

# Initiating ICT in the open distance learning of Gabonese teachers

Jean-Louis Ndoutoume Mendene

Dissertation submitted for the degree *Magister Educationis* in Education  
Management at the Potchefstroom Campus of the North-West University

Supervisor: Prof Dr A. Seugnet Blignaut

Co-supervisor: Mr Michael Laubscher

Assistant Supervisor: Mr Christo Els

November 2012

# Acknowledgements

---

I would like to thank and acknowledge the following people and Institution for the great contribution to the success of this dissertation:

- God for giving me the chance to be accepted by the School of Continuing Teacher Education and strength and determination to achieve my studies.
- My supervisor Prof A. Seugnet Blignaut who was very enthusiastic all the time. You were available and willing to guide me every time I came to your office. I have learnt a lot from you. These acknowledgements are not enough to thank you.
- J. Christo Els, my study leader; you have been a great pillar of this dissertation. Your advice was of a great help. May God bless and protect you!
- Michael Laubscher, my study leader; it was a pleasure to work with you. You are a wonderful person. I appreciate your determination. Thank you.
- Liezl, you were like a daughter, but we were sharing the office like two adults. You have been of great help.
- Verona Cassim, always ready to help, thank you!
- Albert Rabe, my friend; every morning we had a chat and from there I went to my office and worked all day long without any stress or tiredness. Your part in this dissertation is also important. Thank you.
- Steve Ndinga Koumba and his wife Carine Ndinga; you are my family here in Potchefstroom and you are those to whom I dedicate this dissertation.
- My wife Irene Benoit Ndoutoume; you accepted to stay alone, away from me during the writing of this dissertation and you did not stop encouraging me to achieve these studies. Thank you very much.
- To my children; for understanding that I could not be there for you. You are lovable.
- My late big brother Antoine Nguema Essone; you passed away before I could complete the dissertation. I do not forget your desire, your ambition. Thank you for having understood mine.
- Last but not least; the North-West University for financial support.

## Abstract

---

Gabon is a Sub-Saharan francophone country which has been independent since August 1960. Its Educational System is modelled on the French System. However, the Gabonese Education System currently does not have any guidelines or policies for the system-wide implementation, integration and use of Information and Communication Technology (ICT) into the education system. The Gabonese Government committed itself to some ICT-related partnerships, but did not launch any programme or activity relating to those commitments. In addition, the Government provided funding to change the country's Internet connectivity by satellite with the WASC/SAT3 sub-marine cable in order to make Internet access and connection ten times cheaper at the international level. Unfortunately, the benefit from this investment is not experienced in the country as the potential users, such as teachers, keep having challenges with Internet connection.

After fifty years of independence, the government also does not offer sufficient opportunity for teachers to enhance their pedagogical knowledge and skill through teacher professional development (TPD). As a result, no research, guidelines or policies exist for the implementation and use of Open Distance Learning (ODL) for TPD supported by ICT. The aim of this qualitative descriptive exploratory research study was to explore, describe and understand the enablers and challenges of initiating ICT in the ODL training of Gabonese in-service teachers.

Although the academic seat for this research was the *School of Continuing Teacher Education* on the Potchefstroom Campus of the North-West University in South Africa, the research project's focus, conceptualisation, data-collection and data-interpretation were all based and conducted within the researcher's *heimat*, i.e. the Gabonese Education System context. An interactive qualitative case-study research design (Denzin & Lincoln, 2005; Merriam, 1998) was used in this investigation to obtain in-depth context sensitive data concerning the attitudes, fears, needs, expectations, infrastructure and readiness of the Gabonese Education teachers (at schools and training institutions) for the implementation and use of ICT for ODL training of Gabonese English (second language) teachers, collected through qualitative research methods, i.e. semi-structured open-ended individual and focus-group interviews, as well as additional research artefacts in the form of photographs to visually record the unique contexts involved.

The researcher decided to involve Gabonese English (second language) teachers in the investigation, as he has worked in this discipline for at least twenty years. To ensure sufficient participants, the researcher made use of a snowball strategy where participants in the research referred others. Participants were also selected according to specific selection criteria. Two English (second language) teachers, one school principal, four ICT specialists, one advisor of English teachers, and one inspector of English teachers (ICT specialist) participated in eight individual interviews. Nine English teachers and two advisors of English teachers participated in four focus-group interviews. All

interviews were conducted in French. At the North-West University in South Africa, the researcher transcribed the interview data and used ATLAS.ti™ (qualitative data-analysis software) to construct an integrated data-set for analysis. Qualitative data-analysis was performed under the guidance of an expert researcher in qualitative data-analysis. The relevant research findings were translated into English for the purpose of this report.

Qualitative data-analysis of the integrated data-set identified six categories of data related to three themes, i.e. (i) Gabonese Education, (ii) ICT in Gabon and (iii) ODL in Gabon. The six categories are: (i) Challenges of Gabonese Education, (ii) Enablers of Gabonese Education, (iii) Challenges to implementation and integration of ICT, (iv) Enablers of ICT; (v) Challenges of ODL, and (vi) Enablers of ODL. These categories supported by codes and quotations provide basic ideas on the research enablers and challenges of initiating ICT in ODL training of Gabonese in-service teachers. The discussion comprises thirty codes, and recommendations are made.

The findings of this rich qualitative exploration could benefit and support the Gabonese Education Department, policy makers and academic institutions in their quest to implement, integrate and use ICT in the TPD of in-service teachers via DE and ODL.

### **Keywords**

1. Gabon
2. Gabonese Education System
3. English Teachers (Second Language)
4. Information Communication Technology (ICT)
5. Teacher Professional Development (TPD)
6. Distance Education (DE)
7. Open Distance Learning (ODL)
8. Challenges of ODL
9. Enablers of ODL
10. Qualitative research



## SOLEMN DECLARATION

### Solemn declaration by student

I, JEAN-LOUIS NDOUTOUME MENDENE declare herewith that the mini-dissertation/dissertation/thesis entitled, Initiating ICT in the open distance learning of Gabonese teachers

which I herewith submit to the North-West University Potchefstroom Campus, in compliance / partial compliance with the requirements set for the **MEd** degree, is my own work, has been text edited and has not already been submitted to any other university.

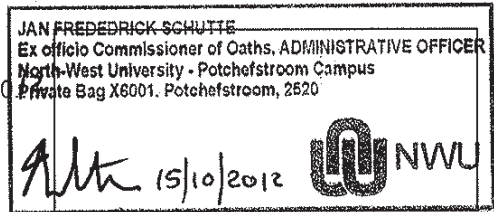
I understand and accept that the copies that are submitted for examination are the property of the University.

Signature of student  University number 23253789

Signed at **Potchefstroom** this day 5 of October 2012

Declared before me on this 15 day of October 2012

Commissioner of Oaths: 



PLEASE NOTE: If a mini-dissertation/dissertation/thesis of a student is submitted after the deadline for submission, the period available for examination is limited. No guarantee can therefore be given that (should the examiners' reports be positive) the degree will be conferred at the current graduation ceremony. It may also imply that the student would have to re-register for the following academic year.

### Declaration by supervisor / promoter / research director / dean

The undersigned declares:

- 1.1 that the student attended an approved module of study for the relevant qualification and that the work for the course has been completed or that work approved by the Senate has been done;
- 1.2 that the student has complied with the **minimum duration** of study as stated in the yearbook;
- 1.3 the student is hereby granted permission to submit his/her mini-dissertation/dissertation or thesis;
- 1.4 that registration/change of the title has been approved;
- 1.5 that the appointment/change of examiners has been finalised and
- 1.6 that all the procedures have been followed according to the Manual for Postgraduate Studies.

Signature of Supervisor/Promoter:  Date: 29-10-2012

Signature of Research Director: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Dean: \_\_\_\_\_ Date: \_\_\_\_\_



NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

Private Bag X6001, Potchefstroom  
South Africa 2520

Tel: (018) 299-4900  
Faks: (018) 299-4910  
Web: <http://www.nwu.ac.za>

## ETHICS APPROVAL OF PROJECT

### Ethics Committee

Tel +27 18 299 4850  
Fax +27 18 293 5329  
Email [Ethics@nwu.ac.za](mailto:Ethics@nwu.ac.za)

2012/09/28

This is to certify that the next project was approved by the NWU Ethics Committee:

<p><b>Project title : Initiating ICT in the open distance learning of Gabonese teachers</b></p> <p><b>Student :</b> Jean-Louis Ndoutoume Mendene <b>Project leader:</b> Prof S Blignaut</p> <p><b>Ethics number:</b> <b>NWU-00033-12-A2</b></p> <p><small><u>Status:</u> S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation</small></p> <p><b>Expiry date:</b> 23 April 2017</p>
---

The Ethics Committee 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 Ethics Committee for any further enquiries or requests for assistance.

The formal Ethics approval certificate will be sent to you as soon as possible.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Me. Marietjie Halgryn', written over a horizontal line.

Me. Marietjie Halgryn  
NWU Ethics Secretariate

## Certificate of Proofreading

---

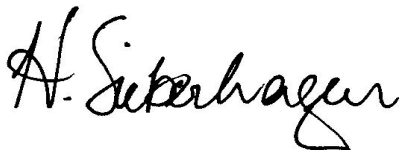
*H C Sieberhagen*  
*SATI no 1001489*

*Translator and Editor*  
*082 3359846*

CERTIFICATE ISSUED ON 11 NOVEMBER 2012

I hereby declare that I have linguistically edited the dissertation submitted by Mr. Jean-Louis Ndoutoume Mendene for the MEd degree.

Initiating ICT in the open distance learning of  
Gabonese teachers



H C Sieberhagen  
SATI number: **1001489**  
ID: 4504190077088  
Telephone: 0182994554

# Table of Contents

---

Acknowledgements .....	i
Abstract .....	ii
Solemn Declaration .....	iv
Ethics Declaration .....	v
Certificate of Proofreading.....	vi
Table of Contents .....	vii
List of Tables .....	xi
List of Figures .....	xii
List of Addenda.....	xiii
List of Acronyms .....	xiv

## **Chapter 1:                    Problem Statement, Research Questions, Aims, and Outline of the Research Report**

1.1	Introduction .....	1
1.2	Orientation, Problem Statement, and Motivation.....	1
1.3	Review of Literature .....	3
1.3.1	Information Communication Technology .....	3
1.3.2	Distance Education and Open Distance Learning.....	3
1.3.3	The Use of Information Communication Technologies in Open Distance Learning.....	5
1.3.4	Fundamental Challenges to the Implementation, Integration, and Use of Information Communication Technology for Educational Purposes.....	5
1.3.5	Conceptual Research Framework .....	6
1.4	Research Aim.....	9
1.5	Research Design and Methodology.....	9
1.6	Research Report Structure .....	10

## **Chapter 2:                    Literature review**

2.1	Introduction .....	12
2.2	Information and Communication Technology .....	12
2.2.1	Definitions of Information and Communication Technology .....	12
2.2.2	e-Learning.....	13
2.2.3	Policy and planning of Information and Communication Technology.....	13
2.2.4	Use of Information and Communication Technology.....	16
2.2.5	Information and Communication Technology Integration Challenges.....	17
2.2.6	Potential of Information and Communication Technology for Developing Countries .....	20
2.2.7	Infrastructure and Resources.....	22

2.3	Distance Education and Open Distance Learning .....	23
2.3.1	Distance Education .....	24
2.3.2	Open and Distance Learning .....	27
2.3.3	Policy.....	27
2.3.4	Role of Open and Distance Learning.....	29
2.3.5	Higher Education .....	29
2.3.7	Vocational and Continuing Education.....	30
2.4	Teacher Professional Development.....	30
2.5	Challenges .....	31
2.6	Enablers .....	32
2.7	Survey of Gabonese Educational System .....	34
2.7.1	Introduction .....	34
2.7.2	Gabonese Educational System.....	35
2.7.3	Secondary Education.....	35
2.7.4	Vocational Training and Technical Education.....	36
2.7.5	Higher Education .....	36
2.7.6	Administrative Infrastructure .....	38
2.7.7	Teacher Training.....	38
2.8	Open Distance Learning in the Gabonese Educational System.....	39
2.8.1	Advent of the Concept of Distance Learning in the Francophone Area .....	39
2.8.2	Open Distance Learning in the Gabonese Educational System.....	40
2.9	Current Information and Communication Technology Landscape in the Gabonese Educational System.....	41
2.9.1	Policy for Information and Communication Technology Implementation .....	41
2.9.2	Implementation of Information and Communication Technology .....	41
2.9.3	Development and growth of Information and Communication Technology in Gabon .....	43
2.9.4	Information and Communication Technology and Higher Education .....	45
2.9.5	Partnerships and Initiatives.....	46
2.9.5.1	NEPAD Partnership Model .....	46
2.9.5.2	Private Initiatives .....	47
2.9.6	Challenges of Information and Communication Technology Implementation, Integration, and Use in the Gabonese Educational System .....	47
2.9.7	Enablers for Information and Communication Technology Implementation, Integration, and Use in the Gabonese Educational System .....	48
2.9.8	Taylor’s Five Generations of Technology Evolution .....	49
2.10	Summary.....	49
<b>Chapter 3:</b>	<b>Research Design and Methodology</b>	
3.1	Introduction .....	51
3.2	Research Paradigm, Design, and Methodology .....	51

3.2.1	Research Paradigm .....	51
3.2.2	Research Design .....	52
3.2.3	Research Methodology .....	53
3.2.3.1	Case study .....	53
3.2.3.2	Snowball Sampling and Selection Criteria for Participants.....	53
3.2.3.3	Semi-structured Open-ended Individual and Focus Group Interviews .....	55
3.2.3.4	Case Sensitivity .....	57
3.2.3.5	Grounded Theory .....	57
3.2.3.6	Role of Researcher .....	58
3.3	Data Analysis .....	58
3.4	Ethical Aspects of the Research .....	59
3.5	Trustworthiness of the Integrated Dataset.....	61
3.5.1	Validity of the Integrated Dataset.....	61
3.5.2	Reliability of the Integrated Dataset.....	61
3.6	Summary.....	61

#### **Chapter 4: Research Findings**

4.1	Introduction .....	62
4.2	Demographical Information of Participants.....	62
4.3	Data Themes and Categories .....	63
4.3.1	Gabonese Education .....	63
4.3.1.1	Challenges of Gabonese Education .....	63
4.3.1.2	Enablers of Gabonese Education .....	73
4.3.2	ICT in Gabon.....	76
4.3.2.1	Challenges to Implementation and Integration of Information and Communication Technology in Gabon.....	76
4.3.2.2	Enablers of Information and Communication Technology in Gabon .....	81
4.3.3	Open Distance Learning in Gabon .....	83
4.3.3.1	Challenges to the Implementation of Open Distance Learning in Gabon .....	83
4.3.3.2	Enablers of Open Distance Learning.....	85
4.4	Summary.....	88

#### **Chapter 5: Proposed Information and Communication Technology Implementation and Integration Framework for Teacher Professional Development in Gabon via Open Distance Learning**

5.1	Introduction .....	91
5.2	Overview of the Research Report.....	91
5.3	Summary of Findings .....	92
5.3.1	Challenges .....	92
5.3.2	Enablers .....	93

5.4	Proposed Information and Communication Technology Implementation and Integration Framework for Teacher Professional Development via Open Distance Learning .....	94
5.5	Recommendations for Future Research.....	101
	Bibliography.....	103

## List of Tables

---

Table 1.1	Modes of Distance Programme Delivery .....	5
Table 1.2	Fundamental Challenges to the Implementation, Integration, and Use of Information and Communication Technologies for Educational Purposes.....	6
Table 1.3	Five Generations of the Evolution of Technological Innovation in Distance Education.....	7
Table 1.4	Research Report Structure .....	10
Table 2.1	Three Categories of Obstacles Experienced by Teachers in their Use of Information and Communication Technologies in Teaching .....	18
Table 2.2	Components of Distance Education .....	24
Table 2.3	Infrastructures and the Number of Students and Teachers in Secondary Education between 2004 and 2005 .....	37
Table 2.4	Evolution of Mobile Phone Telephony in Gabon .....	43
Table 2.5	Evolution of Internet Use in some Countries in Africa.....	45
Table 3.1	Selection Criteria of Participants .....	55
Table 4.1	Demographical Information of Participants.....	62
Table 5.1	Proposed Information and Communication Technology Implementation and Integration Framework for Teacher Professional Development via Open Distance Learning.....	96

## List of Figures

---

Figure 1.1	Systems Life Cycle of Learning Technology Integration .....	8
Figure 4.1	Enablers and Challenges of Implementing Open Distance Learning in Gabon .....	64
Figure 4.2	Challenges of Gabonese Education .....	65
Figure 4.3	School from Remote Area .....	67
Figure 4.4	Young Teachers Posted into Rural Area Eager for Open Distance Learning to be Implemented .....	70
Figure 4.5	Enablers of Gabonese Education .....	73
Figure 4.6	Challenges to Implementation and Integration of Information and Communication Technology .....	76
Figure 4.7	Vice-principal without Computer Training .....	77
Figure 4.8	Secretary's Office in a School .....	79
Figure 4.9	Enablers of Information and Communication Technology .....	81
Figure 4.10	Challenges of Open Distance Learning .....	84
Figure 4.11	Enablers of Open Distance Learning .....	85
Figure 5.1	Contribution of this Study towards the Implementation and Integration of Information and Communication Technology for Teacher Professional Development in Gabon via Open Distance Learning .....	95

## List of Addenda

---

- Addendum 3.1 Ethical approval from the Ethics Committee of the North-West University
- Addendum 3.2 Request from Director of SCTE, NWU to the Director of the Teacher Training College in Gabon
- Addendum 3.3 Request from Director of SCTE, NWU to the Director of the Department of Education and Training
- Addendum 3.4 Researcher's request to Director of the Teacher Training College in Gabon
- Addendum 3.5 Researcher's request to the Director of the Department of Education
- Addendum 3.6 Research invitation, permission and informed consent letter
- Addendum 3.7 Individual and focus group interviews and analysis as captured in Atlas.ti™

The addenda are available on the CD-ROM at the back of the dissertation.

## List of Acronyms

---

<b>ACE</b>	African Coast to Europe
<b>AFDB</b>	African Development Bank
<b>AOU</b>	Arab Open University
<b>AUF</b>	The l'Agence Universitaire de la Francophonie
<b>AVU</b>	African Virtual University
<b>CAI</b>	Computer-Assisted Instruction
<b>CAPC</b>	College Teacher Training Certificate
<b>CAPEs</b>	Secondary School Vocational Training Certificate
<b>CBT</b>	Computer- Based Training
<b>CT</b>	Communication Technology
<b>DAI</b>	Digital Access Index
<b>DE</b>	Distance Education
<b>DSCP</b>	Document about Increasing and Reducing Poverty Strategy
<b>EFA</b>	Education for All
<b>ENIL</b>	Primary Teacher Training College
<b>ENS</b>	Teacher's Training College
<b>ENSET</b>	Technical Teacher Training College
<b>IAI</b>	African Institute for Computer Technologies
<b>ICT</b>	Information and Communication Technology
<b>IT</b>	Information Technology
<b>ITU</b>	International Telecommunication Union
<b>LT</b>	Learning Technology
<b>MSC</b>	Multimedia Super Corridor
<b>NCA</b>	North Central association
<b>NEIMS</b>	National Education Infrastructure Management System
<b>NEPAD</b>	New Partnership for Africa's Development
<b>ODL</b>	Open Distance Learning

<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>RNDD</b>	Reseau National de Developement Durable
<b>SACS</b>	Southern Association of Colleges and Schools
<b>SDNP</b>	Sustainable Development Networking Programme
<b>SOLO</b>	Sudan Open Learning Organisation
<b>TPD</b>	Teacher Professional Development
<b>TTISSA</b>	Teacher Training Initiative for Sub-Saharan Africa
<b>UOB</b>	Omar Bongo University
<b>USS</b>	Health Sciences University
<b>USTM</b>	Sciences and Technology University of Masuku
<b>UVF</b>	Francophone Virtual University
<b>WASC</b>	West-African Submarine Cable

# Chapter 1: Problem Statement, Research Questions, Aims, and Outline of the Research Report

---

## 1.1 Introduction

Information and Communication Technology (ICT) can supplement, support and facilitate curricula over distance (Creswell, 1994; Denzin & Lincoln, 2005). Currently, no research is available to the Gabonese Education Department, policy writers and other researchers concerning the challenges and enablers of initiating ICT in the distance education (DE) and open distance learning (ODL) training of Gabonese teachers. Accordingly, this qualitative descriptive exploratory study investigates the challenges and enablers of initiating teacher professional development (TPD) to unqualified, under-qualified and qualified Gabonese in-service teachers via DE and open ODL, supported by ICT. The findings of this research could benefit and support the Gabonese Education Department, policy makers and academic institutions in their quest to implement, integrate and use ICT in the TPD of in-service teachers via DE and ODL. Chapter 1 orientates the reader into the context of the study, identifies the research problem, presents the research questions and aims, and briefly explains the research design and methodology that were used to address the research questions and aim. Chapter 1 is anchored with an outline of the research report structure.

## 1.2 Orientation, Problem Statement, and Motivation

The Republic of Gabon (*République Gabonaise*) is a French-speaking country located in Central Africa, covering a land area of 267,667km<sup>2</sup> with an estimated population of 1.5 million (Creswell, 1994; La Gabon.org, 2012). In the North-West Gabon borders on Equatorial Guinea, in the North on Cameroon, in the West on the Atlantic Ocean, and in the South and East on the Republic of Congo (Ndinga-Koumba Binza, 2006). Gabon was a French colony from 1885 to its independence in 1960, and thus inherited the French language, as well as the political and educational systems of France. The Gabonese Education System is regulated by the Education Law 16/66 of August 1966 (la République du Gabon, 1966). Since the advent of independence, the Gabonese Education System has been based upon traditional teaching and learning methods. However, in education it also tries to keep up with the increasing technological advancements of the Information Age as ICT can supplement, support and facilitate curricula over distance (Creswell & Miller, 2000; Denzin & Lincoln, 2005).

The evolution of technology, and more specifically the Internet, increasingly produces new innovations to communicate information which impacts on all sectors of society (Basalla, 2002). In the Education sector, the pedagogical use of ICT refers to the use of ICTs as tools in the acquisition of knowledge and to facilitate professional, personal and social development (Oakland, 2010). The Internet creates immediate communication between an educational institution and its students; it provides a channel

---

for students to access information and participate in pedagogical activities (Ackermann, 2005). In developing and newly industrialised countries (NICs) mobile-learning (m-learning) is a growing phenomenon on which ICT in the pockets of students (mobile phones with Internet connection) can be used for pedagogical purposes, despite the Higher Education Institutions' (HEIs) insufficient computer infrastructure and access (Nygren, Sutinen, Blignaut, Laine, & Els, 2012).

There is an international predisposition to make use of ICT for TPD of in-service teachers who want to study via DE and ODL. However, no academic institution in Gabon currently offers TPD to unqualified, under-qualified and qualified Gabonese in-service teachers via DE or ODL, supported by ICT. Nevertheless, ODL is not totally new to Gabon when one considers that a number of Gabonese people have been educated via these delivery modes through learning institutions based in France (Rumajogee, Jeeroburkhan, Mohadeb, & Moonesamy, 2003).

Currently, there are no ICT policies for ICT development in the Republic of Gabon. The President usually takes overall responsibility in this regard and is advised by ICT experts who are members of the *Commission Nationale d'Informatique*. This commission is involved with United Nations (UN) initiatives in the country, e.g. the *Réseaux National Gabonais de Développement Durable (RNDD)*, which devised an ICT development plan in 2000 (Fall, 2007). Despite no formal ICT policies, Gabon nevertheless has a growing ICT infrastructure: by 2004 there were 500,000 mobile phone subscribers in the country, and by 2007 there were 55,000 Internet users (five percent of the population)—some of the most prolific users in Africa. ICT infrastructure is radically moving ahead in the country; as a matter of fact, Gabon is one of only two countries in central Africa connected to the WASC/SAT3 optic sea cable that links Europe to Asia by skirting the African continent, making international Internet communication via this cable ten times cheaper than satellite connection (Fall, 2007). Furthermore, the late President El Hadj Omar Bongo Ondimba and his government launched a series of ICT initiatives in collaboration with private and International companies, such as ARES, HP and the African Virtual University, in order to initiate ICT implementation and use in the Educational System (Fall, 2007).

Learners and teachers could benefit significantly by the implementation, integration and use of ICT for teaching and learning activities, as well as for TPD (Fall, 2007; Nitschke, 2005; Nygren, *et al.*, 2012; Pelgrum, 2008; Rumajogee, *et al.*, 2003; Schlosser & Anderson, 1994). However, presently neither the implementation nor the integration or even the use of ICT is being realized within the education system of Gabon, especially for the TPD of in-service teachers via ODL. *The central research problem identified by the current investigation is that it is unclear which challenges and enablers exist pertaining to initiating ICT in the ODL training of Gabonese teachers.* Information concerning the challenges and enablers of initiating ICT in the ODL training of Gabonese teachers could benefit and support the Gabonese Education Department, policy makers and academic institutions in their quest to implement, integrate and use ICT in the TPD of in-service teachers via DE and ODL.

### 1.3 Review of Literature

In accordance with the topic of investigation and the research problem identified in the previous section, this section firstly provides short introductory literature reviews of ICT, DL and ODL, and the role of ICT in the TPD of in-service teachers via ODL. Then the fundamental challenges against the implementation, integration and use of ICT for educational purposes are identified from the literature; followed by the conceptual research framework used for this study, i.e. a combination of Taylor's (2006, 2007) five generations of the evolution of technology innovation in DE with Stoner's (1996) conceptual framework for the integration of learning technology.

#### 1.3.1 Information Communication Technology

ICT is generally defined as the use of different technologies to process and transfer information within different contexts, i.e. social, economic, political, educational, etc. (Ogunsola, 2005). ICT definitions often point out devices and their roles, and services for which their use is definitely paramount—such as education. There is no doubt that ICT influences teaching and learning nowadays. According to the Birkbeck University of London (2005), ICT represents all the devices required in the *dynamics* of information processing anywhere and anytime. Nitschke (2005) acknowledges this view and refers to the definition for ICT provided by Whatis.com (2005) which states that ICT constitutes any communication media, such as radio, television, cellular phones, computer and network hardware and software, and satellite systems, etc. It includes the various services and applications closely linked up with devices such as video conferencing and distance learning. The pedagogical use, implementation and integration of ICT in education imply changes in teaching and learning previously based on conventional paradigms (face-to-face teacher and learner interaction, lecturer-centredness, etc.). Asemota (2005, p. 31) states that “with the advent of new technologies, the nature of delivery and acquisition of knowledge has changed and will continue to change with further improvement in technology...” Pedagogical materials and methods are adapted and education is extended to DE, thus breaking down geographical and time challenges. According to UNESCO (2012), ICTs can significantly contribute to universal access to education, equity in education, the delivery of quality learning and teaching, *teachers' professional development* and more efficient education management, governance and administration. ICTs offer developing countries a window of opportunities to leapfrog the industrialization stage and transform their economics into soaring value-added information economies that can compete with the advanced economics of the global market (Faye, 2000).

#### 1.3.2 Distance Education and Open Distance Learning

DE focuses on teaching methods, usually supported by technology, with the aim of delivering teaching to students who are not physically present at a specific time in a traditional educational setting such as a classroom (Faye, 2000). DE can furthermore be defined as a teacher-learner relationship characterized by separation between learners and teachers, and facilitated by print, electronic,

mechanical or other devices (Shalyefu, 2005). The definition points out the characteristics of DE namely the *geographical distance* and the *educational organization* which consists of the curricula and the devices necessary for their achievement. DE theorists' views as to these characteristics vary and often lead to different names for DE (asynchronous learning, independent study) as competing perspectives (Peters & Wedemeyer, 2007). DE represents an interactive style of teaching which is capable of forging a relationship between learners and tutors (Shalyefu, 2005). As such, this perspective is identical to Moore's definition which establishes a gap between the conventional classroom teacher-learner relationship and the virtual teacher-learner relationship in DE. Although different, the use of ICT in both traditional and DE becomes difficult to avoid. In this regard, UNISA (2008) gives a condensed definition of ODL 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. Open distance learning focuses on removing barriers to access learning, flexibility of learning provision, student-centeredness (sic), supporting students and constructing learning programmes with the expectations that students can succeed (UNISA, 2008).

This definition reflects the South African view as to ODL and its policy to implement ICT in the country which also responds to the assertion that should a country not be able to embark on the current technological advancement, the country cannot prosper. In this regard, the South African government, through its *e-Education White Paper* (Department of Education, 2004) relating to ICT implementation policy, foresees by the year 2013 to have made every South African user (manager, teacher and learner) ICT capable. South Africa can be considered as a model, an example for the countries in which ICT has not yet been integrated into institutions of learning. This study regularly refers to South African ICT implementation policy and its DE experience.

Broadly speaking, DL and ODL seem akin in terms of their terminology, *distance learning* and their background. For instance, the post-Apartheid South African Government's commitment to DE states that the development of a well-designed and quality DE system is based upon the principles of open learning, which will allow people access to education and training, and the ability to determine where, when, what and how they want to learn. However, despite some similarities, there are inadequacies related particularly to the relationship between teachers and learners, and most importantly to the academic programme of each concept of where, when, what and how they want to learn. In this regard, South Africa's first White Paper on e-Education (Department of Education, 2004; Els & Blignaut, 2009) distinguishes between open learning and DE, refining the principles of open learning in South Africa. According to this policy, open learning is an approach which combines the principles of learner-centredness, life-long learning, flexibility of learning provision, the removal of challenges to access learning, the recognition of credit for prior learning experience, the provision of learner support, the construction of learning programmes in the expectation that learners can succeed, and the maintenance of rigorous quality assurance over the design of learning materials and support systems (Welch & Reed, 2005). As such, the distinction between DL and ODL is presented according to different modes of programme delivery (Table 1.1).

**Table 1.1: Modes of Distance Programme Delivery \***

Distance Learning	Open Distance Learning
University/lecturer-centred	Student, teacher, or professionally-centred
Lecturers providing education to learners over a distance	Students take ownership of their own learning and professional development over a distance
Focuses on deliverance of DE from the viewpoint of lecturers	Focuses on the specific needs, expectations and development of students
Course content and curricula developed from the viewpoint of lecturers	Curricula and course content developed to accommodate the unique contexts, needs and expectations of students
Usually in line with on-campus schedules and time-tables	Students can enrol and write examination for courses at any time throughout the year
Not flexible	Flexible

\* (Edwards, 1995; Schlosser & Anderson, 1994; Schlosser & Simonson, 2002; Welch & Reed, 2005)

### 1.3.3 The use of Information Communication Technologies in Open Distance Learning

The use of ICT in DE has become crucial in the modern world. Olcott (1999), for example, recognizes the importance of the role of technologies in the 21<sup>st</sup> century when he invites the institutions of learning to *assimilate* technology into the core of their missions. Nitschke (2005) argues that any institution which uses technologies to *reach its clients* whilst giving education lessons, *has a good chance to prosper and take a fair share of the market*. Similarly, Asemota states that...*the country* which will be able to integrate *these changes in the context of DE* will definitely exhibit competitive advantage over others (Asemota, 2005). On the other hand, people in *quest of better qualifications and good employment positions* provide themselves with technologies which enable them to further their studies. Today most universities around the world, including institutions that deliver academic programmes via DE or ODL, regularly make use of ICT for programme delivery (Ackermann, 2005; Asemota, 2005; Fozdar, Kumar, & Kannan, 2006; Schlosser & Simonson, 2002).

### 1.3.4 Fundamental Challenges to the Implementation, Integration, and Use of Information and Communication Technology for Educational Purposes

The following fundamental challenges that hold back the implementation, integration and use of ICT for educational purposes (Table 1.2) are identified from the literature: (i) insufficient or inadequate ICT policy; (ii) insufficient or inadequate framework (with objectives, strategies and guidelines) for the implementation, integration and use of ICT for pedagogical purposes; (iii) insufficient or inadequate ICT infrastructure; (iv) insufficient or inadequate ICT resources; (v) insufficient or inadequate professional development in ICT knowledge and skill; (vi) insufficient or inadequate ICT technical support; (vii) resistance to change; (viii) technophobia; (ix) digital divide; (x) negative attitude of management; and (xi) poverty (Blignaut & Els, 2009; Els & Blignaut, 2009; Galusha, 1997; Pelgrum, 2008).

**Table 1.2: Fundamental Challenges to the Implementation, Integration, and Use of Information and Communication Technologies for Educational Purposes \***

Fundamental Challenges *	
i	Insufficient or inadequate ICT policy
ii	Insufficient or inadequate framework (with objectives, strategies and guidelines) for the implementation, integration and use of ICT for pedagogical purposes
iii	Insufficient or inadequate ICT infrastructure
iv	Insufficient or inadequate ICT resources
v	Insufficient or inadequate professional development in ICT knowledge and skill
vi	Insufficient or inadequate ICT technical support
vii	Resistance to change
viii	Technophobia
ix	Digital divide
x	Negative attitude of management
xi	Poverty

\* (Blignaut & Els, 2009; Els & Blignaut, 2009; Galusha, 1997; Pelgrum, 2008)

Despite the fact that Gabon opted to set up a national system for the implementation and use of ICT in order to provide access to information for the general public, currently no policy, framework or strategies exist to incorporate ICT into Education (Fall, 2007). This study provides information concerning the enablers and issues of initiating ICT into the ODL of Gabonese in-service teachers. This information could benefit and support the Gabonese Education Department, policy makers and academic institutions in their quest to implement, integrate and use ICT in the TPD of in-service teachers via DE and ODL. In this regard, the UNESCO International Institute for Educational Planning defines TPD as: "Teacher development is the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically" (Villegas-Reimers, 2003, p. 11).

### 1.3.5 Conceptual Research Framework

A combination of Taylor's (2006, 2007) five generations of the evolution of technology innovation in DE and Stoner's (1996) conceptual framework for the integration of learning technology serves as conceptual research framework for the current investigation. Stoner (1996) identifies *three phases* when describing ODL. The first phase points out the *distribution of printed material by mail* with a limited *face-to-face interaction* between learners and teachers. The second phase, *postal communication* combined with *sound and video* such as *telephones, radio and television*, and interaction, is a limiting one-way mode of communication. The last phase is the consequence of technological improvement leading to a combination of one-way and multi-link communication encompassing *written material, television, video conference, computer network, e-mail, Internet, computer conference, and tutorial work with direct contact*. Tatkovic, Ruzic, and Tatkovic (2006) depict the close link between ODL and the *technological advancement*. The three phases described by Tatkovic, *et al.* (2006) can be expanded with the theory of Taylor (2006, 2007) who describes the evolution of technological innovation (ICT) in DE according to five generations (Table 1.3).

**Table 1.3: Five Generations of the Evolution of Technological Innovation in Distance Education** (Taylor, 2007)

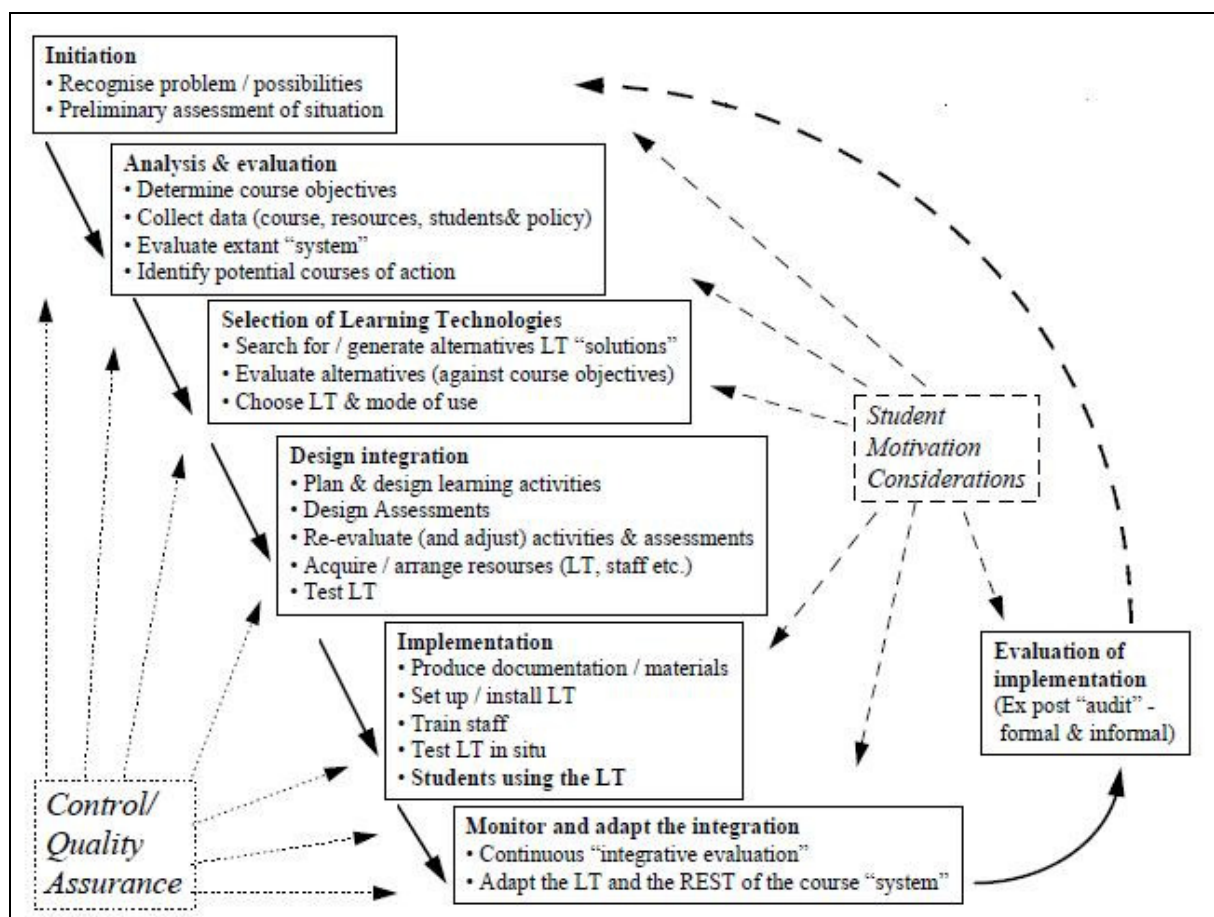
Models of Distance Education and Associated Delivery Technologies	Characteristics of Delivery Technologies					
	Time	Flexibility		Highly Refined Materials	Advanced Interactive Delivery	Institutional Variable Costs Approaching Zero
		Place	Pace			
<b>FIRST GENERATION</b>						
<b>The Correspondence Model</b>						
• Print	Yes	Yes	Yes	Yes	No	No
<b>SECOND GENERATION</b>						
<b>The Multimedia Model</b>						
• Print	Yes	Yes	Yes	Yes	No	No
• Audiotape	Yes	Yes	Yes	Yes	No	No
• Videotape	Yes	Yes	Yes	Yes	No	No
• Computer-based learning (e.g. CML/CAL/IMM)	Yes	Yes	Yes	Yes	Yes	No
• Interactive video (disk and tape)	Yes	Yes	Yes	Yes	Yes	No
<b>THIRD GENERATION</b>						
<b>The Telelearning Model</b>						
• Audio tele-conferencing	No	No	No	No	Yes	No
• Video-conferencing	No	No	No	No	Yes	No
• Audiographic Communication	No	No	No	Yes	Yes	No
• Broadcast TV/Radio and audio-teleconferencing	No	No	No	Yes	Yes	No
<b>FOURTH GENERATION</b>						
<b>The Flexible Learning Model</b>						
• Interactive multimedia (IMM) online	Yes	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes	Yes
• Computer-mediated communication	Yes	Yes	Yes	Yes	Yes	No
<b>FIFTH GENERATION</b>						
<b>The Intelligent Flexible Learning Model</b>						
• Interactive multimedia (IMM) online	Yes	Yes	Yes	Yes	Yes	Yes
• Internet-based access to WWW resources	Yes	Yes	Yes	Yes	Yes	Yes
• Computer-mediated communication, using automated response systems	Yes	Yes	Yes	Yes	Yes	Yes
• Campus portal access to institutional processes and resources	Yes	Yes	Yes	Yes	Yes	Yes

The first generation (Correspondence Model) makes use of printed media only for programme delivery. The second generation (Multimedia Model) makes use of printed, audio-taped, video-taped, computer-based learning and interactive video delivery technologies (ICTs). The third generation (Tele-learning Model) uses the following types of ICTs for programme delivery: audio tele-conferencing, video conferencing, audio-graphic communication, TV or radio broadcasting and tele-conferencing; while the fourth generation (Flexible Learning Model) uses the following ICTs: online interactive multimedia, Internet-based access to World Wide Web (WWW) resources and computer-mediated communication. Lastly, the fifth generation (Intelligent Flexible Learning Model) uses the following types of ICTs for programme delivery: online interactive multimedia, Internet-based access to

WWW resources, computer-mediated communication using automated response systems, and campus portal access to the academic institution's processes and resources (Taylor, 2006, 2007).

