
- How could a TPD with the focus on curriculum development enhance the EFL programmes in Gabon?
- To what extent does the TPACK of English lecturers influence the implementation of OERs in ODL?
- How could government support enhance the teaching and learning experiences of pre-service and in-service teachers in Gabon?
- How could the utilising of OERs enhance the pre-service teachers' experience at ENS?
- What ODL model for TPD would be effective for Gabonese education?

7.7   Reflection on my Research Journey

From independence until now, Gabon remained one of the richest countries in central Africa despite the economic disturbances that the country has encountered the last fifteen years. All that money, and education seems to be the last area where the government will invest money! When I went to ENS in Gabon for the training workshop with the lecturers and pre-service teachers I realised that the infrastructure is in a poor condition. I once again realised how the political circumstances influence the lecturers and students in Gabon. Lecturers were not very positive about the status of education. Access to internet was a major obstacle when I went to Gabon during my first visit to access curriculum sources. The question that confuses me a lot is how lecturers, especially novice lecturers, know that the standards they set are satisfactory and that their students will be able to cope in further education. I am native of Gabon, but spent many years abroad to study, and sometimes we forget what happens in our home countries. On my return to Gabon for the training workshop at the end of February 2017, I was very unsure how I

would be accommodated due to the political instability in the country. I accolade the lecturers who are still positive and who want to make a difference in society. Many of these lecturers have reached the last phase of the academic career and there is no support from the government to invest in the training of a younger academia. This research journey made me realise that I have a responsibility to the students in Gabon and must return to make a change to the situation.

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