



# ASSESSMENT OF E-LEARNING READINESS IN SOUTH AFRICAN SCHOOLS

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By

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## **DECLARATION BY CANDIDATE**

I, Ditlalanane Irene Kolo hereby declare that the thesis submitted for the degree M Tech: Applied and Computer Sciences, at Vaal University of Technology, is my work and was never submitted previously to any other institution.

Signed: .....

Date: .....

Ditlalanane Irene Kolo

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## **ABSTRACT**

The delivery of education and/or curriculum is shifting from the traditional method of delivery to a digital format, most notably the e-learning, using available technology. However, without e-learning readiness, e-learning benefits will not be reaped and the probability of failure in adopting e-learning will be high. Therefore, it is imperative to know the levels of readiness for e-learning of educators and learners in South African schools.

In this study, e-learning readiness of the South African educators and learners in previously disadvantaged schools in Gauteng were investigated. A twenty-nine (29) item questionnaire was used to obtain the data. This new learning method is being introduced and will be implemented by Gauteng Department of Education. The data obtained from the questionnaires was then analyzed by using a STOPE (Strategy, Technology, Organization, People and Environment) model. The results obtained by using STOPE analysis indicated the overall readiness for e-learning at a level of 77%. This is above the mid-point of 50% showing that the schools in Gauteng are ready for adoption of e-learning. The five-point Likert scale method was also used to check the e-learning readiness and established a level of 3.86. The schools in Gauteng that participated in our study are ready for e-learning adoption but need to improve on their people and content readiness. These schools show that they will benefit in adopting e-learning in their schools.

**Keywords—** Assessment, e-learning, readiness, educators, learners

## **ABBREVIATIONS**

e-Learning	Electronic Learning
OLE	Online Learning Environment
MCL	Malayan Colleges Laguna
ICT	Information and Communication Technology
IT	Information Technology
e-Book	Electronic Book
e-Readiness	Electronic Readiness
HEI	Higher Education Institution
STOPE	Strategy Technology Organization People Environment
STIPC	Strategy Technology Institution People Content

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## **CHAPTER 1: INTRODUCTION**

In the present day, technology is used for collaboration amongst educators and learners. The South African government is currently pushing to roll out e-learning in South African schools (Mawoyo, 2011). E-learning is used to deliver education curriculum through the latest available technologies. Some schools in South Africa are using a combination of traditional and e-learning methods, while some are still using the traditional way of delivering the curriculum. To build an effective e-learning environment many things need to be prepared, such as the readiness of technology, the readiness of educational institutions, and the readiness of the community. These preparations are important because they will affect the quality of e-learning programs when implemented (Maulida & Lo, 2013).

“As online education continues to expand, the need for determining and maintaining quality online education is becoming an important issue. Therefore, it is important to detect which qualities are necessary for students’ achievement and satisfaction in an online learning environment (OLE)” (Lau, 2008).

The primary objective of this study was to assess the readiness for e-learning in participating schools in Gauteng province to assure successful e-learning implementation. The main objective was to determine the e-readiness in Gauteng province schools to assure success and quality in use of e-learning technology. The secondary objectives of this research were to develop frameworks for measuring the level of readiness to implement e-learning, and, to use these frameworks to measure e-learning readiness in Gauteng province schools.

The objectives will clarify the level of e-learning readiness of the schools, identify areas where improvements are needed, and, it will measure how educators and learners perceive the e-learning technology, and whether they are ready for e-learning. The issues were addressed by adapting the previous models developed for measuring readiness. The adapted model was validated by educators and learners participation in the survey administered.

### 1.1 PROBLEM STATEMENT

The delivery of education and/or curriculum in South African schools is shifting from the traditional practice to a digital format of delivery using available technology. However, without e-learning readiness, e-learning benefits will not be reaped and the probability of failure in adopting e-learning will be high (Mosa, Mahrin, & Ibrrahim, 2016). It was confirmed by Lopes (2008) that an e-learning readiness evaluation is critical to the success of an e-learning strategy.

Ouma, Awuor, and Kyambo (2013) also stated that for the successful implementation of e-learning as a platform for learning, it is essential to assess the readiness of e-learning. “Success in e-learning can be achieved by understanding the level of readiness of e-learning environments”.

### 1.2 RESEARCH QUESTIONS

The department of education in South African schools is trying to improve the level of education by a way of digitization in the so-called e-learning (Mawoyo, 2011). The e-learning seems simple when exploring how it works, however, the implementation is not as simple as it sounds, learners and educators need to be ready for this system to reap the benefits. This makes it important to assess the level of readiness of both the learners and the educators.

The primary research question is, how assessment of e-learning readiness can be done in South African schools to assure success in implementing e-learning?

Secondary questions for this research are as follow:

- How to measure e-readiness in South African schools?
- What is the level of e-learning readiness in South African schools?

### 1.3 GOAL AND OBJECTIVES

The purpose of this study was to assess e-learning readiness in South African schools to assure success in implementing e-learning. The objective of this study was to determine the e-readiness in South African schools to assure success and quality.

Secondary objectives for this research are as follow:

- To determine the level of readiness by developing frameworks for measuring the level of readiness to implement e-learning,
- To measure e-learning readiness in South Africa schools

### 1.4 RESEARCH METHODS AND DESIGN

The research methods are plans that will give guidance on the requirements for this study, what needs to be done, to whom, what to measure, how to do data collection and how to analyze the results (Bless & Higson-Smith, 1995; Schuyler, 1995). This study used both quantitative and qualitative methods. The methods are discussed in chapter 3.

## 1.5 LIMITATIONS

While interpreting the results in this study, there are limitations to be considered. The number of participants was the main limitation. Access to 6 schools was applied for and approved by Gauteng Department of Education but only 4 schools allowed the participation. Most of the educators didn't participate due to examinations and other commitments. From the learner's side, most couldn't participate because of unreturned consent forms. Each school was visited four times, the first day was to arrange the distribution of questionnaires and consent forms with the deputy principal. The other three days were to follow-up and collect the completed questionnaires.

## 1.6 STRUCTURE OF THE DISSERTATION

### Chapter 1: Introduction

This chapter involved the background to the study, problem statement, research questions, goals and objectives, research method design and limitations.

### Chapter 2: Literature review

Chapter 2 discovers the literature and provides details of e-learning in terms of e-learning facts, e-learning readiness frameworks and models.

### Chapter 3: Methodology

Chapter 3 includes research design, data analysis, data collection instrument, population and proposed model.

#### Chapter 4: Experiment and Results

Chapter 4 discusses the findings and analyze the results obtained in this study. The following were involved: Practical assessment, learners' results, educators' results and combined results.

#### Chapter 5: Conclusion and recommendations

The last chapter completes the study, the following were included: overview, conclusion and recommendations, suggestions for the future studies to be done.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1.INTRODUCTION**

This chapter reviews literature on e-learning readiness from previously written research from different countries, gives an overview of ICT uses and the benefits reaped from e-learning. The models and frameworks used in other countries will be reviewed and assessed in more detail. Models and frameworks developed with similar characteristics to South African schools in mind, will then be used to assess the e-learning readiness in South African schools.

### **2.2.E-LEARNING FACTS**

“E-learning is defined as electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge. The technological foundation of e-learning is the Internet and associated communication technologies” (Garrison, 2011).

It was confirmed by Rohayani, Kurniabudi, and Sharipuddin (2015) that “E-Readiness is recognized as one of the most critical aspects for achieving successful implementation of e-learning in higher education”. To build an effective e-learning environment many things need to be prepared, such as the readiness of technology, the readiness of educational institutions, and the readiness of the community. These preparations are important because it will affect the quality of e-learning programs after implementation (Maulida & Lo, 2013).