Considering Gabon's growing ICT infrastructure, such as the country's connection to the WASC/SAT3 optic sea cable that makes international Internet communication ten times cheaper than satellite connection, and the series of ICT initiatives launched by the Gabonese Government in collaboration with private and International companies in order to launch ICT implementation and use in the educational system (Fall, 2007), it is envisioned that the Gabonese context lies within the fourth generation (Flexible Learning Model) in terms of the evolution of technology innovation in DE. This study aims to indicate which model would be suitable for the Gabonese context.

Stoner (1996) proposes a conceptual framework for the integration of learning technology (Figure 1.1) which provides structure to the study—a lens through which the study is viewed (Merriam, 1998).



**Figure 1.1: Systems Life Cycle of Learning Technology Integration (Stoner, 1996)**

Figure 1.1 shows the systems life cycle of the integration of learning technology into education. The current study focuses on the first dimension in Figure 1.1, namely *Initiation*, i.e. recognising the challenges and enablers of initiating ICT in the TPD of in-service teachers via ODL, and will thereby, provide a preliminary assessment of the situation/context for initiating ICT in the ODL training of

Gabonese teachers. The determination of these issues will assist in the preliminary assessment of the integration of ICT for ODL in in-service teacher training in Gabon.

From the above exposition, the following research questions are identified: (i) *What are the challenges of initiating ICT in the ODL training of Gabonese in-service teachers?*; and (ii) *What are the enablers of initiating ICT in the ODL training of Gabonese in-service teachers?*

#### **1.4 Research Aim**

The aim of this qualitative descriptive exploratory research study is: *to explore, describe and understand the enablers and challenges of initiating ICT in the open distance learning training of Gabonese in-service teachers.*

#### **1.5 Research Design and Methodology**

Burrell and Morgan (1979) hold that social theory can be located within the context of four paradigms according to their meta-theoretical assumptions. The four paradigms provide a map for researchers to describe where they are, where they have been, and where they could go. “The interpretivist paradigm sees the world as an emergent social process which is created by the individuals concerned” (Burrell & Morgan, 1979, p. 28). This statement accurately describes the research context of this study because it involves the unique (subjective) attitudes, fears, needs and expectations of individuals within the Gabonese Education System.

An interactive qualitative case-study research design according to and Denzin and Lincoln (2005); Merriam (1998) was used in this investigation to obtain in-depth context sensitive data concerning the attitudes, fears, needs, expectations, infrastructure and readiness of the Gabonese Education teachers (at schools and training institutions) for the implementation and use of ICT for ODL training of Gabonese English (second language) teachers, collected through qualitative research methods, i.e. individual and focus-group interviews, as well as additional research artefacts in the form of photographs to visually record the unique contexts involved.

For almost two decades, as an English teacher in Gabonese schools, I have encountered many Gabonese English teachers who undoubtedly would like to professionally develop themselves as part of in-service training or during study leave. As a researcher, I should be knowledgeable in the field of enquiry (Patton, 2002). I therefore decided to stay within the domain of my specialization as a Gabonese English second-language teacher when conducting my research. I selected to execute my research amongst a social network selection of Gabonese English teachers, principals, university lecturers, ICT experts, as well as officials from the National Pedagogical Institute (advisers and

inspectors) as I have knowledge about the structures and networks of this community of practice. To ensure sufficient participants, I made use of a snowball strategy where participants in the research referred others, as well as a selection criteria. Guided by the selection criteria, participants were invited to voluntarily and anonymously participate in individual and focus-group interviews at neutral pre-arranged locations (e.g. school classrooms, principals' offices, university offices and government building offices) (Merriam, 1998).

Three qualitative data collection strategies were used to collect in-depth context sensitive data: (i) semi-structured open-ended individual interviews; (ii) semi-structured open-ended focus-group interviews; and (iii) qualitative research artefacts, e.g. photographs (Denzin & Lincoln, 2005; Merriam, 1998; Patton, 2002). Data collection was sensitive and considerate regarding schools and university time-tables to ensure that the interviews did not disrupt the pedagogical activities within the Gabonese Education System. All interviews were recorded with digital data-recorders. Photographs as qualitative artefacts were also collected in order to help illustrate the fundamental contexts of the Gabonese Education System concerning the implementation and use of ICT for ODL teachers training (Greef, 2005).

Interviews were conducted in French, as it is the official language of Gabon. The recorded individual and focus-group interviews were transcribed (in French) and ATLAS.ti™, a computer-based qualitative data-analysis software, was used to construct an integrated data-set for analysis. Data were analysed according to a grounded theory approach and a content analysis of the interview data was performed (Saldaña, 2009) to identify the aspects concerned with the enablers and challenges of ICT integration in ODL for English teachers in Gabon. Qualitative researchers from the North-West University (NWU) assisted me in the data-analysis and interpretation process.

## 1.6 Research Report Structure

Table 1.4 outlines the structure (chapter division) of this research report for the reader.

**Table 1.4: Research Report Structure**

Dissertation Chapter	Description of Content
Chapter 1 Problem statement, research questions and aims, paradigm, and outline of the research report	Chapter 1 orientates the reader into the context of the study, identifies the research problem, presents the research questions and aims, and explains, in short, the research design and methodology that were used to address the research questions and aim.
Chapter 2 Literature Review	Chapter 2 continues to look at DE and ODL, as well as the use of DE and ODL for vocational continued education, specifically for TPD. Thereafter, a survey is provided of the Gabonese Education System, followed by a discussion of ODL in the Gabonese Education System. The current ICT landscape of the Gabonese Education System is explored, followed by a discussion of the enablers and challenges of ICT implementation, integration and use in the Gabonese Education System.

Dissertation Chapter	Description of Content
Chapter 3 Research Design and Methodology	Chapter 3 explains the research design and methodology used for this research, including sampling, data collection methods and procedures, and data-analysis.
Chapter 4 Research Findings	Chapter 4 offers an analytical report of the research findings pertaining to the enablers and challenges of initiating ICT in the ODL training of Gabonese in-service teachers.
Chapter 5 Framework (with Guidelines)	Chapter 5 provides a proposed framework (with guidelines) for the implementation and use of ICT for ODL TPD of Gabonese English (second language) teachers. Recommendations are also made for future research.
References	Bibliography of references used

## Chapter 2: Literature Review

---

### 2.1 Introduction

The first chapter indicated and motivated the research problem and aim of this study within the context of the Gabonese Educational System. The implementation, integration and use of ICT in the ODL training of in-service teachers in Gabon comprise the heart of this study. South Africa was used as reference point in this study. Chapter 2 starts with a general discussion of ICT, i.e. definitions of ICT, e-learning, policy and planning of ICT, the use of ICT, potential of ICT for developing countries, ICT integration challenges, and ICT infrastructure and resources. In order to come to grips with this, the first cycle of Stoner's model on learning technology integration is used as conceptual framework. This cycle revolves around initiation, which deals with recognising challenges and enablers of the issue at hand, which is the integration of ICT in the ODL training of in-service teachers in Gabon, as well as doing a preliminary assessment of the situation. Chapter 2 continues to look at DE and ODL, as well as the use of DE and ODL for vocational continued education, specifically for TPD. Thereafter, a survey is provided of the Gabonese Educational System, followed by a discussion of ODL in the Gabonese Educational System. The current ICT landscape of the Gabonese Educational System is explored, followed by a discussion of the enablers and challenges of ICT implementation, integration and use in the Gabonese Educational System.

### 2.2 Information and Communication Technology

It appears that various definitions of Information Technology and ICT have been offered since its inception and integration into Education. Although definitions differ, most scholars seem to agree on what the core of ICT entails. The South African government's policy concerning ICT, the use, enablers and challenges that ICT offers are discussed. The infrastructure of ICT in education is also dealt with, as is the part it plays in the professional development of teachers.

#### 2.2.1 Definitions of Information and Communication Technology

A generic definition of ICT refers to all technologies used for the manipulation and communication of information and their use in any environment or domain such as education, management etc. (Boer, 2005). Loveless and Dore (2002) and Pelgrum (2008) define ICT as the use of electronic information handling 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, smart boards, learning management systems (LMS), the Internet, email, modems, television, and other sophisticated laboratory equipment.

Since we are using South Africa as reference point in this study, we will also rely upon the definition from the South African White Paper (Department of Education, 2004), which states that ICT represents the combination of information technology and communication technology. The term information technology (IT) is a term used to represent the items of equipment (hardware) and computer programmes (software) that allow us to access, retrieve, store, organise, manipulate and present information by electronic means. Personal computers, scanners and digital cameras fit into the hardware category; database programmes and multimedia programmes fit into the software category. The term communication technology (CT) is a term used to describe telecommunications equipment through which information can be sought, sent and accessed, for example, phones, faxes, modems and computers. So, ICTs combine networks, hardware and software. The means of communication, collaboration and engagement involved in that combination enable the processing, management and exchange of data, information and knowledge (Department of Education, 2004; Ngugi *et al.*, 2007).

### **2.2.2 e-Learning**

Guri-Rosenblit (2005) defines e-learning as a new phenomenon which relates to the use of electronic media for a variety of learning purposes. It is thus a channel, or method, within ICT to use to facilitate learning. That can be as add-on functions in conventional classrooms or as a full substitution for the face-to-face meetings by online encounters. Nitschke (2005) clarifies that e-learning applications and processes include web-based learning, computer-based learning, virtual classrooms, and digital collaboration. He states that its content is delivered via the Internet, intranet or extranet, audio or video tape, satellite TV and CD-ROM. Broadly speaking, e-learning is a flexible learning which focuses on: accessing information; interaction between teachers, learners and the online environment; collaborative learning; and production of materials, resources and learning experiences (Department of Education, 2004; Ngugi, *et al.*, 2007).

The e-Education White Paper (Department of Education, 2004) describes e-learning (learning through the use of ICTs) as learning and teaching philosophies and methodologies within the context of outcomes-based education, using ICTs in the learning environment. Using ICTs in the learning environment depends on the goals the country aims to reach. So, enriching the learning environment through the use of ICTs is a continuum; it is a process that takes learners and teachers through learning *about* ICTs (exploring what can be done with ICTs), learning *with* ICTs (using ICTs to supplement normal processes) (and/or resources), and learning *through the use* of ICTs (using ICTs to support new ways of teaching and learning).

### **2.2.3 Policy and Planning of Information and Communication Technology**

National ICT policies aim to increase the quality of education, to provide work, empower people and provide education. Those who are proficient in ICT are found in many developed and developing

countries (Tondeur, Braak, & Valcke, 2007). At tertiary level, unfortunately, it often seems as if the vast majority of policy texts appear to focus on formal academic tertiary education, as opposed to post-secondary vocational training and non-formal e-learning experiences. Australia seems to be a welcome exception to this rule (Brown, Anderson, & Murray, 2007).

This seems to indicate insufficient planning and insight from the side of policy makers, which could hamper the progress of the integration of ICT considerably. Since universities are increasingly delivering courses on-line, via the internet, or through satellite or television broadcasts, colleges and universities have found this to be profitable to provide learning services and opportunities through alternative delivery methods (Wallace, 1996); insufficient policies in this field will be detrimental and short-sighted. Governments worldwide would be similarly short-sighted if they did not develop and implement an effective policy for the integration of ICT. Unfortunately ICTs remain a low policy or financial priority in most educational systems in Africa. In some cases certain ICT policies have also been structured to benefit external interest and not the development of the needs of the specific country (Evoh, 2007).

The South African Government has committed itself to the integration and use of ICTs in education for equal access to learning opportunities, economic growth and social development. In this regard, the e-Education White Paper (Department of Education, 2004) serves as the official governing policy on e-Education in South Africa. This policy supports larger systematic, pedagogical, curricular and assessment reforms. These reforms will facilitate improved education and improved use of educational resources such as ICT. The strategic goal of the policy is that each South African manager, teacher and learner in the general and further education and training bands, should be a capable ICT user. That is, they have to use ICTs confidently and creatively in order to help develop the skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community by the year 2013.

The policy on e-Education acknowledges the great investment required to attain its strategy goals. The on-going and increasing costs involved in providing access to technology, teacher development, pedagogical and technical support, digital content, telecommunication, as well as maintenance, upgrades and repairs to infrastructure, are all expenses not yet acknowledged in the national educational budget (Department of Education, 2004). South Africa is not alone in realising the importance of ICT; many governments also note the importance of ICT in the growth of cross-border education and trade in educational services (Middlehurst & Woodfield, 2006). Unfortunately these countries seem to be situated outside Africa.

The Malaysian government with its Vision 2020 is seeking to transform Malaysia into the economic, political and educational hub of South East Asia. ICT plays a significant part in this with the Multimedia Super Corridor (MSC) initiative which is intended to make Malaysia the centre of excellence for future multimedia industries (Middlehurst & Woodfield, 2006). By 2002, 23 HEIs had

MSC status conferred, marking them out as proficient in key aspects of ICT such as infrastructure and content development, research and training (Middlehurst & Woodfield, 2006).

Developing countries have no choice but to provide schools with computers and also to foster a culture of acceptance among those who are to use the tools (Albirini, 2006). If developing countries do not want to fall even further behind in the information age, the governments of these countries need to provide their citizens with the opportunities that ICT might offer (Howie, Muller, & Paterson, 2005). This calls for an effective and comprehensive policy regarding the integration of ICT, as well as for commitment to actually turn policy into reality.

The implementation of these comprehensive strategic policy goals requires a multi-year implementation strategy executed in three phases which are: (i) Improve system-wide and institutional readiness to use ICTs for learning, teaching and administration; (ii) System-wide integration of ICTs into teaching and learning, and (iii) Integration of ICTs at all levels in education systems, including management, teaching and learning, and administration (Department of Education, 2004). Howie, *et al.* (2005) indicate that, in South Africa, government education departments on their own cannot guide ICT policy and have to rely on local initiatives. They advocate that in the twenty-first century it is essential for national education departments to initiate education-related ICT policies for four reasons: to ensure that national human resources development can be improved so that the workforce has the skills to extract maximum value from ICT availability in the workplace and in civil society; to ensure that national human resources development policies include ICT so as to sustain competitiveness in the global labour market; to ensure that access and skilling does not increase inequity in education, which is likely to happen if ICT acquisition and integration into the curriculum is left to local initiative.

Even though the emerging global economy places significant pressure on the education and training sector in South Africa with respect to knowledge production and acquisition, it is important to balance the imperative of skilling educators and learners to facilitate national and information industry needs within an economic rationale with the importance of preparing learners for the optimisation of their own development needs as individuals and as lifelong learners (Howie, *et al.*, 2005).

This commitment will require significant dedication from both public and private partnerships as governments of many developing countries have realised. A good example of this occurred in Asia, where the Coca-Cola™ Company brought e-learning opportunities and resources to tens of thousands of young people and their communities in countries such as Vietnam, China, Philippines, Australia and Malaysia (Tinio, 2003).

In Scotland, unlike South Africa, all education authorities took full responsibility for taking a lead in policy and planning for ICT in education in their area. They took responsibility for planning the wider aspects of infrastructure, such as network equipment, connections to the Internet and services for learners and teaching staff. Head teachers generally have responsibility for provision of ICT

equipment and software within their establishments with the support of the government (Donaldson, 2007). According to Blignaut, Els, and Howie (2010a), Internet connectivity becomes increasingly important to achieve education goals such as fostering collaborative skills and teamwork and preparing students for responsible Internet behaviour in the 21st century. Education departments of South Africa should invest money in the acquisition of ICTs and look for private initiative. When compared with other educational systems like Chile, Singapore, Lithuania etc., South Africa's availability of more modern ICT equipment such as interactive smart-boards, mobile devices, digital resources, modelling software, multimedia production tools, and electronic laboratory equipment was even lower (Howie, *et al.*, 2005).

#### **2.2.4 Use of Information and Communication Technology**

Olcott (1999) stresses the importance of the role of technologies in the 21<sup>st</sup> century, saying that HEIs should bring technology closer to their core missions. Then technology will find its rightful place within the institution and the necessary resources and facilities will be made available for proper integration of technologies in teaching and learning (Nitschke, 2005).

Ololube, Ubogu, and Egbezor (2007) rightly declare that the ICT literacy rate has become the key tool that has revolutionised how we see the world and how we live it. He goes on to state that the integration of ICTs is an essential ingredient in the development of DE programmes in Africa, but has not been sufficiently encouraged. In Scottish education, teaching staff and learners use ICT most effectively where centres identify and implement the most effective arrangements for deploying equipment to enable access to ICT for learning and teaching that meet most appropriately the needs of users (Donaldson, 2007).

Howie, *et al.* (2005) claim that the integration of ICT into the curriculum can benefit learners in two important ways. Firstly, exposure to ICT will supply learners with great practical experience and the opportunity to learn skills that will be useful in an increasingly technology-saturated work environment. Secondly, integrating ICT across the curriculum makes it possible for learners to become creators of knowledge in their own right, for example, through seeking for information on the Internet and then synthesising this information in the form of a presentation or project (Howie, *et al.*, 2005). Pelgrum (2008) states that the paradigm underpinning the change in the students entails a process in which students become actively involved in their own learning. This process is sometimes referred to as lifelong learning or as a constructivist vision of teaching and learning. In this approach, educators drive learners, as well as themselves, to independent and self-regulated learning, which involves engaging actively and collaboratively in research-based real-world challenges and tasks (Howie, *et al.*, 2005).

Tinio (2003) states that ICTs are potentially powerful tools that enable educational change and reform. When used appropriately, different ICTs help to expand access to education, strengthen the relevance

and effectiveness of education in an increasingly digital workplace. Added to that, ICTs raise educational quality by assisting in turning teaching and learning into an engaging, active process connected to real life.

### **2.2.5 Information and Communication Technology Integration Challenges**

Challenges are obstacles in the way of the integration of ICT in learning and teaching areas and in other domains relating to the implementation and the use of ICT. During the past twenty years the factors that impede the integration of ICT seem not to have changed: resistance to change, resources, training and time to integrate ICT effectively (Blignaut & Els, 2009; Guru & Percy, 2005).

Jamieson-Proctor, Burnett, Finger, and Watson (2006) claim that twenty years of research on the integration of ICT in education shows that although changes are taking place to integrate ICT effectively into teaching and learning, they are not enough to bring about the required change at the required pace (Blignaut & Els, 2009). A survey dealing with the integration of ICT in South African schools indicated that integration had started as long ago as the 1980s (Howie, *et al.*, 2005), but some difficulties prevail in certain areas in education and administration but in general seems to be improving.

Stoner's (1996) conceptual framework, which deals with the life cycle of the integration of learning technology into education (Figure 1.1), would place South Africa somewhere between the fifth and the sixth levels of the framework. The fifth level comprises implementation and its components, namely to produce documentation or materials, set up or install LT, train staff, test LT in situation and students using the LT. The sixth level comprises to monitor and adapt the integration with continuous "integrative evaluation," and adapt the LT and the rest of the course "system." Pelgrum (2008) states that South African teachers seem less technically skilled, and rely more on external support than for example Lithuania, where teachers are mostly responsible for their own technical support. In the majority of schools in Hong Kong, the Moscow Russian Federation, and Singapore, students mostly provide technical support—an indication of their readiness for and connectedness to the demands of the 21<sup>st</sup> century information skills. In South Africa students technically support their schools less than two minutes per week (Blignaut & Els, 2009).

The current study focuses on the first dimension in Figure 1.1, namely *Initiation*, i.e. recognising the challenge and enablers of initiating ICT in the TPD of in-service teachers via ODL, and will thereby provide a preliminary assessment of the situation or context for initiating ICT in the ODL training of Gabonese teachers. Establishing these issues will assist in the preliminary assessment of the integration of ICT for ODL in in-service teacher training in Gabon.

During an investigation of possible obstacles to the use of ICT Pelgrum (2008) referred to teachers from 22 countries. The obstacles were placed in two categories, such as pedagogical ICT use by

teachers and obstacles to adopting ICT in teaching. Regarding the obstacles to pedagogical ICT use, twelve listed obstacles to ICT use were given and grouped into three sub categories: (i) school-related factors relating to school culture or ICT resources available; (ii) teacher-related factors relating to competence, confidence, and time availability; and (iii) student-related factors relating to students' level of ICT-skills and access to ICT outside school (Pelgrum, 2008). Teachers were asked to indicate whether they had experienced, when teaching, any of these twelve listed obstacles to ICT use.

**Table 2.1: Three Categories of Obstacles Experienced by Teachers in their Use of Information and Communication Technology in Teaching (Pelgrum, 2008)**

Category of Obstacles	Specific Obstacle Included within Each Category
<b>School related</b>	<ul style="list-style-type: none"> <li>• ICT is not considered useful in my school</li> <li>• My school does not have the required ICT-infrastructure</li> <li>• My school has insufficient digital learning resources</li> <li>• I do not have the flexibility to make my own decisions when planning lessons with ICT</li> <li>• I do not have access to ICT outside of the school</li> </ul>
<b>Teacher related</b>	<ul style="list-style-type: none"> <li>• Insufficient ICT-related skills</li> <li>• Insufficient ICT-related pedagogical skills</li> <li>• Insufficient confidence to try new approaches alone</li> <li>• Insufficient time to develop and implement ICT-using activities</li> <li>• Unable to identify which ICT tools will be useful</li> </ul>
<b>Student related</b>	<ul style="list-style-type: none"> <li>• Students do not possess the required ICT-skills</li> <li>• Students do not have access to the required ICT-related tools outside of the school premises</li> </ul>

In general, the school-related obstacles were those least likely to be reported in most systems related to ICT resources availability. For most of the other systems, teacher-related obstacles were those most frequently reported. Fifty percent and more of teachers in Japan, Moscow, the Russian Federation, South Africa, and Thailand reported these obstacles related to competence, confidence and time availability. In three of these systems—the Russian Federation, South Africa, and Thailand--the levels of student-related obstacles reported and linked to students' level of ICT skills and access to ICT outside school were even higher, at around 70% or above (Pelgrum, 2008).

Regarding the obstacles to adopting ICT in teaching, in some systems such as Slovenia and Finland, the level of school-related obstacles experienced indicated a very strong negative index while in other systems such as Catalonia, Chile, and Japan, the level of teacher-related obstacles experienced was a strong negative index. In about half of the participating systems, results showed that both kinds of obstacles formed significant negative indexes of the likelihood of teachers adopting ICT in their teaching. Singapore was exceptional in that neither type of obstacle was a statistically significant index of teachers' pedagogical adoption of ICT. The results for Chile were also unique and somewhat puzzling in that the level of school-related obstacles experienced by teachers was a significant positive index for teachers' reported use of ICT in teaching (Pelgrum, 2008).

In Scotland where ICT integration was quite advanced in education, the occurrence of a limited range of offered services to all learners and teaching staff created a challenge for ICT integration. However, there were centres which deployed a wide range of services to manage learners' access to and use of

ICT. These services included network accounts, network-based file storage, and access to e-mail shared folders for learning and teaching materials and, in the case of a few colleges, comprehensive managed learning environments (Donaldson, 2007).

Cho and Berge (2002) refer to various studies on challenges to ICT integration. They identified the following challenge clusters:

- technical expertise
- administrative structure
- evaluation/effectiveness
- organizational change
- social interaction and quality
- student support services
- threatened by technology
- access
- faculty compensation and time
- legal issues (Berge & Muilenburg, 2000).

The professional working situation of teachers can also be a challenge to integration of ICTs. Many under-qualified, overworked, and underpaid teachers in developing countries, will only effectively and successfully adopt and integrate ICTs if they are given continuous opportunities to learn what they need to learn based on their specific circumstances and experience, and should be given sufficient time in which to do so (Tinio, 2003).

Farrell, Isaacs, and Trucano (2007) performed a comprehensive survey of ICT in education in 53 different African countries and found that certain factors seem to enable ICT integration and certain ones seem to curb this integration. In an African country like Zimbabwe, the most prominent factors that curb ICT initiation and integration seem to be: insufficient national policies on ICT initiation and integration in education, insufficient human resources and funding, and insufficient digital education content based on the local curriculum.

Tinio found that in a developing country like the Philippines, one of the major obstacles for the use of ICT is the insufficient timely technical support. Schools in remote areas often have to wait months for computers to be fixed and often these computers have to be sent away (Tinio, 2003). Developing countries in Africa have similar challenges.

Research findings by the OECD (Organisation for Economic Co-operation and Development) suggest that the under-utilization of ICT by student and beginner teachers was due to a number of causes such as: insufficient resources in schools and in initial teacher training institutions, or insufficient access to these, insufficient ICT experience and training at pre-service level and insufficient confidence in computing skills of both students and teacher trainers, insufficient opportunities and

encouragement to use computers during school placement and predominance of other classroom pressures. Teachers, in general, also seem reluctant to change their teaching styles and habits (Magambo, 2007) which would obviously be a substantial challenge to integrating ICTs in education.

Anderson and Plomp (2008) indicate that language is also an obstacle for South African schools in the implementation of ICT in teaching and learning. English is not the primary home language, but the most common language used on the WWW (Blignaut & Els, 2009).

Jimoyiannisa and Komi (2007) indicate that another obstacle seems to be the fact that few practising teachers know exactly how to proceed with the integration of ICT in the curriculum. They also do not understand what is actually meant by ICT integration (Blignaut & Els, 2009). Rena (2008) poses that connectivity, capacity and content are three basic conditions for Internet use. In their need for and deployment of ICTs, universities in Africa are hampered by challenges such as high prices for Internet connectivity, poor local and regional infrastructure, and insufficient ICT-skilled human resource capacity to manage the scarce Internet resources and make them available to the end-user community. Low teacher remuneration also relates to insufficient ICT-skilled staff at tertiary education as teachers struggle to afford ICT access and infrastructure themselves. Magambo (2007) indicates that the average African university pays fifty times more than the amount a North-American university pays for Internet. Bagchi and Udo (2007) conclude that factors such as high costs of computers and telephones and insufficient education have severely hampered the rate of penetration of the Internet in sub-Saharan countries such as Uganda and other African countries. The availability of electricity and telephones is a basic requirement for ICTs but is often inadequate in developing countries where there are large areas that are still without a reliable supply of electricity and the nearest telephones are miles away (Tinio, 2003).

Ololube, *et al.* (2007) clearly state that essential services and infrastructure like electricity, telecommunications and postal services must be developed to levels that could support open and DE and create a link between the students and the academic faculties.

## **2.2.6 Potential of Information and Communication Technology for Developing Countries**

For developing countries ICTs have the potential to increase access to as well as assist in improving the relevance and quality of education. ICTs offer various wide-ranging and significant enablers such as facilitating the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improving policy formulation and execution as well as widening the range of opportunities for business and the poor. ICTs can help to alleviate the sense of isolation that many less privileged inhabitants of developing countries experience, as well as to provide access to knowledge in ways never thought possible in the past (Tinio, 2003). According to BECTA (2004), ICTs, by enriching the curriculum, improving delivery,

extending methods of presenting information and offering its new techniques, can enhance teaching and learning (Blignaut & Els, 2009).

There is no doubt that access to a computer, to the Internet, to software packages and resources and to other technology (such as a scanner or digital projector) can greatly support teachers' work, and add value to it. And while supporting teachers' broad range of teaching and learning, the use of computers reveals the different roles of the teacher as well. A teacher can be learning mediator, interpreter and designer of learning programmes and materials, scholar, researcher and lifelong learner, assessor as well as learning area, subject, discipline, or phase specialist (SAIDE, 2005).

ICTs are instrumental in making education far more accessible and can be seen as a powerful tool for extending educational opportunities to underserved constituencies—wide-spread and rural communities and groups traditionally excluded from education due to cultural or social reasons. They may be women, children, people with disabilities and people who are unable to enrol on campus because of time and/or financial constraints (Tinio, 2003, p. 6).

ICTs by definition transcend time and space, making asynchronous learning possible. Materials can be available virtually 24 hours a day, seven days a week and learners and lecturers do not have to be in the same physical location. It also offers access to remote learning resources and teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs (Tinio, 2003). Over and above the fact that ICT offers many opportunities to learners, it also has the ability to change the teaching methods and beliefs of teachers (Erdogan & Sahin, 2010). ICT can assist teachers in providing equal education opportunities because of its ability to lend support in gradually transforming current educational practices. It also offers continuing feedback regarding pedagogical or educational effects and processes (Mooij, 2004). ICT provides opportunities to access a plethora of information because it has access to a multitude of resources while viewing information from multiple perspectives, leading to nurturing the authenticity of learning environments. ICT can also make intricate processes easier to understand which contributes to authentic learning experiences (Smeets, 2005). This is particularly significant for many schools in developing countries, and even some in developed countries, that struggle with limited and outdated library resources. Additionally ICTs also facilitate access to resource persons—mentors, experts, researchers, professionals, business leaders, and peers—all over the world (Tinio, 2003). ICT also has the potential to enhance and foster collaborative learning due to its interactive nature as well as creative learning due to its flexibility and its creative potential. Furthermore, it can be integrative as well as evaluative, the latter due to its student-directed approach (Tinio, 2003).

The importance and necessity of integrating ICT in education is underlined by projects such as the UNESCO's Teacher Training Initiative for Sub-Saharan Africa (TTISSA) and the African Virtual University (AVU) Teacher Education Project. These projects feature among the most significant,

multi-country regional programmes promoting TPD and ICT integration. TTISSA is a high-priority programme focusing on TPD in Africa scheduled for 2006–2015 with a focus on supporting the 46 sub-Saharan countries in restructuring national teacher policies and teacher education. Its main aim is to increase the number of teachers and to improve the quality of teaching in Africa, and it considers the use of ICTs to be a strong component of the programme. The AVU established an ambitious teacher education project which involves 10 African countries in partnership with the African Development Bank (AFDB) and the New Partnership for Africa's Development (NEPAD) in 2006 (Farrell, *et al.*, 2007). The NEPAD e-schools initiative is another case in point. It was implemented in 2007 under the auspices of the NEPAD e-Africa Commission in order to promote and enhance secondary education with the use of ICTs central in this whole process. This indicates that many countries realise and acknowledge the fact that investment in ICTs is indeed an investment in human capital, and that investments such as the NEPAD e-schools initiative reiterate this point (Evoh, 2007).

The world is in the midst of an ICT revolution, which can offer training and support of a type and at a cost unheard of up to now, and therefore it must be fully and exhaustively explored, especially given the scale and urgency of demand for it. This will only be successful if it is built on existing and well-tested strategies, which would entail the best models of open and distance learning (Moon, Leach, & Steven, 2005). If designed and implemented properly, ICT-supported education can promote the acquisition of knowledge and skills that will empower students for lifelong learning (Tinio, 2003).

### **2.2.7 Infrastructure and Resources**

Since the 1980s, the great difficulty of integrating ICT effectively into education has been insufficient hardware and inappropriate software at teachers' disposal. SITES 2006 indicated that about 38% of South Africa's schools had computers, while 96% of schools in Chile and hundred per cent of schools in Finland had computers available for teaching and learning. In 2006, only eighteen per cent of computers in South African schools connected to the Internet (Blignaut, Hinojosa, Els, & Brun, 2010b). Class sizes have increased, but resourcing of classrooms has not followed. The National Education Infrastructure Management System (NEIMS) quantifies the physical infrastructure for education in all schools in South Africa. The NEIMS 2007 report indicates that in 56% of 1 972 listed schools, more than ten per cent of students were without desks, and in 58% of schools, more than ten per cent students were without chairs (Australian Government, 2012). In such conditions, teachers cannot reach 21<sup>st</sup> century pedagogical goals. Basic infrastructure, facilities and ICT equipment and tools should be at teachers' disposal. The majority of available computers in schools are placed in computer laboratories (49.3%). While 69% of schools in the Hong Kong Education System have computers for teaching and learning in classrooms, only 0.8% of South Africa schools comply (Blignaut, *et al.*, 2010a).

Owing to the costs involved in successfully establishing and integrating ICTs into education, governments of developing countries have realised that on their own they will not be able to achieve

this integration. Therefore private-public sector partnerships to either pilot or fast track ICT-based projects have become a popular strategy to boost the development, establishment and integration of ICTs (Tinio, 2003). These partnerships take many forms, including private sector grants with government counterpart contributions, donations of equipment and education-related content by corporations to state-run schools, and the provision of technical assistance for planning, management, and strengthening human resources at the grassroots level (Tinio, 2003). There are also multilateral organizations and international aid agencies which have been the driving force behind many of the most significant efforts pertaining to ICT in education in the developing world. Many of these initiatives could not be sustained because government failed to step in with the necessary financing and the local communities in a position to generate the resources needed to continue these programmes (Tinio, 2003). This leads to a dismal insufficiency of resources and an insufficient infrastructure to maintain and expand the integration of ICT, especially in developing countries.

In other developed countries like Scotland the situation has been different. Schools, colleges and other centres have in recent years received significant enhancements in infrastructure to support ICT for learning and teaching. Almost all schools have access to broadband Internet connections. Colleges benefit from fast Internet access through connection to SuperJANET4. Glow (formerly the Scottish Schools Digital Network) will use SuperJANET4 to supply its high bandwidth interconnections for all Scottish education authorities. This infrastructure has proved very reliable and should provide an effective platform (Donaldson, 2007).

## **2.3 Distance Education and Open Distance Learning**

ODL is an approach that provides learning in a flexible manner, organized around the geographical, social, and time constraints of the learner rather than an institution. DE is often a means to that end. It is “an educational process in which a significant proportion of the teaching is conducted by someone removed in space or time from the learner. The combination of the approach, open learning, with the method, distance teaching, is called open and distance learning” (Moon, *et al.*, 2005).

The term ODL thus combines distance learning and open learning. The distinction between distance learning and ODL is described in Table 1.1. Distance learning and DE are terms used synonymously in education and learning technologies (UNESCO, 2002). DE has been a method of teaching and learning for many individuals for at least one hundred years (Moore & Kearsley, 1996; Plessis, 2010).

The following section first presents definitions related to the perspectives of some scholars, accreditation and evolution of distance learning; secondly definitions of open distance learning, then policy, role, higher education, vocational and continuing education, challenges of ODL and enablers.

### **2.3.1 Distance Education**

Delling (as quoted by Schlosser & Simonson, 2002) states that DE, in general, is a planned and systematic activity that encompasses the choice, didactic preparation, and presentation of teaching materials as well as the monitoring and support of student learning. He indicates that the physical distance between student and teacher is bridged by means of at least one appropriate technical medium. DE is only possible when there is a medium bridging the gap between learners and teachers or instructors (Schlosser & Simonson, 2002). Distance learning, education or training is used for individual learners geographically dispersed by physical distance from the teacher or instructor using computer and telecommunications facilities (Asemota, 2005; Belanger & Jordan, 2000).

Simonson, Smaldino, Albright, and Zvacek (2009) define DE as institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors (Schlosser & Simonson, 2002) (Table 2.2).

**Table 2.2 Components of Distance Education** (Schlosser & Simonson, 2002)

Components	Descriptions
Institutionally based	Institutionally based DE ensures accredited education of high quality or standards
Separation of teacher and student	Three kinds of separation, i.e. geographical, time and intellectual
Interactive telecommunications	Interactive telecommunications enable students to interact with each other, with resources of instruction, and with their teachers
Instructional design procedures of resources	Resources subject to instructional design procedures that organise them into learning experiences

The first component of the definition (Table 2.2) is the concept of institutionally based. This concept makes the difference between DE and self-study which has no credit towards public service.

Emerging non-traditional institutions offer education to students at a distance. Educators and trainers advocate their accreditation to add credibility, improve quality, and eliminate diploma mills (Simonson, *et al.*, 2009).

The second component of the definition is the concept of separation of the teacher and student. Three kinds of separation can be included namely the most mentioned geographic separation, time separation and intellectual separation. Regarding separation in geographical terms, teachers are in one location and students are in another. Separation of time is the separation of teachers and students in time related to asynchronous DE which means that instruction is offered and students access it at separate times, or any time which is convenient to them. Finally, intellectual separation means that teachers obviously have an understanding of the concepts presented in a course that students do not possess (Simonson, *et al.*, 2009).

The third component of the definition is interactive telecommunications of DE. Learners should be able to interact with each other, with resources of instruction, and with their teacher. Although interaction should not be the primary characteristic of instruction, it should be available, commonplace, and relevant. It is important to note that telecommunications are not limited to electronic media. They

are defined as “communicating at a distance.” The definition includes communication with the postal system, as in correspondence study, and other non-electronic methods for communication which will continue to be important in any communication (Simonson, *et al.*, 2009).

Finally, the fourth component of the definition is the concept of connecting learners, resources, and instructors. Resources must be available to allow learning to occur, so that instructors interact with learners. Resources should be subjected to instructional design procedures that organise them into learning experiences that promote learning, including resources that can be observed, felt, heard, or completed (Simonson, *et al.*, 2009).

Kember (2007) points out the four different elements that underpin DE: (i) the quasi-permanent separation between teacher and learner throughout the learning process which distinguishes it from face-to-face education; (ii) the educational organisation relying upon the planning and preparation of learning materials and student support services which distinguishes it from private study and teach-yourself programmes; (iii) the use of technical media; print, audio, video and computer; to unite teacher and learner and transfer the content of the course; and (iv) the provision of two-way communication so that the student may benefit from or even initiate dialogue.

Moore and Kearsley (1996) perspective can be considered as the summary of the above definitions. They claim that the transaction of DE is the interaction between people who are teachers and learners in environments that have the special characteristics of being separate from one another and a consequent set of special teaching and learning behaviour. It is the physical distance that leads to the communication gap, a psychological space of potential misunderstandings between the behaviour of the instructor and those of learners and therefore, a transactional DE (Shalyefu, 2005).

People in traditional education are concerned about the quality of DE programs, and DE institutions are often called diploma mills. A diploma mill has the following characteristics: no classrooms, untrained or non-existent faculties, and unqualified administrators with profit as their primary motivation (Noble, Schneiderman, Herman, Agre, & Denning, 1998). In that regard, legitimate DE institutions expend considerable effort to demonstrate the quality of their programmes. Accreditation is amongst the activities that seek to ensure the value or the quality of DE diplomas. The most important form of accreditation, which involves in-depth security of a school or college’s entire programme by outside evaluators, comes from regional accrediting agencies, such as the North Central Association (NCA) and the Southern Association of Colleges and schools (SACS) (Schlosser & Simonson, 2002).

The evolution process of DE has integrated emerging technologies into the definitions of DE systems. These technologies range from the print media, telecommunicated audio and video to the Internet, the WWW, compact disc read only memory systems (CD-ROMS) and the hypertext and hypermedia. The

evolution of five generations, together with the various information communication technologies make up the delivery systems (Shalyefu, 2005; Taylor, 2007).

The first generation: correspondence studies started in the late 1800s in the United Kingdom with correspondence education which quickly spread to France, Germany and Sweden (Dijkstra, Seel, Schott, & Tennyson, 1997; Shalyefu, 2005). These correspondence systems are still the most widely used form of DE in less developed countries (UNESCO, 2002). The main characteristic of correspondence education is that it is a two-way communication which uses written and printed material (textbooks, self-study material and teaching letters) sent and returned to learners through postal system services to which were added records and slides to deliver material with feedback and other interactions between learners and educators (Shalyefu, 2005).

The second generation started to use radio and telephones at the beginning of the 1900s. Radio was a one-way audio medium effective for delivery to a large and widely spread population. It was applied to DE as radio-based study tasks. Radio is a very effective and low-cost delivery medium used in remote areas with poor infrastructure. Telephones were used for two way individual tutoring (Shalyefu, 2005).

The third generation developed during the 1950s with television and satellites; it was the era of the "University of the Air." Television provided dynamic visuals and was applied as TV-led video based courses. In the 1980s, satellite delivered television led the development of tele-courses that reached the end-users via cable. This was different from correspondence and Open University models which were delivered to individuals. Since radio and television were one-way delivery mediums, they were supplemented by various delivery technologies with either two way postal mail, telephone tutoring or contact sessions (Shalyefu, 2005)

The fourth generation started in the 1970s with computers and information communication technologies, computer-assisted instruction (CAI) and computer-based training (CBT) as independent delivery methods for learner materials (Shalyefu, 2005; UNESCO, 2002). Videoconferencing via satellite was developed, a two-way video medium for interactive delivery and meetings at high cost. Although Computer-Aided Instruction (CAI) was in place in the 1970s, it was only after the introduction of the WWW in 1993 that web-based DE and training have grown tremendously (Shalyefu, 2005).

The fifth generation emerged in the 20<sup>th</sup> century with all digital technologies, integrating telecommunications and information technologies in digital networks, offering interaction between people and enabling them to access large amounts of multimedia information stored in different sites and different storage technologies (Shalyefu, 2005). These technologies facilitate the distribution of information and enable interaction between learners and teachers, and learners and learners, one-to-one, one-to-many, and many-to-many (Shalyefu, 2005; UNESCO, 2002) through audio-graphics, interactive television, digital desktop videoconferencing and broadband video conferencing in DE.

### 2.3.2 Open and Distance Learning

Moore and Kearsley (1996) simply define ODL as the distribution of learning materials to students who are spatially distant from their teachers (Ferreira & Venter, 2010). Moore (1993) points out that ODL does not merely entail a geographic separation between students and lecturers, but also a separation by time. The greatest portion of teaching and learning is realised outside educational institutions and requires special education and communication technologies executed through the application of electronic and other media (Ferreira & Venter, 2010). The *open* nature of education that is mediated by electronic or printed technologies might be formally institutionalized in such policies as open admissions, and freedom of selection regarding what, when and where to learn. The openness of DE is also seen in relatively flexible organizational structures, delivery and communication patterns and the use of various technologies in support of learning (UNESCO, 2002).

Open learning is defined as an approach which possesses the combined principles of learner-centredness, lifelong learning, flexibility of learning provision, the removal of challenges to access learning, the recognition of prior learning experience, the provision of learner support, the construction of learning programmes in the expectation that learners can succeed and the maintenance of rigorous quality assurance over the design of learning materials and support systems (Butcher, 2003). These principles are made possible due to the interaction between learners and teachers.

Quality ODL requires interactive communication between student and lecturer which is realised with the aid of modern ICT (Tatkovic, *et al.*, 2006). Since the advent of ICT, there has been a significant change in the manner of teaching and learning for teachers and students. Students, for example, are no longer passive listeners, but need to be able to do pro-active reading, encoding and decoding anywhere and anytime. Consequently, ODL has its own didactical, logical and methodological articulation and its own purpose, causes and effects, and its own strategies and objectives (Ferreira & Venter, 2010).

### 2.3.3 Policy

As early as the 1970s, distance learning provision had already been created in Malaysia through various well-established Malaysian public universities. These universities still enjoy strong government support and the collaboration with companies specialising in e-learning is continually increasing (Middlehurst & Woodfield, 2006). This support and collaboration is vitally important in ensuring the success of these mega universities which cater for hundreds of thousands of students. Open universities have been established in Israel, Palestine, Iran, Turkey, Sri Lanka, India, Bangladesh, Indonesia, China, South Korea, Japan, Hong Kong, Macau, Vietnam and the Philippines (Jung & Latchem, 2007).

The Arab Open University in Jordan seeks to provide opportunities for education for those who were unable to continue their higher studies for economic, social or geographic reasons and is hugely successful in attracting students. The AOU has links with the UK Open University, thus enabling students to gain both UK and Jordanian qualifications. Courses are in English, except for specialist areas of Islamic study (Middlehurst & Woodfield, 2006).

This explosion and growth of distance learning has led to the need for the role of a distance learning system to be described within the context of the national policy. Sifuna (2011) stresses the importance of the need for governments to adopt implementation strategies in line with their national policy on education to set up pre-tertiary DE institutions to increase access to educational programmes. He also emphasises the necessity of development of a National Distance Education policy framework as a crucial step in teacher training or retraining in the light of changing challenges of DE, rise of civil societies and expansion of trans-national education.

This may be directed towards particular purposes, target groups, regions sectors or levels of education and training, and driven by particular values and philosophies of learning and education. The mission statement of a public institution will be part of a national policy, while the mission of private organizations may fulfil subsidiary functions in relation to the public institutions (UNESCO, 2002). The mission as the national policy mainstay relies upon some national policy reasons.

Holmberg (1986) offers some political, economic, and educational reasons for the founding of distance teaching universities, which are (i) the need felt in many countries to increase the offerings of university education generally; (ii) a realization that adults with jobs, family responsibilities, and social commitments form a large group of perspective part-time university students; (iii) a wish to serve both individuals and society by offering study opportunities to adults, among them disadvantaged groups; (iv) the need found in many professions for further training at an advanced level; (v) a wish to support educational innovation; and (vi) a belief in the flexibility of an economical use of educational resources by mediated teaching (Schlosser & Simonson, 2002). Government rationales for the development of distance learning also include increasing access, creating greater flexibility and choice for students, facilitating international collaboration for capacity-building and enabling the import of courses of economic relevance (Middlehurst & Woodfield, 2006).

However, developing countries in general seem to struggle to come to grips with these policy issues. An African country like Tanzania faces a major challenge due to its insufficient explicit national policy on DE. This insufficient overall policy, coupled to the poor harmonization of initiatives, have led to the random adoption of different systems and standards, unnecessary duplication of effort, and waste of scarce resources, especially through the loss of potential synergies (Komba, 2009).

#### **2.3.4 Role of Open and Distance Learning**

Open and distance learning has a major impact on the functioning of the whole education system particularly to seek how students can improve their learning by adapting the delivery of instruction needed. DE has changed from an anomaly to a standard component of most HEIs (Wallace, 1996). Open and Distance Learning has the potential to enhance a more student-centred and consumer oriented approach to education leading in turn to more extensive contact between educational institutions on the one hand and community-based organizations, business and industry on the other (UNESCO, 2002, p. 36).

In countries such as Jordan, Malaysia, Australia, Kenya and the UK distance learning is being promoted at national and institutional levels and is becoming increasingly interconnected with other forms of provision: face-to-face, on and off-site, vocational and work-related training and trans-national (or cross-border) education (Middlehurst & Woodfield, 2006). The eleven so-called mega-universities of the world, are all big and well-established open and distance institutions and include the likes of The Open University of the United Kingdom, The Indira Gandhi National Open University of India, The China TV University System, The Universitas Terbuka of Indonesia and the University of South Africa (Tinio, 2003).

### **2.3.5 Higher Education**

Since the invention of the DE method near the end of the twentieth century there are more distance learning courses offered at the tertiary levels than at any other. The use of new technology (i.e. national rail systems that supported national postal systems) made possible to deliver higher education beyond the boundaries of the campus (UNESCO, 2002, p. 35).

The basic change in the way DE was practiced in much of the world was brought by the 1962 decision that constituted the University of South Africa as a distance teaching HEI. The other landmark was the founding, in 1971, of the Open University of the United Kingdom. The university offered full degree programs, sophisticated courses, and the innovative use of media (Holmberg, 1986). It brought important prestige to DE and encouraged the establishment of similar institutions in industrial nations such as West Germany, Japan, and Canada, as well as in such lesser-developed nations as Sri Lanka and Pakistan. Although the distance teaching universities shared numerous similarities, they were not identical in their mission or practice. Two of the largest and most influential, the Open University of the United Kingdom and the German Fern Universitat, differ widely. The British School favoured employed, part-time students and above-normal study age, allowing them to enrol without formal entrance qualifications. By 1984, some 69,000 students had completed work for the Bachelor of Arts degree (Schlosser & Simonson, 2002). The German Fern Universitat, founded in 1975, offered a more rigorous programme than its British counterpart. Despite strict, formal entrance requirements, it had 28,000 students in 1985. However, the dropout rate is very high, and in its first decade, only 500 students completed the full curricula for a university degree (Schlosser & Simonson, 2002).

### **2.3.7 Vocational and Continuing Education**

The role of ODL in the field of technical and vocational education is significant. It has two main functions: (i) to respond effectively to the growing demand of working adults or any others who have difficulties in getting training in conventional education because of insufficient flexibility in the timing and location of courses; (ii) to provide an opportunity for the empowerment of those most disadvantaged by existing provision- the unemployed, the disabled, women and either minorities (UNESCO, 2002).

ODL in the field of technical and vocational education makes up a mixed and complex picture. It may include experimental work and hands-on training as an integral element. It has often been developed by private institutions and enterprises, and makes an important contribution to human development (UNESCO, 2002).

Continuing education and training is an expanding field in which open and distance learning is used to a great extent. The need for recurrent and continuous updating of knowledge and skills is recognized as a fundamental demand in society today. Open and distance learning with its decentralized and flexible delivery and its modular structure of courses and curricula has become an obvious way and meeting this need. Open and distance learning institutions offer their courses and programmes for this purpose and they are developing particular courses for particular needs (UNESCO, 2002).

### **2.4 Teacher Professional Development**

An international summit on the Teaching Profession highlighted the fact that high-performing educational systems rely on teachers to constantly develop professionally by:

- updating their knowledge of a subject in light of recent advances
- updating skills and approaches in light of new teaching techniques, new circumstances, and new research.

If this is done successfully it would enable teachers to apply changes made to curricula or teaching practice and ensure that schools develop and apply new strategies concerning the curriculum and teaching practice as well as exchanging information and expertise among teachers and others and help weaker teachers become more effective (Schleider, 2011).

Sufficient, effective, supportive and on-going TPD, teachers' integration of ICT can be possible (Blignaut & Els, 2009; Chen & Chang, 2007). Professional development should continue throughout a teacher's life, as it is a tool that creates opportunities for growth and learning, increases effectiveness and decreases isolation (BECTA, 2004; Blignaut & Els, 2009).

Governments worldwide seem to understand the importance of continuing professional development of teachers as essential to the success and effectiveness of education. The Australian government echoes these sentiments when they underline the importance of professional development for teachers and indicate their commitment to quality teaching. They state that quality education can overcome location and similar disadvantages and is the single greatest element in-causing a positive influence on student engagement and achievement. Improving teacher quality requires both strong school leadership and new approaches to teacher recruitment, retention and reward, and has professional teacher development at its core (Australian Government, 2012).

The British government, through its Schools White Paper, commits itself to developing a strong culture of professional development where more teachers acquire postgraduate qualifications and are supported to progress further academically and deepen their subject knowledge. They backed this up in 2011, by introducing a two million pound Scholarship scheme for existing teachers in order to assist them to develop professionally (British Department for Education, 2011).

The role that the integration of ICT plays in this process of professional teacher development is crucial. A fine example of this occurred when The World Links for Development Program, which was started in Uganda in 1997 under the auspices of the World Bank Institute, used the benefits of the Internet and the WWW, not only to provide technology to schools, but to offer professional development services to teachers (Tinio, 2003).

The implementation and integration of ICT is a complicated issue as it involves a wide range of factors such as the Government commitment and support, the schools' responsibility for its integration and teachers' willingness to embrace such a venture.

## **2.5 Challenges**

Distance learning does, however, face several challenges. It seems that many UNISA students involved in a survey dealing with DE, are either not comfortable with the use of ICT and the proposed support systems, or they do not have the necessary skills to use them. Many of students are still in the first phase of ODL—they wanted written material and written comments sent to them through the postal system as done in traditional correspondence education. The lecturers are still seen as the main source of knowledge and information, so many opt for one way communication where the lecturer gives a lecture through which information is distributed (Ferreira & Venter, 2010).

Students still seem to prefer postal services or phone contact for communication because most of them do not have access to Internet or even fax machines, or cannot use the Internet. They prefer to submit their assignments through the postal system and want feedback from lecturers via tutorial letters (Ferreira & Venter, 2010). Further factors as challenges to learning are challenges with time

management, poor study techniques and skills, work obligations, no contact with other students, insufficient availability, and administration challenges. These factors may be possible reasons for students drop-out. Similar challenges seem to be experienced in ODL worldwide: insufficient personal contact with especially teachers and the immediate feedback from lecturers on work done; sense of isolation; pre-course orientation to help with management of studies; tutor support during course of studies and improved information and formative advices (Ferreira & Venter, 2010; Fozdar & Kumar, 2007).

Berge and Muilenburg (2000) identified 64 potential challenges to the implementation of DE of which the first 10 strongest are given here: (i) increased time commitment; (ii) insufficient money to implement DE programs; (iii) organisational resistance to change; (iv) insufficient shared vision for DE in the organisation; (v) insufficient support staff to help course development; (vi) insufficient strategic planning for DE ; (vii) slow pace of implementation; (viii) faculty compensation/incentives; (ix) difficulty keeping up with technological changes; and (x) insufficient technology-enhanced classrooms, laboratories, or infrastructure (Schlosser & Simonson, 2002). In addition, Berge and Muilenburg (2000) identified the least important challenges to implementation provided in rank order: competition with on-campus courses; insufficient personal technological expertise; insufficient acceptable use policy; insufficient transferability of credits; challenges with vast distances and time zones; technology fee; tuition rate; local, state, or federal regulations; ethical issues; existing union contracts; and insufficient parental involvement.

Distance learning and ODL show their slight difference in the delivery of their programmes. ODL is more student-centred than distance learning while distance learning is more related to lecturers or campus programmes.

## **2.6 Enablers**

In many countries in Sub-Saharan Africa, there is an urgent need to expand the number of primary and secondary teachers while it seems that in all African countries, there is an equally important need to improve the quality of teaching. This can only be achieved if new approaches to teacher education are considered. Existing institutions of teacher education will continue to play an important role, but, they alone will not meet the goals and needs of African education as highlighted in Education for All (EFA) by 2015. It is fortunate that, just as the combined needs to improve the quantity and quality of teachers become critical, new forms of education and training, as offered by ODL become available (Moon, *et al.*, 2005).

This demand, and shortage, is mirrored in many African countries, such as Nigeria, where there is an acute insufficient capacity at universities to cater for the huge demand of applications of prospective students. In the 2000-2001 Nigerian universities had 653 818 applications by students to do tertiary education, but only 50 277 were admitted. Colleges of Education had 14 438 applications of which

only 6672 candidates were admitted. ODL clearly offers an innovative and cost effective alternative to cater for these students (Olugbenga Ojo & Kayode Olakulehin 2006).

Sub-Saharan countries, like Gabon, Cameroon and Congo, to name a few, are in desperate need of teachers and need more than three million additional teachers to reach universal primary education by 2015. NEPAD is well aware of this and also understands the need to improve education in Africa by increasing access and increasing the quality of education and they see the DE and Teacher Training Programme as a very welcome development and that it should be expanded to train more teachers in order to address this need. This need is not limited to prospective teachers, but there is a great need in sub-Saharan countries for the training of in-service teachers who are untrained or not sufficiently trained (Choi, 2003).

The flexibility inherent in ODL as a delivery method enables students to pursue whatever kind of degree or training they want, even though they may be working full or part-time, which on its own suggests there is strong rationale for the expansion of the ODL institutions in African countries. ODL institutions seemed to have reached the critical tipping point of acceptance, and as such ODL institutions are well positioned to become a permanent component of the formal education system in African countries like Nigeria, which would suggest that more African countries will follow suit (Olugbenga Ojo & Kayode Olakulehin 2006).

The flexibility inherent in ODL as a delivery method enables students to pursue whatever kind of degree or training they want, even though they may be working full or part-time and DE seems to be able to deal with large numbers of learners in a cost-effective manner (Hülsmann, 2004).

The flexibility that DE offers in terms of where and when students learn has been particularly advantageous to students who live at a geographic distance from universities, and those who are fully employed (either at home or in the workplace) and who must pursue a university education on a part-time basis. Full-time teachers, or in-service teachers as they are sometimes called, fit squarely into these two categories (Wallace, 1996). ODL has the potential to transcend challenges which are caused by distance, time as well as age, hence facilitating lifelong learning. It offers the learner a high degree of autonomy in deciding what, when and how to learn. This is ideal for in-service teachers (Sifuna, 2011).

ODL also has great potential for professional teacher development. A project in Bangladesh that involved the professional development of in-service teachers through the English in Action secondary and learning programme indicated that school-based support systems combined with technology enhanced ODL are contributing significantly to professional teacher development as an in-service training (Shohel & Banks, 2010).

In 1998 the Sudan Open Learning Organisation (SOLO) undertook a comprehensive re-orientation of untrained teachers in the Republic of Sudan in and a few years later it had achieved numerous goals such as:

- assisting the Sudanese Government in improving the quality of Sudanese education by improving the quality of teaching
- helping fourteen Sudanese states increase their education sector's workforce by training 50,000 teachers
- enhancing the image of teachers by establishing a Certificate in Education, issued by SOLO and approved by the Sudan's Ministry of Education and Ministry of Labour.

In addition to their role in Sudan's school system, teachers are also paid to engage in programmes designed to respond to the educational needs of refugees and adult learners in vocational and life skills acquisition (Aderinoye & Ojokheta, 2004).

In South Africa UNISA is the frontrunner and bastion of DE. Teaching and learning at UNISA has had major changes progressing through the three different phases (the distribution of printed material, postal communication and technological advancement) of development by (Tatkovic, *et al.*, 2006) and the generations of (Fozdar, *et al.*, 2006). UNISA has been a DE university since 1946. Tuition was initially based on postal correspondence with limited face-to-face interaction. Materials were print-based supplemented by face-to-face tutorials, of which attendance was not compulsory. But the need for a more flexible system came with the development of ICT (Ferreira & Venter, 2010).

Various enablers for supporting learning in DE are offered to students. Technologies such as telephony, multimedia CDs and DVDs, video and audio conferencing, SMSs and MMSs via cell phones, e-mail and discussion forums/chat facilities via *myUnisa* have been proposed and offer flexibility and wide-ranging and continuous availability of meaningful interaction, resources and study material to students. The web-based system of *myUnisa* was developed to improve academic interaction and communication between UNISA and its students and provide opportunity for academic achievement and growth among students (Ferreira & Venter, 2010).

## **2.7 Survey of Gabonese Educational System**

### **2.7.1 Introduction**

In respect with the role of education in the development of the World, South African former President Nelson Mandela claims that Education is the most powerful weapon which you can use to change the world (Thinkexist.com, 2012). Similarly, the Burkinabé politician and writer, Joseph Ki-zerbo, acknowledges that education is the heart of any development, and that another perception of development apart from this understanding would be meaningless (Ki-zerbo, 2003). In accordance

with the above statements, developing countries, by their governments, should take into consideration education issues in order to ensure socio-economic development of their countries.

Relating to this vision, El Hadji Omar Bongo, late second President of Gabon, stated that since the independence of Gabon, the Gabonese Government has always wanted to place education in the centre of its priorities (Pourtier, 2005). Regarding education improvement, the *la République du Gabon* (1966) indicates that all new technology, which can improve education and make it more efficient, should be embraced. In that regard, the advent of *ICT* as teaching and learning tools should be welcomed and their adoption should not be made difficult, specifically in the Gabonese Education System. The following section will deal particularly with the Gabonese Educational System, its policy, with secondary education, vocational and training education, Higher education and finally with teacher's training.

### **2.7.2 Gabonese Educational System**

Gabon is one of the countries of which the educational system is mainly controlled by the government. The government devises the educational development policies, defines the national educational programmes and ensures the training, the recruitment and the salaries of Gabonese teachers as those of foreigner teachers. The Gabonese Educational system is modelled on the French education system. It presents a number of similarities with the French system. Government educational policy aims to settle schools in all areas across the country in order to give children the opportunity to go to school wherever they are (*la République du Gabon*, 1966).

### **2.7.3 Secondary Education**

Secondary education comprises approximately 107 public and private schools, based on the illustration below of the number of buildings and classrooms (Obono Mba, 2008), with 55 Lycees (the senior phase of secondary education) and 52 colleges (the junior phase of secondary education) (Mebale, 2005). The secondary schools contain more than half of students registered for secondary education, while the remainder are to be found in the confessional and secular schools. There are about 4750 teachers and 153 754 (estimation 2004-2005) students (Obono Mba, 2008).

Secondary education displays some distinctions in numbers between female and male students. Females seem to be more numerous than males. In addition, the teacher body is composed of Gabonese and foreigners.

### **2.7.4 Vocational Training and Technical Education**

Vocational training and technical education are composed of eleven schools, three technical Lycees, one commercial school and one professional Lycees (Mebale, 2005). According to the document as

to increasing and reducing poverty strategy (DSCP), 92% of young people are registered in education of which only 8% are in the technical and vocational training education (Obono Mba, 2008). This education is viewed as the final resort for the dropout students who do not succeed in their secondary education (Soumaho, 2005).

The development of this type of education in Africa is essential for the development of societies and countries (Nze & Ginestie, 2012). The inadequate structuring of such training leads to disorganised socio-vocational setups, exaggeration of informal sectors and unstable parallel economy (Nze & Ginestie, 2012).

### **2.7.5 Higher Education**

Higher education comprises three Universities: Omar Bongo University (UOB) and the Health Sciences University (USS), both in Libreville, while the third one is situated in Franceville and is called the Sciences and Technology University of Masuku (USTM). There are also Higher Schools and Institutions, like the Teachers' training High School or College (ENS) and the African Institute for Computer Technologies (IAI) in Libreville, which also cater for students (Soumaho, 2005). The teaching personnel of universities and higher schools comprises 564 lecturers of which 440 are Gabonese and 85 are foreigners. The number of students was about 9 070, 8 659 Gabonese and about 411 foreigners for 2000-2001 (Soumaho, 2005).

**Table 2.3: Infrastructures and the Number of Students and Teachers in Secondary Education between 2004 and 2005**

Schooling Sector	Buildings	Classes		Students			Gabonese Teachers			Foreigner Teachers		
		Ordinary	Special	Male	Female	Total	Male	Female	Total	Male	Female	Total
Public	226	1 540	104	54 924	57 166	112 090	1 857	357	2 214	611	77	688
Confession	116	380	308	13 145	13 682	26 827	403	47	450	226	27	253
Secular	76	548	30	6 780	7 057	13 837	472	100	572	500	73	573
<b>Totals</b>	458	2 468	442	74 849	78 905	153 754	2 732	504	3 236	1 337	177	4 750

(La Gabon.org, 2012)

## **2.7.6 Administrative Infrastructure**

The educational system covers nine provinces with each province having its own school administration. Each province has a School Inspectorate (Inspection Delegue d'Academie) and there are 47 different School Administrative Areas (Circonscriptions Scolaires) for which these School Inspectorates are responsible. This involves managing these areas and dealing with discipline and administration of the schools situated in these areas (Mebale, 2005).

## **2.7.7 Teacher Training**

In Gabon training courses for teachers and trainers are limited to a very small number of people in highly specialised fields of expertise. This fact of limited opportunities has also contributed partially to the fact that studying abroad is deemed to be very attractive to Gabonese students (Nze & Ginestie, 2012).

The teacher training college (ENS) offers a training of three and five years to students who have passed their baccalaureat examination whatever the discipline, languages and sciences. The programme of three years delivers a College Teacher Training Certificate (CAPC) to teach in secondary schools while the programme of five years allows you to graduate as a Secondary school Vocational Training Certificate (CAPES) to teach in high secondary schools, in French Lycees. The difference between a college and a lycee is that a college is composed of four basic classes, from grades 1-4 when the lycee often has the two cycles the first four classes mentioned earlier and the three last classes which are up to the college cycle. A lycee is constituted of seven classes from grades 1-7. Colleges often register students who are more than twelve years old while lycees register from grade one students who are at the latest thirteen years old because these students are supposed to take their baccalaureat examination when they are 21 years old (La Gabon.org, 2012).

Students who have completed their Maitrise-es-Arts (Master of Arts) at the University (UOB) may take the entrance examination for the Teacher Training Higher School (ENS) to prepare the Secondary school Vocational Training Certificate (CAPES) examination to be certified as a teacher at the Lycees. The dropouts who did not obtain their Bachelor's at the university also take the entrance examination for the College Teacher Training Certificate (CAPC) to be certified as a teacher at the colleges. The Gabonese English and Spanish teachers have the opportunity to travel to the countries where English and Spanish are spoken and used as medium of instruction in schools (La Gabon.org, 2012).

In accordance with TPD, after the training and at least five years of experience, teachers can enter for competitive examinations as part of their professional development. Teachers with the CAPC take the CAPES examination, those with CAPES take the Adviser examination and the Advisers do the Inspectorate examination. The training lasts two years and is fulltime training which assumes that teachers, during that period, are still in the process of undergoing tuition on how to teach.

Consequently, their classes do not have English teachers as the number of English teachers is insufficient (La Gabon.org, 2012).

If one studies the relevant documentation (Education Law) the Gabonese Government seems committed to the enhancement of education and keen to establish schools across the country (la République du Gabon, 1966).

## **2.8 Open Distance Learning in the Gabonese Educational System**

It is necessary to point out the distinction of viewpoints as to distance learning in terms of background and understanding in French and English areas.

### **2.8.1 Advent of the Concept of Distance Learning in the Francophone Area**

For many decades, the notion of DL has been the only one which has prevailed in the Francophone area until the inception of the notion of “open” coming from the English notion of “opening learning”. French people acknowledge that today the former notion cannot any more be used without the term open which is also important in that learning mostly when related to professional training (Obono Mba, 2008). Therefore, in 2001, the ‘la Delegation Generale a l’Emploi et a la Formation Professionnelle (DGEFP)’ translated the English definition of “open and distance learning” into French which has been adapted by the French government. This definition stands as follows: “Un dispositif souple de formation organise en fonction de besoins individuels ou collectifs (individus, entreprises, territoires). Elle comporte des apprentissages individualises et l’acces a des ressources et competences locales ou a distance. Elle n’est pas executee necessairement sous le controle permanent d’un formateur” (Obono Mba, 2008, p. 151). When translated into English this basically indicates a flexible set of training organized in functions of individual and collective needs (individuals, companies, territories). It involves individualized apprenticeships and the access to local resources and competences or to distance ones (resources and competences). It is not necessarily executed under the permanent control of a trainer. There certainly has been some disagreement concerning this in the literature. Some people use the terms open and distance learning loosely or interchangeably or in combination (Kember, 2007).

Regarding the sub-Saharan countries, Anglophone countries seem better furnished in the field of distance learning. The first distance learning programme in South Africa dates from 1873 at the University of the Cape of Good Hope, the current University of South Africa (UNISA). Botswana, Tanzania and Zimbabwe to name a few, have also created at their universities departments devoted to distance learning whereas the sub Saharan francophone countries are still in the stage of projects, as is also the case with Gabon (Obono Mba, 2008).

## 2.8 2 Open Distance Learning in the Gabonese Educational System

As mentioned before, distance learning is not a new type of learning in Gabon when we consider that a number of Gabonese people have been educated that way and specifically through French institutions (Chapter 1). Broadly speaking, the process of distance learning was launched in Gabon in 1962, at the same time that this was done in Mali and in Ivory Coast. UNESCO (2012) indicates that the National Pedagogical Institute of Mali implemented a distance learning (tele-enseignement) to deal with the continuing teachers training. From the year 1970, almost every francophone country proceeded to broadcasting learning by radio which was called “radio scolaire” or schooling radio that Gabon had experienced for the first time at the beginning of the academic year 1966-1967. The project was supported by the Gabonese government and by the French cooperation as well. In addition, countries launched, in the same time, courses through correspondence, Congo at the University of Marien Ngouabi in 1970 and in Gabon. Toussaint Nguema Mbeng, became a teacher of primary school due to the courses he was attending via correspondence in 1975, and currently works as chief supervisor at the lycee Oyono Abagha in Bitam, in the north of the country (Obono Mba, 2008). Such type of distance learning still prevails in the country, but these initiatives are driven primarily by private institutions and not the government. Naturally, to improve their social conditions, people often look for similar opportunities offered from abroad.

For the period 2011-2012, the Gabonese government awarded a total of 13 443 students with study grants and bursaries. Approximately 77 % of the total number of students with grants were attached to one university, the University Omar Bongo in Libreville, while the government claims that there are Gabonese students studying in around thirty different countries on all the continents. The criteria of qualifying for the majority of the grants seem to be threefold:

- should be a Gabonese citizen
- should not be older than 22 years
- should have good average marks (La Gabon.org, 2012).

This means that in-service teachers will have very limited opportunities to study abroad. However, Gabon is one of the few, if not the only one, so far, in Central Africa which offers national courses through the net to abroad (Obono Mba, 2008). For instance, the University of Sciences and Technology of Masuku (USTM) sends seismic data collected in Gabon to the seismological laboratory of Albuquerque in New Mexico (USA). In the same way, specialists are working to install a digital network of distance learning at radio emergence which will take advantage of that opportunity to extend its services throughout the country (Fall, 2007).

On the other hand, there is no significant framework for distance learning in the Gabonese educational system apart from structures like the francophone digital campus. There has not been widespread success when it comes to the implementation either of ICT in secondary education or of ODL in higher education. A fairly recent one was launched and organized by the University of Laval (Canada) in

2000, in collaboration with the ENS. At the outset of that programme, 37 students (secondary and temporary teachers) from different subjects were enrolled in the didactics Master of Arts degree programme in the faculty of Educational Sciences. To facilitate the programme, lecturers used to come over to Libreville twice per year for face-to-face teaching and the rest of the time students sent their academic submissions to their lecturers via Internet, but unfortunately this project was ceased in 2004 (Obono Mba, 2008).

## **2.9 Current Information and Communication Technology Landscape in the Gabonese Educational System**

The OECD (organisation for economic co-operation and development) defines the digital divide for its member countries as a gap between individuals with different socio-economic levels and their enablers to access, and more importantly the ability to use all kinds of ICTs (Obono Mba, 2008).

According to UNESCO a digital divide is a “multiple faces” phenomenon which involves various factors such as: economic resources, geography, age, sex, language, education and social origin, employment and physical integrity. These factors help to determine the use, access and level of proficiency by users when it comes to technology. When considering these factors Gabon is considered, among the Sub Saharan francophone countries, to be the most advanced in ICT (Obono Mba, 2008).

### **2.9.1 Policy for Information and Communications Technology Implementation**

Unfortunately in Gabon there is no one institution responsible for ICT development. The president takes overall responsibility in this area, advised and supported by an expert in computer technology. There is also no policy to integrate the administrative and the educational domains to ICT (Fall, 2007).

Another issue that concerns many countries, and that is very evident in Gabon as well as the rest of Africa, is the excessive bureaucracy that characterizes African governments and policy implementation. There is a clear indication that excessive bureaucracy hampers policy implementation severely in Africa and African governments should make efforts to cut down on unnecessary and time-consuming bureaucratic processes that can lead to delays (Evoh, 2007).

### **2.9.2 Implementation of Information and Communications Technology**

Digital Access Index (DAI), a part of the International Telecommunication Union (ITU), combines eight variables which cover five areas: availability of infrastructure, affordability of access, educational level, quality of ICT services, and Internet usage, and provides the index of access in technology for each country. The results, which point to challenges in ICT adoption, can help countries identify their

relative strengths and weaknesses. DAI places Gabon at the medium level when it comes to the universal access of technology, with an index of 0.34 on a scale of 0 to 1 where 1 is the highest access. However, when Gabon is compared to other countries, internationally, its index rating of 0.34 places it 117<sup>th</sup> after countries such as Mongolia (0.35), Algeria (0.37), Swaziland (0.37), Namibia (0.38) (International Telecommunication Union, 2003), which is alarming.

However, when considering the sub Saharan African context, Gabon is ranked first among Francophone countries and third after Botswana (0.43) and South Africa (0.45) among all the sub Saharan countries (Anglophone and Francophone countries) (Obono Mba, 2008). The position of Gabon as presented above reflects that there is a realisation of the necessity to actively and effectively implement and integrate ICT, especially in education, yet the impact of this realisation is still not perceived as such. The government keeps on initiating actions such as the creation of ICT and Media department in the Ministry of National Education organization chart and Seminars (Republique Gabonaise, 2010) but the effect of these actions seems minimal.

These education seminars are arranged by the Ministry of National Education, the first one being as long ago as 1983. Since then, education has kept on developing and evolving in terms of teaching and learning materials. The most recent seminar held in 2010, also made various recommendations on education issues, with some specifically relating to ICT implementation in education for the short and medium term (Republique Gabonaise, 2010):

- In the primary education one of the aims is to build 331 schools and equip these with laboratories consisting of Multimedia and which will deal with early linguistic and scientific learning activities. The idea is that each of these Multimedia Centres will be connected to Internet.
- In secondary education, a schedule on ICTs use will be developed.
- Finally, in higher education, a digital technology campus will be developed at the university Omar Bongo (UOB), while at the Teacher Training Higher School (ENS) a Multimedia Centre with three distance learning rooms, a library, a digital technology campus and a languages laboratory will be implemented, supported by a maintenance department.

On the other hand, a University of Education Sciences will merge the three educational schools namely: the Teacher Training High School (ENS), the Technical Teacher Training High School (ENSET) and the Primary Teacher Training college (ENIL) encompassing a digital technology campus (Republique Gabonaise, 2010). Massive changes in Gabon post office and telecommunication services have been achieved to further this goal of implementing ICT in Gabon. The telecommunication structure consists of two parts: Gabon post office services and Gabon telecommunications.

In 1986 the introduction of the mobile phone, with the American AMPS network, occurred without any programme or training for the users. A few years later, in 1999, the AMPS network shared the mobile

phone market with the European GSM network which quickly developed it across the country. The number of subscribers increased, about 8860 subscriptions in 1999 (Makanga, 2005), to 500 000 subscriptions in 2005 (Fall, 2007).

### 2.9.3 Development and Growth of Information and Communications Technology in Gabon

In Gabon in 2006, the number of GSM (a mobile phone server) subscribers was 716 000 which means that one of every two inhabitants of Gabon, which has a population of about 1.5 million inhabitants, has a mobile phone (La Gabon.org, 2012). This clearly shows that Gabon has great potential for ICT usage.