Not only South African schools need e-learning readiness assessment, a study in Malaysia, Philippines, “the assessment of the e-learning readiness status at Malayan Colleges Laguna



(MCL)” was done in preparing the faculty members, students, administration and facilities for its implementation of e-learning” (Red, Borlongan, Briagas, & Mendoza, 2014).

It was said by Graham and Bonk (2006) that e-learning has gained popularity in higher education because learning technologies help to address many of the key challenges that colleges and universities face. Kituyi and Tusubira (2013) mentioned that in higher institutions, “e-learning has become an increasingly significant element of the pedagogy that is adopted.”

One of the realities is that, while all students can learn, they will not all start at the same place, learn at the same rate, or reach the same ultimate level of proficiency. This is because of differences in academic ability, interest, and commitments (Chappuis, Stiggins, Arter, & Chappuis, 2005). This study will determine in which areas educators and learners are not yet ready for e-learning, for example, technology skills and attitude towards e-learning.

“E-learning provides various benefits. Some of the benefits that are found in literature include advantages of convenience, time and place flexibility, avoiding the commuting to campus, a wide variety of course selections, lifelong learning, social equity and access, more advanced information, financial benefits, and multimedia-rich contents” (Bates, 2005; Rosenberg, 2001)

Rashty (2000) says: “e-learning also includes advantages which are not found in traditional learning, such as: time for digesting the information and responding, enhanced communication among the learners, both with regard to quality and urgency, knowledge being acquired and transferred among the learners themselves, the ability to conduct an open discussion, where each learner gets more of an equal standing than in a face-to-face discussion, access to information and to discussion ability, responses may be made around

the clock with no restrictions, and, a higher motivation and involvement in the process on the part of the learners”.

There are many benefits offered by e-learning such as time saving, flexible education delivery and training from anywhere at any time.

Last but not least is reduced costs of commuting from residences to the institution. The most important benefit of e-learning is that the learners can study at their own pace in their own place without their educators. It was confirmed by Rosenberg (2001) that “E-learning is not the end to classroom training and, in fact, classroom training will be redefined to focus on those aspects of learning that are best accomplished when there is the requirement for person-to-person interactions, identifying opportunities for improvement, team efforts, evaluative tasks, and the participation of experts with the group.”

It was mentioned by Du, Fu, Zhao, Liu, and Liu (2013) that e-learning promotes learner-centered learning and enhances activities that promote collaboration, communication and interaction, and gives learners better experience and education effect (Akaslan & Law, 2011).

South Africa is a developing country, with a high level of educational resource backlog in schools and shortage of educators especially in the field of Mathematics and Science (Mogano, 2014). This can be seen every year in the South African schools when first term of learning commences, many schools would not have enough study material while others will not have enough educators (Singh, 2017). “The e-learning could address the shortage of educators and learning material, and at the same time offer quality of education by providing improved informational content and learning approaches and also offers students with information and communications technology skills”(Sunday, Ayooluwa, Pascal, & Olaniyi, 2015).

According to Alshaher (2013), “many promises has been made about the potential of technology to revolutionize learning, with benefits identified in six key dimensions:

- Connectivity: access to information is available on a global scale;
- Flexibility: learning can take place any time, any place;
- Interactivity: assessment of learning can be immediate and autonomous;
- Collaboration: use of discussion tools can support collaborative learning beyond the classroom, extended opportunities;
- E-content can reinforce and extend classroom-based learning and motivation; and
- Multimedia resources can make learning fun”.

The e-learning can easily be customized to suit different learners based on their needs and their capability. The current generation of youth rely more on technology to get information and to communicate. With technology’s rapid growing rate, learners find it easier and more attractive to use digital methods of learning rather than the traditional method of teaching and learning. Akaslan and Law (2011) mentioned the fact that e-learning readiness is not only described in terms of its characteristics with regards to an organization, but also to individuals using it.

### 2.3.E-LEARNING READINESS FRAMEWORKS AND MODELS

To introduce e-learning in the schools of South Africa, it is imperative that the following factors be addressed; namely: people, technology, content, institution and strategy. People (educators and learners) need to have a good understanding of technology. Failure to understand the technology will make it difficult to implement technology in schools. If e-learning is introduced to, or implemented at, schools before understanding the readiness then the resources at the schools will not be effectively utilized.

Engholm and McLean (2001) mentioned that culture must be supportive of learning, self-directed training and development are to be observed, and organization goals are to be aligned with e-learning. The proposed model consists of the organization's culture, individual learners and technology.

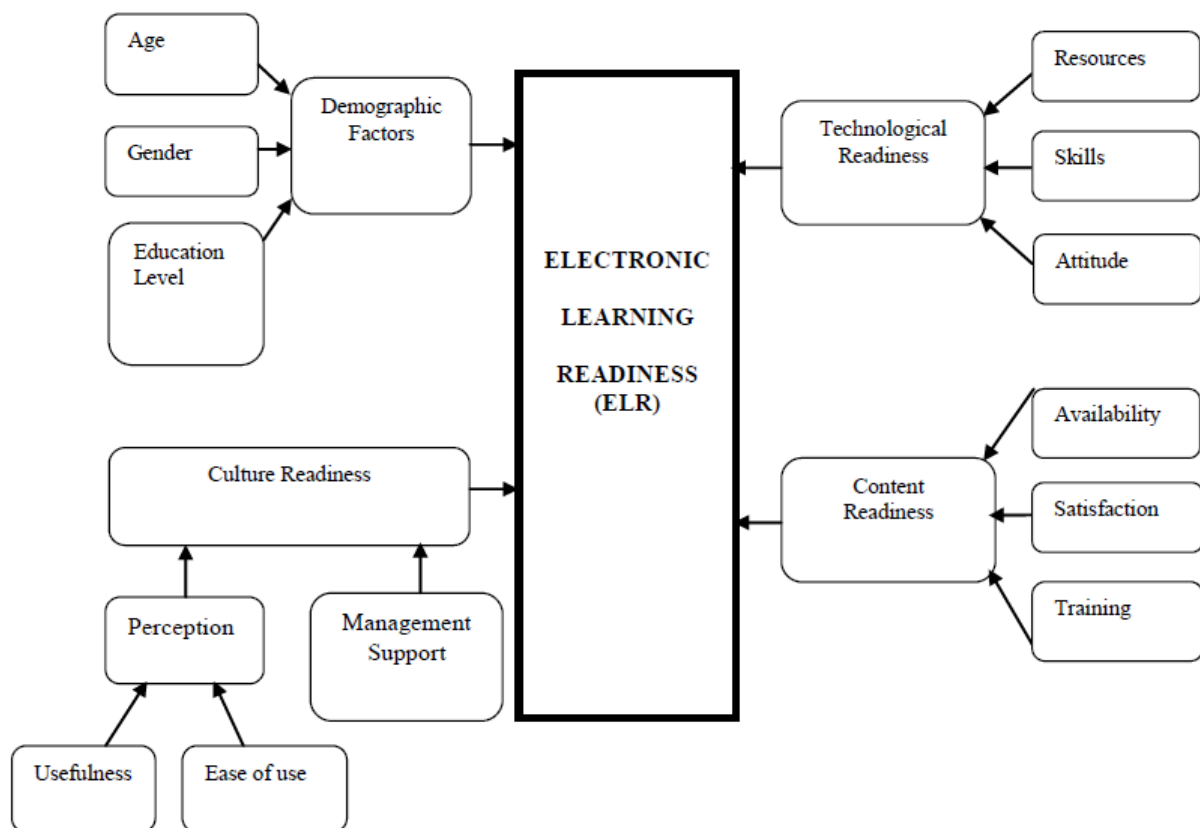


Figure 1: E-learning readiness model by (Oketch, Njihia, & Wausi, 2014)

Figure one above was developed by Oketch et al. (2014) for e-learning readiness assessment in Kenya's higher education institutions. There is one factor known as technology that can be used to adapt a technological innovation in an organization (Rogers, 2003). It will not be easy or almost impossible to implement e-learning if the equipment is not easily accessible (Oliver & Towers, 2000). Institutions are required to value e-learning in terms of cultural readiness (Ettinger, Holton, & Blass, 2006).

Content readiness is the driving engine of any system; for the purpose of this study, the readiness of e-learning is determined by the measurement of content readiness. That is, to determine easy availability of well-structured and reusable content (Psycharis, 2005). Demographical factors, namely, gender, age and education level will be collected from all the participants (Aydin and Tasci (2005). "The people factor deals with the characteristics of all human resources of a company as individuals with a level of higher education are more likely to adopt an innovation than others (Rogers, 2003)."

As per Ouma et al. (2013), "The four main parameters that are used to develop the hybrid model are; technological readiness (Aydin & Tasci, 2005; Chapnick, 2000), culture readiness (Borotis & Poulymenakou, 2004; Kaur & Abas, 2004), content readiness (Borotis & Poulymenakou, 2004; Chapnick, 2000; Psycharis, 2005), and demographics factors (Aydin & Tasci, 2005)."

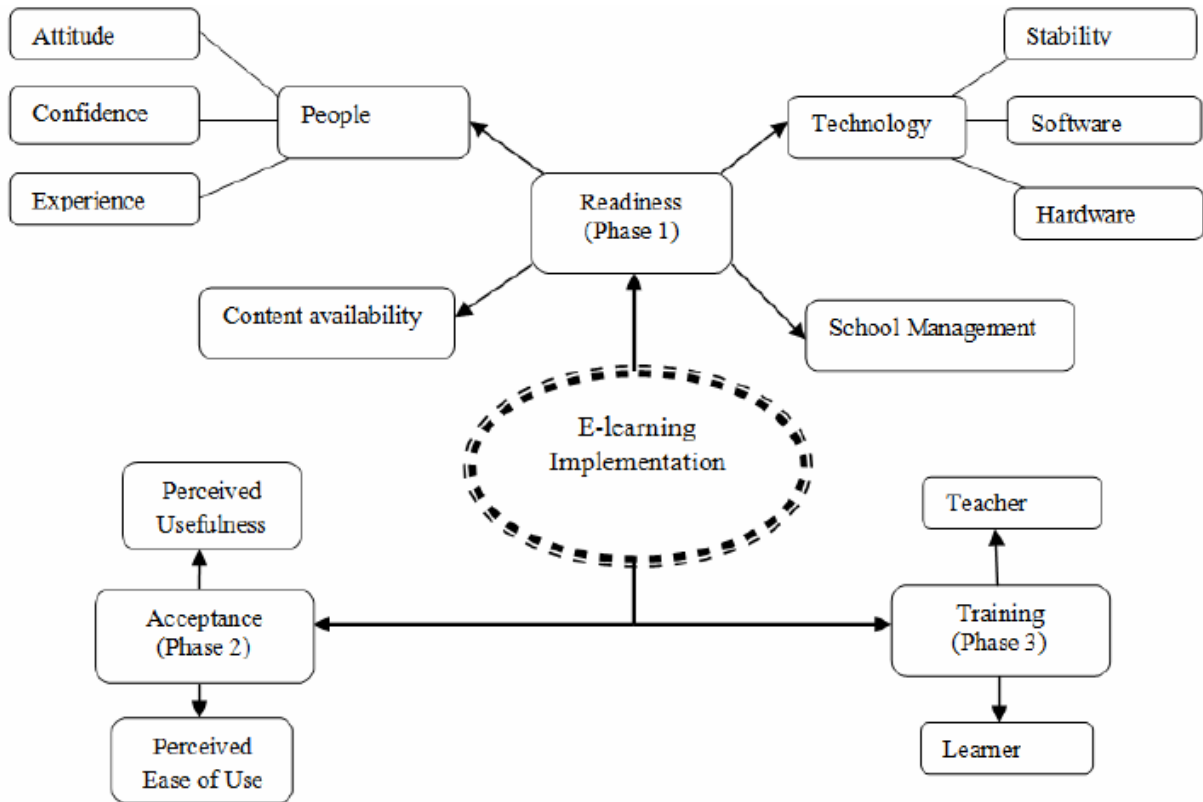


Figure 2: E-learning readiness model by (Ouma et al., 2013)

Figure 2 above is a model used to evaluate e-learning readiness in secondary schools in Kenya. The model was adapted by Ouma et al. (2013) from the paper written by (Akaslan & Law, 2011). The model have three distinct phases, readiness, acceptance and training. There are components of e-learning implementation studied by Ouma et al. (2013) i.e. people and technology. Students' and teachers' readiness to accept and use e-learning were measured. The readiness in this model include people (attitude, confidence and experience), technology (stability, software and hardware), content and school management. Then acceptance include perceived usefulness and perceived ease of use while training includes the teacher and the learner.

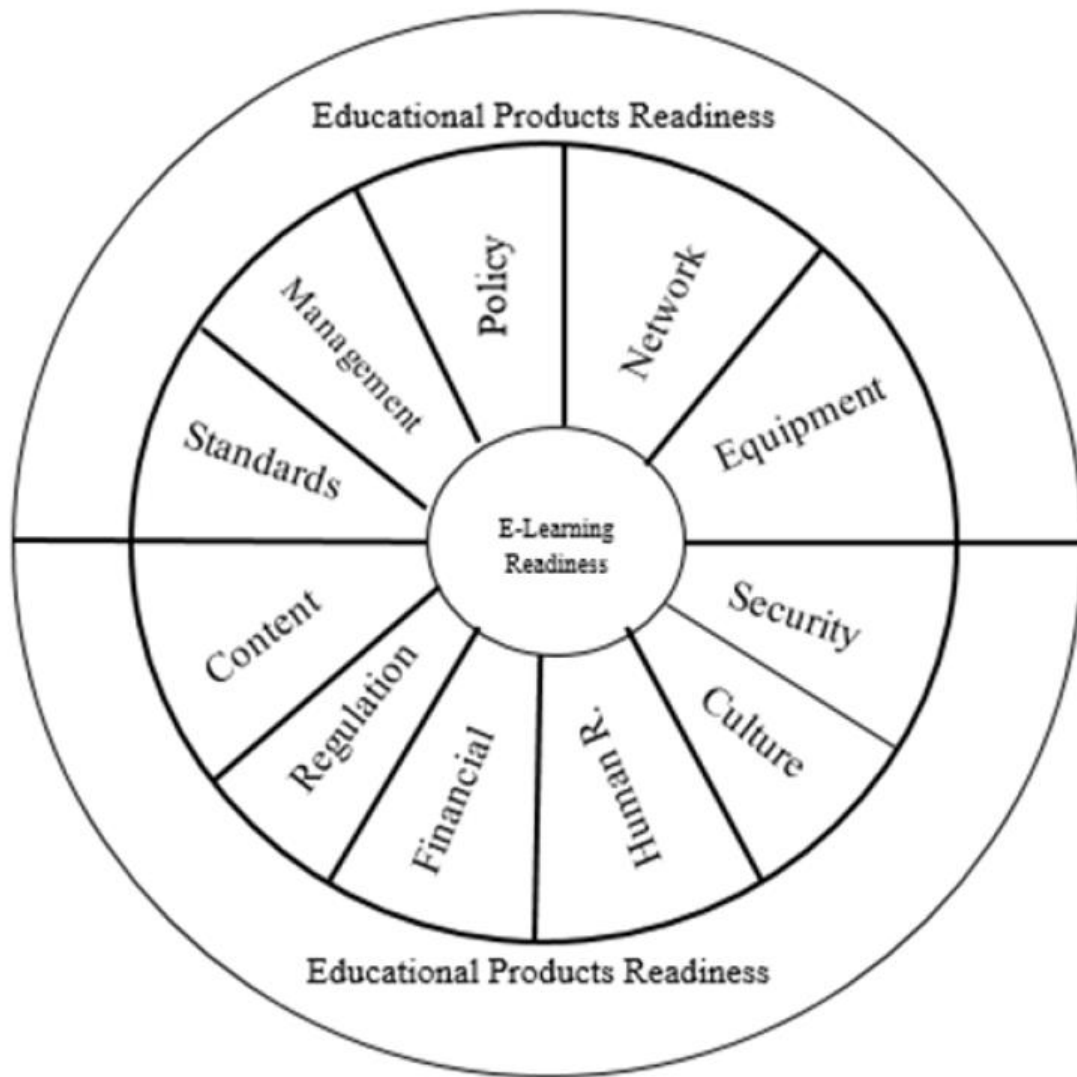


Figure 3: E-learning readiness frameworks by (Darab & Montazer, 2011)