Similarly in 2007, the Agency for the Regulation of the Telecommunications (ARTEL, 2007) stated that the three mobile phone companies (Libertis™, Celtel™ and Moov™) shared almost the same number of subscriptions, about 647 000 active subscribers with a geographical coverage of about 85% of the territory. It is important to notice that the said evolution is the result of the massive changes occurred on the communication market due to the liberalization of that sector and the shattering of the monopoly of the Gabon Telecommunications on international communications. Mobile phone companies offer the subscribers competitive tariffs and reduce international communications costs. For instance, communications, per minute, to other African countries cost 250 francs cfa (about R4) and 320 francs cfa (about R5) to America, while the previous landline phone costs were about 1900 francs cfa (about R28) and 2500 francs cfa (about R35) depending on the destination (Obono Mba, 2008). Table 2.4 presents the evolution of the global market of mobile telephony in Gabon until 2006

**Table 2.4: Evolution of Mobile Phone Telephony in Gabon \***

Operators	Years					
	2000-2001	2002	2003	2004	2005	2006
<b>Libertis</b>	30 000	122 000	155 000	200 000	242 000	250 000
<b>Celtel</b>	90 000	107 000	145 000	230 000	370 000	500 000
<b>Moov</b>	50 000	60 000	53 000	41 000	35 000	40 000
<b>Totals</b>	170 000	289 000	353 000	471 000	647 000	790 000

\* (La Gabon.org, 2012)

Table 2.4 shows the evolution of each mobile phone operator market from 2000 to 2006. Libertis™, a Gabonese operator, seems behind the private operator Celtel™ with the number of 500 000 mobile phones sold in 2006, which places it ahead of Moov™ with only 40 000 mobile phones sold during the same year. Broadly speaking, mobile phone market has undergone a spectacular evolution in six years when we consider the number of mobile phones sold between 2000 and 2006: 170 000-790 000 mobile phones (Obono Mba, 2008).

It is important to take a few moments and step back and have a brief view of the situation of landline phones in Gabon, before we consider the implementation of ICT. This should help us understand

people's attitudes towards telephony. The landline telephony was the first modern means of telecommunication in Gabon until the advent of mobile telephony. The limited expansion of that telephony was related to various factors. Obono Mba (2008), in her thesis about distance training in Gabon, claims that the main reasons of that limitation are the national unequal coverage, the administrative slowness in the acquisition of a landline phone and the very high cost of a landline phone. Additionally, the reduction of government budget subsidies from 2003 also caused Gabon Telecommunications to limit the access to landline telephones.

Regarding the Internet implementation, Gabon has made significant progress in setting up a national system and opted for general access to information using computer related technologies. Since the recommendations from Bamako Summit in 2000, the Gabonese government, in collaboration with some international organisations such as the United Nations Programme for the Development (PNUD) and Information and Communication for the Development (ICD), launched some actions such as the launching of the Sustainable Development Networking Programme (SDNP)/(RDD=Reseau de Developement Durable) in 1996 and the installation of Internet international connection by the Post Office and Telecommunication services inaugurated by the late president El Hadji Omar Bongo in 1998. Other initiatives and actions will be launched in order to favour the use of Internet across the country. Further to an agreement with TeleGlobe, a number of companies share the Gabonese Internet market of which the most important are: Gabon Telecom with 6.500 clients; Online Services and computing systems with about 800 clients with a satellite connection since 2003; and Internet Gabon with 1000 subscribers and a satellite connection since 2002 (Obono Mba, 2008).

The introduction of mobile phones and the appearance of Internet in 1997 accelerated the changes earlier mentioned (§2.9.2), in the Gabonese post office and telecommunication services. Previously run as one entity, these services were divided into two parts and created Gabon post-office services and Gabon telecommunication with the setting up of an Agency for the Regulation of the Telecommunications (ARTEL) since June 27, 2001(Fall, 2007; Makanga, 2005). In order to facilitate these changes Gabon decided to be connected to the West African Submarine Cable (WASC/SAT3/SAFE) which made the country become one of only two countries in the Central African region that possesses the sea cable linking Europe to Asia (Fall, 2007). With the sea cable connection, Gabon could free itself from the exclusive dependence satellite support for international communications, increase communication exchanges between African countries and substantially reduce communication costs, improve Internet connection and consequently foster people to subscribe. For example, between 2000 and 2001, the number of Internet users quickly increased in the country from 3000 to 60000 with about 25000 computers in service (Fall, 2007; Makanga, 2005). That number represents about 5% of the population. The large cities cover about 210 cyber-cafes of which 89 are in Libreville (Obono Mba, 2008). Although in Africa only one in every 700 people has Internet access, versus one in four in Europe (Blignaut & Els, 2010), the technological progress is definitely underway in Gabon as illustrated in Table 2.5.

**Table 2.5: Evolution of Internet Use in Some Countries in Africa**

Country	Population	Internet Users (December 2000)	% Users in Africa
Benin	7 714 766	15 000	1.6%
Cameroon	17 775 743	20 000	0.8%
Congo	3 774 537	500	0.2%
Cote D'Ivoire	20 169 352	40 000	0.7%
Equatorial Guinea	1 120 061	500	0.0%
Gabon	1 461 679	15 000	0.2%

(University of Cape Town, 2007)

The number of Internet users in Gabon is high (15000) for a population of 1 461 679 inhabitants when comparing it with other sub-Saharan countries such as Benin (15000) with 7 million inhabitants and Congo with only 500 users which is three times less than Gabon (Research-Africa.net).

ICT is not only limited to the Internet and telephony. Radios, televisions, and other various media have also an important role in ICT implementation within the society. In Gabon context and since independence, there is an important progress in the implementation of radio and television stations across the country. Each of the 9 county towns has at least a radio station which provides listeners with local, country, and global information. The broadcasting of information is delivered in French and in the local languages as well. The country encompasses two public radio channels (RTG 1 and RTG 2) which also cover television channels and some other commercial and associative radios (Black FM, Mandarine, Top FM, Radio Emergence, Radio Campus, Radio Sainte Marie, etc. Additionally the country has private televisions such as: Tele-Africa; TV+; RTN; Chaîne 5, etc (Obono Mba, 2008).

#### **2.9.4 Information and Communication Technology and Higher Education**

The progress in ICT implementation is also noticeable in higher education. The African Institute for Computer Technologies (IAI), based at Mindoube (Libreville) was created in collaboration with several other nations. The existence of this high school has allowed for the development of a small regional scientific community of technicians in computing who come together at the biennial organization of the Conference on Research in Computer Science. In terms of ICT implementation in the country, the creation of IAI in 1971 should be considered the first great project of international co-operation in the field of information technology (Fall, 2007)

The University of Sciences and Technology of Masuku (USTM) located in Franceville is connected to VSAT network with Houston (USA), since 2000. This connection allows the university to have access to the latest information on technology and which makes it possible for the engineers and technicians to get quality training (Fall, 2007).

The Francophone digital campus (Campus numerique francophone) in Libreville connected to the Virtual French University (Universite Virtuelle Francophone) (UVF) was developed in 2001. One of its goals is to help university professors locally produce modules, seminars, publications, databases, and

archives to support DE courses as well as supplementary materials for local courses on the internet in French. It also provides assistance to professors in the production of programmes (La Gabon.org, 2012).

There is also the 'l' Agence Universitaire de la Francophonie (AUF)' which provides the transfer programme to sustain ICT in higher education and research through Internet site design training. The other programme is ICT and Fostering Knowledge in which primary activities deal with access to scientific and technical information, Internet access, producing multimedia content, supplying documents to the institutional members of AUF, face-to-face vocational training, distance training leading to qualifications, and Web hosting for young, innovative businesses (Fall, 2007).

Since 2003, when the late president decided to aim to make Gabon the digital technology centre of Western and Central Africa, many meetings have been held to discuss the effective implementation of ICT in Gabon and particularly in education. Some of these discussions led to partnerships such as NEPAD for the e-Schools Initiative and initiatives including Friends of the Net Forums and the 'l'agence Universitaire Francophone' (NEPAD, 2003).

## **2.9.5 Partnerships and Initiatives**

### **2.9.5.1 NEPAD Partnership Model**

The New Partnership for Africa's Development (NEPAD) was adopted by the OAU in 2001 and ratified by the African Union (AU) in 2002. The objectives of NEPAD are: to reduce poverty, putting Africa on a sustainable development path, halt the marginalization of Africa and empower women (NEPAD, 2009). From this undertaking various NEPAD partnership models were developed which entail a private and public partnership comprising of the participating governments on one side and the private sector on the other side. In Gabon the NEPAD e-schools initiative was an example of such a partnership between the government (public) and the private sector (NEPAD, 2003).

The government's responsibilities were as follows: they appoint their Country Liaison Persons (CLP) and support in-country structures necessary for planning and implementation. They are expected to facilitate entry of equipment required, ensure safety of equipment provided to the schools, provide conducting ICT regulatory environment, prepare readiness of schools and availability of teachers and other personnel (NEPAD, 2003).

Regarding private sector which entails fifty private companies led by five consortia namely AMD, Cisco, HP, Microsoft and Oracle, the sector provides end-to-end solutions, sources and delivers suitable digital content and support, maintenance and, satellite connectivity and power solution where necessary. Furthermore, the private sector is responsible for the training of first-line support staff and teachers. The partnership was ratified in a tripartite Memorandum of Understanding (MOU) which was

signed by the countries agreeing to become participants of the initiative and before the start of implementation. Gabon was among the twenty countries invited to participate in the first phase and which signed the MOU namely Algeria, Angola, Benin, Burkina Faso, Cameroon, Republic of Congo, Egypt, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Mali, Mauritius, Mozambique, Nigeria, Rwanda, Senegal, South Africa and Uganda (NEPAD, 2003).

#### **2.9.5.2 Private Initiatives**

*Friends of the Net Forum* is a Gabonese NGO which goal is to make the Internet easier for youth to understand and use, and to help them create their own jobs. This NGO has already launched two projects which are Net Rush and, Internet and Education. They are concerned with the popularisation of the Internet to make it easier for the youth to use. Training is offered to young people so that they can then become trainers for others (Fall, 2007).

The 'l'Agence Universitaire Francophone (AUF)', based at UOB since 2003, has signed a convention of co-operation with (UVA) that enables collaboration between the two organisations. In March 2006, in honour of International Day of the French Language, AUF and the NGO Friends of the Net Forum organised training for women in ICT use in which women were invited to learn how to create their own Web sites (Fall, 2007).

Since the government indicated their desire to implement ICT in education nearly a decade ago and despite some initiatives and actions (e.g., creation of ICT department, organization of seminars), ICT use still has a long way to go as far as the Gabonese Educational System is concerned, which thus keeps the country largely isolated digitally from other countries which have already effectively launched ICT in their educational system (Frempong, 2004). To acknowledge the emergency of ICT in education presently, Mahama claims that: "If we do not dot com, we shall be dot dead" (Oderberg, Jensen, & Sintim-Misa, 2003). This clearly underlines the importance of ICT in the development of the education and economy of a country.

#### **2.9.6 Challenges of Information and Communication Technology Implementation, Integration, and Use in the Gabonese Educational System**

Gabon, like many other countries in Africa, also struggles with various challenges when it comes to the integration and implementation of ICT. A survey in 23 Sub-Saharan countries from 2008 showed that radio is the major source of getting information about daily life (Michel, 2012), which gives us a good idea of the ineffective ICT integration. A survey done in 2009 indicates that Gabon only has an internet penetration of 5.9 %, with 90 000 Internet users. This compares favourably with Gabon's immediate neighbours, Congo (3.9%), Cameroon (3.8%) and even better with a country like Ethiopia (0.4 %). However, compared to other Sub-Saharan countries like South Africa (9.6 %); Zimbabwe (12.2%); and Seychelles (36.6 %), Gabon lags far behind. Only seven of 49 sub-Saharan countries

have a penetration rate of more than ten percent, and Gabon is not one of them. Availability is a main issue, and this includes connectivity, capacity and equipment (Michel, 2012).

Most countries in Africa and smaller regions are connected with satellite up-down-link stations, broadband sea-cables or fibre optic cables but in rural areas landlines fulfil this function (Michel, 2012). Although Gabon has grown tremendously in the area of internet subscribers, more than 90% of these subscribers make use of dial-up connections, and are therefore dependent on telephone lines, while only less than 10 % utilise broadband facilities (Oxford Business Group, 2011). Rural areas telephone lines are often in disuse because of widespread copper cable theft and therefore availability of a telephone line becomes extremely irregular (Michel, 2012). The high costs of successfully integrating and implementing ICT also cause concern. A study involving nearly 200 countries, investigated the relation between the GDP per capita and the cost of acquiring Windows and office XP, showed some interesting data. In Gabon with a GDP/capita of 3437 (US dollars) it will cost the equivalent of \$5747 for an individual to set up such a basic ICT operation, nearly twice the GDP/capita amount (Ghosh, 2003). Maintenance of the ICT tools is not even taken into consideration then.

This raises the issue of skilled labour when dealing with ICT. There seems to be an acute need for skilled technicians in the ICT sector (Oxford Business Group, 2011), which compounds the issues of successful ICT implementation.

Social and cultural factors also play a part. A survey on the individual use of ICT was done in Libreville, Gabon and 1 352 individual responses were collected from participants. The data pertained to the participants' socio-economic characteristics (age, gender, languages spoken, level of education, marital status and income bracket). This survey indicated that young people are more attracted to new technologies and that the probability of adopting internet drops with age (Penard, Poussing, Yebe, & Ella, 2012). The social neighbourhood also contributes to the decision whether or not to use the internet. If someone has a lot of friends using the Internet and belonging to associations, the chances are greater that he or she will also make use of the Internet (Penard, *et al.*, 2012).

Michel (2012) states that the dominance of English as the language of the Internet language is a challenge for developing countries to using the Internet. This is problematic in Gabon where English is a second language and is not spoken by everyone.

### **2.9.7 Enablers for Information and Communication Technology Implementation, Integration, and Use in the Gabonese Educational System**

Gabon has various advantages, as opposed to most sub-Saharan countries, when it comes to the possibility of implementation of ICT in education. Gabon enjoys a very healthy Gross Domestic Product (GDP) per capita when compared to other African countries (Penard, *et al.*, 2012) which would make successful ICT implementation plausible. As mentioned before, Gabon decided to be

connected to the West African Submarine Cable (WASC/SAT3/SAFE) which made the country become one of only two countries in the Central African region that possesses the sea cable linking Europe to Asia (Fall, 2007). Further developments have ensued, such as the installation and operation of a new Africa Coast to Europe (ACE) fibre-optic cable, which will have a landing point in Libreville by the end of 2012. There are plans to triple the SAT3 transferral from 120 GB per second to 340 GB per second, and increase the wavelength from 2.5 GB to 10 GB per second. This could ensure better quality of service, a drop in internet costs, and better internet penetration. Additionally, in January 2011 a new agency, the National Agency of Digital Infrastructure and Frequencies was established in order to coordinate the development of all IT, telecommunication and audiovisual infrastructure in Gabon (Oxford Business Group, 2011).

Gabon is able to take a technological leap and invest in 3G and 4G technology and many feel that if and when people realise the potential and enablers of ICT they will embrace it (Oxford Business Group, 2011). This can be seen in the growth of the internet subscribers. In December 2000 Gabon had 15 000 Internet subscribers, by 2009 the number had grown to 90 000 (Table 3) of (Michel 22). This constitutes a growth of 600% in nine years, which clearly underlines ICT's potential.

### **2.9.8 Taylor's Five Generations of Technology Evolution**

When considering Taylor's (2006, 2007) five generations of the evolution of technology innovation in DE, it clearly appears that South Africa's evolution of technology innovation in the DE has been developed since the existence of DE in 1946 with UNISA. The Intelligent Flexible Learning Model, which uses online interactive multimedia, Internet-based access to www resources, computer-mediated communication using automated response systems, and campus portal access to the academic institution's processes and resources, is developed by the Government and private organisations in South Africa so as to every learner involved in the use of ICT becomes a concrete ICT capable user (Department of Education, 2004). The use of DE in Gabon is being installed with private organisations, namely the "l' Agence de l'Universite Francophone (AUF)" and the Indian DE both in Libreville. However, the Gabonese Government committed itself to the public implementation of ODL in Gabon. The literature review shows us that the current Gabonese ICT infrastructure corresponds to the third generation (the Tele-learning Model) of the (Taylor, 2006, 2007) five generations. Obono Mba (2008) does not seem to agree with it and feels that in Gabon the third generation, relating to ICT has not even been reached.

### **2.10 Summary**

Gabon indeed offers more opportunities than most sub-Saharan countries for the successful integration and implementation of ICT and ODL. However, it still seems to lag behind the rest of the world and has not developed this field the way they could have. On one hand, the country is

surrounded with some technological structures like West African Submarine Cable (WASC/SAT3/SAFE), and even more impressively the potential of implementation of ACE (Africa Coast to Europe) fibre optic cable, which would make internet cheaper, faster and more accessible, the battle has not been won yet. There are some signs that the government aims to aggressively implement ICT in education, but at this stage these only remain signs. Although there is a degree of willingness to integrate ICT in education, there is still insufficient planning when it comes to ICT integration. On the other hand, distance learning is still being treated like the “poor parent” of the technological revolution in the country (Obono Mba, 2008).

As mentioned in Chapter 1, this study uses Stoner’s systems life cycle of learning technology integration as conceptual framework. Initiation is the first cycle in this model and during this cycle the challenges and enablers of the said topic, together with a preliminary assessment of the situation is undertaken. This chapter has contributed largely in doing exactly that, and has assisted in creating a clearer picture of the situation concerning the implementation and integration of ODL in Gabon.

## Chapter 3: Research Design and Methodology

---

### 3.1 Introduction

The aim of this qualitative descriptive exploratory research study is to explore, describe and understand the enablers and challenges of initiating ICT in the ODL training of Gabonese in-service teachers. Marshall and Rossman (2011) claim that when a proposed research project is devised with concrete plans for managing design decisions, there is reassurance that the researcher has leaned on qualitative research traditions for advice, has foreseen a range of issues to be managed, and is able to know what to do in the field. In short, the completion of the proposal ensures the feasibility and the readiness for the execution of the research. It dictates the field of the research through the research design (Mouton, 2001). The second chapter (literature review) shows the clarification of terms like ICT, ODL and the implementation of ICT in the Gabonese education. In order to enter into the fieldwork of the research, Chapter 3 will deal with concise methodological aspects such as research design, methods, strategies involved in the empirical fieldwork (Mouton, 2001). These aspects described in the current chapter helped the researcher to work with confidence in the field of work.

### 3.2 Research Paradigm, Design, and Methodology

#### 3.2.1 Research Paradigm

A paradigm is the basic model or frame of reference we use to organise our observations and reasoning (De Vos, Strydom, Fouche, & Delpont, 2005). A paradigm shapes what we see and how we understand it, because what we observe reminds or gives us a particular image of the world around us (Babbie & Mouton, 2001; Mouton, 2001). This image of the world can reflect the way we interpret the world. A paradigm is also a set of basic beliefs or ontology that defines how we view the world and our relationship with it (Denzin & Lincoln, 2005; Guba & Lincoln, 1994). Therefore, to carry out research we have to place it within a paradigm, as it is the paradigm that will largely determine the research design chosen and the methodology used in gathering and analysing research data (Guba & Lincoln, 1994; Schwandt, 1994; Wood, 2012).

The current research fits within the interpretivist paradigm because the knowledge was socially constructed and reality subjective. The effort in the context is to understand the subjective world of human experience (Cohen, Manion, & Morrison, 2011). Through some methods to collect data, participants have participated in interviews organised by the researcher. The researcher needed to interpret and understand the participants' experience about the research topic.

### 3.2.2 Research Design

There are many approaches to deal with when doing research. The most common of them are known as quantitative and qualitative research approaches (Mackey & Gass, 2005). Broadly speaking, quantitative research starts with an experimental design. In this design, the quantification of data follows a hypothesis, then some sort of numerical analysis is carried out (e.g. a study comparing student test results before and after an instructional treatment), while qualitative studies, on the other hand, generally are not set up as experiments because the data cannot be easily quantified (e.g. a diary study in which a student keeps track of her attitudes during a year-long Japanese language course), and the analysis is interpretive rather than statistical. The current research fits within the qualitative approach which needs to be clarified for the best understanding of the research and the readers. The data from the participants' viewpoints relating to the research topic could not be collected before their commitment in the research. The data were first collected and then put in the process of analysis. Qualitative research is 'an umbrella' term which covers an array of interpretive techniques (Patton, 2002; Van Maanen, 1979). Those techniques seek to describe, decode, translate, and come to terms with the meaning. The meaning provides a deep understanding of the world through conversation and observation in natural settings rather than through experiment and manipulation under artificial conditions (Denzin & Lincoln, 2005). 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 there. Each view presented by the participants represents a different view of the world not better, not worse just different (Wood, 2012). Relating to this research, interviews have helped the researcher understand the impediments of initiating ICT in ODL training of Gabonese teachers. Participants were expected to give their views as to their willingness, their readiness, their fears and attitudes of initiating ICT in ODL for their professional development.

A research design refers to the plan followed to undertake research activities (Merriam, 1998). She claims that each activity is best undertaken with some idea of what you want to do and, in the case of research, what you want to know. During the research, the researcher in the field work was looking for the enablers and the challenges of initiating ICT in ODL training of Gabonese in-service teachers. The plan or the research design should assist the researcher to know and make readers know from where he/she starts the research to where he/she is supposed to go. Readers expect to be informed about all aspects of the study for two reasons: the first reason is the later possibility of replication and the second is to provide readers with an informed opinion of the research; they need to know as much detail as possible as to what was done (Mackey & Gass, 2005). This study followed a qualitative case study research design.

### **3.2.3 Research Methodology**

Three qualitative data collection methods were used in this study, i.e. semi-structured open-ended individual interviews, semi-structured open-ended focus group interviews and photographs (artefacts). The researcher went to his home country to conduct interviews with Gabonese teachers of English and returned to the North-West University in Potchefstroom, South Africa, for data analysis.

#### **3.2.3.1 Case study**

A case study is a particular case that is regularly designed to illustrate a more general principle (Nisbet & Watt, 1984), it is the study of a particular case (Stake, 1995). A single case can be defined as a bounded system, such as a child, a clique, a class, a school, a community (Cohen, *et al.*, 2011; Creswell, 1994). A case study is an intensive, holistic description and analysis of a single instance, phenomenon, or a social unit (Merriam, 1998). The topic of initiating ICT in ODL training of Gabonese teachers became a single case of a bounded study within the implementation of ODL in the Gabonese Education System. It is a specific context with relevant information as to the challenges to initiate ICT in ODL training of Gabonese teachers that the researcher can collect to explore their relationship. The most defining characteristic of case study research lies in delimiting the object of study, the case or bounded system (Miles & Huberman, 1994). The choice of this topic comes from an observation of a phenomenon which led to the study of the phenomenon in order to understand it. To understand the phenomenon, the researcher seeks to assess the boundedness of the topic, asking whether there is a limited number of people to be interviewed or a finite amount of time for observations (Merriam, 1998).

The purpose of choosing a qualitative case study research design was to use individual interviews and focus group interviews to obtain in-depth information from the participants as to the challenges that can be encountered when initiating ICT in ODL training of Gabonese teachers. The main reason for the choice of this qualitative case study was that the researcher is a former English teacher having worked for a long time in Gabonese Education. The qualitative case study made the researcher able to describe and understand this case and further address the policy-makers for relevant recommendations. The current research focused on the Gabonese English teachers. The number of people to be interviewed was determined by snowball sampling. It is difficult to determine the number of people to be interview as the phenomenon is not bounded (Merriam, 1998).

#### **3.2.3.2 Snowball Sampling and Selection Criteria for Participants**

One cannot study the universe; everything, every place, all the time. Instead, the researcher makes selections of sites and samples of times, places, people, and things to study (Marshall & Rossman, 2011). A sample comprises elements of the population considered for actual inclusion in the study (Arkava & Lane, 1983). It can also be viewed as a subset of measurements drawn from a population in which we are interested. We study the sample in an effort to understand the population from which

it was drawn. Alternatively, a sample is a small portion of the total set of objects, events or persons which together comprise the subject of the study (De Vos, *et al.*, 2005; Seaberg, 1988).

Cohen, *et al.* (2011) distinguish two main methods of sampling: a probability sample (also known as a random sample) and a non-probability sample (also known as a purposive sample). According to them, the difference between these methods is that in a probability sample the chances of members of the wider population being selected for the sample are known, whereas in a non-probability sample the chances of members of the wider population being selected for the sample are unknown.

The number of participants in a study is always difficult to determine ahead (Merriam, 1998). Guba and Lincoln (1994) recommend that sampling continues until data saturation has been reached, i.e. no more new information is forthcoming from participants. This indicates that data analysis will take place almost simultaneously with data collection as interviews will be transcribed and analysed directly after the interviews to ascertain that the correct questions were asked, and to ascertain when data saturation was reached (Saldaña, 2009).

In a snowball sampling, for example a non-probability sample, researchers identify a small number of individuals who have the characteristics in which they are interested. These individuals are then used as informants to identify and/or put the researchers in touch with others who qualify for inclusion, and these, in turn, identify yet others; hence the term snowball sampling, also known as chain-referral methods. Cohen, *et al.* (2011) claim that snowball sampling is specifically important as it is a means in itself rather than a default, fall-back position. The strategies, for gaining access to people, lie on participants' social networks and personal contacts. In snowball sampling, interpersonal relations are of high importance. During the process of contacting people to attend interviews, the researcher proceeded to a chain-referral method which consisted of contacting some of his former English teacher colleagues. These latter continued the process of contacting friends, then friends of friends, friends of friends of friends. They carried on with acquaintances, acquaintances of acquaintances, acquaintances of acquaintances of acquaintances; and finally with contacts (those they personally know or do not personally know), contacts of contacts, contacts of contacts of contacts (Cohen, *et al.*, 2011). Despite the difficult period during the writing of the national examinations in the country, the chain-referral method allowed the researcher to have eight individual interviews and four focus group interviews.

Not having the opportunity to enrol in the traditional and conventional programmes of Gabonese universities, Gabonese teachers would like professionally to develop through any kind of training. The researcher selected to execute his research amongst a social network selection of Gabonese English teachers, principals, university lecturers, ICT experts, as well as officials from the National Pedagogical Institute (advisers and inspectors), since he had knowledge about the structures and networks of this community of practice (Cohen, Manion, & Morrison, 2007). Participants were selected according to specific selection criteria (Table 3.1).

**Table 3.1: Selection Criteria of Participants**

Participants	Selection Criteria	Individual Interviews	Focus Group Interviewees
Teachers	<ol style="list-style-type: none"> <li>1. English teacher</li> <li>2. At least five years in position</li> <li>3. Concerned with ICT for ODL for in-service training</li> </ol>	2	9
Principals	<ol style="list-style-type: none"> <li>1. School leader / manager</li> <li>2. At least three years of experience in the position</li> <li>3. Concerned with ICT for ODL for in-service training</li> </ol>	1	-
ICT specialists	<ol style="list-style-type: none"> <li>1. ICT specialist of ICT in Education</li> <li>2. At least three years of experience as consultant of ICT in Education</li> <li>3. Concerned with ICT for ODL for in-service training</li> </ol>	4	-
Advisers of English teachers	<ol style="list-style-type: none"> <li>1. Adviser of English teachers in schools</li> <li>2. At least three years of experience in the position</li> <li>3. Concerned with ICT for ODL for in-service training</li> </ol>	1	2
Inspectors of English teachers	<ol style="list-style-type: none"> <li>1. School inspector of English second language</li> <li>2. At least three years in position</li> <li>3. Concerned with ICT for ODL for in-service training</li> </ol>	1	-

The researcher encountered many challenges when starting his investigation. The period he went home was not suitable for teachers' interviews. Teachers were at the end of the academic year and were busy dealing with matters such as recording, reporting and the writing of the national examinations. Eleven English teachers from various areas (schools and offices) were involved in the different interviews: two teachers in the individual interviews and nine in three focus group interviews. The researcher went to Minvoul (700km from Libreville) in the North province to start with interviews. As teachers were very busy, interviews took place in different places including my home.

The researcher made one interview with a principal of one of the colleges in the Northern part of the Country. In Libreville all the principals were involved in the writing of the national examinations, since all the schools are examination centres. That means that it was difficult to meet principals in Libreville.

Four ICT specialists, two from University and two from the Ministry of National Education, were included in the individual interviews. One of the officials from the Ministry of National Education was also a lecturer at ENS and the second was an Inspector of English teachers.

Three advisers were involved, two in a focus group interview and one in an individual interview. The inspector was an official of the Ministry of National Education and an ICT specialist as he is the initiator of ICT in the Ministry of National Education.

### 3.2.3.3 Semi-structured Open-ended Individual and Focus Group Interviews

According to Kvale and Brinkman (2009), an interview is literally an *inter view*, an inter change of views between two or more persons. Tuckman (1972), defines interview as a process to provide access to what is inside a person's head. As such, an interview enables to measure what a person knows (knowledge or information), what a person likes or dislikes (values and preferences), and what

a person thinks (attitudes and beliefs) (Cohen, *et al.*, 2011). Qualitative studies use unstructured or semi-structured interviews (Morse, 1991). The dichotomy between “structured” and “unstructured” is deceptive as “unstructured” interviews are structured in a number of ways (Collins, 1998). For example the researcher, in the very act of initiating the interview, necessarily determines the nature of the event, the interviews he is going to use. Semi-structured interviews are organised around areas of specific interest and allow considerable flexibility in scope and depth (Morse, 1991). These semi-structured interviews imply individual or one-on-one interviews and focus-group interviews as well. Focus group interviews are viewed as a specific data collection method to understand more comprehensively what people know and think and how they experience a certain issue. The researcher ensured tolerant environments for conducting the focus group interviews and encouraged participants to share perceptions, viewpoints, experiences, wishes and concerns without any pressure.

The most important difference between individual and focus-group interviews is the total amount of information that individual interviews provide about each interviewee. Things that are not likely to emerge in the one-on-one interview are more likely to come out in focus groups, because group dynamics can be a catalytic factor in bringing information to the fore (De Vos, *et al.*, 2005; Morgan & Krueger, 1998). It is generally claimed that the purpose of the research must guide the researcher to choose the most effective method (De Vos, *et al.*, 2005). The present research, which is to explore, describe and understand the enablers and challenges of initiating ICT in ODL training of Gabonese in-service English teachers, will only use in-depth interviews for the data collection process.

The researcher attended a training session in the conduct of interviews with an expert of the department. In the morning, the training focused on individual interviews and in the afternoon on focus group interviews. In the morning the trainer focused on the body language which enabled the researcher to become acquainted with the participants and learn much about their attitudes and perceptions. In the afternoon, after some difficulties encountered in the morning session, fear and stress, the practice seemed easier. After a workshop with two other experts of the department, the researcher was ready to return to his country and conduct the interviews.

To ensure in-depth data collection, these two mentioned types of interviews (individual and focus group interviews), underpinned by open-ended questions, were used in the present research in order to allow participants to freely talk and give different responses (Bodgan & Biklen, 2007). Open-ended questions do not require the selection from a given range of responses and participants can answer questions in their own way and in their own words. While in closed questions, multiple choice questions, participants have to select from a given, predetermined range of responses a particular response which most accurately represents what they wish to be recorded (Cohen, *et al.*, 2011).

During the interviews, an interview schedule with two questions as an appropriate instrument was handed in participants to engage them in the interviews and make them think about what the interview might cover. The questions focused on the research topic to ensure responses that provided relevant information in coherence with the purpose of the investigation in mind:

- 1) What are the enablers of initiating ICT in ODL training of Gabonese teachers?
- 2) What are the challenges of initiating ICT in ODL training of Gabonese teachers?

All the participants gave consent for their participation in the interviews as well as for the recording of the interviews. The audio recording of the interviews enabled the researcher to concentrate on the interviews' proceedings and progression. The recordings of all the interviews were transcribed verbatim for careful data analysis.

Artefact data in the form of photographs were collected to visually display the unique context of the Gabonese Educational System. The researcher took some photographs of schools and offices to show the Gabonese education context and confirm the responses from participants.

#### **3.2.3.4 Case Sensitivity**

Throughout the research I focussed on aspects of case sensitivity. Case sensitivity refers to improving insight into the data and being able to discover meanings that are not explicit (Strauss & Corbin, 1998). Cohen, *et al.* (2011) claim that researchers have to be aware of the sensitive issues at work in any piece of research that they are undertaking. They argue that the researcher has to be sensitive to the context, the cultures, the participants, the consequences of the research on a range of parties, the powerless, the powerful, people's agendas, etc. Strauss and Corbin (1998) indicate that there are different types of questions that can be asked during analysis, namely sensitizing, theoretical, and practical questions. Sensitizing questions help the researcher to become aware of what the data might mean and may take the form of questions such as "what does this mean?"; "what is going on here?"; "what are the different meanings for the different participants?" (Wood, 2012).

#### **3.2.3.5 Grounded Theory**

The current investigation was conducted within the context of grounded theory. A theory is a systematic set of interrelated statements intended to explain some aspects of social life and/or enrich our sense of how people behave and find meaning in their daily lives (Rubin & Babbie, 2001). Neuman and Krueger (2003) state that social theory was defined as a system of interconnected abstractions or ideas that condenses and organizes knowledge about the social world. Theory provides an explanation for phenomena; it helps people make sense of patterns and see them in diverse observations. Theory helps to drive people's inquiry into those areas that seem more likely to show useful patterns and explanations; and it helps people distinguish between chance occurrences and observations that have value in anticipating future occurrences (De Vos, *et al.*, 2005; Henning, 2004; Monette, Sullivan, & DeJong, 2010).

Grounded theory is a general methodology for developing theory that is based on data systematically gathered and analysed. The theory is derived inductively from the analysis and study of, and reflection on, the phenomena under study, i.e. it explains by drawing on the data generated. It is a

method or set of procedures for the generation of theory or for the production of a certain kind of knowledge (Cohen, *et al.*, 2011; Strauss & Corbin, 1998). Therefore, the researcher needs to understand social processes as the participants understand them, learn about their world and share their definitions. And it is through this sharing of definitions that the researcher may begin to understand that human experience is mediated by interpretation (Potgieter, 2012). Potgieter (2012) also indicates the guidelines required to ensure rigour within grounded theory study namely, non-probability sampling procedures with small sample size, data collection and analysis both combined for a constant comparison until data saturation in order to create a well-integrated theory and the research report. Data saturation occurs when there are no additional data to the data analysis (Glaser & Strauss, 1967; Krueger & Casey, 2000).

### **3.2.3.6 Role of Researcher**

The researcher conducted all interviews in French, and collected some artefact data (photographs) related to schools in Gabon. The researcher chose to work with English teachers in Gabon because of his professional experience as teacher of English and he knew that many other English teachers, principals, lecturers, advisors and inspectors are interested in TPD via ODL supported by ICT. These people also knew other people concerned with the issue. This knowledge of the field assisted him in his role as interviewer (Merriam, 1998).

## **3.3 Data Analysis**

Interviews were recorded in French, as French is the official language of Gabon. The transcription of the interviews was done in French as well. The researcher worked with an expert of the SCTE on the data analysis. The transcription done into French was captured in Atlas.ti™ to create an integrated dataset. The data analysis, based on grounded theory approach, consisted of endeavouring to identify the enablers and challenges of initiating ICT in ODL training of Gabonese in-service English teachers. After removing all the names of the participants from the interviews, the next step was to look for codes which involved the identification and labelling of units of meaning (Henning, 2004). Then, we grouped the codes in order to construct categories and themes for the discussion. Participants were expected to provide their viewpoints and their experience about initiating ICT in ODL training of Gabonese in-service English teachers. Accordingly, their responses in relation to their attitudes, feelings, willingness, knowledge and experiences were analysed and interpreted. In the analysis, each quotation was linked to its original interview. For example, (P1: 8) relates to interview 1, and line 8 to the transcribed data. The interpretation with the quotations was done in English and the reference in French was at the footnote. During analysis,

- the responses of the participants were captured by two digital recorders
- the utterances of the participants were transcribed verbatim

- codes related to units of meaning were listed in categories and were linked to the three themes.

Some photographs from Gabonese education context related to the schools and the use of ICT in the analysis have been part of the research. Those photographs show the reality of the Gabonese education aspects related to insufficient ICT equipment, safety and electricity. To a certain extent the photographs sustain participants' responses.

### **3.4 Ethical Aspects of the Research**

Validity and trustworthiness of the research relates to the confidence in the conduct of the investigation (Merriam, 1998). The researcher will throughout the study aim to provide evidence that research procedures have been followed faithfully. Therefore careful attention is given to the conceptualization, the way in which data will be captured, analysed, interpreted and presented. As *understanding* of the experiences and views of the participants are important, the careful following and describing of procedures is equally important. All these issues relate to the concept of crystallization (Creswell & Miller, 2000; Denzin & Lincoln, 2005).

Ethical decision making is a complex process (Cohen, *et al.*, 2011). Ethical issues arise between conflicting values involving community matters such as freedom, privacy and scientific method (Greef, 2005). The main principle pertaining to people participating in research is that no harm should be done to anybody participating in the research (Patton, 2002).

Prior to data-collection, formal permission and ethical clearance was obtained from both the North-West University's Ethics Committee, as well as the Gabonese Education Department (DGEF) in order to conduct research within the Gabonese Education System (Greef, 2005).

Participants voluntarily and anonymously participated in open-ended semi-structured individual and focus-group interviews. Participants were informed about the nature of the research and their rights to withdraw from the research process at any time. Participants were informed about the nature and aim of the research, and were requested to voluntarily complete a formal permission and consent form, granting the researcher permission to interview them, make the digital recording after interviews to analyse the data, and report the findings (Merriam, 1998).

Copies of the original dataset (recordings and transcriptions) were stored on the P-drive of the researcher at the School of Continuing Teacher Education on the Potchefstroom Campus of the NWU for at least seven years. Each participant received an electronic copy of the final research report during a feedback session (Merriam, 1998).

The study was approved by the Ethics committee of the North-West University (Addendum 3.1). The researcher received formal permission and ethical clearance from the North-West University's Ethics Committee. The goal of the ethical approval was to protect the participants, the researcher and the University. The research was conducted in the manner that met the applicable ethical norms of social sciences in general (Merriam, 1998). Ethical aspects applied to the research included the avoidance of emotional or any other form of harm, obtaining informed consent of all participants, assurance of confidentiality and privacy while the researcher reported on the analysis of the data and the findings of the research (Merriam, 1998).

Permission and consent to conduct the research in the Gabonese education System are listed according to the respective role players:

- Request from Director of SCTE, North-West University to the Director of the Teacher Training College in Gabon (Addendum 3.2), as well as to the Director of the Department of Education and Training (Addendum 3.3)
- Researcher's request to ENS director (Addendum 3.4) and to the director of the Department of Education (Addendum 3.5)
- Research Invitation, permission and informed consent letter (Addendum 3.6).