Figure 3 is a model developed by Darab and Montazer (2011), to assess e-learning readiness in higher education in Iran. The factors identified were equipment, policy, management, networks, content, standard, financial and human resource sources, security and culture.

According to (Mosa et al., 2016), "Policies and standards are essential to make any system or operation work successfully. Managing e-learning methods include the preparation of the required rules together with the design of an operative management system. With regard to the network, clear assessment should be done for e-learning to be successful. Culture is a factor

that contributes to the e-learning environment. Equipment is critical, as it will make the method be operational in terms of technological equipment.”

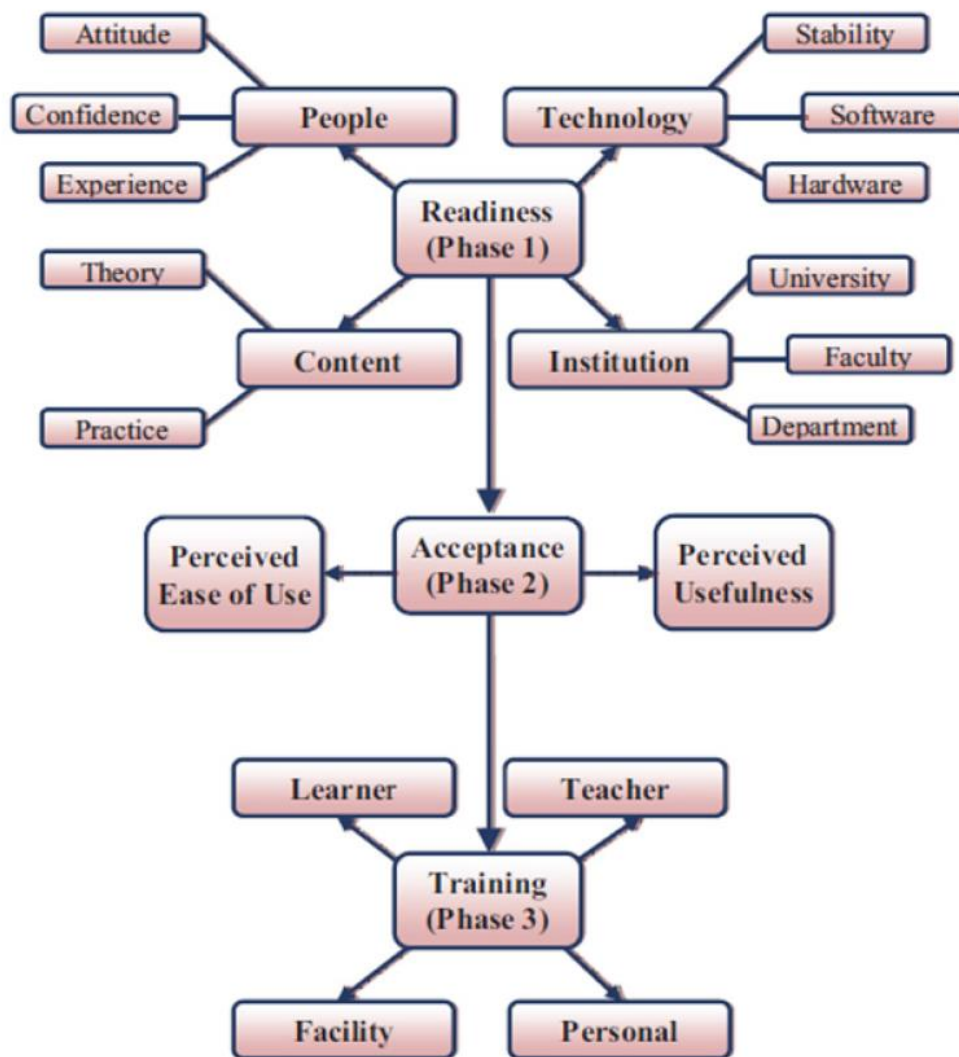
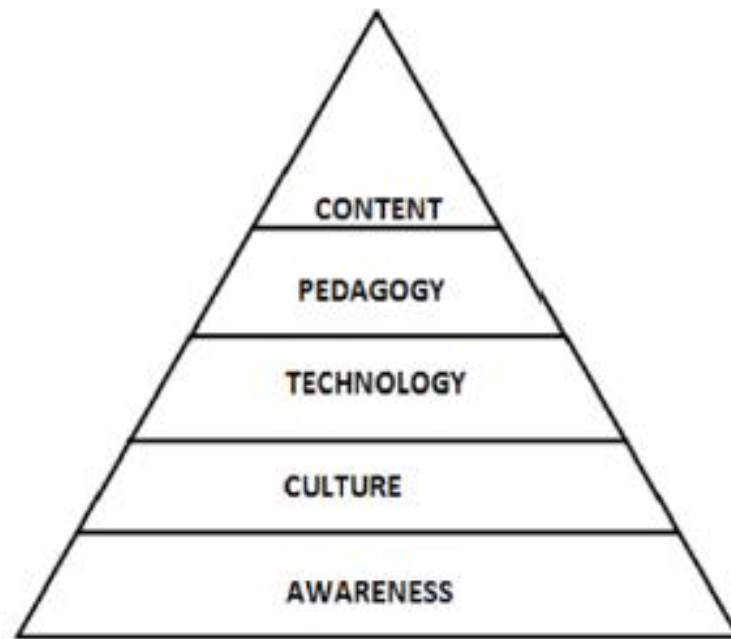


Figure 4: E-learning readiness model by (Akaslan & Law, 2011)

Figure 4 is model developed by (Akaslan & Law, 2011). This model was used to measure student e-learning readiness of HEIs in Turkey. There are three phases including readiness, acceptance and training respectively. The readiness phase reflects four aspects, namely, the technology, content, people and institution. The aspects in readiness phase, based on people, was about attitude, confidence and experience, technology aspects was about stability, hardware and software, institutional aspects was about university, faculty and department while



content was about theory and practice. The acceptance phase included perceived ease of use and perceived usefulness. Ford, Ford, and D'Amelio (2008) mentioned that, "when there is an implementation of a change, some problems are experienced, but it will be accepted at the later stage." The third phase is training of learners and teachers after accepting the e-learning.



**Figure 5: E-learning readiness model by (Omoda & Lubega, 2011)**

According to (Mosa et al., 2016), "there was a study conducted by Omoda and Lubega (2011) to identify the factors that affect the e-learning readiness process implemented by HEIs in Uganda. (Omoda & Lubega, 2011) anticipated ways to encourage the use of e-learning systems to improve the level of education in Uganda. Their analysis revealed that the factors that affect the implementation of e-learning systems and that are imperative to consider include awareness, culture and technology along with pedagogy and content. Regardless of the particular country in which the e-learning is to be implemented, these factors are significant and need to be considered and managed well in order to reduce the resistance level and to increase the results that are to be reached.

Table 1: Different previously used models

OTHER MODELS FOR E-LEARNING READINESS	
Author	Factors
<b>Chapnick (2000)</b>	<ol style="list-style-type: none"> <li>1. Psychological readiness</li> <li>2. Sociological readiness</li> <li>3. Environmental readiness</li> <li>4. Human resources readiness</li> <li>5. Financial</li> <li>6. Technological skill readiness</li> <li>7. Equipment readiness</li> <li>8. Content readiness</li> </ol>
<b>Engholm &amp; McLean (2001)</b>	<ol style="list-style-type: none"> <li>1. Organisational culture</li> <li>2. Individual learners</li> <li>3. Technology</li> </ol>
<b>Psycharis (2005)</b>	<ol style="list-style-type: none"> <li>1. Resources</li> <li>2. Education</li> <li>3. Environment</li> </ol>
<b>Aydin &amp; Tasci (2005)</b>	<ol style="list-style-type: none"> <li>1. Technology</li> <li>2. Innovation</li> <li>3. People</li> <li>4. Self-Development</li> </ol>
<b>Lopes (2007)</b>	<ol style="list-style-type: none"> <li>1. Business</li> <li>2. Technology</li> <li>3. Content</li> <li>4. Culture</li> <li>5. Human resources</li> <li>6. Financial resources</li> </ol>
<b>Omoda &amp; Lubega (2010)</b>	<ol style="list-style-type: none"> <li>1. Content</li> <li>2. Pedagogy</li> <li>3. Technology</li> <li>4. Culture</li> <li>5. Awareness</li> </ol>
<b>Alshaher's (2013)</b>	<ol style="list-style-type: none"> <li>1. Strategy</li> <li>2. Structure</li> <li>3. Systems</li> <li>4. Style/culture</li> <li>5. Staff</li> <li>6. Skills</li> <li>7. Shared values</li> </ol>

Table 1 above summarizes the previously developed models used to measure the readiness of e-learning in different countries. “Most of the models were developed for use in business organizations, universities or higher education institutions. In addition, they were designed for use in developed countries whose e-maturity is high. Every system, (organization, culture, country and individual) has its own norms, for that measurement instruments that work in one country might not work for organizations in other countries” (Oketch et al., 2014).

## 2.4.CHAPTER SUMMARY

There are many benefits offered by e-learning such as time saving, flexible education delivery and training from anywhere at any time. Last but not least is reduced costs of commuting from residence to the institution. The most importance of e-learning is that the learners can study at their own pace in their own place without their educators.

## CHAPTER 3: METHODOLOGY

### 3.1.INTRODUCTION

This chapter explains the methods used for data analyses, the instrument used to collect data, the population reached, the model proposed, the research questions and the scale used to measure the readiness level.

The method to conduct the survey on learners and educators was selected and a number of schools were visited to conduct the study. Those learners under 18 years old were given consent forms for their parents or custodians to sign them.

### 3.2.BACKGROUND OF RESEARCH METHODOLOGY

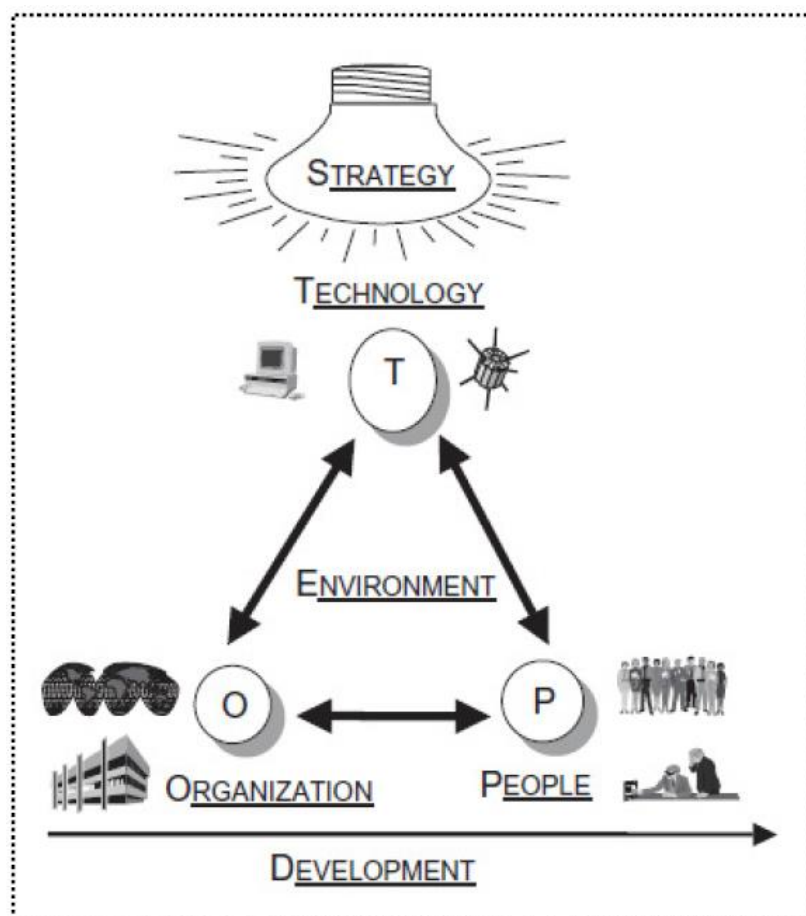


Figure 6: STOPE approach (Bakry, Khalid, & Abdulmohsen, 2007)

Figure 6 above illustrate the STOPE approach/model. STOPE stands for Strategy, Technology, Organization, People and Technology (Schreurs & Al-Huneidi, 2012; Susanto, Muhaya, Almunawar, & Tuan, 2010).

“The elements of STOPE are identified as follow:

- **Strategy:** the strategy of the country with regards to the future development of the industry or the concerned.
- **Technology:** the technology upon which the industry or the service concerned is based.
- **Organization:** the organizations associated with or related to, the industry or the service concerned.
- **People:** the people concerned with the target industry or service.
- **Environment:** the environment surrounding the target industry or service.”

In the proposed model, the STOPE will be:

**Strategy = Strategy, Technology = Technology, Organization = Institution, People = People and Environment = Content.**

According to Trochim and Land (1982), “ quantitative design is the glue that holds the research project together. A design is used to structure the research, to show how all of the major parts of the research project—the samples or groups, measures, treatments or programs, and methods of assignment—work together to try to address the central research questions”.

Quantitative design has many types. One of the main types of quantitative designs is the descriptive method. “Descriptive method includes survey research or case study methodology. Survey research involves gathering data, usually through a written survey/questionnaire. The purpose of survey research is to describe characteristics, opinions, attitudes or behaviors as they currently exist in a target population” (Babbie, 1990).

Table 2 below illustrates the five-point Likert scale of means previously used by (Nisperos, 2014; Ouma et al., 2013) .

**Table 2: The Scale and Indication of Means**

<b>Means</b>	<b>Scale</b>
<b>1 - 2.6</b>	not ready lot of work to be done
<b>2.6 - 3.4</b>	not ready some work to be done
<b>3.4</b>	expected level of readiness
<b>3.4 - 4.2</b>	ready but needs a few improvements
<b>4.2 - 5</b>	ready to go

### 3.3.METHODS

This study used quantitative research designs. Data was collected from educators and learners using closed ended questionnaires. The questions on the questionnaires were adopted from previous papers written by (Mercado, 2008; Nisperos, 2014; Soydal, Alir, & Ünal, 2012). Descriptive method was used to determine the level of readiness to implement e-learning in South African schools. The descriptive method was chosen because it allows the researcher to collect a large amount of data (Babbie, 1990). For the level of readiness measurement, a five-point Likert scale was used.