The interview process and ethical conditions were explained to the participants prior to the interviews in order to familiarise the participants with the empirical procedures. The research was conducted in this manner to minimise any intrusion into the professional working and school life of the participants. Participants voluntarily and anonymously participated in open-ended semi-structured individual and focus group interviews which were held either at my place or at the teacher's place, and in some schools. Some arrangements were included:

- Making of appointments with the teachers at the place selected
- Time for refreshment
- Travelling to the respective sites of the interviews.

The individual and focus group interview schedules are available on the CD ROM at the back of the dissertation. All the interviews are concatenated in the integrated dataset compiled in the HTML version of the Atlas.ti™ heuristic unit:

- Focus group interview with three teachers (Addendum 3.7)
- Focus group interview with an adviser (Addendum 3.7)
- Individual interview with an adviser (Addendum 3.7)
- Individual interview with an inspector (Addendum 3.7)
- Individual interview with ICT an specialist and lecturer (Addendum 3.7)
- Individual interview with two ICT specialists (AUF) (Addendum 3.7)
- Individual interviews with two English teachers (Addendum 3.7)
- Individual interview with a principal (Addendum 3.7).

Trustworthiness, validity and reliability of the integrated dataset were also ensured.

### **3.5 Trustworthiness of the Integrated Dataset**

Trustworthiness of the research relates to the confidence in the conduct of the investigation. The research design was conducted according to the criteria of validity and reliability (Merriam, 1998).

#### **3.5.1 Validity of the Integrated Dataset**

Data do not speak for themselves; there is always an interpreter or a translator (Merriam, 1998). The data were analysed by the researcher so as to show the links between the data and the interpretations. The credibility of the research was also based on the training of the researcher by an expert on interviews of the SCTE before the interviews. The training of the researcher was essential for conducting the interviews as the researcher had to do the interviews alone in his home country.

#### **3.5.2 Reliability of the Integrated Dataset**

The research was logical, traceable and documented in a reflexive way by means of a detailed account of the research. From the first chapter of the research to the fourth chapter, interpretation of the data, every step is explained in order to show what was done in the research and how it was done. The second chapter about the literature review indicated some particular aspects of the two main points of the research ICT and ODL and finally it pointed out the nature of the Gabonese Education System and the implementation of ICT in it (La Gabon.org, 2012).

### **3.6 Summary**

This chapter describes the research paradigm, design and methodology that were used in this qualitative descriptive exploratory research study to explore, describe and understand the enablers and challenges of initiating ICT in the ODL training of Gabonese in-service teachers. The main themes of the chapter were the interviews, individual and focus-group interviews, the data analysis, and the ethical issues. The research received a particular attention to collect reliable and valid information aimed to initiating ICT in ODL training of Gabonese in-service teachers. The next chapter deals with the interpretation of data.

## Chapter Four: Research Findings

---

### 4.1 Introduction

The previous chapter described the qualitative research design and methodology used in this study, as well as the methods for data collection. Chapter 4 offers an analytical report of the research findings pertaining to the enablers and challenges of initiating ICT in the ODL training of Gabonese in-service teachers. There were twelve interviews: four focus-group interviews and eight individual interviews. They all contributed to responding to the two main research questions, i.e. (i) What are the enablers of initiating ICT in ODL training of Gabonese in-service teachers?, and (ii) What are the challenges of initiating ICT in ODL training of Gabonese in-service teachers? All the interviews were recorded and transcribed in French, and the data-analysis was also conducted in French. The research findings were translated into English for the purpose of this report.

### 4.2 Demographical Information of Participants

The following section deals with age, gender, teaching experience and educational background of the English teachers involved in the interviews. The teachers were from different schools, university and ENS. A research invitation, permission and informed consent letter and a protocol of interview with demographical information in were given to each of them, before the beginning of each interview.

**Table 4.1: Demographical Information of Participants**

Gender		Age group		Qualifications		Teaching experience	
Males	Females	Age Group	Number of Teachers	Level	Number of Teachers	Years of Experience	Number of Teachers
15	4	30-39	4	CAPC licence	5	01-09	5
		40-49	8	CAPES Master	12	10-19	6
		50-59	7	Doctorate	2	20 and more	8

Demographical information of participants is provided in Table 4.1. Participants ranged from 33 years old to 56 years old. Most of the teachers (n = 15) were from 40 to 56 years old. Only n = 4 teachers were between 30 and 39 years old. The age of participants was viewed in relation to their teaching experience. The largest group of teachers (n = 8), according to the teaching experience was between 20-30 years of teaching experience. The second group was n = 6 teachers with a teaching experience between 10-19 years. Regarding the qualifications, n = 14 teachers, with their CAPES, Master and Doctorate, were highly qualified for their careers and have worked for more than 10 years. Teachers were experienced and were able to appreciate the research problem; initiating ICT in ODL training of Gabonese in-service teachers. They presented the challenges and some advantages they encounter

in their work and which are related to the research topic. Regarding the gender distribution, the inequity between males and females appeared on account of the period of the year which corresponded to the closure of the academic year and during which females are more at home than at work.

### **4.3 Data Themes and Categories**

After the transcription of the twelve interviews in ATLAS.ti™, we constructed an integrated dataset which identified six categories of data related to three themes, i.e. Gabonese Education, ICT in Gabon and ODL in Gabon. The six categories are: (i) Challenges of Gabonese Education, (ii) Enablers of Gabonese Education, (iii) Challenges to implementation and integration of ICT, (iv) Enablers of ICT; (v) Challenges of ODL, and (vi) Enablers of ODL. These categories supported by codes and quotations provide basic ideas on the research problem, enablers and challenges of initiating ICT in ODL training of Gabonese in-service teachers. Thirty codes were comprised in the discussion. The chapter presents the findings of the research in two sections: the participants' demographical information and a comprehensive discussion on the data collected.

Figure 4.1 shows the three themes identified by the qualitative data analysis, i.e. (i) Gabon education, (ii) ICT in Gabon, and (iii) ODL in Gabon. The three themes encompass each two categories, Challenges and Enablers for the initiation of ICT in ODL training of the Gabonese teachers. From each category, we will discuss the different factors or codes that can impede and favour the integration of ICT in ODL implementation for the benefit of in-service teachers. We will start with the theme which stems from the research field, Gabonese Education.

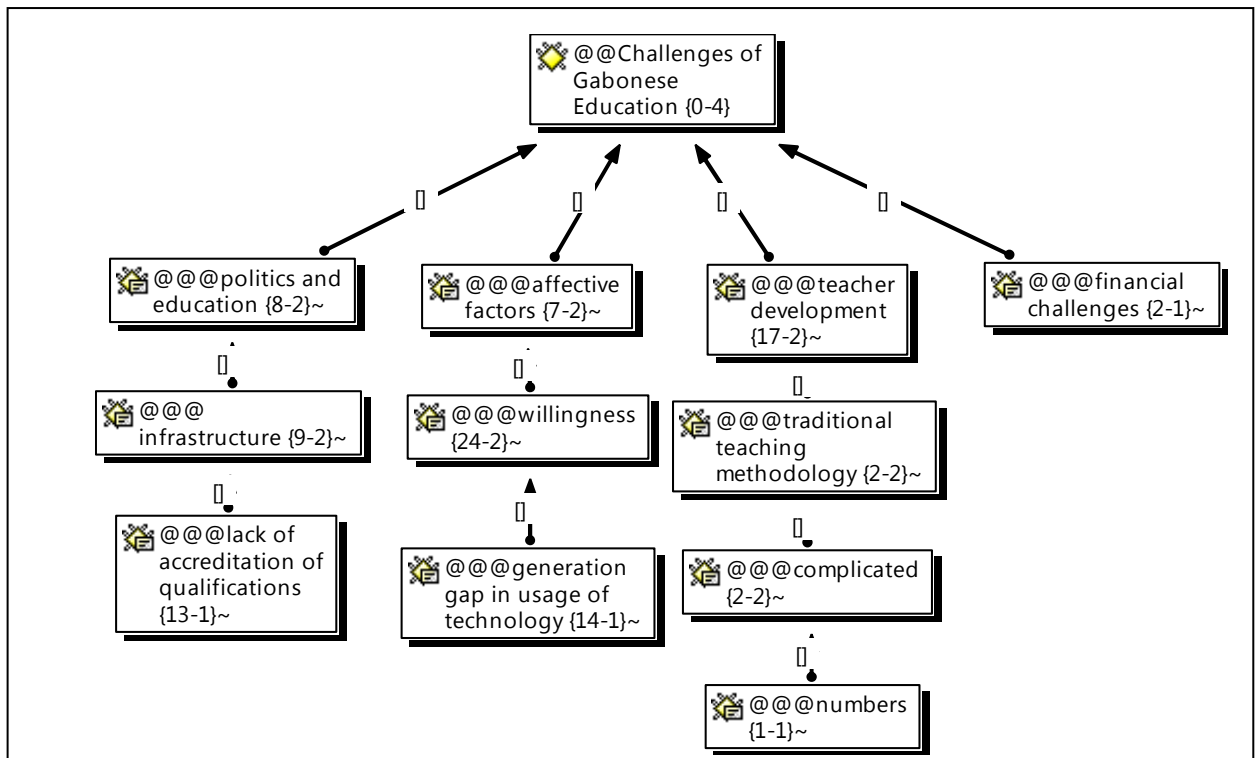
#### **4.3.1 Gabonese Education**

The first theme Gabonese Education comprises the factors related to education in the Gabonese context. These factors cover some main aspects like Government responsibility, qualification and participants' feelings about the research problem.

##### **4.3.1.1 Challenges of Gabonese Education**

Figure 4.2 shows the different challenges of initiating ICT in ODL training of Gabonese in-service teachers. These challenges are politics and education, infrastructure and no accreditation of qualifications; affective factors, willingness and generation gap in usage of technology; teacher development, traditional teaching methodology, and financial challenges.

**Insert Figure 4.1 here.**



**Figure 4.2: Challenges of Gabonese Education**

### Politics and Education

Politics and education indicates the responsibility of the government (politics) on Education in Gabon. The government from the educational law (la République du Gabon, 1966) has the responsibility to ensure the education of the Gabonese citizen. In that regard, the government should pay attention on the evolution of education in the country and abroad to see the growth of cross-border education. Participants seem not to understand the government slowness in providing education with new technology. However, Gabon has opted to set up a national system for general access to information using computer-related technologies (Fall, 2007). Government policy should follow the flow of the world technological development and make educators adapt to the new technologies for the enhancement of the education and the development of the country (Mbeki, 1999) because good education underpins development. According to participants, political vision and will-power via ICT in education policies are needed for such development:

*I think that is a matter of political vision of bringing Gabon achieve emergence (P2: 2-30)<sup>1</sup>*

*We are a little blocked by the will of the State, because the human resources there is already a deficit (P2: 2-33)<sup>2</sup>*

*I think there is a matter of political vision of policy-makers (P12: 12-21)<sup>3</sup>.*

<sup>1</sup> Je crois que c'est une question de vision politique pour pouvoir amener le Gabon parce que si on veut atteindre l'émersion (P2: 2-30)

<sup>2</sup> On est un peu bloqué par la volonté de l'Etat, parce que les ressources humaines, il y a un déficit (P2: 2-33)

<sup>3</sup> Je pense qu'il est question de la volonté politique des décideurs (P12: 12-21)

One of the factors which can pull the Gabonese education to the level of other countries is the implementation of ODL in the Gabonese Education System for the benefit of teachers. However, it seems difficult for the Gabonese government to deal with the implementation of ODL for the TPD or to encourage private initiative so that teachers can be involved in. Relating to that, implementing ODL required significant commitment from public and private partnership (Tinio, 2003). But in Gabon there is no policy to integrate the administrative and the educational domains to ICT apart from the 2001 plan of Mali, which envisioned equipping high schools with computers (Fall, 2007). Participants furthermore wished that politics and education were not mixed:

*We are not in the American system or in the South African system where it is the private which is going to, because here it is the State which does everything (P2: 2-36)<sup>4</sup>*

*It is not easy, it is complicated. You know it's really a shame that we mix politics and education together (P1: 1-14)<sup>5</sup>.*

## Infrastructure

The need for policy to integrate ICT in the Gabonese education can explain the carelessness of the government in schools infrastructure. In this second challenge responses show the need for electricity in classrooms and offices. According to Ololube, *et al.* (2007) electricity powers ICT materials. Bagchi and Udo (2007) indicate that poor infrastructures are a challenge to ICT integration in developing countries. So, to integrate and use ICT, the basic infrastructural requirements include electricity and educational workers. Some of the participants indicated a lack of such basic infrastructure at schools:

*But there must have first electricity (P2: 2-15)<sup>6</sup>*

*Where are you going to plug them (ICT devices)? There is not any plug, any power in classrooms (P2: 2-14)<sup>7</sup>.*

Some foreign institutions like NEPAD which attempt to launch initiatives in ICT integration in Gabon even claim that school classrooms in Gabon do not have windows (Farrell, 2006). The fact that classrooms do not have windows can impede the integration of ICT in schools because it affects the long-term sustainability of the technologies (Farrell, 2006). This statement joins participants' viewpoints of the schools. They seem to complain about the appropriate places of schools. They are often disturbed by children or noise from pubs because schools are built close to pubs:

*To use ICT in our classrooms where there are pubs around, where there is noise outside; on the other hand, on the other side (South Africa and America), classrooms are closed and air conditioning. We cannot switch on a tape recorder while children are crying outside (P2: 2-20)<sup>8</sup>*

*That can be a problem because our structures are not adapted (P2: 2-11)<sup>9</sup>.*

---

<sup>4</sup> Nous ne sommes pas au système Américain ou au système Sud Africain ou c'est le privé qui va, parce que c'est l'Etat qui fait tout (P2: 2-36)

<sup>5</sup> Ce n'est pas facile, c'est compliqué. Vous savez c'est vraiment dommage qu'on mélange la politique avec l'éducation (P1: 1-14)

<sup>6</sup> Mais il faut d'abord qu'il y ait de l'électricité (P2: 2-15)

<sup>7</sup> Vous allez brancher ça où, il n'y a pas de prise, il n'y a pas de courant dans les salles de classes (P2: 2-14)

<sup>8</sup> Utiliser les TIC dans nos salles de classes, où il y a des bars autour, où il y a le bruit dehors, chez les autres, les salles sont fermées, climatisées. Nous ne pouvons pas mettre le magnétophone pendant que les enfants crient dehors (P2: 2-20)

<sup>9</sup> Ça peut être un problème parce que nos structures ne sont pas adaptées (P2: 2-11)

Some schools do not have fences and there are no police or security officers to guard these schools, the opposite of many South African schools which have full time security officers to guard school premises as a result of high crime rates (Blignaut & Els, 2009). They are often burglarized and books disappear. Head teachers and some chief supervisors live in some schools. When the researcher went to one of the schools in Minvoul, it was difficult for the researcher to know the limits of the school and where the head teacher lives. There is no fence or challenge differentiating the three buildings of the school and the neighbours. This school, which is in the centre of Minvoul, does not have any fence. There is a way crossing the school which is used by neighbours at any time Figure 4.3.



**Figure 4.3: School from Remote Area**

### **No Accreditation**

The important aspect in training ensured by the DE is to complete the training with a diploma. Since Gabon has not implemented DE yet, there is no credit given to DE diplomas. No accreditation is one of the important challenges to the implementation of ODL in the Gabonese Educational System. Participants argue that the government does not accredit into account diplomas obtained via DE training:

*The fact that the government does not take into account distance learning diplomas discourage a great number of those who want to further their studies through distance learning (P3: 3-14)<sup>10</sup>*

*After that, it (government) stopped giving credit to the education, because people start questioning about the reliability of the diplomas (P3: 3-16)<sup>11</sup>*

*Institutions are informed but do not understand the well-founded of the training (distance learning). They doubt the monitoring in this training, without having experimented it or felt it (P8: 8-2)<sup>12</sup>*

---

<sup>10</sup> Le fait que l'Etat ne prenne pas en compte les diplomes obtenus a distance fait en sorte que beaucoup ne s'aventurent pas a suivre des formations a distance (P3: 3-14)

<sup>11</sup> Apres ca s'est arête parce que les gens commencent a se demander s ices diplomes etaient vraiment fiables (P3: 3-16)

<sup>12</sup> On informe mais les institutions ne comprennent pas toujours le bien fonde de ces formations. Ils mettent en doute le suivi qu'il y a dans cette formation, sanspour autant l'avoir experimente ou epreuve (P8: 8-2)

*They will doubt the value a bit (P15: 15-21)<sup>13</sup>*

*It is the knowledge of their training at the level of their administrations, mostly in the public service (P8: 8-1)<sup>14</sup>.*

The government's attitudes towards DE rely certainly upon aspects such as no classrooms, non-existent faculties, unqualified administrators, etc. which Schlosser and Simonson (2002) deal with when they explain problems related to accreditation. However, courses in ODL are delivered by specialists through ICT tools and students' assessment of learning outcomes are ensured by proctored examinations (Olugbenga Ojo & Kayode Olakulehin 2006). According to Olugbenga Ojo and Kayode Olakulehin high quality, self-directed, learner-centred instructional materials should be made available to students, while instructional facilitation is carried out when necessary to ensure students success.

### **Affective Factor**

The fact that diplomas are not accredited in the Gabonese Educational System can take the Gabonese motivation away. During the interviews, participants' responses indicate the loss of motivation relating to insufficient ICT and the ignorance of ICT tools:

*There is a lack of will and motivation for the use of tools (P2: 2-19)<sup>15</sup>*

*So, the motivation is in the interest (P2: 2-22)<sup>16</sup>*

*But in fact, the colleagues saying teachers would not unveil some of their ignorance (P7: 7-6)<sup>17</sup>*

*The others will show me the finger (P7: 7-7)<sup>18</sup>.*

The non-integration of ICT in education by the government can be the mainstream cause of this ignorance of ICT because motivation rises when there is some interest.

### **Willingness**

Willingness can be regarded an affective factor as it deals with the will of participants (volition and personal desire) that, to some extent, can be linked to their motivation (Jung, 1990). Responses indicate that participants, in general, do not possess the will and motivation to further their studies:

*Sometimes I perceive around us amongst colleagues a certain lack of taste for more knowledge, to challenge or to adopt new strategies, new approaches (P2: 2-1)<sup>19</sup>*

*It is a matter of personal desire (P2: 2-4)<sup>20</sup>*

*But it is really personal (P2: 2-5)<sup>21</sup>*

---

<sup>13</sup> Ils vont un peu douter de la valeur (P15: 15-21)

<sup>14</sup> C'est la reconnaissance de leur formation au niveau de leur administration, surtout la fonction publique (P8: 8-1)

<sup>15</sup> Il y a de manque de volonte et des outils motivants (P2: 2-19)

<sup>16</sup> Donc, la motivation c'est dans l'esprit (P2: 2-22)

<sup>17</sup> But, en fait les collegues se disant enseignants ne voudraient pas dévoiler un pan de leur ignorance (P7: 7-6)

<sup>18</sup> Les autres vont me montrer du doigt (P7: 7-7)

<sup>19</sup> Je percois parfois autour de nous, parmi les collegues une certain absence de gout a plus de connaissances, a se metre en cause ou adopter de nouvelles strategies, de nouvelles approches (P2: 2-1)

<sup>20</sup> C'est un probleme de volonte personnelle (P2: 2-4)

*But ourselves, we must make an effort to go towards to get the material already adequate (P2: 2-8)<sup>22</sup>*

*Because there is some resistance among colleagues (P7: 7-3)<sup>23</sup>*

*The first thing starts with oneself, one must oneself have hers/his own motivation (P14: 14-29)<sup>24</sup>.*

If the political power (with its influence) provides certain people with vast opportunities and advantages which will be detrimental to the long term advantages of ICT, improving the life conditions of participants will not come from what new technologies can bring to them. Currently, the number of older teachers reticent to ICT use is decreasing in Gabon, while young teachers seem more adapted to ICT. However, ODL is not yet introduced into the Gabonese education system:

*Old teachers are reticent because of the programme, the system (ODL) is not introduced (P1: 1-10)<sup>25</sup>.*

Despite young teachers' willingness to learn and use ICT, it seems that the political power does not integrate ICT in Gabon because these technologies can serve as a force of opposition by providing access to information outside the country without having to rely on official communication channels which are often subject to censorship (Penard, *et al.*, 2012).

Nevertheless, the findings of the current investigation indicate a change in Gabonese teachers' willingness towards TDP via ODL supported by ICT. Some participants are of the opinion that they are ready to participate in ODL training whenever it is launched. They want to know more about ICT tools. Most young teachers would like to be trained in ICT use. This desire to use ICT will exacerbate the chasm between young and old teachers, towards participation in the Global Information Age:

*Teachers are ready (P3: 3-11)<sup>26</sup>*

*Some of us are willing (P12: 12-16)<sup>27</sup>*

*Who would like to be in contact with the rest of the world? (P9: 9-2)<sup>28</sup>*

*They would like to be in contact with the news of the world (P9: 9-11)<sup>29</sup>*

*Gabonese people are interested further to these formations (ODL) (P10: 10-15)<sup>30</sup>.*

Figure 4.4 shows that young teachers who are posted in Minvoul are geographically distant from their parents. They accepted to go and work in this rural area according to the regulations which state that teachers have to work where they are needed. The same regulations also state that teachers with CAPC only teach in Colleges and can apply for training to further their studies after five years of work

---

<sup>21</sup> Mais c'est vraiment d'ordre personnel (P2: 2-5)

<sup>22</sup> Mais il faut que nous memes nous fassions un effort d'aller vers, aller vers c'est de s'approprier le materiel déjà edequat (P2: 2-8)

<sup>23</sup> Parce qu'il y a des ilots de resistance parmi les collegues (P7: 7-3)

<sup>24</sup> La premiere chose commence par soi-meme on doit soi-meme avoir sa proper motivation (P14: 14-29)

<sup>25</sup> Les anciens sont reticents parce que le programme, ce systeme n'est introduit (P1: 1-10)

<sup>26</sup> Les enseignants sont prêts (P3: 3-11)

<sup>27</sup> Certains d'entre nous sommes disposes (P12: 12-16)

<sup>28</sup> Qui aimerient bien etre en contact avec le reste du monde (P9: 9-2)

<sup>29</sup> Ils aimeraient bien etre au parfum des actualites du monde (P9: 9-11)

<sup>30</sup> Les Gabonais s'interessent davantage a ces formations (P10: 10-15)

(Chapter 2). Unfortunately, their requests to apply for TPD are not answered by the education system. Figure 4.4 shows young teachers in a rural area who are eager for ODL to be implemented.



**Figure 4.4: Young Teachers Posted into Rural Area Eager for Open Distance Learning to be Implemented**

### Generation Gap

A generation gap in usage of technology is also a challenge of Gabonese education. The generation gap between older and younger teachers results in a difference of appreciation for ICT tools, while age constitutes an obstacle to Internet access. Generally, Internet users are young, well-educated and skilled in the use of computers (Penard, *et al.*, 2012). The integration of new technology into education seems more relevant to young teachers. Old teachers are not interested in ICT because they believe that ICT will increase their workload. In addition, old teachers discover ICT when they are at the end of their careers, awaiting their retirement. Most teachers who are more than fifty years of age and who have about ten years left before their retirement, prefer not to waste their time on ICT training and remain reluctant to the manipulation of ICT:

*It is now a problem of generation (P12: 12-13)<sup>31</sup>*

*A great difference is that young teachers adapt themselves more easily (P13: 13-17)<sup>32</sup>*

*After 40 years we discover computer. That has not been easy for our generation (P13: 13-19)<sup>33</sup>*

*I believe that there is a clear difference between old teachers and those who have just finished (training) (P14: 14-11)<sup>34</sup>*

*The old generation is refractory, but the new one is enthusiastic and receptive (P14: 14-12)<sup>35</sup>*

---

<sup>31</sup> C'est maintenant un probleme de generation (P12: 12-13)

<sup>32</sup> Une grande difference, les jeunes s'adaptent plus facilement (P13: 13-17)

<sup>33</sup> Apres 40 ans on decouvre l'ordinateur, ca n'a pas ete facile pour notre generation (P13: 13-19)

<sup>34</sup> Je crois qu'il y a une nette difference entre les anciens professeurs et ceux qui sortent actuellement (P14: 14-11)

*For me it (ICT use) was detached from my generation (P14: 14-10)<sup>36</sup>.*

*A problem of age (P16: 16-8)<sup>37</sup>*

At the opposite end of the scale, young teachers are less refractory.

*Already, some of young teachers have got their laptops (P9: 9-10)<sup>38</sup>*

*The youngest teachers who use many new technologies (P3: 3-4)<sup>39</sup>*

*They are much more adapted and use them (ICT) (P3: 3-5)<sup>40</sup>*

*Our children master better than we do (P9: 9-8)<sup>41</sup>.*

Young teachers are more attracted by new technologies, notably for the purpose of communicating (Penard, *et al.*, 2012). Young teachers may have correspondents over the world and are encouraged by their friends. Penard, *et al.* (2012) claim that the probability of their being significant Internet users comes from the fact that young teachers have lots of friends using Internet and often belong to associations. They also have laptops at their disposal, and would like to buy laptops particularly for use in their jobs.

## Teacher Development

Teacher development is another challenge of the Gabonese Education, especially for further training at an advanced level. ICTs make teacher development possible as ICT has the potential to enhance teaching and learning through enriching the curriculum, improving delivery and extending methods of presenting information (Blignaut & Els, 2009). However, participants who would like to further their studies in order to improve their pedagogical knowledge and skills, and accordingly to improve their careers, do not have the opportunity of using ICT and encounter many other difficulties. Some of these challenges are related to time constraints and financial means, to name a few:

*We do not have enough time to manipulate and the lack of devices (P2: 2-13)<sup>42</sup>*

*We do not have materials. At the level of means, the others have spoken of financial means to provide themselves with ICT tools. We have problems, financial means (P2: 2-12)<sup>43</sup>*

*That is to say if you cannot take this short cut, that is to say you will have problems to go forwards (P1: 1-11)<sup>44</sup>.*

Other responses indicate challenges such as teachers' families and materials. Teachers are married, so they are constrained to stay with their families. Also, materials or ICT tools are still one of the great challenges of ICT initiation:

*It is a human obstacle (P7: 7-1)<sup>45</sup>*

---

<sup>35</sup> L'ancienne generation est refractaire mais la nouvelle est plutot enthousiaste, elle est receptive (P14: 14-12)

<sup>36</sup> Pour moi c'etait detache de ma generation (P14: 14-10)

<sup>37</sup> Un problem d'age (P16: 16-8)

<sup>38</sup> Deja la plupart des jeunes professeurs ont leurs ordinateurs portables (P9: 9-10)

<sup>39</sup> Les plus jeunes enseignants qui utilisent beaucoup les nouvelles technologies (P3: 3-4)

<sup>40</sup> Ils sont beaucoup plus adaptes et ils les utilisent (P3: 3-5)

<sup>41</sup> Nos enfants maitrisent mieux que nous-memes (P9: 9-8)

<sup>42</sup> Nous n'avions suffisamment de temps pour manipuler et le manque d'appareils (P2: 2-13)

<sup>43</sup> Nous n'avons pas de materiel. Au niveau des moyens, les autres ont parle de moyens financiers, pour se procurer un outil, nous avons des problems, moyens financiers (P2: 2-12)

<sup>44</sup> C'est-a-dire si tu ne veux pas emprunter ce short-cut, c'est-a-dire que tu auras des problems pour avancer (P1: 1-11)

*The second obstacle is material (P7: 7-2)<sup>46</sup>*

*We have a family (P15: 15-17)<sup>47</sup>*

*The access, that is not easy (P12: 12-6)<sup>48</sup>*

*Because for many students, very few computers (P12: 12-7)<sup>49</sup>.*

Sifuna (2011) indicates that challenges in ICT include poorly developed national policy contexts, insufficient online materials relevant to the African context, low levels of computer literacy, insufficient staff development and training, among others. The challenge of materials is not only a Gabonese matter but affects the governments of almost Sub-Saharan countries.

### **Traditional Teaching Methodology**

Another challenge seems to be the use of traditional teaching methodology:

*The old generation is for the classical method (P12: 12-15)<sup>50</sup>*

*We write at the board (P1: 1-15)<sup>51</sup>.*

Older teachers mostly maintain the traditional way of teaching and behaving. Older teachers prefer working without ICT tools because these devices them to do more work, to learn new skills. ICT tools require training to use them and also require more money to buy them. Insufficient materials and resources do not necessarily disturb them during their work.

### **Financial Challenges**

Gabonese education also faces financial challenges that seem related to aspects e.g. the WASC (West African Submarine Cable) which cost Gabon a lot of money. While the government spent a lot of money in order to place Gabon in a leading position for future telecommunications platforms in the entire sub-region with the WASC (Fall, 2007), the connection in the country is still the same, slow and non-efficient:

*This submarine cable which cost a lot of money to Gabon and for that the whole country be connected (P3: 3-1)<sup>52</sup>*

There also seems to be insufficient funding for Gabonese students who would like to go abroad to further their studies. It is important to notice that the government only grants bursaries to young students:

*Everybody does not have the chance to have a scholarship, go abroad (P10: 10-8)<sup>53</sup>.*

---

<sup>45</sup> C'est un obstacle humain (P7: 7-1)

<sup>46</sup> Le second obstacle est materiel (P7: 7-2)

<sup>47</sup> Nous ayons une famille (P15: 15-17)

<sup>48</sup> L'accès, ce n'est pas aussi facile (P12: 12-6)

<sup>49</sup> Parce que pour autant d'étudiants, très peu d'ordinateurs (P12: 12-7)

<sup>50</sup> L'ancienne génération est pour la méthode classique (P12: 12-15)

<sup>51</sup> On écrit au tableau (P1: 1-15)

<sup>52</sup> Ce câble sous-marin qui a coûté beaucoup d'argent au Gabon et pour que tout le monde soit connecté (P3: 3-1)

<sup>53</sup> Tout le monde n'a pas la chance d'avoir une bourse, aller à l'étranger (P10: 10-8)

Apart from the challenges of Gabonese education, related to slowness to implement ODL, no accreditation etc., participants show that the government can implement ODL and they expect ODL to be implemented by the government.

#### 4.3.1.2 Enablers of Gabonese Education

Figure 4.5 indicates the context enablers identified from the integrated dataset. The most important enablers seem to be government support, need for programme and progress.

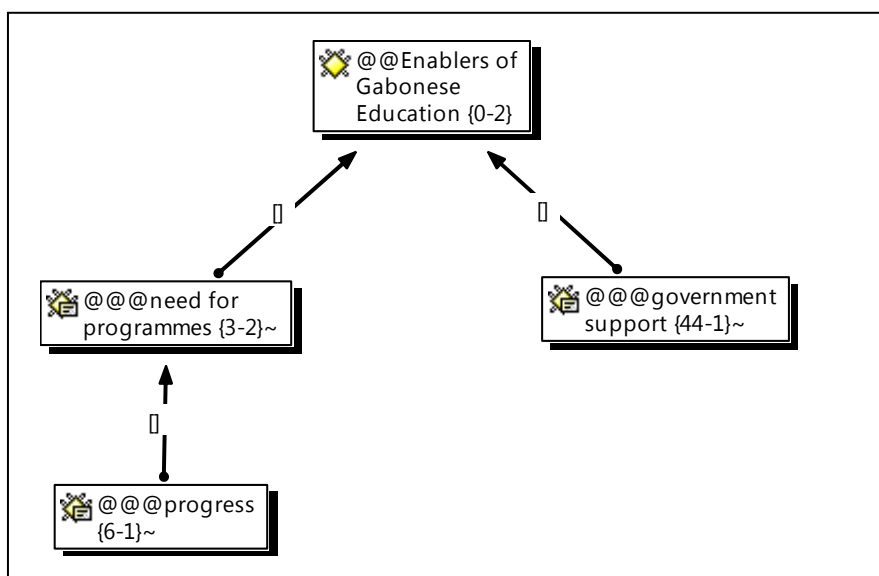


Figure 4.5: Enablers of Gabonese Education

#### Government Support

Government support appears as the most important enabler in the Gabonese education due to the important number of participants' responses. They indicate that the responsibility of the government is very important on account of its pervasive role in education. The government is in charge of educational matters, that is to say that any change or enhancement in education is the responsibility of the government (la République du Gabon, 1966). Participant complaints are addressed towards the government:

*that is to say not to use these means, these tools, it is to go backwards thousands of years (P1: 1-6)<sup>54</sup>*

*That is why I say that the State must make an effort. The State has a great part of responsibility (P1: 1-7)<sup>55</sup>*

*The State must obviously master the market. If the State does not master the market, how can it make a policy in that sense?(P1: 1-8)<sup>56</sup>*

<sup>54</sup> C'est-à-dire que ne pas utiliser ces moyens, ces outils la, c'est retourne encore des milliers d'annees en arriere (P1: 1-6)

<sup>55</sup> C'est pourquoi je dis que l'Etat doit faire un effort. L'Etat a une grande part de responsabilite (P1: 1-7)

*The State must give us a hand (P1: 1-22)<sup>57</sup>*

*The State must join the action to the word (P1: 1-23)<sup>58</sup>*

*The State must find its didactical materials (P2: 2-35)<sup>59</sup>*

*The State must open for example computers rooms for us, ok, and put them to our disposal (P9: 9-17)<sup>60</sup>.*

Participants show leniency and acknowledge some efforts from the government, even though the efforts are not sufficient. They need support from the government for the development of their careers:

*We must encourage them (the Government), in which sense? Encourage them with the policy of the State, in the sense where even if the State cannot do everything, the State does the minimum to help teachers in that sense (P1: 1-17)<sup>61</sup>*

*But what is even though a bit encouraging, it is that there is a month, the month of May (in May), during the Ministers council of May, during that Ministers council, there has been a part of that meeting where they have spoken of new technologies and of e. learning (P3: 3-20)<sup>62</sup>*

*What is really encouraged during this Ministers council of the 16th of May...they really speak of e. learning (P3: 3-21)<sup>63</sup>*

*Because the budget is annual (P7: 7-8)<sup>64</sup>*

*A project as grand as the NEPAD needed to be budgeted (P7: 7-11)<sup>65</sup>*

*If people had really known that the Government was behind that project that would not be happened like that (P7: 7-14)<sup>66</sup>.*

Other participants are less lenient towards the government, because for them the government is for everybody. They do not think that the implementation of ODL will be possible in Gabon if the Gabonese government is not involved in the project:

*I still come back to the State (P9: 9-19)<sup>67</sup>*

*The State is everybody (P9: 9-20)<sup>68</sup>*

*That is to say try to elevate our level giving us a little training (P12: 12-24)<sup>69</sup>*

*If the State can try to maximise, enhance the graduates, maximise partnership; that will help us enormously (P12: 12-32)<sup>70</sup>*

*In general, the Government and the Ministry of National Education especially must be involved (P15: 15-3)<sup>71</sup>*

---

<sup>56</sup> L'Etat doit evidemment maitriser le marche. Si l'Etat ne maitrise pas le marche, comment est-ce-qu'il peut faire une politique dans ce sens? (P1: 1-8)

<sup>57</sup> L'Etat doit nous donner un coup de main (P1: 1-22)

<sup>58</sup> L'Etat doit joindre l'acte a la parole (P1: 1-23)

<sup>59</sup> Il faut que l'Etat trouve son materiel didactique (P2: 2-35)

<sup>60</sup> L'Etat de nous ouvrir par exemple les salles d'informatique et metre a notre disposition (P9: 9-17)

<sup>61</sup> Il faut les encourager, dans quell sens? Les encourager avec la politique de l'Etat, dans le sens ou meme si l'Etat ne peut pas tout faire, l'Etat fait le minimum pour aider les enseignants dans ce sens (P1: 1-17)

<sup>62</sup> Mais ce qui est quand meme un peu encourageant, c'est qu'il y a un mois, le mois de Mai, au conseil des Ministres du mois de Mai, il y a eu touto une partie de ce conseil ou on a parle des nouvelles technologies et du e.learning (P3: 3-20)

<sup>63</sup> Qui a vraiment encourage lors de ce conseil des Ministres du 16 Mai, on parle vraiment du e.learning (P3: 3-21)

<sup>64</sup> Parce que le budget est annuel (P7: 7-8)

<sup>65</sup> Un projet aussi grandiose que celui du NEPAD necessitait d'etre inscrit au budget (P7: 7-11)

<sup>66</sup> Si on avait vraiment senti que le Gouvernement etait derriere ce projet, ca ne se serait pas passé comme ca (P7: 7-14)

<sup>67</sup> Moi, je reviens toujours a l'Etat (P9: 9-19)

<sup>68</sup> L'Etat c'est tout le monde (P9: 9-20)

<sup>69</sup> C'est-a-dire essayer un peu de surelever notre niveau en nous accordant un peu de stage (P12: 12-24)

<sup>70</sup> Si l'Etat peut essayer de maximiser, valoriser les diplomes, maximiser les partenariats, ca nous aiderait enormement (P12: 12-32)

<sup>71</sup> Le Gouvernement en general et le Ministere de l'Eduaction Ntionale en particulier est tenu d'etre implique (P15: 15-3)

*Does he have to address to the State, does he have to take a permission to do it (training)?*  
(P13: 13-7)<sup>72</sup>

## **Need for Programmes**

Need for programmes is part of the enablers of Gabonese Education which can make ODL implementation in Gabon possible. Participants acknowledge the era of technological development and they are ready and willing for the use of these ICT tools. They believe that there is need for the Gabonese government to adopt implementation strategies from other countries with its national policy on education to set-up pre-tertiary DE institutions in order to increase access to educational programmes (Sifuna, 2011):

*We live in the world of communication, of technology. We are in a world where technology has progressed a lot* (P1: 1-6)<sup>73</sup>

*Teachers are available who master well the net* (P10: 10-13)<sup>74</sup>

*The kind of work we want to set up will allow us to evolve, to evolve the career* (P12: 12-27)<sup>75</sup>.