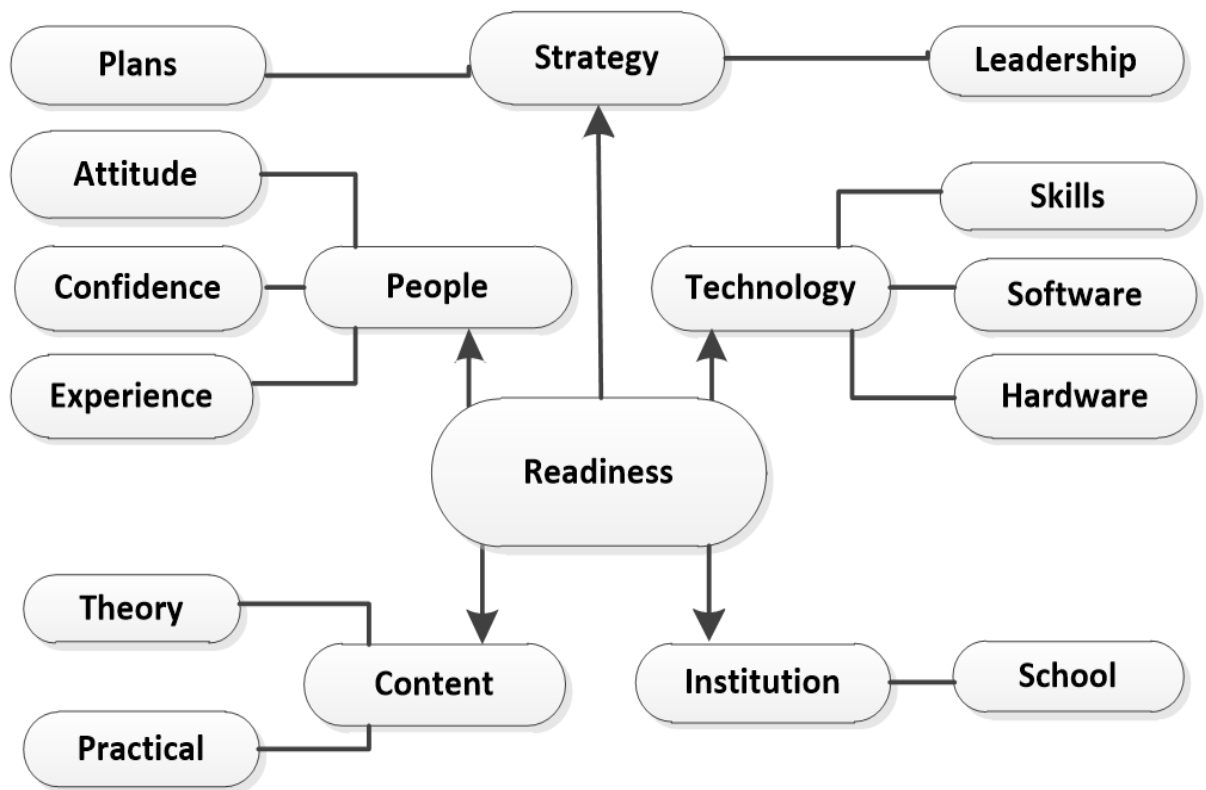
For the purpose of this study, the structured questionnaires were distributed to the educators and learners in different high schools in Gauteng province. Each individual educator and / or learner was expected to fill in their own questionnaire individually. For the learners, consent forms were distributed and only those who had signed forms were administered the questionnaires for participation.

Sampling was defined by Frey, Botan, and Kreps (2000) as “a smaller group of a population”. It is termed by Berinstein (2003) as “representative ‘taste’ of a group”. Probability sampling was used for this study. Probability sampling was defined by Henry (1990), as “having the differentiating characteristic that each unit in the population has a known, nonzero probability of being included in the sample”.

Targeted participants were both females and males between the age of 13 to 55. A population of 176 participants was reached. Out of 176, only 48 was educators and 128 learners from grade 7 to grade 12.

The main research question of this study was: how can assessment of e-learning be done in South African schools to assure success in implementing e-learning?

The secondary research questions addressed in this study were: how to determine the level of e-learning readiness in South African schools and how to measure e-readiness in South African schools.



**Figure 7: STIPC Proposed model**

The proposed model above (figure 7) was intended for both learners and educators and it can be applied for different age groups though the consent forms will still be needed for under age participants due to ethical considerations. The sampled learners used in this study were all from high schools and their ages ranged from 13 years to 20 years. Educators' ages ranged from 28 to 55 years.

The issues were addressed by adapting the previous models developed for measuring readiness. The adapted model was validated by educators and learners participation in the survey administered.

Table 3 below explains purpose of the components included in the proposed model. The table is consisting of five domains namely: strategy, technology, institution, content and people. The domains contain 25 factors distributed over 11 issues.



**Table 3: Discussion of purpose of each variable in the model**

<b>Readiness</b>			
<b>Variable</b>	<b>Issues</b>	<b>Aim</b>	<b>Factors</b>
People	Attitude	To determine the attitude	2
	Confidence	To understand the feeling that one can rely on e-learning	3
	Experience	To determine the knowledge acquired	5
Technology	Skills	To determine the technology skills	4
	Software	To check the availability of software	2
	Hardware	To check the availability of equipment	3
Content	Practical	To determine the usage of e-learning	1
	Theory	To determine general principles	1
Strategy	Leadership	To assess the action of leading an organisation	1
	Plan	To assess the intention	2
Institution	School	To determine if e-learning is used	1

Table 4 below illustrates the levels and assessment methods used in the STOPE assessment, from top to bottom. The e-learning readiness was assessed by the use of the STOPE approach. The STOPE consists of different levels which were used to calculate or to assess the readiness. For the purpose of this study, the STOPE consisted of four levels. The bottom level was used to assess individual answers on the questionnaires and the results can be seen from the Appendix C on the spreadsheet. The factors in this table are the questions on the questionnaires which were adopted from previous studies.

The next level was called the issue level. Factors addressing similar issues from factor level were grouped in to levels. The strategy comprised of two issues, the plans and leadership. Plans were derived from two factors while the leadership was derived from one factor. Technology was assessed by three issues which were skill, hardware and software. A skill was assessed by four factors, hardware by three factors while software had two factors. People assessment comprised of three issues, namely; attitude, experience and

confidence. Under attitude there were two factors, five factors under the experience and three factors for confidence. The content comprised of two issues which were theory and the practical, each issue had one factor to assess. The last issue was to assess the institution and that was the school.

Once the issue level was assessed, the assessment moved in to the next level called the domain level. There were five domains which were assessed individually, namely, strategy, technology, people, content and the institution. Issue level results were used to assess the domains.

The final level was the top level. All five domains were combined to indicate the overall e-learning readiness.