## **Progress**

Progress is another enabler of Gabonese Education of which participants show expectations of a possible progress in the future with ODL implementation:

*We are in a world in evolution [that] we really need those things to be able to make good progress* (P1: 1-4)<sup>76</sup>

*Thus, knowledge can only make teacher be good* (P1: 1-20)<sup>77</sup>

*In fact, it is when the machine will be launched; all of these small problems will disappear. Because it is quite normal, it is the beginning of all, so once the machine is launched, you are going to see that all of this, I can say that this misunderstanding, they will disappear, easily* (P1: 21)<sup>78</sup>

*The lady asked to the Minister, you want to develop this country, the Minister said yes, of course, and the lady said if you want to develop this country, invest in the education* (P1: 1-24)<sup>79</sup>

*We need have viewpoints from somewhere else* (P16: 16-10)<sup>80</sup>.

The context enablers indicate that the government have assets (availability of teachers) to launch and implement ODL in the country. The government needs to revisit its development policy.

---

<sup>72</sup> Est-ce-qu'il doit s'adresser a l'Etat, est-ce-qui doit prendre une permission pour le faire? (P13: 13-7)

<sup>73</sup> Nous vivons dans un monde de communication, de technologie. Nous vivons dans un monde ou la technologie a beaucoup progresse (P1: 1-6)

<sup>74</sup> Que les enseignants soient disponibles qui maitrisent bien le net (P10: 10-13)

<sup>75</sup> Le genre de travail que nous sommes en train de vouloir metre sur place nous permettra d'evoluer, de faire evoluer la carriere (P12: 12-27)

<sup>76</sup> Nous sommes dans un monde en evolution que nous avons vraiment besoin de ces choses pour pouvoir bien avancer (P1: 1-4)

<sup>77</sup> Donc la connaissance ne peut que du bien a un enseignant (P1: 1-20)

<sup>78</sup> En fait c'est quand la machine sera lance, tous ces petits problems disparaîtront. Parce que, c'est tout a fait normal, c'est le debut de tout, donc une fois que la machine est lance, vous allez voir que tout ca la, je peux dire que ce malentendu, ils seront dissipes, facilement (P1: 1-21)

<sup>79</sup> La dame a demande au Ministre, vous voulez developper ce pays, le ministre a repondu, bien sur, et la dame a dit si vous voulez developper ce pays, investir dans l'education (P1: 1-24)

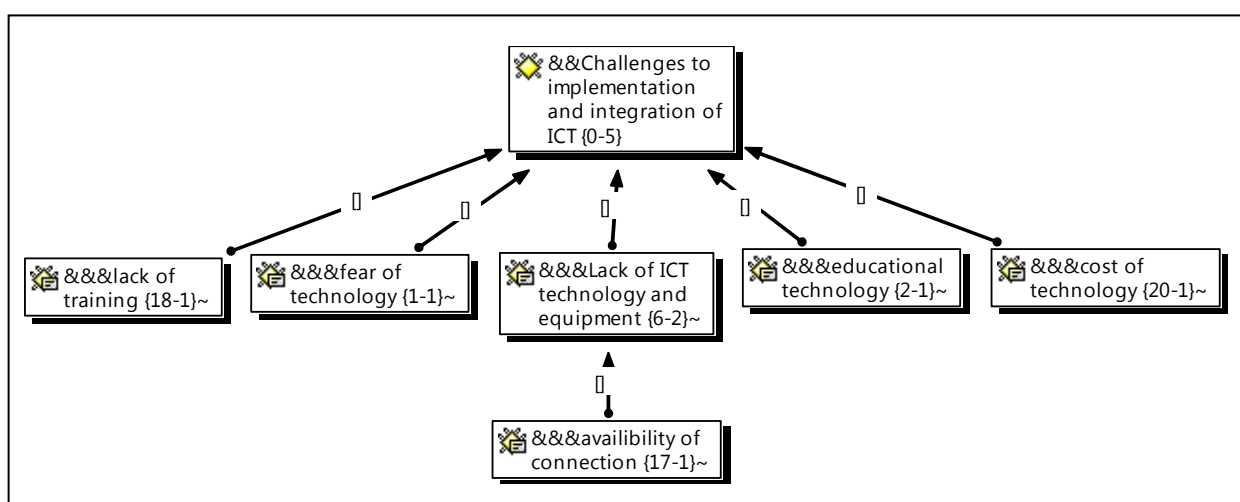
<sup>80</sup> On a besoin d'avoir des points de vue d'ailleurs (P16: 16-10)

## 4.3.2 Information and Communication Technology in Gabon

ICT in Gabon is the second theme emerged from the integrated dataset. It comprises six challenges and four enablers to integrate ICT in Gabon. These factors deal with some significant aspects like possibility of ICT, availability of connection and insufficient training.

### 4.3.2.1 Challenges to Implementation and Integration of Information and Communication Technology in Gabon

Figure 4.6 shows the challenges to ICT in Gabon identified from the integrated dataset. The important challenges seem to be insufficient training, fear of technology, insufficient ICT technology and equipment, educational technology, cost of technology and availability of connection.



**Figure 4.6 Challenges to the Implementation and Integration of Information and Communication Technology**

### Insufficient Training

The Gabonese government should not implement ODL without having integrated ICT devices in teachers daily functions (Department of Education, 2004). Participants mention that they did not undergo training regarding the pedagogical use of ICT:

*Who have almost never touched computer (P15: 15-6)<sup>81</sup>*

*They do not even know how to use them (P3: 3-3)<sup>82</sup>*

*They must first be initiated using them (P3: 3-7)<sup>83</sup>*

*Many persons who want to further their training do not still have necessary competencies for the basic usage of the computing tool (P8: 8-4)<sup>84</sup>*

<sup>81</sup> Qui n'ont presque jamais touché a un ordinateur (P15: 15-6)

<sup>82</sup> Ils ne savent meme pas les utilise (P3: 3-3)

<sup>83</sup> Il faut d'abord qu'ils s'initient a l'utilisation (P3: 3-7)

<sup>84</sup> Beaucoup de personnes qui veulent parfaire leur formation n'ont pas toujours les competences necessaires pour l'usage de base de l'outil informatique (P8: 8-4)

*The person has problems of adaptation to Internet connection (P10: 10-4)<sup>85</sup>.*

Most participants do not have any experience in computers or any ICT devices. Some of them have never touched a computer before. As earlier mentioned in the willingness section, not to improve ICT domain in Gabon could have been a political power strategy to prevent people from obtaining information outside the country (Penard, *et al.*, 2012). In this regard, all activities related to integration and use of ICT are hampered, as the government is the main responsible party for the integration of ICT in the country.

However, some teachers trained themselves to use computers. These teachers understood the importance and the necessity of ICT tools in their daily life and work. They could not wait any longer for ICT training, which is difficult to find:

*I do not think that he have been trained somewhere (P12: 12-10)<sup>86</sup>.*



**Figure 4.7: Vice-principal without any Computer Training**

Figure 4.7 shows the vice-principal working on a computer in a school. The school has electricity but does not have Internet connection. The computer is used for some administrative issues such as lists of students, students' marks, etc. This user did not receive any training.

### **Fear of Technology**

Fear of technology is another challenge of ICT implementation and integration in Gabon:

*But old teachers are much more distant, yes they are much more distant. There are those who do not even want, not at all, not at all (P3: 3-12)<sup>87</sup>.*

<sup>85</sup> La personne a des problemes d'adaptation de la connection Internet (P10: 10-4)

<sup>86</sup> Je ne pense pas qu'il ait été formé quelque part (P12: 12-10)

<sup>87</sup> Mais les anciens sont beaucoup plus distants, oui ils sont beaucoup plus distants. Il y en a qui n'en veulent même pas, du tout, du tout (P3: 3-12)

## Insufficient Information and Communication Technology and Equipment

Insufficient ICT technology and equipment is amongst the challenges of ICT implementation and use in Gabon:

*Everybody cannot have access to a computer (P13: 13-5)<sup>88</sup>*

*There was not any computer to their disposal (P15: 15-4)<sup>89</sup>*

*Colleagues who do not have computers (P15: 15-5)<sup>90</sup>*

*It is necessary to have a USB key (P15: 15-14)<sup>91</sup>.*

Ferreira and Venter (2010) indicate that the insufficient equipment always remains a challenge in countries which seek to implement or integrate ICT. Some participants claim not to use computers when they are working. They think that it is necessary for every teacher to have one computer and a flash drive. Insufficient ICT technology and equipment may contribute towards insufficient ICT training in Gabonese education.

## Use of Educational Technology in Classrooms

While English teachers (participants) do not allow their students to use mobile phones in their classrooms, they view their lack of laptops in classrooms as a major challenge:

*Yes, we use telephones, mobile phones to have courses no, no (P1: 1-5)<sup>92</sup>*

*That is to say that today, news, technology has evolved that a teacher who does not have a laptop, it is criminal. Thus, it is to tell you that how many times it is complicated for us (P1: 1-16)<sup>93</sup>.*

## Cost of Technology

The main reason which prevents teachers from buying laptops is their costs. The cost of technology seems to be the major challenge to the integration of ICT. Participants indicate that new technologies require lots of money to buy and to maintain them. Participants indicated that they cannot afford ICT:

*Computers are even expensive (P7: 7-5)<sup>94</sup>*

*It costs even here eyes of the head (P9: 9-15)<sup>95</sup>*

*It is expensive and now if there are parts to replace on, small repairs to do, you must also pay for them (P9: 9-16)<sup>96</sup>*

*I found a computer at 700.000frcs cfa (ten thousands rand) (P12: 12-12)<sup>97</sup>*

---

<sup>88</sup> Tout le monde ne peut pas avoir acces a l'ordinateur (P13: 13-5)

<sup>89</sup> Il n'y avait pas d'ordinateur a notre disposition (P15: 15-4)

<sup>90</sup> Des collegues qui n'ont pas d'ordinateurs (P15: 15-5)

<sup>91</sup> Il faut necessairement avoir une cle USB (P15: 15-14)

<sup>92</sup> OUI nous utilisons les telephones, les mobilephones pour faire cours non, non (P1: 1-5)

<sup>93</sup> C'est-a-dire qu'aujourd'hui, l'information, la technologie a evolue qu'un enseignant qui n'a pas de laptop, c'est criminal. C'est pour vous dire combine de fois c'est complique pour nous (P1: 1-6)

<sup>94</sup> Les ordinateurs sont encore chers (P7: 7-5)

<sup>95</sup> Ca coute encore ici les yeux de la tete (P9: 9-15)

<sup>96</sup> Ca coute cher et maintenant s'il y a des pieces a changer, de petites reparations a faire il faut egalement les payer (P9: 9-16)

<sup>97</sup> J'etais tombe sur un ordinateur a 700.000 frcs cfa (P12: 12-12)

*A computer costs a lot of money (P14: 14-8)<sup>98</sup>*

*The material is expensive (P16: 16-1)<sup>99</sup>.*

Orival cited in (Plessis, 2010) reveals that the costs of ICT are related to a global market in hardware, software and consumables. That means that the costs do not really differ between developed and developing countries. Developing countries which cannot buy these expensive tools have to leapfrog over new and sophisticated tools and get either the second hand or the cheapest ones (Plessis, 2010). But such second hand tools also need to be maintained.



**Figure 4.8: Secretary's Office in a School**

This photograph (Figure 4.8) shows the old typewriters that are used in some schools. Secretaries are working on these old manual typewriters because the school cannot afford to buy new ones.

In addition participants believe that new technologies are demanding in terms of money. Like a car, they need to be repaired and maintained. Even some institutions cannot have new technologies due to these two aspects. Their prices are much too high for many participants' wages. Participants need to make great sacrifices, saving money for a long time in order to buy a laptop:

*It is even a luxury. Here is not easy to find people who have a computer or something similar (P12: 12-4)<sup>100</sup>*

*We do not have a computer (P14: 14-2)<sup>101</sup>*

*It is almost the wage of somebody who starts working, the wage of a month (P14: 14-9)<sup>102</sup>*

*We must do an enormous sacrifice on the financial plan (P15: 15-12)<sup>103</sup>*

---

<sup>98</sup> Un ordinateur coute cher (P14: 14-8)

<sup>99</sup> Le materiel est cher (P16: 16-1)

<sup>100</sup> C'est encore un luxe. Ici c'est pas facile de trouver des gens qui ont un ordinateur ou quelque chose de semblable (P12: 12-4)

<sup>101</sup> Nous ne disposons pas d'un ordinateur (P14: 14-2)

<sup>102</sup> C'est quasiment le salaire de quelqu'un qui commence, le salaire d'un mois (P14: 14-9)

<sup>103</sup> Il faut faire un sacrifice enorme sur le plan financier (P15: 15-12)

*And it is like a car, we must put petrol in it to make it walk (P7: 7-9)<sup>104</sup>*

*I have forgotten the price of computing material and of connection (P8: 8-14)<sup>105</sup>.*

## **Availability of Connection**

Most schools in Gabon do not have Internet connectivity. Insufficient Internet connection is one of the major challenges of ICT implementation and integration at schools:

*Can we say that connection is difficult or complicated or connection does not exist? (P1: 1-13)<sup>106</sup>*

*We do not have Internet for example (P9: 9-1)<sup>107</sup>*

*Here we have postal offices but there is not network to favour the access to Internet (P12: 12-3)<sup>108</sup>*

*We do not have possibilities to have Internet connection (P14: 14-3)<sup>109</sup>*

*We do not use Internet (P16: 16-3)<sup>110</sup>*

*Gabon is a country where everybody cannot have access to electricity (P13: 13-6)<sup>111</sup>.*

There are schools in cities and in remote areas which do not even have electricity. So the connection to Internet cannot be possible. Blignaut and Els (2010) claim that availability of computers or connection has to be taken into consideration in a school's infrastructure. That means that a school should be connected to Internet. However, electricity in schools is required for computer use, as well as Internet connectivity. When there is connection in cities, the connection is not good:

*It is only in large cities (P12: 12-18)<sup>112</sup>*

*Connection is not good (P16: 16-4)<sup>113</sup>*

*During the day connection is complicated a bit (P15: 15-13)<sup>114</sup>*

*You cannot maintain the communication (P12: 12-2)<sup>115</sup>*

*Having a tool to work with, the city in which they are must be connected...they must have electrical power (P13: 13-3)<sup>116</sup>.*

Available Internet connectivity is slow and people cannot work well. In that regard, the South African Department of Education indicates the need for high-speed, affordable access and alternative means of access instead of dial-up Internet access (Department of Education, 2004). Schools must be furnished with a connection which ensures good and permanent Internet access.

---

<sup>104</sup> Et c'est comme un vehicule il faut y metre le carburant pour faire fonctionner (P7: 7-9)

<sup>105</sup> J'avais oublie une des difficultes, le prix du materiel informatique et de la connection (P8: 8-14)

<sup>106</sup> Est-ce-qu'on peut dire que la connection est difficile ou compliquee ou soit la connection n'existe pas (P1: 1-1)3

<sup>107</sup> Nous n'avons pas l'Internet par exemple (P9: 9-1)

<sup>108</sup> Ici nous avons une poste mais il n'y a pas de reseau pour favoriser l'acces a l'Internet (P12:L 12-3)

<sup>109</sup> Nous n'avons souvent les possibilites d'avoir la connection Internet (P14: 14-3)

<sup>110</sup> On n'utilise pas Internet (P16: 16-3)

<sup>111</sup> Le Gabon est un pays ou tout le monde ne peut pas acces a l'electricite (P13: 13-6)

<sup>112</sup> Ce n'est que dans les grandes villes (P12: 12-18)

<sup>113</sup> La connection n'est pas bonne (P16: 16-4)

<sup>114</sup> La journee que la coinnection est un peu compliquee (P15: 15-13)

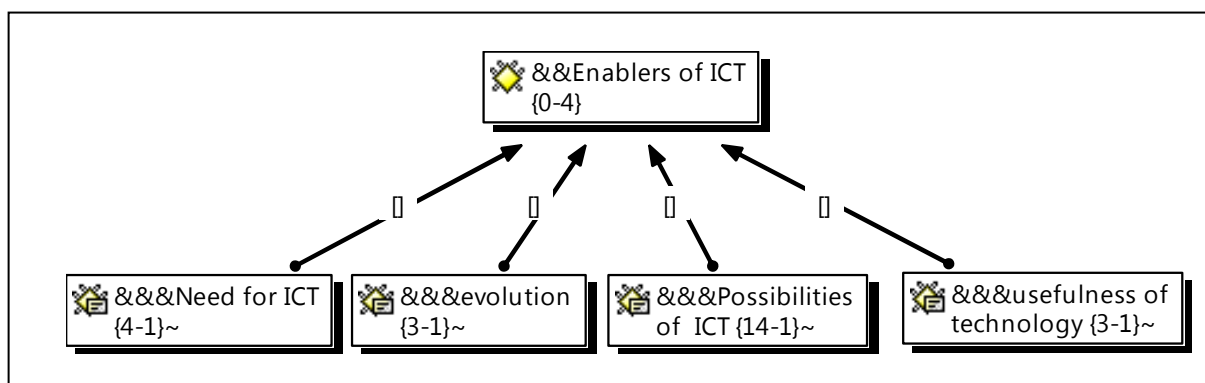
<sup>115</sup> Vous ne pouvez pas maintenir la connection (P12: 12-2)

<sup>116</sup> Avoir un outil pour travailler, il faut que la ville dans laquelle ils se trouvent soit connectee...qu'ils puissent meme avoir le courant electrique (P13: 13-3)

Insufficient training in the use of ICT can be linked to insufficient technology, and also to the cost of technology. Could these two aspects be addressed, teachers' training would be effective.

#### 4.3.2.2 Enablers of Information and Communication Technology in Gabon

Figure 4.9 indicates the context enablers identified from the integrated dataset, i.e. need for ICT, evolution, enablers of ICT and usefulness of technology.



**Figure 4.9: Enablers of Information and Communication Technology**

#### Need for Information and Communication Technology

As the use of new technologies in education has vital nowadays, the Gabonese government has to involve the country in the implementation, integration and use of ICT. Participants indicated their dire need to make use of ICT in education and also indicated that they consider it necessary to be trained in ICT tools:

*That the world know finally that it is very very important today to master computing (P9: 9-22)<sup>117</sup>*

*We must really be trained (P13: 13-18)<sup>118</sup>*

*It is important to know how to use a computer (P14: 14-7)<sup>119</sup>*

*All secondary schools (colleges), high schools (Lycees), even primary schools should be equipped with a computing room (P9: 9-13)<sup>120</sup>.*

In order for Gabon to join the Information Age, teachers and learners must have access to ICT infrastructure (Department of Education, 2004). The integration of ICT should be launched to ensure equality education in Gabon.

<sup>117</sup> Le monde sache enfin que c'est tres tres important de nos jours de maitriser l'informatique (P9: 9-22)

<sup>118</sup> Il nous faut vraiment une formation (P13: 13-18)

<sup>119</sup> Il faut savoir utilise l'ordinateur (P14: 14-7)

<sup>120</sup> Tous les colleges, tous les lycees meme les ecoles primaires devraient etre equips d'une salle d'informatique (P9: 9-13)

## Evolution

Globalization encourages old and young teachers to get involved in the use of ICT:

*When the machine will be launched, even the old (teachers) will become young (teachers) because they are going to accompany the evolution (P1: 1-12)<sup>121</sup>*

*But as more and more the world is moving, the world is moving, the world imposes things on us (P3: 3-12)<sup>122</sup>*

*With the new president ...we see that during the council of Ministers, images that we have from the council of Ministers (P7: 7-15)<sup>123</sup>.*

According to Higgins (2003) the integration and use of ICT lead to changes in participants' world-views as well as their pedagogical practices. In the modern world, teachers need to communicate, share news, work together, while they are geographically separated.

## Enablers of Information and Communication Technology

The enablers of ICT are the major enabler of ICT implementation, integration and use in Gabon. New technologies open up enablers to design new study environments that were not feasible beforehand (Guri-Rosenblit, 2005). The adoption of ICT changes the environment of study, of work and even the world. Mobile phones allow participants in remote parts of the country, to communicate with others in any country in the world. Therefore, responses indicate the awareness of participants of the importance of the use of ICT which will establish new relationship between people and around people:

*We are interested due to what the new technologies of information and communication can give to us (P7: 7-4)<sup>124</sup>*

*First, it is important to arouse in them the well-founded, that they perceive the importance of that (P2: 2-2)<sup>125</sup>*

*At least they are already a little aware that it (ICT programme) exists and that it can help the Gabonese Educational System (P3: 3-22)<sup>126</sup>.*

Responses show the usefulness of ICT in the professional lives of participants. They are aware of the relationships that the new technologies can make possible between people:

*The potentials are there, the users are there, but it is important to make understand what we win all of us, all the society, students, teachers, or other participants to use these tools. The time and all of that, the SMSs... (P2: 2-23)<sup>127</sup>*

*There are those who, but if they have their mind really .what the new technologies can give in their professional life, they are going to adhere (P3: 3-23)<sup>128</sup>*

*The teacher xxx sent all to us by e. mail. We directly replied, she corrected and e. mailed them back to us. However, here everything is done by hand writing (P2: 2-17)<sup>129</sup>*

---

<sup>121</sup> Quand la machine sera lancee meme les anciens deviendront les jeunes, puisqu'ils vont accompagner l'evolution (P1: 1-12)

<sup>122</sup> Mais puisque de plus en plus, le monde a evolue, le monde a evolue, le monde nous impose (P3: 3-12)

<sup>123</sup> Le nouveau president...on voit que pendant le conseil, les images qu'on a du conseil des Ministres (P7: 7-15)

<sup>124</sup> On est interesse par ce que les nouvelles technologies de l'information et de la communication peuvent nous procurer (P7: 7-4)

<sup>125</sup> Il faudra d'abord susciter en eux le bien fonde, qu'ils percoivent l'importance de cela (P2: 2-2)

<sup>126</sup> Au moins ils sont deja un peu conscient que ca existe et que ca peut aider le systeme educatif Gabonais (P3: 3-22)

<sup>127</sup> Les potentiels sont la, les utilisateurs sont la, mais il faut faire comprendre ce qu'on gagne ce que nous gagnons tous, toute la societe, que ca soit les eleves, les enseignants, ou d'autres intervenants, utiliser ces outils la. Le temps et tout ca, les SMS.. (P2: 2-23)

<sup>128</sup> Il y en a qui s'ils ont leur esprit vraiment ce que les TIC peuvent apporter dans leur vie professionnelle, ils vont adherer (P3: 3-23)

*They can work and send responses to the others in order to objectively evaluate them (P12: 12-11)<sup>130</sup>.*

Some participants think that people appropriate new technologies in order to be informed, to be in contact with others, and to work. Success in ICT relies upon *how* ICT is used to make a difference (Higgins, 2003):

*We are diversifying to allow people to appropriate the technologies of information (P10: 10-12)<sup>131</sup>*

*I want to write correspondence, if I want to prepare a course (P13: 13-14)<sup>132</sup>*

*My laptop, I used it to in any case, what I need do (P13: 13-15)<sup>133</sup>.*

### **Usefulness of Technology**

Despite the complexity of ICT, participants indicate the importance of ICT use in their job and in the world today:

*I believe first, it is important to make teachers sensitive and show them the usefulness, the well-founded of the use of the technologies of communication (P1: 1-18)<sup>134</sup>*

*Teachers set to work, and then can use these tools (P16: 16-18)<sup>135</sup>*

*They (teachers) become aware that one cannot do anything anymore without the new technologies (P10: 10-16)<sup>136</sup>.*

Every country would like to board the train of globalization. That means that some efforts should be made by governments to integrate ICT and implement ODL in the country in order to boost the development of education.

### **4.3.3 Open Distance Learning in Gabon**

The third theme, i.e. ODL in Gabon, emerged from the integrated dataset and encompasses two challenges and four enablers. In particular, the most important factors are the enablers and advantages of implementing ODL in Gabon.

#### **4.3.3.1 Challenges to the Implementation of Open Distance Learning in Gabon**

Figure 4.10 indicates the challenges of ODL identified from the integrated dataset, i.e. cost of studying through ODL and uncertainty about implementation and functioning of ODL.

---

<sup>129</sup> Le professeur xxx nous envoyait tout par e.mail. On repondait directement, elle corrigeait et nous renvoyait. Or chez nous ici, tout est manuscrit (P2: 2-17)

<sup>130</sup> Ils peuvent travailler et leur envoyer des reponses afin de les evaluer objectivement (P12: 12-11)

<sup>131</sup> On est en train de diversifier pour permettre aux gens de s'approprier les technologies de l'information (P10: 10-12)

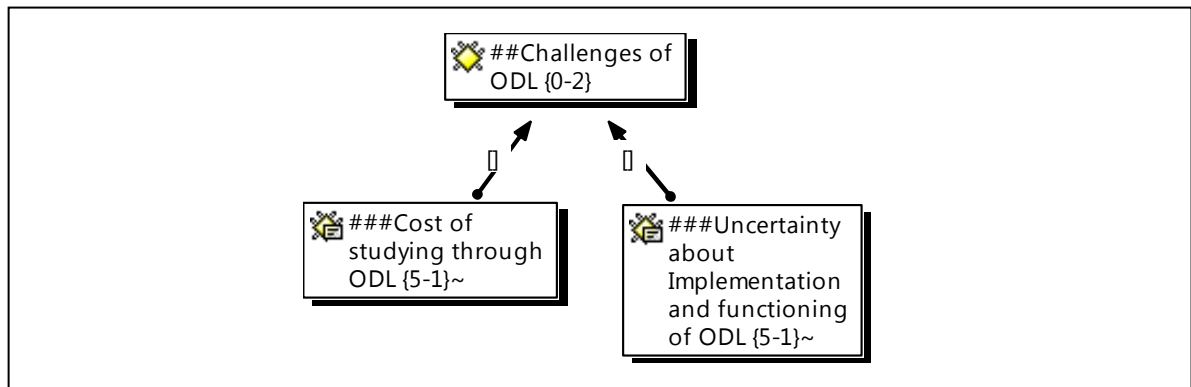
<sup>132</sup> Je veux faire de la correspondance, si je veux preparer un cours (P13: 13-14)

<sup>133</sup> Mon ordinateur, je l'utilisais pour en tout cas tout ce que j'ai envie de faire (P13: 13-15)

<sup>134</sup> Je crois que d'abord il faut sensibiliser les enseignants et leur montrer l'utilite, le bien fonde de l'utilisation des technologies de communication (P1: 1-18)

<sup>135</sup> Les enseignants se mettent au travail, et puis puissent utiliser ces instruments (P16: 16-18)

<sup>136</sup> Ils prennent conscience que on ne peut plus rien faire sans les nouvelles technologies (P10: 10-16)



**Figure 4.10: Challenges of Open Distance Learning**

### **Cost of Studying through Open Distance Learning**

Some of the participants showed their concern about the financial demands of studying through DE/ODL, especially if they are not subsidised by government:

*It is there that the difficulty occurs because people do not have money on them (P10: 10-1)<sup>137</sup>*

*The great problem, in principle, is that the formation is excessively expensive (P10: 10-3)<sup>138</sup>*

*It is with your own money that you have to do it (P13: 13-4)<sup>139</sup>.*

While others indicated that they do not even have money to initially register for ODL programmes:

*Do we need a lot of money to register? (P13: 13-8)<sup>140</sup>*

*Distance learning, I can say it is a formation at a lower cost (P13: 13-23)<sup>141</sup>.*

Costs involved to study via ODL will depend on the commitment and the partnership between the Gabonese government, partnership institutions, as well as schools. Mensah (2005) states that as long as we do not have a handle on the dimensions of the distance learning practice and its concomitant financial demands, we will not be in a position to plan for efficient and effective distance learning. Responses show how participants are not informed about DE/ODL. Therefore, it is important that participants get more information about ODL practice so that they know what will be their next challenges.

### **Uncertainty about Implementation and Functioning of Open Distance Learning**

General uncertainty amongst teacher participants concerning the implementation and functioning of ODL indicates the need to provide and distribute relevant information in this regard:

*There is a limit of age (P13: 13-9)<sup>142</sup>*

<sup>137</sup> C'est là ou la difficulté vient parce que beaucoup de personnes n'ont pas l'argent sur eux (P10: 10-1)

<sup>138</sup> Le grand problème en principe c'est quand la formation est excessivement chère (P10: 10-3)

<sup>139</sup> C'est avec ses propres fonds qu'il doit le faire (P13: 13-4)

<sup>140</sup> Est-ce que pour s'inscrire on doit avoir suffisamment d'argent? (P13: 13-8)

<sup>141</sup> Une formation à distance, je peux le dire est une formation à moindre coût (P13: 13-23)

<sup>142</sup> Il y a une limite d'âge (P13: 13-9)

To register? (P13: 13-10)<sup>143</sup>

Is there any diploma at the end of the training? (P13: 13-11)<sup>144</sup>

Is there any incidence on the career of the teacher? (P13: 13-12)<sup>145</sup>

How long will the formation take? (P13: 13-13)<sup>146</sup>.

Participants do not know how DE/ODL works. However, participants indicated that they would like to understand the requirements, procedures and management of distance learning. The two challenges have the same concern, i.e. insufficient information about ODL management and practice, which should be addressed. Insufficient information on ODL practice leaves participants confused and unaware of TPD enablers via ODL supported by ICT.

#### 4.3.3.2 Enablers of Open Distance Learning

Figure 4.11 indicates the context enablers of ODL identified from the integrated dataset, i.e. enablers of ODL, availability of training with ODL, policy for implementation and integration of ODL, and advantages of ODL.

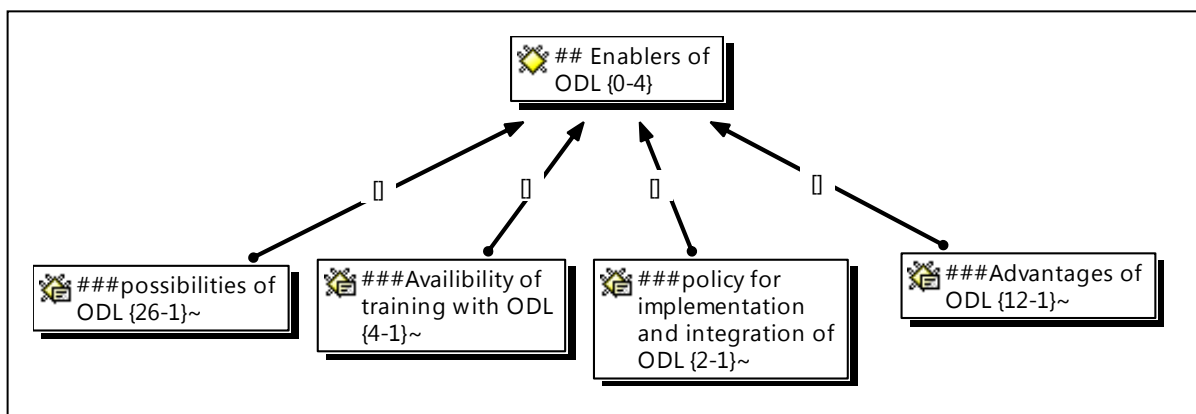


Figure 4.11: Enablers of Open Distance Learning

#### Enablers of Open Distance Learning

Enablers of ODL indicate that there are aspects that can make ODL implementation possible in Gabon. Responses show that the 'l 'Agence Universitaire Francophone' (AUF)' in Gabon can help the country to implement ODL or to solve some of the challenges related to the implementation of ODL. This AUF has been located at the University of Omar Bongo since 2003 (Chapter 2) and registers mostly students from abroad (Fall, 2007) because the Gabonese people are not informed of the implementation of ODL at UOB:

*The AUF signed a partnership with the Gabonese State (P8: 8-22)<sup>147</sup>*

<sup>143</sup> Pour s'inscrire (P13: 13-10)

<sup>144</sup> Cette formation est-elle sanctionnee par un diploma? (P13: 13-11)

<sup>145</sup> Une incidence sur la carrier de l'enseignant (P13: 13-12)

<sup>146</sup> Combine de temps la formation prendra-t-elle? (P13: 13-13)

<sup>147</sup> L 'AUF a signe une convention avec l' Etat Gabonais (P8: 8-22)

*Via the tools used in the formation (P8: 8-8)<sup>148</sup>*

*The University Omar Bongo which has 18.000 learners now can be settled this manner (P8: 8-7)<sup>149</sup>*

*They can come to us at any time (P10: 10-7)<sup>150</sup>*

*We can solve some difficulties linked to the reliability and monitoring of these formations by the setting up of these technologies (P8: 8-9)<sup>151</sup>*

*We can manage with the modules of formation that we have to accompany schools to integrate the open distance learning approach in their degree course (P8: 8-19)<sup>152</sup>.*

Some participants indicated that they realise the advantages of implementing ODL in Gabon:

*The Gabonese English teachers who are in the depths of Gabon can easily have access to the technology that allows us to follow courses at distance (P13: 13-2)<sup>153</sup>*

*It is a formation which is adapted to our situation (P13: 13-20)<sup>154</sup>*

*Everybody is interested, students, researcher teachers, etc. (P10: 10-11)<sup>155</sup>*

*Everybody in the depths where he is can freely have a formation (P13: 13-21)<sup>156</sup>*

*You have the economy of your time (P13: 13-24)<sup>157</sup>*

*The economy in terms of finances (P13: 13-25)<sup>158</sup>*

*There is flexibility concerning the time of work (P14: 14-13)<sup>159</sup>*

*One could follow a parallel formation (P14: 14-15)<sup>160</sup>.*

Teachers and other education professionals throughout Gabon, including those living and working in rural areas can benefit studying through ODL. Guri-Rosenblit (2005) points out that, instead of assembling students from dispersed locations in one place, ODL reaches out to students wherever they live or whatever they wish to study.

### **Availability of Training**

The AUF offers Gabonese learners/students the opportunity to study on the UOB campus with sufficient ICT infrastructure, equipment and workshops:

*We have workshops open to any body (P8: 8-12)<sup>161</sup>*

*We have rooms of 18 computers each (P10: 10-6)<sup>162</sup>.*

---

<sup>148</sup> Via les outils utilisés dans la formation à distance (P8: 8-8)

<sup>149</sup> L'Université Omar Bongo qui a 18000 apprenants à l'heure actuelle peut être réglée de cette manière là (P8: 8-7)

<sup>150</sup> Ils peuvent venir vers nous à tout moment (P10: 10-7)

<sup>151</sup> On peut résoudre certaines difficultés liées à la fiabilité et au suivi de ces formations par la mise en place de ces technologies (P8: 8-9)

<sup>152</sup> On peut arriver avec les modules de formation que nous avons à accompagner les établissements à intégrer l'approche FOAD dans leur cursus de formation (P8: 8-19)

<sup>153</sup> Les professeurs d'anglais gabonais qui se trouvent au fin fond du Gabon peuvent facilement avoir accès à la technologie qui nous permettra de suivre les cours à distance (P13: 13-2)

<sup>154</sup> C'est une formation qui est vraiment adaptée à notre situation (P13: 13-20)

<sup>155</sup> Ça intéresse aussi les étudiants, les enseignants chercheurs (P10: 10-11)

<sup>156</sup> Chacun du fin fond de là où il se trouve puisse avoir à une formation librement (P13: 13-21)

<sup>157</sup> Tu fais l'économie de ton temps (P13: 13-24)

<sup>158</sup> L'économie en termes de finances (P13: 13-25)

<sup>159</sup> Il y a flexibilité en ce qui concerne le temps du travail (P14: 14-13)

<sup>160</sup> On pourrait suivre une formation parallèle (P14: 14-15)

<sup>161</sup> On est ces ateliers de formation, qui sont ouverts à tout le monde (P8: 8-12)

<sup>162</sup> Nous avons deux salles de 18 machines chacune (P10: 10-6)

Students without any ICT knowledge or skill are initiated into the use of computers and the Internet:

*There is first initiation to computing and the research to computing on the net (P10: 10-10)<sup>163</sup>.*

The AUF also delivers DE programmes for students abroad. The availability of distance training, e.g. via AUF, is an enabler of the implementation of ODL in Gabon. Programmes offered by the AUF can be at the disposal of a great number of people who would like undergo TPD through ODL.

### **Policy for Implementation and Integration of Open Distance Learning**

Participants indicated that currently there is no policy for ODL implementation in Gabon. This requires policy makers to design and institutionalise ODL policies accordingly. Policy makers should regularly evaluate and revise future ODL policy regarding the implementation of ODL in Gabon:

*It is important that the policy makers try to see again their policy (P12: 12-25)<sup>164</sup>.*

Partnerships exist between most African countries and consortium institutions, including Gabon:

*In most African countries, the partnership existed (P12: 12-22)<sup>165</sup>.*

### **Advantages of Open Distance Learning**

Advantages of ODL are the last enabler for ODL in Gabon and indicate the benefits of ODL to the country and people. ODL offers flexibility in terms of where and when students learn (Wallace, 1996). In the case of place where students have to learn, ODL can save their expenditure because they would stay at their job and save their salaries as well as their travel expenses (Choi, 2003):

*It allows to some and to the others to appropriate cultures of other participants and to enrich yours and take into account certain aspects according to the persons with whom you discuss (P8: 8-13)<sup>166</sup>*

*He can follow his courses when he wants, as he wants (P8: 8-15)<sup>167</sup>*

*It will become less expensive on various plans (P8: 8-16)<sup>168</sup>*

*So the open distance learning remains for me a solution which can make savings for us on a scale underestimated (P8: 8-18)<sup>169</sup>*

*The university can reach a sure autonomy (P8: 8-20)<sup>170</sup>.*

---

<sup>163</sup> Il y a d'abord l'initiation à l'informatique et la recherche de l'informatique sur le net (P10: 10-10)

<sup>164</sup> Il faut que les décideurs essaient de revoir à nouveau leur politique (P12: 12-25)

<sup>165</sup> Dans la plupart des pays Africains, ce partenariat existait (P12: 12-22)

<sup>166</sup> Ça permet aux uns et aux autres de s'approprier des cultures des autres participants et d'enrichir la leur et tenir compte de certains aspects selon les personnes avec qui on discute (P8: 8-13)

<sup>167</sup> Il peut suivre ses enseignements quand il veut, comme il veut (P8: 8-15)

<sup>168</sup> Ça reviendra moins cher sur plusieurs plans (P8: 8-16)

<sup>169</sup> Donc la formation ouverte à distance reste pour moi une solution qui peut nous faire faire des économies sur une échelle qu'on sous-estime (P8: 8-18)

<sup>170</sup> L'Université peut atteindre une certaine autonomie (P8: 8-20)

These advantages should be presented to the government so that they are aware of the benefits of the implementation of ODL in Gabon. Apart from the above examples, ODL provides access to many adults who are unable to attend scheduled classes on-campus (Wallace, 1996). In this regard, ODL can support and sustain the Gabonese government in its educational policy and in its policy for the development of the country:

*The State understands that our country will win in all choosing this kind of formation (P12: 12-32)<sup>171</sup>*

*To show them the advantages of this formation (P14: 14-19)<sup>172</sup>.*

*I think that could be a quite rich experience (P14: 14-21)<sup>173</sup>.*

The Gabonese government has an opportunity to grasp, since the AUF is established in the country and has implemented ODL. The choice of learning materials is usually governed by the educational experience of the learner and the availability of other resources (Moon, *et al.*, 2005). The AUF institution already makes use of ODL study materials to provide students from abroad with their courses. Consequently, the AUF already has the foundation for ODL implementation in Gabon.