Table 4: Levels and methods of assessment (Al-Osaimi, Alheraish, & Bakry, 2008)

STIPC (top) level					
Main domain	Strategy	Technology	Institution	People	Content
Symbol	S	T	I	P	C
Index	$i[1]$	$i[2]$	$i[3]$	$i[4]$	$i[5]$
Measure	$M[1]$	$M[2]$	$M[3]$	$M[4]$	$M[5]$
Weight	$w[1]$	$w[2]$	$w[3]$	$w[4]$	$w[5]$
STOPE					
$STIPC = \sum_{i=1}^{i=5} w[i].M[i] = \sum_{i=1}^{i=5} D[i]$					
assessment					
Domani level: S, T, I, P, or C					
Domain	Any of the five main STOPE domains, identified as $D[i]$				
Index	$i$ gives the domain index: $1 \leq i \leq 5$ (STOPE)				
	$J_i$ represents the sub-domain (issue) index: $1 \leq j_i \leq J_i$				
Measure	$M[i, j_i]$	Weight		$w[i, j_i]$	
Domain	$D[i] = \sum_{j_i=1}^{j_i=J_i} w[i, j_i]M[i, j_i] = \sum_{j_i=1}^{j_i=J_i} D[i, j_i]$				
Assessment					
Sub-domain (issue) level					
Issue	Any of the issues of a domains, identified as $D[i, j_i]$				
Index	$k_{ji}$ represents the factor index of domain $i$ and issue $j_i$				
	$1 \leq k_{ji} \leq K_{ji}$ ( $K_{ji}$ : number of factors in issue $j$ of domain $i$ )				
Measure	$M[i, j_i, k_{ji}]$	Weight		$w[i, j_i, k_{ji}]$	
Issue	$D[i, j_i] = \sum_{k_{ji}=1}^{k_{ji}=K_{ji}} w[i, j_i, k_{ji}]M[i, j_i, k_{ji}]$				
Assessment					
Assessment					
Method:					
<i>bottom-up</i>	The issue level, the domain level, up to the STOPE level, which Provides the overall e-readiness indicator				
Scale:	Measure	Five possibilities: 1 to 5			
	Weight	Five levels from 1 to 5			
	Indicator	Relative to 100			
Results	Tables: spreadsheets	Numerical results for factors, issues, domains, with measure, weights and indicators, leading into the overall STOPE indicator			
	Radar graphs	Domains represented by their issues STIPC represents by the domains			

### 3.4.CHAPTER SUMMARY

The proposed model, to measure the level of e-learning readiness, was adopted from previous models. The participants in this study were learners and educators. Participants were given questionnaires to answer and the responses were analysed to measure the e-learning readiness. The model to measure the e-learning readiness consisted of five components, namely, people, technology, content, strategy and institution. For the level of readiness measurement, the five-point Likert scale was used based on the five components using the STOPE model.

## **CHAPTER 4: EXPERIMENT AND RESULTS ANALYSIS**

### **4.1.INTRODUCTION**

This chapter discusses the findings and analyses of the consent forms signed by the parents of the learners studying in certain sections of the Gauteng Province high schools. The purpose of this study was to assess e-learning readiness in South African schools to assure success in implementing e-learning. The objective of this study was to determine the e-readiness in South African schools to assure success and quality.

### **4.2.PRACTICAL ASSESSMENT**

All the participated schools in a certain section of Gauteng have Deputy Principals dealing with e-learning. The student responses were measured separately from educators responses and then both were combined to find the readiness as an institution. As the study is measuring components of e-learning readiness in education, diagrams have the titles, learners, educators and combined to indicate the domain in which the readiness is being measured.

#### 4.3.LEARNERS RESULTS AND EDUCATORS RESULTS

The lowest level on table 3 was used to obtain the sub-domain level results. Below are the results of each issue for the learners and educators separately. The results obtained compared as follow:

##### 4.3.1. THE STRATEGY DOMAIN

The strategy domain was measuring the level of readiness by institution to provide resources required to offer education in the schools by means of e-learning. Two variables were used to measure the level of strategy in the institutions to provide e-learning education, i.e. leadership and plans.

The leadership variable in the strategy domain was used to measure the level of readiness by the institution to provide resources required to offer education in the schools by means of e-learning. The plans variable in the strategy domain was used to measure the level of readiness by learners, educators and the institution to adopt the e-learning.

The plans as a measure for strategy domain was measuring the level of readiness (willingness) by the learners and the educators to spend money for e-learning. The money could be spent on data or other resources to be used in e-learning. This was also used to indicate to what extent are the learners and the educators willing to be involved in e-learning initiatives.

## Learners

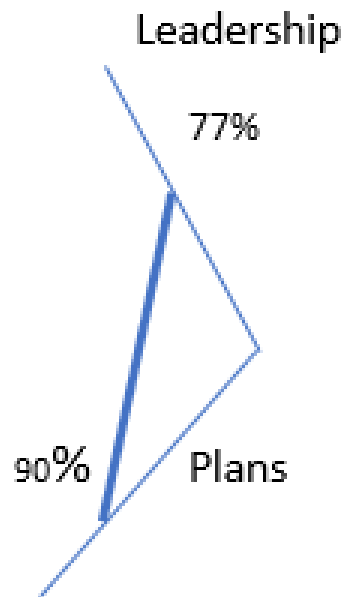


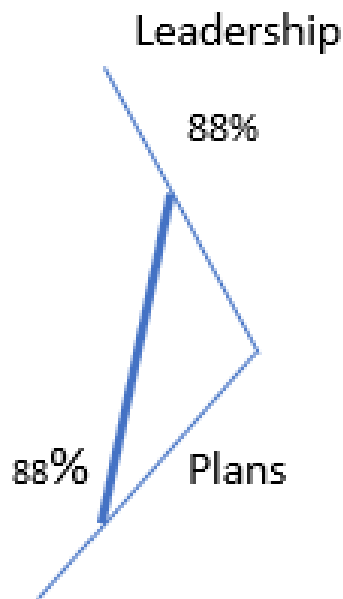
Figure 8: Learners' strategy domain assessment results

Figure 8 above summarizes the results attained for the e-readiness assessment issues of the learners' strategy domain. The issues used to assess the strategy domain were plans and leadership. The plans issue shows how the learners are ready to adopt e-learning as a medium of learning and to what extent are they willing to accept e-learning and sacrifice the current form of education.

The results in figure 8 indicated that 90 percent of the learners are willing to spend more money on e-learning. On the issue of involvement, the learners want to be involved in e-learning. The results also indicated that the learners agree with e-learning. The plans issue has an overall acceptance of 90 percent as shown in figure 8.

In terms of leadership the learners were asked if computers are adequately provided for e-learning whereby 77 percent of the results indicated that the learners believe that computers are provided.

## Educators



**Figure 9: Educators' strategy domain assessment results**

Figure 9 above summarizes the results attained for the e-readiness assessment issues of the educators' strategy domain. The plan issue shows how the educators are ready to have e-learning as a medium of teaching and to what extent are they willing to accept e-learning and sacrifice the traditional method of delivering education.

The results indicated that 88 percent of the educators are willing to spend more money on e-learning and want to be involved in e-learning. The results also indicated that the educators agree with e-learning. While in terms of leadership the participants were asked if computers are adequately provided for e-learning whereby the results indicated that the educators believe that computers are provided.



#### 4.3.2. THE TECHNOLOGY DOMAIN

The technology domain was used to assess the level of e-learning readiness in terms of skills and resources. Three variables were used to measure the level of technology, namely skills, software and hardware.

The skills literally measure how well the participants can use technology, this is done by checking if they are able to use computers and if they were able to fix basic computer errors in terms of hardware and software. The hardware variable in the technology domain was used to check if both the institution and the participants possess or own the hardware resources required for e-learning. The hardware will include, but is not limited to, computers and tablets. The software variable in the technology domain was used to measure the availability and accessibility of both software and connectivity. Software will include programs required to use e-learning and connectivity will include network and internet.