#### **4.4 Summary**

The chapter deals with the research findings that the researcher had collected from the participants during the interviews process. The participants responded to two questions related to the research problem focused on initiating ICT in ODL training of Gabonese English teachers. From the integrated dataset, the data analysis shows three important themes stemming from the research field, the Gabonese Education System: Gabonese Education, ICT in Gabon and ODL in Gabon. Each of these comprises two categories: challenges and enablers.

In the Gabonese Education, the results indicate the challenges encountered by the Gabonese government. These challenges show the difficulties for the Gabonese government to integrate ICT in the Gabonese Education. The government does not build appropriate schools to integrate ICT. Participants indicate that most of the schools do not have electricity in the classrooms. Electricity appears to be a central requirement and a prerequisite for the broad diffusion of ICT applications for social, economic and educational ends (Bagchi & Udo, 2007). The other important point is human aspects related to teachers' motivation about the use of ICT. Some teachers do not show any interest in the use of ICT. Old teachers for example are refractory in the use of ICT for many reasons. They discovered ICT a bit late in their career, and they think that working on the ICT is a waste of time. Relating to this, Tinio (2003) indicates some other teachers' reasons which underpin this reluctance, such as poor software design, scepticism about the effectiveness of computers in improving learning outcomes, insufficient administrative support, increased time and effort needed to learn the technology

---

<sup>171</sup> L'Etat comprend que notre pays gagnerait en tout en obtenant ce type de formation (P12: 12-32)

<sup>172</sup> Leur présenter les avantages de cette formation (P14: 14-19)

<sup>173</sup> Je crois que ça pourrait être une expérience assez riche (P14: 14-21)

and how to use it for teaching, and the fear of losing the authority in the classroom as it becomes more learner-centred.

The context of enablers shows the responsibility of the Gabonese government to integrate ICT in the Gabonese Education. Responses indicate that the government does not show any interest in initiating ICT in schools. The government does not seem to take into account the desire of teachers to further their studies. So participants' attitudes are different. There are participants who think that the government must invest in education to initiate and integrate ICT in the curriculum so that students and teachers become involved, and those who recognise the efforts from the government but expect more for the development of their knowledge and their career.

In Gabon, the context of challenges indicates the insufficiency of ICT in schools. Responses indicate that there are teachers who have never used computers, but some have and still use them. That means that there is inequity in the use of ICT among teachers. Unplanned integration and application of ICT in education without a sustainable model that includes ownership by beneficiaries, can intensify existing inequalities in society, and reinforce an internal gap separating the 'haves and have-nots' in the society. The other challenge was the cost of computers. Teachers who need computers have to make financial sacrifices to buy computers (Evoh, 2007). This still places the responsibility of the government in the centre of the debate.

Responses in the context enablers of ICT in Gabon indicate the need for ICT in teachers' daily work. Some responses show the usefulness of ICT and indicate that some participants already have laptops. They use computers without any training. They have learnt to use computers on their own.

In ODL in Gabon, the challenges show that people do not have adequate information about ODL. They do not know how ODL works. They are asking questions about the cost of studying through ODL, the length of the study, etc. If we do not have good information about distance learning practice and its concomitant financial demands, we will not be able to plan for efficient and effective distance learning (Mensah, 2005). In conventional education, in-service teachers have to leave their jobs if they want to receive a full-time teacher training; and if they quit their job, they will lose their salaries. However, ODL can be offered to them at a lower cost, for example by saving expenditure on buildings and teacher trainers that would be required to increase when the number of enrolment becomes larger (Choi, 2003). They can also continue working while they study.

The context enablers indicate that there is already an institution in Gabon which can help the government to solve some difficulties related to ODL implementation, studying cost, management, programmes, etc. They also show advantages of ODL for teachers wherever they are in the deep rural parts of the country, and for the Gabonese government. These teachers can be enrolled in ODL programmes wherever they are and whenever they want. The accreditation of their degrees will help them to be confident and competitive in their jobs.

These different viewpoints indicate that the responsibility of the Gabonese government is important in the decision to implement ODL for the Gabonese English teachers and generally for the implementation of ODL in the Gabonese Educational System. The researcher beseeches the government to revisit their policy and change their mind set. If the government would like to develop the country, it is important that they think about how to catch up, as Gabon lags way behind other countries in terms of digital context.

We will end this section by an African proverb which says that; to plan ahead for one year, catch a fish, to plan for a decade, plant a tree, but to plan for a century, educate people (NEPAD, 2009).

# Chapter 5: Proposed Information and Communication Technology Implementation and Integration Framework for Teacher Professional Development in Gabon via Open Distance Learning

---

## 5.1 Introduction

Chapter 5 provides an overview of the research report as well as a summary of the research findings. The main findings are then holistically used to propose an *Information and Communication Technology (ICT) Implementation and Integration Framework for Teacher Professional Development (TPD) in Gabon via Open Distance Learning (ODL)*. Recommendations are made for future research, and the chapter ends with general conclusions.

## 5.2 Overview of the Research Report

**Chapter 1** describes the problem statement and the motivation for the research, as well as the aim of this qualitative descriptive exploratory research study, i.e. *to explore, describe and understand the enablers and challenges of initiating ICT in the open distance learning training of Gabonese in-service teachers*. The chapter describes the advantages of new technologies in countries in the world and the international predisposition to TPD. In Gabon, TPD has not been dealt with by any institution dealing with the training of teachers, particularly via distance learning. The chapter seeks to know why there is not any distance learning institution in Gabon, whereas teachers could benefit from this learning and improve the knowledge in their profession. The chapter describes a brief literature study pointing out some important points related to ICT, DE, ODL and some challenges to the implementation of ODL, the integration and use of ICT for educational purposes. Then the chapter provides an explanation of the research design and methodology that have been used to conduct the research.

**Chapter 2** reports on a literature study which deals with the themes earlier mentioned in the first chapter, i.e. ICT, DE and ODL. These themes are extensively explained to enable the researcher to get a profound understanding of the research topic he is working on. The description shows the policy to implement ICT, DE and ODL, and the challenges and the enablers that influence their implementation. Finally, the chapter describes the nature of the Gabonese Education and the attempts of ICT integration and ODL training.

**Chapter 3** deals in detail with the research design and methodology. It describes the research design and the methods that the researcher used to collect data. The chapter provides the detail of the

process of collecting and analysing data and of ethical issues in order to prevent any harm to the participants and the data, bias from the researcher. The data collection methods were based on individual and focus group interviews. All the interviews were recorded and transcribed. The transcription was done in French and was analysed by means of coding to produce themes and categories.

**Chapter 4** reports on the data analysis. The chapter starts with a discussion of the demographical information which shows that the data were provided by qualified and experienced participants. Participants were grouped according to their qualifications and their teaching experience. The next step was to interpret the data according to the categorisation as it emerged from the integrated dataset. There were three themes and each theme comprised two categories, challenges and enablers, which were derived from the two questions of the research problem about the enablers and challenges of initiating ICT in ODL training of Gabonese teachers. The researcher made an interpretation of the challenges and enablers of each theme sustained by the different codes of each category. From this interpretation, important findings were grouped in two main findings—challenges and enablers—be displayed in the next section. There have been findings in the Gabonese education theme, in ICT in Gabon and in ODL in Gabon themes.

### **5.3 Summary of Findings**

It is important to notice that, based on the findings from the three themes, more challenges than enablers emerged, especially within the first two themes, Gabonese Education and ICT in Gabon. However, when it comes to the theme ODL in Gabon, the group of enablers has more codes (4 codes) than the group of challenges (2 codes) (Figure 4.1).

#### **5.3.1 Challenges**

Various challenges have emerged from the analysis but we will deal with those which seem to be the most important within the three themes, such as government policy, support and accreditation; teacher professional development; infrastructure, structure and furniture; ICT technology and cost of technology; and cost of studying through ODL.

When dealing with the Gabonese Education system, the issue of government support featured prominently. It seems that policy-makers and the government do not show sufficient interest in the integration of ICT or the implementation of ODL in the Gabonese Educational System. Findings indicate that there is not one policy which can facilitate the implementation of ODL and the integration of ICT in the Gabonese Educational System. Consequently, this lack of policy may hinder the process of integrating ICT in the Gabonese schools as well as the implementation of ODL for the benefit of teachers. In addition, many participants felt that the government does not supply adequate and

sufficient help in the form of financing and establishing a proper and effective infrastructure for ICT integration and ODL training in Gabon. They feel very strongly that government should be the prime mover in this market and that there is a huge responsibility on the government to drive this process of the integration of ICT and ODL in Gabon. An effective infrastructure for the integration of ICT is lacking, and participants feel strongly that government needs to address the issue urgently. Insufficient availability of electricity, connectivity, equipment and tools are the main issues mentioned. They complain that the government does not provide substantial assistance to teachers who seek to improve their professional situation, fails to accredit distance education qualifications and does not provide sufficient financial support for further studies, especially those of in-service teachers. Consequently they are not able to improve their teaching and develop professionally.

Teachers themselves also have certain issues that form challenges to the implementation of ICT in ODL training in the Gabonese Education system. Older teachers, especially, seem to shy away from technology and new ways of teaching. Not all participants are willing to embrace ICT and ODL training, while insufficient finances seem to be a common complaint. They also complain about the cost of studying as well as the cost of effectively acquiring ICT and maintaining it.

### **5.3.2 Enablers**

There is definite scope for the integration of ICT in ODL training in Gabon. Interestingly enough government support, one of the main challenges, also turned out to be one of the main enablers. Participants were adamant about the fact that, in their opinion, government plays a pivotal role in the whole process of integration of ICT in ODL training in Gabon. They recognise the role the government plays in education as well as the financial implications when it comes to the implementation of ICT and ODL; therefore they believe that the government is the only institution able to launch and implement ODL in Gabon. They feel that without the adequate and substantial support of the government, there is very little chance of success in the implementation of ODL. Other enablers are the usefulness of ICT, as well as the existence of structures like the AUF.

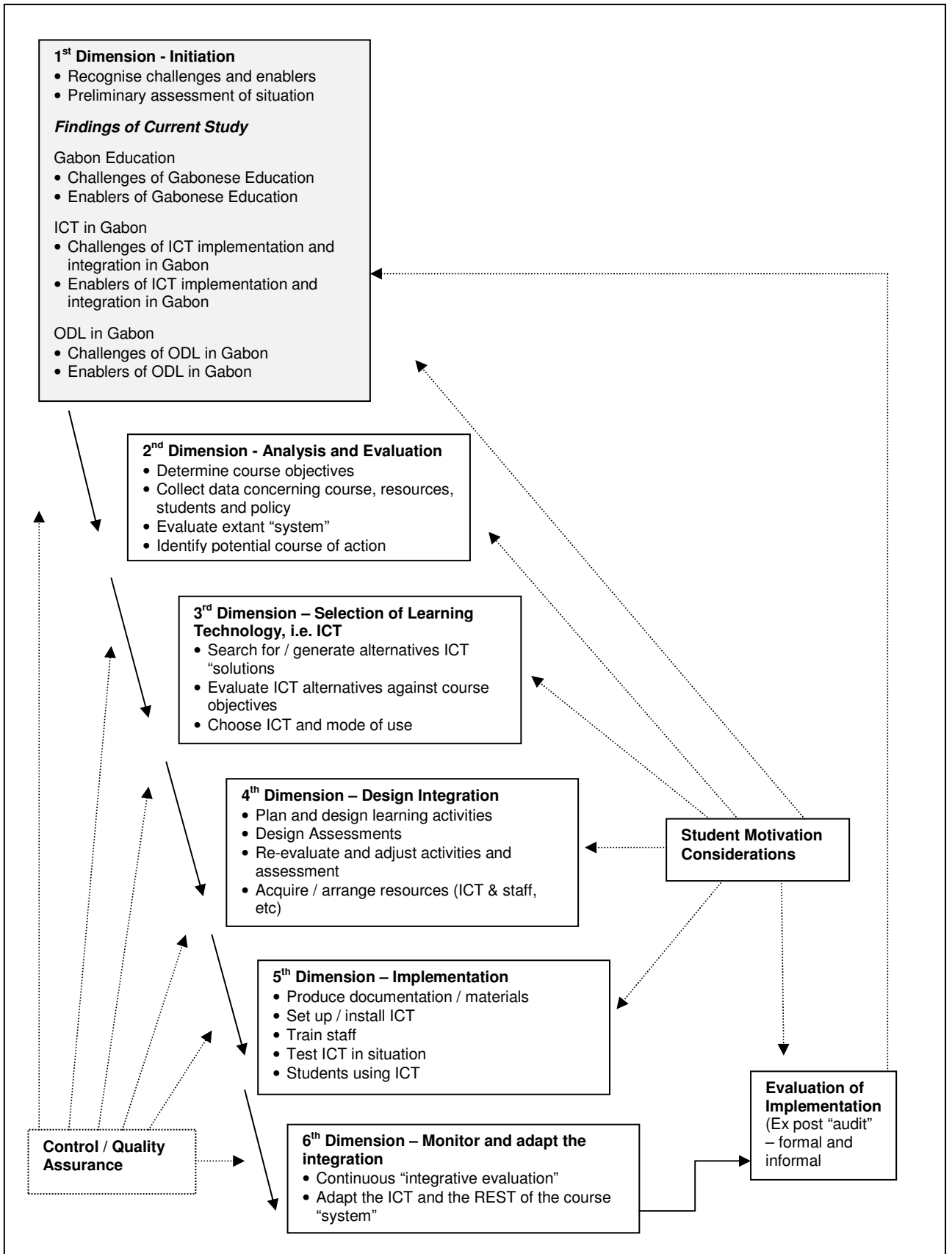
There is a willingness and eagerness from teachers, particularly young teachers, to use ICT. They are aware of the usefulness and enablers of ICT tools, both at home and at work. They believe that it is nearly impossible to work nowadays without ICT. On the other hand, findings indicate that there is an excellent opportunity for the Gabonese government to implement ODL with the collaboration of the AUF. This digital campus located at the University Omar Bongo (UOB) provides courses to learners from mostly West African countries. Participants have indicated that they are well aware of the signed convention between the Gabonese government and the AUF to establish an AUF site in the country; as well as its willingness to help the government in the implementation of ODL in Gabon. Many feel that this is an ideal opportunity for the proper integration and implementation of ICT in ODL training in Gabon, and this opportunity must not be ignored.

Other findings indicate various advantages of ODL training for the students, for the learners as well as the country. The implementation of ODL in Gabon can offer opportunities for students, many of whom are in-service teachers, to improve their qualifications and develop professionally, which will be immensely beneficial to education as well as to the individuals. It will also be cost-effective and can attract a huge market. It offers effective training that transcends time and space—teachers can be trained wherever they are, whenever they want to and still keep their jobs and support their families. In that sense ODL will help the country immensely to fulfil its educational policy to develop the vast human capital that this emerging country offers.

#### **5.4 Proposed Information and Communication Technology Implementation and Integration Framework for Teacher Professional Development via Open Distance Learning**

The Stoner (1996) *System Life Cycle Framework* for the implementation and integration of learning technology (i.e. ICT) into education was used as conceptual research framework for this study. As already pointed out, this study specifically focussed on the first dimension of Stoner's framework, i.e. *Initiation*, in order to qualitatively recognise the challenges and enablers of initiating TPD to unqualified, under-qualified and qualified Gabonese in-service teachers via DE or ODL, supported by ICT.

Figure 5.1 indicates contribution of the current study towards the implementation and integration of ICT for TPD in Gabon via ODL. This study provides a preliminary assessment of the situation within the Gabonese educational context, and lays the foundation (1<sup>st</sup> dimension of Figure 5.1) for future research on the development, implementation, integration and use of ICT for TPD via ODL in the Gabonese Education System.



**Figure 5.1 Contribution of this Study towards the Implementation and Integration of Information and Communication Technology for Teacher Professional Development in Gabon via Open Distance Learning**

**Table 5.2 Proposed Information and Communication Technology Implementation and Integration Framework for Teacher Professional Development in Gabon via Open Distance Learning**

System life cycle for learning technology integration into education (Stoner, 1996)	Findings of this research study	Recommendations
<p><b>1<sup>st</sup> Initiation Dimension</b></p> <ul style="list-style-type: none"> <li>▪ Recognise challenges and enablers</li> <li>▪ Preliminary assessment of situation</li> <li>▪ Ensure control and quality assurance throughout research</li> <li>▪ Consider student motivation throughout research, development and implementation</li> </ul>	<p><b>GABONESE EDUCATION</b>  <b>Challenges of Gabonese Education</b></p>	
	<p><i>Politics and Education</i></p> <ul style="list-style-type: none"> <li>▪ Participants do not understand the Gabonese Government's tardiness in providing education with new technologies (ICT)</li> <li>▪ Participants feel more political vision and resolve are needed</li> <li>▪ Participants are of the opinion that the implementation and use of ODL for TPD will elevate Gabonese education to the level of other countries</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Gabonese Government (politics) should uphold its educational responsibility to ensure the education of Gabonese citizens (Education Law 1966)</li> <li>▪ The Gabonese Government should pay attention to the evolution of education</li> <li>▪ The Gabonese Government should develop and release e-Education and ODL Policies with strategic vision to enhance education</li> <li>▪ Government Policies should strategically plan the system-wide implementation, integration and use of ICT and ODL</li> </ul>
	<p><i>Infrastructure</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate insufficient electricity in schools. Teachers cannot use ICT materials in schools</li> <li>▪ Participants also complain about the location of schools (often neighbour to pubs and without fences) and the way windows are made</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should provide schools with electricity</li> <li>▪ The government should monitor the implementation of schools and recommend that fences be made around all the schools</li> </ul>
	<p><i>No Accreditation</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that the government does not take into account diplomas from distance learning institutions (the graduates are not accepted in civil services)</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should change its position regarding ODL diplomas and accept the ODL graduates in the Gabonese civil services</li> </ul>
	<p><i>Affective Factor</i></p> <ul style="list-style-type: none"> <li>▪ Participants mention the loss of their motivation due to their ignorance of ICT tools</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should integrate ICT devices in education to arouse teachers motivation</li> </ul>
	<p><i>Willingness</i></p> <ul style="list-style-type: none"> <li>▪ Participants feel discouraged and no more interested to further their studies</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Government and school governing bodies should encourage and motivate teachers to undergo continuous TPD</li> <li>▪ Teachers should feel stronger to face any difficulty and overcome it</li> </ul>
	<p><i>Generation Gap</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that old teachers are reticent to the use of ICT</li> <li>▪ On the other hand, young teachers are attracted by ICT tools</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should change their mind set regarding ICT tools</li> <li>▪ While integrating ICT in schools, the government should seek a policy to get everybody involved in the use of ICT tools</li> </ul>
	<p><i>Teacher Development</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that they</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should plan to work with what they can have for their</li> </ul>

System life cycle for learning technology integration into education (Stoner, 1996)	Findings of this research study	Recommendations
	<p>are often lacking in money and ICT materials to use for their TPD</p> <ul style="list-style-type: none"> <li>▪ They have also families' constraints</li> </ul>	<p>TPD</p> <ul style="list-style-type: none"> <li>▪ Teachers should also well manage the budget of their families</li> </ul>
	<p><i>Traditional Teaching Methodology</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that the training and financial requirements of ICT force teachers into their traditional teaching methodology</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government and school governing bodies should investigate possible initiatives and funding opportunities which will make it possible for teachers to undergo TPD and obtain ICT knowledge and skill</li> <li>▪ Teachers should seek to work with some ICT tools</li> </ul>
	<p><i>Financial Challenges</i></p> <ul style="list-style-type: none"> <li>▪ Participants show that they do not profit from the WASC</li> <li>▪ Participants also indicate that the government grants bursaries to students while teachers complain about the insufficient money to further their studies</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should extend the WASC advantages to the country for a better Internet connection</li> <li>▪ The government should think of a new policy for the teaching professional development</li> </ul>
<b>Enablers of Gabonese Education</b>		
	<p><i>Government Support</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that the government is the prominent manager of education</li> <li>▪ Some participants indicate that the government starts to be interested in ICT</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should provide schools with didactical materials which involves the pedagogical use of ICT</li> <li>▪ The government should change its interest in ICT into action in education</li> </ul>
	<p><i>Need for Programme</i></p> <ul style="list-style-type: none"> <li>▪ Participants recognise the era of technological knowledge and indicate that they are ready for the use of ICT tools</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Gabonese government should adopt implementation strategies from other countries to set up tertiary distance education institutions that can make teachers develop their profession</li> </ul>
	<p><i>Progress</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate their expectations of a progress in the future with ODL</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should invest in education to make ODL possible</li> </ul>
<b>ICT IN GABON Challenges of ICT implementation and integration in Gabon</b>		
	<p><i>Insufficient Training</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that they need to be trained</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should start learning ICT alone before the government decides to integrate and implement ICT in the Gabonese education</li> <li>▪ The Government and school governing bodies should investigate possible initiatives that will enable teachers to complete ICT training and enrol for ODL courses for TPD</li> </ul>
	<p><i>Fear of Technology</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate that teachers do not want to use ICT tools because they are afraid of misusing them</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should use ICT tools and learn to practice them on their own</li> <li>▪ Government and school governing bodies should investigate how to lower technophobia amongst teachers and other school staff</li> </ul>
	<p><i>Insufficient ICT technology and</i></p>	<ul style="list-style-type: none"> <li>▪ Teachers should seek</li> </ul>

System life cycle for learning technology integration into education (Stoner, 1996)	Findings of this research study	Recommendations
	<i>Equipment</i> <ul style="list-style-type: none"> <li>▪ Participants indicate that there is no computer at their disposal, at home or at work</li> </ul>	<ul style="list-style-type: none"> <li>▪ friends or relative who already use a computer</li> </ul>
	<i>Educational Technology</i> <ul style="list-style-type: none"> <li>▪ Participants indicate that it is important for a teacher to have at least a laptop</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should have a laptop for their ICT practice and for their job</li> <li>▪ Government should investigate possible initiatives and subsidies that will enable teachers to obtain their own laptops</li> </ul>
	<i>Cost of Technology</i> <ul style="list-style-type: none"> <li>▪ Participants indicate that new technologies are expensive. Their costs even correspond to some teachers' wages</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should monitor the market of computers and make prices affordable</li> </ul>
	<i>Availability of Internet Connection</i> <ul style="list-style-type: none"> <li>▪ Participants indicate that there is no connection to the Internet or the connection is not good</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should recommend that the WASC should be used by everybody, in rural areas or in cities</li> </ul>
<b>Enablers of ICT implementation and integration in Gabon</b>		
	<i>Need for ICT</i> <ul style="list-style-type: none"> <li>▪ Participants find that the era of technology replaces the old methods of the old period</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should provide schools with a computing room to make the teaching staff and students involved in the practice of ICT</li> </ul>
	<i>Evolution</i> <ul style="list-style-type: none"> <li>▪ Participants foresee evolution from the expansion of ICT use which will be imposed to anybody</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should be trained in ICT and ready to enter into the evolution</li> </ul>
	<i>Enablers of ICT</i> <ul style="list-style-type: none"> <li>▪ Participants indicate that they are interested in ICT and what ICT can bring to them</li> <li>▪ Participants indicate that teachers would like to be informed, to learn and to work like others who already use ICT</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should appropriate ICT tools for their everyday work</li> </ul>
	<i>Usefulness of Technology</i> <ul style="list-style-type: none"> <li>▪ Participants indicate the importance of ICT use in teachers' job and in the world today</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers should set to work and then use the tools</li> </ul>
<b>OPEN DISTANCE LEARNING (ODL) IN GABON</b>		
<b>Challenges of ODL in Gabon</b>		
	<i>Cost of studying through ODL</i> <ul style="list-style-type: none"> <li>▪ Participants feel costs of studying through ODL are expensive</li> <li>▪ Others think that costs are not expensive</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should provide teachers with help (financial or material) to sustain their studies</li> </ul>
	<i>Uncertainty about implementation and functioning of ODL</i> <ul style="list-style-type: none"> <li>▪ Participants indicate insufficient information on the management of ODL</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should provide teachers with relevant information about ODL practice</li> </ul>
<b>Enablers of ODL in Gabon</b>		
	<i>Enablers of ODL</i> <ul style="list-style-type: none"> <li>▪ Participants indicate the usefulness of the partnership between Gabon and AUF for the</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should take advantage of the AUF partnership to launch the implementation of ODL in Gabon</li> </ul>

System life cycle for learning technology integration into education (Stoner, 1996)	Findings of this research study	Recommendations
	<p>implementation of ODL in Gabon</p> <p><i>Availability of Training</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate the opportunity that the AUF offers to the Gabonese learners to study in their institution</li> </ul> <p><i>Policy for implementation and integration of ODL</i></p> <ul style="list-style-type: none"> <li>▪ Participants indicate the lack of policy to implement ODL in Gabon</li> </ul> <p><i>Advantages of ODL</i></p> <ul style="list-style-type: none"> <li>▪ Participants show some advantages of ODL for the government in terms of finances and for the learners in terms of money and in terms of knowledge</li> </ul>	<ul style="list-style-type: none"> <li>▪ The government should recommend teachers to use that opportunity to further their studies</li> <li>▪ The government and policy makers should revisit their policy regarding the implementation of ODL</li> <li>▪ The government should be aware of these advantages and decide to launch in a short-term time the implementation of ODL</li> </ul>
<p><b>2<sup>nd</sup> Dimension – Analysis and Evaluation</b></p> <ul style="list-style-type: none"> <li>▪ Determine course objectives</li> <li>▪ Collect data regarding course, resources, students and policy</li> <li>▪ Evaluate extant “system”</li> <li>▪ Identify potential courses of action</li> <li>▪ Ensure control and quality assurance throughout research</li> <li>▪ Consider student motivation throughout research, development and implementation</li> </ul>		<p>Future research pertaining to the 2<sup>nd</sup> ICT integration dimension recommended</p>
<p><b>3<sup>rd</sup> Dimension – Selection of ICT (Learning Technologies)</b></p> <ul style="list-style-type: none"> <li>▪ Search for or generate alternative ICT “solutions”</li> <li>▪ Evaluate alternatives against course objectives</li> <li>▪ Choose ICT (learning technology) and mode of use</li> <li>▪ Ensure control and quality assurance throughout research</li> <li>▪ Consider student motivation throughout research, development and implementation</li> </ul>		<p>Future research pertaining to the 3<sup>rd</sup> ICT integration dimension recommended</p>
<p><b>4<sup>th</sup> Dimension – Design ICT Integration</b></p> <ul style="list-style-type: none"> <li>▪ Plan and design learning activities</li> <li>▪ Design assessments</li> <li>▪ Re-evaluate and adjust activities and assessments</li> <li>▪ Acquire or arrange resources (learning technology, staff, etc.)</li> <li>▪ Test ICT (learning technology) in a real-life educational context and situation</li> <li>▪ Ensure control and quality assurance throughout</li> </ul>		<p>Future research pertaining to the 4<sup>th</sup> ICT integration dimension recommended</p>

System life cycle for learning technology integration into education (Stoner, 1996)	Findings of this research study	Recommendations
research <ul style="list-style-type: none"> <li>▪ Consider student motivation throughout research, development and implementation</li> </ul>		
<b>5<sup>th</sup> Dimension – ICT Implementation</b> <ul style="list-style-type: none"> <li>▪ Produce documentations and study materials</li> <li>▪ Set up or install ICT (learning technology)</li> <li>▪ Train staff in the use of ICT for pedagogical purposes</li> <li>▪ Test ICT (learning technology) in real-life educational contexts and situations</li> <li>▪ Let students use ICT and receive feedback</li> <li>▪ Ensure control and quality assurance throughout research</li> <li>▪ Consider student motivation throughout research, development and implementation</li> </ul>		Future research pertaining to the 5 <sup>th</sup> ICT integration dimension recommended
<b>6<sup>th</sup> Dimension – Monitor and Adapt ICT Integration</b> <ul style="list-style-type: none"> <li>▪ Continuous “integrative evaluation”</li> <li>▪ Adapt ICT and the rest of the course “system”</li> <li>▪ Ensure control and quality assurance throughout research</li> <li>▪ Consider student motivation throughout research, development and implementation</li> </ul>		Future research pertaining to the 6 <sup>th</sup> ICT integration dimension recommended

Table 5.1 provides a proposed ICT implementation and integration framework for TPD in Gabon via ODL, by providing the main findings of this study in response to the 1<sup>st</sup> dimension of Figure 5.1, as well as corresponding recommendations to the Gabonese Government, Education System, and policy makers for TPD via ODL with the support of ICT and e-Education.

The most prominent holistic finding of this study clearly points 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. The implementation process of ICT in ODL is predominantly the responsibility of the government. The success of such implementation seems to depend squarely on the government. The whole educational system is run, managed and co-ordinated by the government. They are responsible for the appointment, placement and management of teachers. They provide the funding for schools and are also responsible for maintaining this management, physically as well as on all other levels. Teachers look to the government to make the ideals of policy a reality. Teachers look to government to lead the way in education, development and growth, and the Gabonese government seems to be in a position to do this.

The Gabonese Government should be the main force and catalyst for the integration of ICT in ODL training if the process were to have any decent chance of success in Gabon. However, although they are the main force, they are not the only ones involved in this process. Teachers have their part to play as well. Teachers are the ones who must also realise their role in integrating and implementing ICT in ODL training in Gabon. They must realise the benefits this can bring and embrace the process and help to carry it forward. The following recommendations are made on the basis of these findings in the study:

- 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
- The government should encourage the professional development of teachers through ICT and ODL—this will be very beneficial for education as well the people who drive education, teachers
- The government should actively and intensively strive to improve the country's technological infrastructure—materials, tools, availability of electricity and connectivity, technical assistance, must all be improved
- The government should monitor the costs of ICT tools and materials in order to make them affordable to teachers and people in general
- The government should take advantage of the AUF infrastructure and offer to launch ODL practice in Libreville initially, and then further afield
- Teachers must show an interest and willingness to embrace ICT and ODL learning for their professional development.

## **5.5 Recommendations for Future Research**

The research has explored the challenges and the enablers of initiating ICT in ODL training of Gabonese teachers. This should help to further highlight these immensely exciting and profitable fields of ICT and ODL, and even heighten enthusiasm for this cause.

It is important to indicate that there is insufficient information of new technologies in Gabon. The researcher struggled to collect a large volume of data in this regard, and more extensive research into the reasons for the scarcity of data on technology in Gabon can still be done, so that in the process more useful information can be unearthed which will be very useful for research.

Regarding further research, this research is the beginning of a long process of learning technology integration (Stoner, 1996). Hopefully the government decides to integrate ICT and implement ODL during the next three years, which would give researchers additional opportunities to further develop research and to move to the evaluation and the analysis of ICT implementation in the Gabonese Educational System which is the second step in Stoner's systems life cycle.

## **5.6 In Conclusion**

Gabon is one of the richest countries in Africa and there is substantial financial investment from other countries. Its government also has the privilege of having entered into various partnerships and collaborations with other entities. One such example is the partnership with NEPAD e-Schools, which deals specifically with the integration of ICT in schools, but this project stayed at the stage of partnership signature. The government did not follow the guidelines from the partnership to make the project effective and teachers do not see these partnerships making a substantial and lasting difference. The government has some educational policies in place, and still require some, such as ICT integration, but the outcomes of these policies are not reached. The government has the means and the opportunity to make the integration of ICT in ODL training in Gabon a reality, yet it does not seem to happen. It is not quite clear why the government has failed in this process of integration of ICT in ODL training in Gabon. There are some suggestions in this regard, but what we do know is that the government is the one institution that can make dramatic and drastic changes to ensure that ICT integration, and ODL training in Gabon, do not become part of a sad history of lofty ideals that only remain ideals.

The study took the researcher to Gabon for interviews with qualified and experienced participants (from the teaching profession, tertiary institutions as well as government structures) who provided important and relevant information concerning the challenges and enablers of initiating ICT in the ODL TPD of Gabonese in-service teachers. This research study found that the implementation and integration of ICT and ODL for TPD in Gabon depend largely on the government and its ability and willingness to actively fulfil the policy and vision of successful integration of ICT in ODL training. The Gabonese government is in the ideal position to do this and teachers expect this from the government—rightly so. The teachers also have their role to play in this process. They need to welcome and embrace the advent of the integration of ICT in ODL training in Gabon to ensure that they, as well as education in general, reap the benefits of this process.

# Bibliography

---

- Ackermann, E. (2005). *Learning to use the internet and the world wide web with revitalized URLs*. Wilsonville: Franklin, Beedle and Associates Inc.
- Aderinoye, R., & Ojokheta, K. (2004). Open-distance education as a mechanism for sustainable development: Reflections on the Nigerian experience. *International Review of Research in Open Distance Learning*, 5(1, April). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/174/256>
- Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: The case of Syrian EFL teachers. *Computers and Education*, 47(2006), 373-398. doi: doi:10.1016/j.compedu.2004.10.013
- Anderson, R. E., & Plomp, T. (2008). National contexts. In N. Law, W. J. Pelgrum & T. Plomp (Eds.), *Pedagogy and ICT use in schools around the world: Findings from the IEA SITES 2006 study* (Vol. 23, pp. 37-66). Hong Kong: Comparative Education Research Centre.
- Arkava, M. L., & Lane, T. A. (1983). *Beginning social work research*. Boston: Allyn and Bacon.
- Asemota, O. O. (2005). *Building Namibia for competitiveness through ODL: a critical review*. Paper presented at the First open and distance learning conference in Namibia, Windhoek. <http://ir.polytechnic.edu.na/bitstream/10628/49/4/Asemota.%20Building%20Namibia%20for%20Ocompetitiveness%20through%20open%20and%20distance%20learning.pdf>
- Australian Government. (2012, October 2012). Improving Teacher Quality Retrieved 17 October, 2012, from <http://www.smarterschools.gov.au/nationalpartnerships/Pages/ImprovingTeacherQuality.aspx>
- Babbie, E. R., & Mouton, J. (2001). *The practice of social research* (8 ed.). Belmont: Oxford University Press.
- Bagchi, K., & Udo, G. (2007). Empirically testing factors that drive ICT adoption in Africa and OECD set of Nations. *Issues in Information systems*, VIII(2), 45-52.
- Basalla, G. (2002). *The evolution of technology*. Cambridge: Cambridge University Press.
- BECTA. (2004). Continuing professional development in ICT for teachers Retrieved 15 August, 2012, from [http://teachfind.com/becta/becta-research-research-becta-research-continuing-professional-development-ict-teachers-0?current\\_search=ICT%20research%3A%20What%20the%20research%20says%20about%20ICT%20and%20continuing%20professional%20development%20%28CPD%29%20for%20teachers](http://teachfind.com/becta/becta-research-research-becta-research-continuing-professional-development-ict-teachers-0?current_search=ICT%20research%3A%20What%20the%20research%20says%20about%20ICT%20and%20continuing%20professional%20development%20%28CPD%29%20for%20teachers)
- Belanger, F., & Jordan, H. D. (2000). *Evaluation and implementation of distance learning: technologies, tools and techniques* (1 ed.). London: Idea Group Publishing.
- Berge, Z. L., & Muilenburg, L. Y. (2000, 1 January 2012). Barriers to distance education as perceived by managers and administrators. *Distance Learning Administration* Retrieved 15 October, 2012, from [http://emoderators.com/wp-content/uploads/Man\\_admin.pdf](http://emoderators.com/wp-content/uploads/Man_admin.pdf)
- Birkbeck University of London. (2005). Glossary of Terms Retrieved 5 April, 2011, from <http://www.bbk.ac.uk/ccs/elearn/glossary.htm#ICT>
- Blignaut, A. S., & Els, C. J. (2009). *The hare and the tortoise: a comparison of Northern and Southern hemisphere findings of the SITES 2006*. Paper presented at the IADIS Multi Conference on Computer Science and Information Systems, Algarve, Portugal.

<http://www.iadisportal.org/digital-library/mdownload/the-hare-and-the-tortoise-a-comparison-of-northern-and-southern-hemisphere-findings-of-the-sites-2006>

- Blignaut, A. S., & Els, C. J. (2010). Not yet where we want to be: South Africa's participation in SITES 2006. *US-China Education Review*, 7(2), 55-66.
- Blignaut, A. S., Els, C. J., & Howie, S. J. (2010a). Contextualizing South Africa's participation in the SITES 2006 module. *South African Journal of Education*, 30(4), 555-570.
- Blignaut, A. S., Hinostroza, J. E., Els, C. J., & Brun, M. (2010b). ICT in Education Policy and Practice in developing countries: South Africa and Chile compared through SITES 2006. *Computers and Education*, 55(4), 1552-1563.
- Bodgan, R., & Biklen, S. K. (2007). *Qualitative research for education: an introduction to theory and methods* (5th ed.). Boston: Pearson.
- Boer, P. (2005). *Towards education for all: The critical role of open and distance learning in national development* Paper presented at the First open and distance learning conference in Namibia, Namibia. <http://www.col.org/resources/speeches/2005presentations/Pages/2005-08-30.aspx>
- British Department for Education. (2011). Government sets out plans to attract the best graduates into teaching Retrieved 14 September, 2012, from <http://www.education.gov.uk/inthenews/inthenews/a0078044/government-sets-out-plans-to-attract-the-best-graduates-into-teaching>
- Brown, M., Anderson, B., & Murray, F. (2007). *e-Learning policy issues: global trends, themes and tensions*. Paper presented at the Ascilite, Singapore. <http://www.ascilite.org.au/conferences/singapore07/procs/brown.pdf>
- Burns, R. B. (2000). *Introduction to research methods* (4th ed.). London: SAGE.
- Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organisational analysis* (1 ed.). London: Heineman.
- Butcher, N. (2003). Reflections on open schooling and national policy in South Africa. In J. Bradley (Ed.), *The open classroom: distance learning in schools* (pp. 119-132). London: Kogan Page.
- Chen, J.-Q., & Chang, C. (2007, 2012). Testing the whole teacher approach to professional development: a study of enhancing early childhood teachers' technology proficiency Retrieved 15 August, 2012, from <http://ecrp.uiuc.edu/v8n1/chen.html>.
- Cho, S. K., & Berge, Z. L. (2002). Overcoming barriers to distance training and education. *USDLA Journal*, 16(1). Retrieved from [http://www.usdla.org/html/journal/JAN02\\_Issue/article01.html](http://www.usdla.org/html/journal/JAN02_Issue/article01.html)
- Choi, A. (2003). Potentials and challenges of distance education for quality teacher training: cases in Sub-Saharan African countries. *Distance Education for Teacher Training in Africa* Retrieved 12 November, 2012, from [http://ahram.myweb.uga.edu/8030\\_comparative\\_paper.pdf](http://ahram.myweb.uga.edu/8030_comparative_paper.pdf)
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6 ed.). London: Routledge.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). London: Routledge.
- Collins, R. (1998). *The sociology of philosophies: A global theory of intellectual change*. Cambridge: Harvard University Press.
- Creswell, J. W. (1994). *Research design: qualitative and quantitative approaches*. London: SAGE.

- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice*, 39(3), 124.
- De Vos, A. S., Strydom, H., Fouche, C. B., & Delport, C. S. L. (2005). *Research at grass roots for the social sciences and human service professions* (3rd ed.). Pretoria: Van Schaik.
- Denzin, N. K., & Lincoln, Y. S. (2005). *The SAGE Handbook of qualitative research* (3rd ed.). London: SAGE.
- Department of Education. (2004). White paper on e-Education Retrieved 12 November, 2012, from <http://www.education.gov.za/LinkClick.aspx?fileticket=Keu0%2FBkee%2BM%3D&...>
- Dijkstra, S., Seel, N., Schott, F., & Tennyson, R. (1997). *Instructional design: International perspectives*: Lawrence Erlbaum Associates Inc.
- Donaldson, G. (2007, March 2007). Improving Scottish education ICT in learning and teaching Retrieved 15 October, 2012, from <http://dera.ioe.ac.uk/6488/1/iseicilat.pdf>
- Edwards, R. (1995). Different discourses, discourses of difference: globalisation, distance education and open learning. *Journal of Distance Education*, 16(2), 241-255.
- Els, C. J., & Blignaut, A. S. (2009, 2-4 September). *Qualitative case studies of context sensitive ICT pedagogical practices of teachers in the North-West Province*. Paper presented at the 11th Annual Conference on World Wide Web Applications (WWW 2009), Port-Elizabeth, South Africa.
- Erdogan, A., & Sahin, I. (2010). Relationship between maths education teacher candidates: Technological Pedagogical and Content knowledge (TPACK) and achievement levels. *Procedia- social and behavioral sciences*, 2(2), 2707-2711.
- Evoch, C. J. (2007). Policy networks and the transformation of secondary education through ICTs in Africa: The prospects and challenges of the NEPAD e-schools initiative. *Questia*, 3(1). Retrieved from <http://www.questia.com/library/1P3-1405535931/policy-networks-and-the-transformation-of-secondary>
- Fall, B. (2007). ICT for education in Gabon. *Survey of ICT and education in Africa: Gabon country report*, 2(53), 1-8. Retrieved from <http://ddp-ext.worldbank.org/EdStats/GABpro07.pdf>
- Farrell, G., Isaacs, S., & Trucano, M. (2007). Survey of ICT and education in Africa (Volume 2): 53 country reports (Vol. 2012, pp. 587). Washington DC: Country Reports.
- Farrell, G. M. (2006). The NEPAD e-School demonstration project: A work in progress Retrieved 20 August, 2012, from [http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0CCYQFjAB&url=http%3A%2F%2Fwww.infodev.org%2Fen%2FDocument.355.pdf&ei=606XUJyNJs-GhQeVi4GwAQ&usq=AFQjCNGBAmhrzub27LRrly1jRiXXEdz76g&sig2=n8BztZGWqIWwI0nK0y\\_x4Q](http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0CCYQFjAB&url=http%3A%2F%2Fwww.infodev.org%2Fen%2FDocument.355.pdf&ei=606XUJyNJs-GhQeVi4GwAQ&usq=AFQjCNGBAmhrzub27LRrly1jRiXXEdz76g&sig2=n8BztZGWqIWwI0nK0y_x4Q)
- Faye, M. (2000). *Developing national information and communication infrastructure (NICI) policies and plans in Africa: the "why" and "how"*. Paper presented at the The Nigeria NICI Workshop, Abuja, Nigeria.
- Ferreira, G. J., & Venter, E. (2010). Barriers to learning at an open distance learning institution. Retrieved 20 October, 2012, from [http://www.saide.org.za/resources/Conf%202010/Ferreira\\_JG\\_and\\_Venter\\_E\\_Barriers\\_to\\_learning\\_at\\_an\\_ODL\\_institution.pdf](http://www.saide.org.za/resources/Conf%202010/Ferreira_JG_and_Venter_E_Barriers_to_learning_at_an_ODL_institution.pdf)
- Fozdar, B. I., & Kumar, L. S. (2007). Mobile learning and student retention. *The International Review of Research in Open and Distance Learning*, 8(2), 18.

- Fozdar, B. I., Kumar, L. S., & Kannan, S. (2006). A survey of study on the reasons responsible for student dropout from the Bachelor of Science programme at Indira Gandhi National Open University. *International Review of Research in Open and Distance Learning*, 7(3). Retrieved from <http://www.irrodl.org/index.php/irrodl/rt/prINTERfriendly/291/747>
- Frempong, G. K. (2004). *Restructuring of the telecoms sector in Ghana: Experiences and policy implications*. Thesis PhD, University of Ghana, Ghana.
- Galusha, J. M. (1997). Barriers to learning in distance education. *Interpersonal Computing and Technology*, 5(3-4), 6-14.
- Ghosh, R. A. (2003). Licence fees and GDP per capita: The case for open source in developing countries. *Peer-Reviewed Journal on the Internet*, 8(12). Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1103/1023>
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of Grounded theory: strategies for qualitative research* Chicago: Transaction Publishers.
- Greef, M. (2005). Information collection: interviewing. In A. S. De Vos, H. Strydom, C. B. Fouche & C. S. L. Delport (Eds.), *Research at grass roots for the social sciences and human service professionals* (3rd ed., pp. 286-314). Pretoria: Van Schaik.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousands Oaks, CA: SAGE.
- Guri-Rosenblit, S. (2005). 'Distance education' and 'e-learning': not the same thing. *Higher Education*, 49, 467-493. doi: DOI 10.1007/s10734-004-0040-0
- Guru, M., & Percy, B. (2005). *Recapturing Technology for Education. Keeping Tomorrow in Today's Classrooms*. New York: Rowman & Littlefield.
- Henning, E. (2004). Capturing data through observation and in artifacts and documents. In E. Henning, W. Van Rensburg & B. Smit (Eds.), *Finding your way in qualitative research* (pp. 179). Pretoria: Van Schaik.
- Higgins, S. (2003). Does ICT Improve Learning and Teaching in Schools? Retrieved 26 October, 2012, from <http://www.msu.ac.zw/elearning/material/1317635592TECHNOLOGY.pdf>
- Holmberg, B. (1986). *Growth and structure of distance education* New Hampshire: Groom Helm Ltd.
- Howie, S. J., Muller, A., & Paterson, A. (2005). *Information and Communication Technologies in South African secondary schools*. Pretoria: HSRC Press.
- Hülsmann, T. (2004). Guest Editorial: low cost distance education strategies: The use of appropriate information and communication technologies. *International Review of Research in Open and Distance Learning*, 5(1). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/viewArticle/175/257>
- International Telecommunication Union. (2003, 10 January 2006). ITU Digital Access Index: world's first global ICT ranking education and affordability key to boosting new technology adoption Retrieved 31 October, 2012, from [http://www.itu.int/newsarchive/press\\_releases/2003/30.html](http://www.itu.int/newsarchive/press_releases/2003/30.html)
- Jamieson-Proctor, R. M., Burnett, P., Finger, G., & Watson, G. (2006). ICT integration and teachers' confidence in using ICT for teaching and learning in Queensland state schools. *Australian Journal of Educational Technology*, 22(4), 511-530. Retrieved from <http://ascilite.org.au/ajet/ajet22/jamieson-proctor.html>
- Jimoyiannisa, A., & Komi, V. (2007). Examining teachers' beliefs about ICT in education: implications of a teacher preparation programme. *Teacher Development*, 11, 149-173.

- Jung, C. G. (1990). *Psychological Types*. Princeton: Princeton University Press.
- Jung, I., & Latchem, C. (2007). Assuring quality in Asian open and distance learning. *The Journal of Open, Distance and e-learning*, 22(3).
- Kember, D. (2007). *Reconsidering open and distance learning in the developing world*. London: Routledge.
- Ki-zerbo, J. (2003). *A quand l'Afrique? Entretien avec Rene Holenstein* (Edition de l'Aube ed.). Avignon: Editions d'en bas.
- Komba, L. M. (2009). Increasing education access through open and distance learning in Tanzania: A critical review of approaches and practices. *International Journal of Education and Development using ICT*, 5(5). Retrieved from <http://ijedict.dec.uwi.edu/viewarticle.php?id=859>.
- Krueger, R. A., & Casey, M. A. (2000). *Focus groups: a practical guide for applied research* (3, illustrated ed.). Thousand Oaks, CA: SAGE.
- Kvale, S., & Brinkman, S. (2009). *Interviews: an introduction to qualitative research interviewing* (2nd ed.). Thousand Oaks, CA: SAGE.
- La Gabon.org. (2012). Official portal of the Gabonese Republic Retrieved 17 February, 2012, from <http://www.en.legabon.org/>
- la République du Gabon. (1966). Loi sur l'enseignement 16/66 août 1966 (Gabonese Education Law 16/66 of August 1966) Retrieved 26 October, 2012, from <http://www.glin.gov/view.action?searchDetails.searchAll=true&search=&glinID=249938&searchDetails.queryString=insclass%3A%22Law%22&fromSearch=true&searchDetails.sortOrder=rank&searchDetails.queryType=BOOLEAN&searchDetails.showSummary=true&summaryLang=en>
- Loveless, A., & Dore, B. (2002). *ICT in the Primary School: Learning and teaching with ICT*. New York: NY: McGraw-Hill.
- Mackey, A., & Gass, S. M. (2005). *Second language research: methodology and design*. London: Routledge.
- Magambo, J. (2007). Use of Information and Communications Technologies (ICTs) in Teacher education in Sub-Saharan Africa: Case studies of selected African universities Retrieved 12 November, 2012, from [http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCIQFjAA&url=http%3A%2F%2Fkups.ub.uni-koeln.de%2F2140%2F1%2Fmagambo2710790.pdf&ei=SQGhUMSjK5GChQea6IHgBw&usq=AFQjCNESBI2IL8K8drUypXbk7aw3o\\_PneQ&sig2=uRveDokz6ZRzzyoSO2Y94g](http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCIQFjAA&url=http%3A%2F%2Fkups.ub.uni-koeln.de%2F2140%2F1%2Fmagambo2710790.pdf&ei=SQGhUMSjK5GChQea6IHgBw&usq=AFQjCNESBI2IL8K8drUypXbk7aw3o_PneQ&sig2=uRveDokz6ZRzzyoSO2Y94g)
- Makanga, M. P. (2005). Telecommunications *Atlas de l'Afrique: Gabon* (pp. 44-45). Paris: Groupe Jeune Afrique.
- Marshall, C., & Rossman, G. B. (2011). *Designing qualitative research* (5th ed.). Thousand Oaks, CA: SAGE.
- Mbeki, T. (1999). Allocution d'ouverture a la conference sur l' Education pour la renaissance africaine au 21eme siecle. Retrieved 5 February, 2013, from [www.peuplesawa.com/downloads/218.pdf](http://www.peuplesawa.com/downloads/218.pdf)
- Mebale, L. (2005). Projet de generalisation des technologies de l'information et de la communication dans le systeme educatif Gabonais Retrieved 1 October, 2012, from [http://www.gaboneco.com/show\\_article.php?IDActu=24111](http://www.gaboneco.com/show_article.php?IDActu=24111)
- Mensah, F. J. (2005). Is ODL cost Efficient/Effective? The case of the Namibian College of Open Learning Retrieved 3 October, 2012, from

<http://www.cambridgedistanceeducation.org.uk/Is%20ODL%20Cost%20Efficient%20-%20Effective.%20The%20Case%20of%20the%20Namibian%20College%20of%20Open%20Learning.%20Frances%20J%20Mensah%20,%20Director%20Namibian%20College%20of%20Open%20Learning.PDF>

- Merriam, S. B. (1998). *Qualitative research and case study: Applications in education*. San Fransisco, CA: Jossey-Bass.
- Michel, A. J. (2012). The digital divide consequences for Sub-Saharan Africa Retrieved 7 September, 2012, from [http://www.woodhouse-systems.com/ajmblog/DigitalDivide\\_AndreasJMichel.pdf](http://www.woodhouse-systems.com/ajmblog/DigitalDivide_AndreasJMichel.pdf)
- Middlehurst, R., & Woodfield, S. (2006). Quality review in distance learning: Policy and practice in five countries. *Tertiary Education and Management*, 12(1), 37-58.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: an expanded source book* (2, illustrated, reprint ed.). Thousand Oaks, CA: SAGE.
- Monette, D. R., Sullivan, T. J., & DeJong, C. R. (2010). Research in the human services. In D. R. Monette, T. J. Sullivan & C. R. DeJong (Eds.), *Applied social research: tool for the human services* (5th ed., pp. 1-18). Orlando, FL: Harcourt College.
- Mooij, T. (2004). Optimising ICT effectiveness in instruction and learning: multilevel transformation theory and a pilot project in secondary education. *Computers and Education*, 42(1), 25-44.
- Moon, B., Leach, J., & Steven, M. P. (2005). Designing open and distance learning for teacher education in Sub-Saharan Africa: A toolkit for educators and planners Vol. 2012. Retrieved from [http://oro.open.ac.uk/8401/1/Teacher\\_education\\_Toolkit\\_May13.pdf](http://oro.open.ac.uk/8401/1/Teacher_education_Toolkit_May13.pdf)
- Moore, G. M., & Kearsley, G. (1996). *Distance education: A systemic view*. Belmont, CA: Wadsworth.
- Moore, M. G. (1993). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education* (pp. 22-38). London: Routledge.
- Morgan, D. L., & Krueger, R. A. (1998). *The focus group kit* (Vol. 1-6). Thousand Oaks, CA: SAGE.
- Morse, J. M. (1991). *Qualitative nursing research: a contemporary dialogue*. Newbury Park, CA: SAGE.
- Mouton, J. (2001). *How to succeed in your master's and doctoral studies: a South African guide and resource book*. Pretoria: Van Schaik.
- Ndinga-Koumba Binza, H. S. (2006). English in French-speaking African countries: the case of Gabon. In A. E. Arua, M. M. Bagwasi, T. Sebina & B. Sebani (Eds.), *The study and use of English in Africa* (pp. 152-164). Newcastle, UK: Cambridge Scholars Press.
- NEPAD. (2003). NEPAD e-schools initiatives. *NEPAD e-Africa Commission* Retrieved 24 February, 2012, from <http://www.eafricacommission.org/projects/127/nepad-e-schools-initiative#>
- NEPAD. (2009). Education and training: annual report. In M. Mboya (Ed.), *A programme of the African Union* (pp. 40). Johannesburg: NEPAD.
- Neuman, W., & Krueger, M. (2003). *Social research methods: a qualitative and quantitative approach*. Boston: Allyn and Bacon.
- Ngugi, C., Irungu, N., Muwonge, B., Langa, P. V., Pederson, J., Butcher, N., . . . Mhlanga, E. (2007). ICTs and higher education in Africa. In L. Czerniewicz (Ed.), (pp. 168). Cape Town: Centre of Educational Technology.
- Nisbet, J., & Watt, J. (1984). Case study. In J. Bell, T. Bush, A. Fox, J. Goodey & S. Goulding (Eds.), *Conducting small-scale investigations in educational management*. London: Harper & Row.

- Nitschke, J. (2005). *The role of ICTs in science education*. Paper presented at the First Open and Distance Learning Conference in Namibia, Windhoek.  
<http://www.col.org/resources/speeches/2005presentations/Pages/2005-08-30.aspx>
- Noble, D., Schneiderman, B., Herman, R., Agre, P., & Denning, P. (1998). *Distance education: Definition and glossary of terms* (3rd ed.). Charlotte, NC: Information Age Publishing.
- Nygren, E., Sutinen, E., Blignaut, A. S., Laine, T. H., & Els, C. J. (2012). Motivations for Play in the Ufractions Mobile Game in Three Countries. *International Journal of Mobile and Blended Learning*, 4(2), 1-30.
- Nze, J. S. B., & Ginestie, J. (2012). Technical and vocational teaching and training in Gabon: How future teachers build their vocational identity? *International Journal of Technology Design Education*, 22(3), 399-416.
- Oakland, C. C. (2010). Pedagogy Retrieved 2 February, 2012, from  
[www.oaklandcc.edu/assessment/terminology.htm](http://www.oaklandcc.edu/assessment/terminology.htm)
- Obono Mba, A. (2008). *La Formation a Distance au Gabon: Enjeux et Perspectives*. Doctorate Doctorate, University de Rouen, Rouen.
- Oderberg, B., Jensen, M., & Sintim-Misa, M. A. (2003). Investment opportunities in Western Africa. Final report, Ghana Retrieved 1 October, 2012, from  
<http://www.spintrack.com/itadvice/reports/Ghana%20ICT%20investment%20report%20FINAL.pdf>
- Ogunsola, L. A. (2005). Information and communication technologies and the effects of globalization: Twenty-first century "digital slavery" for developing countries - myth or reality? *Electronic Journal of Academic and Special Librarianship*, 6(1-2). Retrieved from  
[http://southernlibrarianship.icaap.org/content/v06n01/ogunsola\\_l01.htm](http://southernlibrarianship.icaap.org/content/v06n01/ogunsola_l01.htm)
- Olcott, D. (1999). Getting it right: reframing the role of technology for the 21st century university. *Open Praxis: the Bulletin of the International Council for Open and Distance Education*, 2, 8-12.
- Ololube, N. P., Ubogu, A. E., & Egbezor, D. E. (2007). ICT and Distance Education Programs in a Sub-Saharan Country: A Theoretical Perspective. *Journal of Information Technology Impact*, 7(3), 181-194.
- Olugbenga Ojo, D., & Kayode Olakulehin, F. (2006). Attitudes and perceptions of students to open and distance learning in Nigeria. *International Review of Research in Open Distance Learning*, 7(1), 10.
- Oxford Business Group. (2011). The report: Gabon (pp. 150-158). London: Oxford Business Group.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: SAGE.
- Pelgrum, W. J. (2008). School practices and conditions for pedagogy and ICT. In N. Law, W. J. Pelgrum & T. Plomp (Eds.), *Pedagogy and ICT use in schools around the world: findings from the IEA SITES 2006 study* (pp. 67-121). Hong Kong: Springer.
- Penard, T., Poussing, N., Yebe, Z. G., & Ella, N. P. (2012). Comparing the determinants of Internet and cellphone use in Africa: Evidence from Gabon. *Communication and strategies* Retrieved 12 November, 2012, from <http://ideas.repec.org/p/tut/cremwp/201217.html>
- Peters, O., & Wedemeyer, C. A. (2007). The Theory of Transactional Distance. In M. G. Moore (Ed.), *Handbook of Distance Education* (pp. 47-54.). London: Lawrence Erlbaum Associates.

- Plessis, P. (2010). Towards sustainable open and distance learning in the developmental State: Financing quality distance education Retrieved 1 October, 2012, from <http://www.saide.org.za/resources/Conf%202010/>
- Potgieter, F. J. (2012). *Educational research support programme*. Faculty of Education Sciences. Potchefstroom Campus. Potchefstroom.
- Pourtier, R. (2005). *Atlas de l'Afrique: Gabon* (Jeune Afrique ed.). Paris: Groupe Leune Afrique.
- Rena, R. (2008). The Internet in tertiary education in Africa: Recent trends. *International Journal of Computing and ICT Research*, 2(1), 9-16.
- Republique Gabonaise. (2010, 18 May 2010). Etats Generaux de L'Eduaction, de la Recherche et de l'Adequation Formation Emploi Retrieved 26 October, 2012, from <http://www.gouvernement.ga/site/pdf/actesversiondef.pdf>
- Research-Africa.net. Ghana science and technology sustom: Abrief profile Retrieved 1 October, 2012, from [www.research-africa.net/media/pdf/Ghana-ST.pdf](http://www.research-africa.net/media/pdf/Ghana-ST.pdf)
- Rubin, A., & Babbie, E. (2001). *Research methods for social work* (4, illustrated ed.). Belmont, CA: Wadsworth/Thomson Learning.
- Rumajogee, R., Jeeroburkhan, F., Mohadeb, P., & Mooneesamy, V. (2003). Case study on distance education for teacher education in Mauritius *Association for the Development of Education in Africa* (pp. 51). Grand Baie, Mauritius.
- SAIDE. (2005, 2 October 2005). Managing ICTs in South African schools: a guide for school principals Retrieved 15 October, 2012, from <http://www.education.gov.za/LinkClick.aspx?fileticket=4rn8m810sXw%3D&tabid=452&mid=1036>
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Thousand Oaks, CA: SAGE.
- Schleider, A. (2011). Background report for the international summit on the teaching profession. In A. Schleider (Ed.), (pp. 73). Paris: Organisation for Economic Co-operation and Development.
- Schlosser, C. A., & Anderson, M. L. (1994). *Distance education: review of the literature*. Ames, IL: Research Institute for Studies in Education, Iowa State University.
- Schlosser, L. A., & Simonson, M. (2002). *Distance education: Definition and glossary of terms*. Bloomington, WS: Association for Educational Communications and Technology.
- Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 118-137). Thousands Oaks, CA: SAGE.
- Seaberg, J. R. (1988). *Utilizing sampling procedures* (3rd ed.). Itaska, IL: F. E. Peacock Publisher Inc.
- Shalyefu, R. K. (2005). *ODL pre-the Internet and World Wide Web*. Paper presented at the Towards education for all: the critical role of open and distance learning in national development, Windhoek, Namibian. <http://www.col.org/resources/speeches/2005presentations/Pages/2005-08-30.aspx>
- Shohel, M. M. C., & Banks, F. (2010). Teachers' professional development through the English in action secondary teaching and learning programme in Bangladesh: Experience from the UCEP schools. *Procedia of Social and Behavioral Sciences*, 2(2), 5483-5494.
- Sifuna, D. N. (2011). The role of distance teacher education in increasing the supply of primary school teachers in Sub-Saharan Africa. *Journal of International Cooperation in Education*, 14(2), 205-220.

- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2009). Teaching and learning at a distance: Foundations of distance education Vol. 2012. Retrieved from [http://www.schoolfed.nova.edu/~simsmich/pdf/all\\_chapters\\_4\\_ed.pdf](http://www.schoolfed.nova.edu/~simsmich/pdf/all_chapters_4_ed.pdf)
- Smeets, E. (2005). Does ICT contribute to powerful learning environments in primary education? *Computers and Education*, 44(3), 343-355.
- Soumaho, M. N. (2005). Education. In R. Pourtier (Ed.), *Atlas de l'Afrique: Gabon* (pp. 48-49). Paris: Groupe Jeune Afrique.
- Stake, R. E. (1995). *The art of case study research* (illustrated ed.). Thousand Oaks, CA: SAGE.
- Stoner, G. (1996). A conceptual framework for the integration of learning technology. In G. Stoner (Ed.), *Implementing learning technology*. Edinburgh: Learning Technology Dissemination Initiative.
- Strauss, A., & Corbin, J. (1998). *Basic of qualitative research: techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: SAGE.
- Tatkovic, N., Ruzic, M., & Tatkovic, S. (2006). Open distant learning: pedagogical terms of reference and dilemmas Retrieved 12 November, 2012, from [http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?\\_nfpb=true&\\_ERICExtSearch\\_SearchValue\\_0=ED494214&ERICExtSearch\\_SearchType\\_0=no&accno=ED494214](http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED494214&ERICExtSearch_SearchType_0=no&accno=ED494214)
- Taylor, J. C. (2006). *Supporting students via 5th generation distance education technologies*. Paper presented at the The Carrick Learning and Teaching at a Distance Forum, University of Southern Queensland, Toowoomba. [http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.usq.edu.au%2Fusers%2Ftaylorj%2Fpublications\\_presentation\\_s%2F5thGenerationDE.doc&ei=w\\_gUM-OLMiRhQeK9YGgCg&usq=AFQjCNHBlyTSbTvB1VDgytaFjqoUsctHdA&sig2=cWyGw1SrZEVsvl3ugWCknA](http://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.usq.edu.au%2Fusers%2Ftaylorj%2Fpublications_presentation_s%2F5thGenerationDE.doc&ei=w_gUM-OLMiRhQeK9YGgCg&usq=AFQjCNHBlyTSbTvB1VDgytaFjqoUsctHdA&sig2=cWyGw1SrZEVsvl3ugWCknA)
- Taylor, J. C. (2007). *5th Generation distance education: a sustainable approach to development*. Paper presented at the The Global Development Learning Network - Asia Pacific General Meeting, Tokyo, Japan. [http://www.jointokyo.org/files/cms/news/pdf/1\\_Prof\\_Jim\\_Taylor2.pdf](http://www.jointokyo.org/files/cms/news/pdf/1_Prof_Jim_Taylor2.pdf)
- Thinkexist.com. (2012). Mandela quotes Retrieved 12 November, 2012, from [http://thinkexist.com/quotation/education\\_is\\_the\\_most\\_powerful\\_weapon\\_which\\_you/144638.html](http://thinkexist.com/quotation/education_is_the_most_powerful_weapon_which_you/144638.html)
- Tinio, V. L. (2003). ICT in Education Retrieved 1 October, 2012, from [http://www.saigontre.com/FDFiles/ICT\\_in\\_Education.PDF](http://www.saigontre.com/FDFiles/ICT_in_Education.PDF)
- Tondeur, J., Braak, J. V., & Valcke, M. (2007). Curricula and the use of ICT in education: Two worlds apart? *British Journal of Educational Technology*, 38(6), 962-976.
- Tuckman, B. W. (1972). *Conducting educational research* (5th ed.). Orlando, FL: Harcourt Brace College.
- UNESCO. (2002). Open and distance learning. trends, policy and strategy considerations Retrieved 1 October, 2012, from <http://unesdoc.unesco.org/images/0012/001284/128463e.pdf>
- UNESCO. (2012). ICT in education Retrieved 2 April, 2012, from <http://www.unesco.org/new/en/unesco/themes/icts/>
- UNISA. (2008). Open Distance Learning Policy Retrieved 30 March, 2012, from [http://www.unisa.ac.za/cmsys/staff/contents/departments/tuition\\_policies/docs/OpenDistanceLearning\\_Council3Oct08.pdf](http://www.unisa.ac.za/cmsys/staff/contents/departments/tuition_policies/docs/OpenDistanceLearning_Council3Oct08.pdf)

- University of Cape Town. (2007). ICTs in higher education in Africa: Ghana at a glance Retrieved 12 November, 2012, from <http://www.cet.uct.ac.za/files/file/ghana.pdf>
- Van Maanen, J. (1979). *Qualitative methodology* (5th ed.). Thousand Oaks, CA: SAGE.
- Villegas-Reimers, E. (2003). Teacher Professional Development: An International Review of the Literature Retrieved 20 May, 2012, from [http://www.iiep.unesco.org/fileadmin/user\\_upload/Research\\_Challenges\\_and\\_Trends/133010e.pdf](http://www.iiep.unesco.org/fileadmin/user_upload/Research_Challenges_and_Trends/133010e.pdf)
- Wallace, L. (1996). Changes in the demographics and motivations of distance education students. *The Journal of Distance Education /Revue de l'Education a Distance*, 11(1), 1-31.
- Welch, T., & Reed, Y. (Eds.). (2005). *Designing and delivering distance education: quality criteria and case studies from South Africa*. Johannesburg: NADEOSA.
- Whatis.com. (2005). Information and communication technologies for development Retrieved 14 Novembre, 2011, from <http://www.whatis.techtargt.com/definition/0,,sid9gci922449.00.htm>
- Wood, L. (2012). *MEd and PhD Education Research Support Programme* Faculty of Education Sciences. Potchefstroom Campus. Potchefstroom.



NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

Private Bag X6001, Potchefstroom  
South Africa 2520

Tel: (018) 299-4900  
Faks: (018) 299-4910  
Web: <http://www.nwu.ac.za>

## ETHICS APPROVAL OF PROJECT

### Ethics Committee

Tel +27 18 299 4850  
Fax +27 18 293 5329  
Email [Ethics@nwu.ac.za](mailto:Ethics@nwu.ac.za)

2012/09/28

This is to certify that the next project was approved by the NWU Ethics Committee:

<p><b>Project title : Initiating ICT in the open distance learning of Gabonese teachers</b></p> <p><b>Student :</b> Jean-Louis Ndoutoume Mendene <b>Project leader:</b> Prof S Blignaut</p> <p><b>Ethics number:</b> <b>NWU-00033-12-A2</b></p> <p><small><u>Status:</u> S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation</small></p> <p><b>Expiry date:</b> 23 April 2017</p>
---

The Ethics Committee 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 Ethics Committee for any further enquiries or requests for assistance.

The formal Ethics approval certificate will be sent to you as soon as possible.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Me. Marietjie Halgryn', written over a horizontal line.

Me. Marietjie Halgryn  
NWU Ethics Secretariate



NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

School of Continuing Teachers Education  
North-West University  
Private Bag X6001  
Potchefstroom, North-West Province  
2520  
Republic of South Africa

**Directeur Général de l' Ecole Normale Supérieure (ENS)**

**REQUEST: FORMAL PERMISSION FOR RESEARCH**

Mr. Jean-Louis Ndoutoume Mendene, a citizen of *République Gabonaise*, is currently enrolled for a Masters Degree in Education (MEd) at the School of Continuing Teachers Education on the Potchefstroom Campus of the North-West University in the Republic of South Africa. Mr. Ndoutoume Mendene's Masters Degree research explores, describes and understands the possibilities and problems of initiating Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers.

Mr. Ndoutoume Mendene intends to conduct individual and focus-group interviews with Gabonese University lecturers and ICT specialists during May and June 2012.

I hereby request your favourable consideration of this request to conduct research within your Education System.

Two professional researchers, Prof. Dr. Seugnet Blignaut and Mr. Christo Els will oversee this process to ensure that data collection will take place according to the highest ethical and academic standards. Participation of research participants will be completely voluntary and participants may withdraw at any time during the research process.

Your permission and involvement for this study as *Directeur Général de l' Ecole Normale Supérieure (ENS)* will be greatly appreciated to contribute towards the successful initiation of Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers.

Sincerely

---

**Prof Manie Spamer (PhD)**

Director: School of Continuing Teacher Education  
North West University, Potchefstroom Campus  
Republic of South Africa  
Tel: +27 18 299 4557  
Email: [manie.spamer@nwu.ac.za](mailto:manie.spamer@nwu.ac.za)



NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

School of Continuing Teachers Education  
North-West University  
Private Bag X6001  
Potchefstroom, North-West Province  
2520  
Republic of South Africa

**Directeur Général de l' Enseignement et de la formation (DGEF)**

**REQUEST: FORMAL PERMISSION FOR RESEARCH**

Mr. Jean-Louis Ndoutoume Mendene, a citizen of *République Gabonaise*, is currently enrolled for a Masters Degree in Education (MEd) at the School of Continuing Teachers Education on the Potchefstroom Campus of the North-West University in the Republic of South Africa. Mr. Ndoutoume Mendene's Masters Degree research explores, describes and understands the possibilities and problems of initiating Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers.

Mr. Ndoutoume Mendene intends to conduct individual and focus-group interviews with Gabonese English teachers, school principals, ICT specialists, as well as Advisers and Inspectors of English teachers during May and June 2012.

I hereby request your favourable consideration of this request to conduct research within your Education System.

Two professional researchers, Prof. Dr. Seugnet Blignaut and Mr. Christo Els will oversee this process to ensure that data collection will take place according to the highest ethical and academic standards. Participation of research participants will be completely voluntary and participants may withdraw at any time during the research process.

Your permission and involvement for this study as *Directeur Général de l' Enseignement et de la formation Professionnelle (DGEF)* will be greatly appreciated to contribute towards the successful initiation of Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers.

Sincerely

---

**Prof Manie Spamer (PhD)**

Director: School of Continuing Teacher Education  
North West University, Potchefstroom Campus  
Republic of South Africa  
Tel: +27 18 299 4557  
Email: [manie.spamer@nwu.ac.za](mailto:manie.spamer@nwu.ac.za)

Lycee Paul Indjedjet Gondjout  
B.P 14449  
Libreville  
Gabon

13 April 2012

**Directeur Général de l' Ecole Normale Supérieure (ENS)**

**PERMISSION TO CONDUCT MASTERS DEGREE RESEARCH (MEd)**

I, Jean-Louis Ndoutoume Mendene, a citizen of *République Gabonaise*, am enrolled for a Masters Degree in Education (MEd) at the School of Continuing Teachers Education on the Potchefstroom Campus of the North-West University in the Republic of South Africa. I am in the process of conducting research to explore, describe and understand the possibilities and problems of initiating Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers. Accordingly, the title of my ongoing research is: *Initiating ICT in open distance learning training of Gabonese in-service teachers*. I hereby apply for permission to conduct research with a selection of participants consisting of University lecturers and ICT specialists. The method of data collection involves individual and focus-group interviews of approximately 45 minutes each. I commit myself to the professional code of ethics for researchers which, amongst other aspects, include the following:

- The participation of all research participants is strictly voluntary
- Participants will be treated with respect
- The anonymity and confidentiality of the research participants are protected and guaranteed
- No interference with the general, administrative and academic programmes of the Gabonese Education System will take place
- Participants have the right to withdraw from the study at any time and stage during the research
- Upon completion, the research findings will be made available to your Office, the Gabonese Department of Education, as well as participants.

This research project has been evaluated and approved by the North-West University's Ethics Committee under the ethics number of xxxx.

The planning for conducting this research is intended for the period between May and June 2012. If you need any additional information about this research, you are most welcome to contact me, or my research supervisor, Prof. Dr. Seugnet Bignaut: +27(0)182994566.

Your support in this regard will be highly appreciated. I thank you for your interest in my research.

Yours faithfully

---

Jean-Louis Ndoutoume Mendene  
MEd Candidate, North-West University, Republic of South Africa  
Student number: 23253789  
Tel: +27 83 891 2055 (South Africa)  
Tel: 241 0747 3851 (Gabon)  
E-mail: [jeanlouisndoutoume@yahoo.fr](mailto:jeanlouisndoutoume@yahoo.fr)

Lycee Paul Indjedjet Gondjout  
B.P 14449  
Libreville  
Gabon

13 April 2012

**Directeur Général de l' Enseignement et de la formation (DGEF)**

**PERMISSION TO CONDUCT MASTERS DEGREE RESEARCH (MEd)**

I, Jean-Louis Ndoutoume Mendene, a citizen of *République Gabonaise*, am enrolled for a Masters Degree in Education (MEd) at the School of Continuing Teachers Education on the Potchefstroom Campus of the North-West University in the Republic of South Africa. I am in the process of conducting research to explore, describe and understand the possibilities and problems of initiating Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers. Accordingly, the title of my ongoing research is: *Initiating ICT in open distance learning training of Gabonese in-service teachers*. I hereby apply for permission to conduct research with a selection of participants consisting of English teachers, school principals, ICT specialists, as well as Advisers and Inspectors of English teachers. The method of data collection involves individual and focus-group interviews of approximately 45 minutes each. I commit myself to the professional code of ethics for researchers which, amongst other aspects, include the following:

- The participation of all research participants is strictly voluntary
- Participants will be treated with respect
- The anonymity and confidentiality of the research participants are protected and guaranteed
- No interference with the general, administrative and academic programmes of the Gabonese Education System will take place
- Participants have the right to withdraw from the study at any time and stage during the research
- Upon completion, the research findings will be made available to your Office, the Gabonese Department of Education, as well as participants.

This research project has been evaluated and approved by the North-West University's Ethics Committee under the ethics number of xxxx.

The planning for conducting this research is intended for the period between May and June 2012. If you need any additional information about this research, you are most welcome to contact me, or my research supervisor, Prof. Dr. Seugnet Bignaut: +27(0)182994566.

Your support in this regard will be highly appreciated. I thank you for your interest in my research.

Yours faithfully

---

Jean-Louis Ndoutoume Mendene  
MEd Candidate, North-West University, Republic of South Africa  
Student number: 23253789  
Tel: +27 83 891 2055 (South Africa)  
Tel: 241 0747 3851 (Gabon)  
E-mail: [jeanlouisndoutoume@yahoo.fr](mailto:jeanlouisndoutoume@yahoo.fr)



NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

## Research Invitation, Permission and Informed Consent Letter

### Initiating ICT in open distance learning training of Gabonese in-service teachers

#### *Invitation to Participate*

You are hereby invited to voluntarily and anonymously participate in a research study to explore, describe and understand the possibilities and problems of initiating Information Communication Technology (ICT) in the open distance learning training of Gabonese in-service teachers. If you agree to participate, you will be requested to participate in either an individual or focus-group interview. Your participation in this study will be highly appreciated.

#### *Your rights as a participant*

Participation is voluntarily. You and your personal information will be treated with the highest of respect, and you have the right to withdraw at any time during the research process and thereafter. Your personal information will be treated anonymously in our research report writing. Your interview and other data will be stored in a safe at the North-West University, and will only be available to the researchers involved in this research study.

#### *Permission and Informed Consent*

We hereby formally request your permission and informed consent to participate in this adventure.

On this day \_\_\_\_\_ (Date) and Place \_\_\_\_\_

I \_\_\_\_\_ (Name and Surname) give my formal permission and

informed consent to participate in this research study. I understand that my participation is voluntarily and anonymously. I furthermore understand that I have the right to withdraw from the research process at any time and stage, and that my personal information and data will be handled with respect and confidentiality. I also grant permission that data collected from me through an interview and observations may be used anonymously for research purposes (data analysis and report writing).

\_\_\_\_\_(Signature)