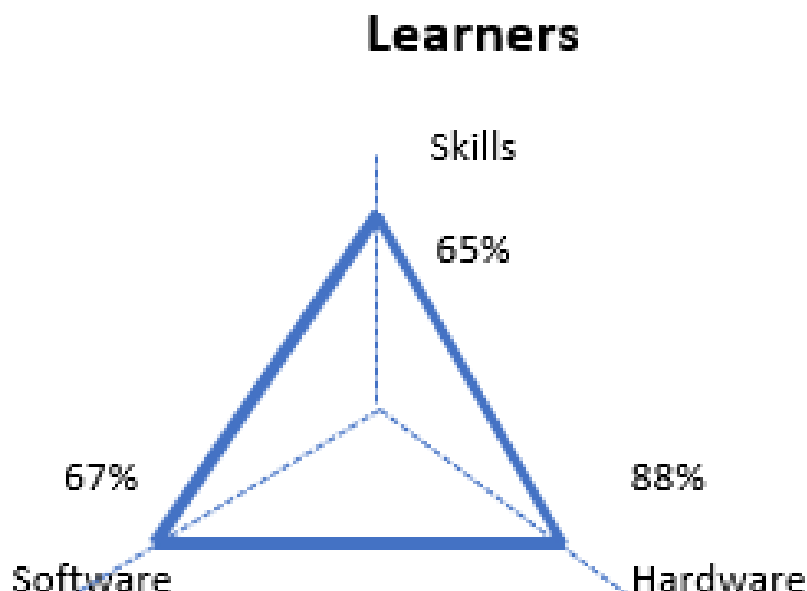
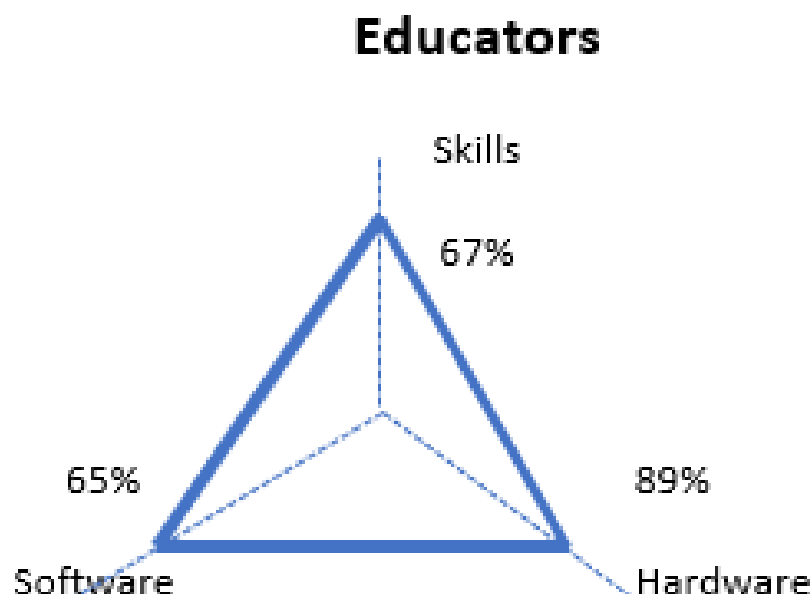


Figure 10: Learners technology domain assessment results

Figure 10 above shows the learners technology domain results. To assess the skills that the learners have, participants were asked if they know how to resolve basic hardware or software problems, how to download files using different browsers, how to resolve common errors while surfing the internet and how to navigate the web pages. The results shown in figures 10 indicated that 65 percent of learners believed they have basic computer skills.

In terms of hardware, the learners were asked if they could easily get access to a computer in the ICT centre, if tablets are adequately provided, and if the IT infrastructure in their school can support e-learning. The results indicated that 88 percent of learners agree that basic hardware facilities such as computers and tablets were provided and they have access to such facilities.

The learners were also assessed in software knowledge and accessibility. The questions asked included access to web and software provision. The results indicated that 67 percent of learners have access to the web and software.



**Figure 11: Educators technology domain assessment results**

Figure 11 above shows the educators technology domain results. To assess the skills that the educators have, participants were asked if they know how to resolve basic hardware or software problems, how to download files using different browsers, how to resolve common errors while surfing the internet and how to navigate the web pages. Figure 11 shows that 67 percent of educators believed they have basic computer skills in navigating through different computer programs and to resolve certain software and hardware systems.

In terms of hardware, the educators were asked if they can easily get access to a server in the ICT centre if tablets are adequately provided and if the IT infrastructure in their school can support e-learning. The results in figure 11 indicated that 89 percent of educators agree that basic hardware facilities such as computers and tablets were provided and they have access to such facilities.

The educators were also assessed in software knowledge and accessibility. The questions asked included access to web and software provision. The results in figure 11 indicated that 65 percent of educators have access to the web and software.

#### 4.3.3. THE PEOPLE DOMAIN

The people domain was measuring the level of readiness of both the learners and the educators to accept e-learning as a mode to provide education in the schools. Three variables were used in the people domain assessment; namely: attitude, confidence and experience.

The attitude variable in the people domain was to determine how people perceive the usefulness and ease of use of e-learning. The confidence variable in the people domain was used to understand the feeling of both the learners and the educators in terms of how

one can rely on e-learning. The experience variable in the people domain was used to determine the knowledge acquired by the learners and educators in the area of e-learning.

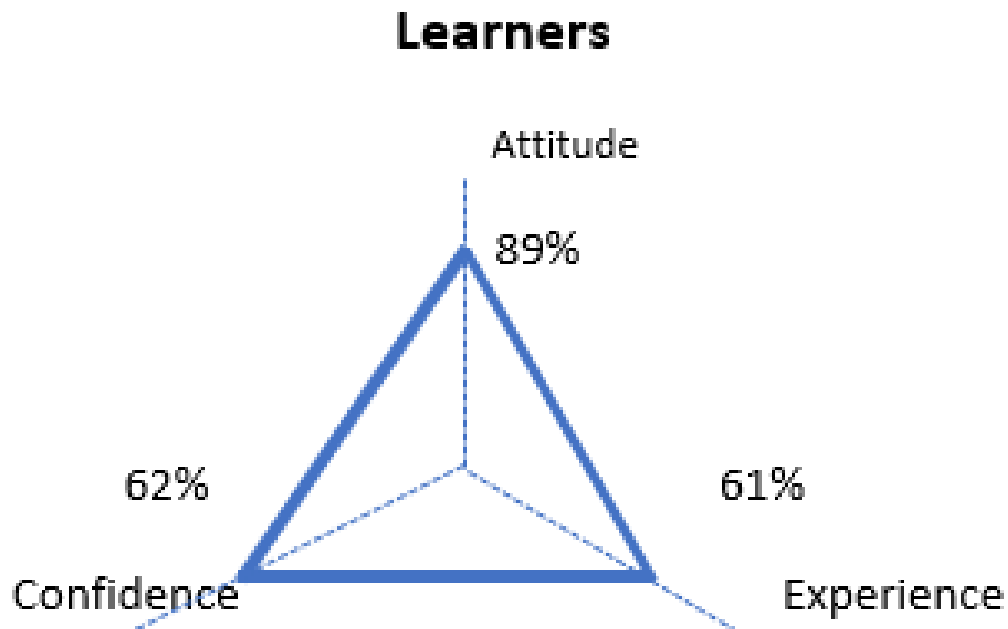


Figure 12: Learners people domain assessment results

The above figure 12 shows the results attained for the e-readiness assessment issues of people domain for the learners. The issues used to assess the people domain were attitude, experience and confidence.

In terms of the attitude the learners were asked if they believe that using e-learning can increase their productivity and if they believe that e-learning will enable them to accomplish their learning more effectively than the traditional classroom-based approach. The results indicated that 89 percent of learners have positive attitude towards e-learning.

In terms of experience the learners were asked if they owned a laptop/desktop, if they owned an email address and can open/ send and add attachment(s), if they were able to

minimize and maximize opened application(s), if they were familiar with Microsoft Office and if they could differentiate between .pdf, .docx., .xls and .ppt. The results in figure 12 indicated that 61 percent of learners have basic experience to operate a computer.

In terms of confidence the learners were asked if they believed that e-learning can improve the quality of learning, if they believed that it is easy for them to use e-learning if they believed that learners and/or educators will find it easy to use e-learning. The results in figure 12 indicated that 62 percent of learners have confidence that they can use e-learning.

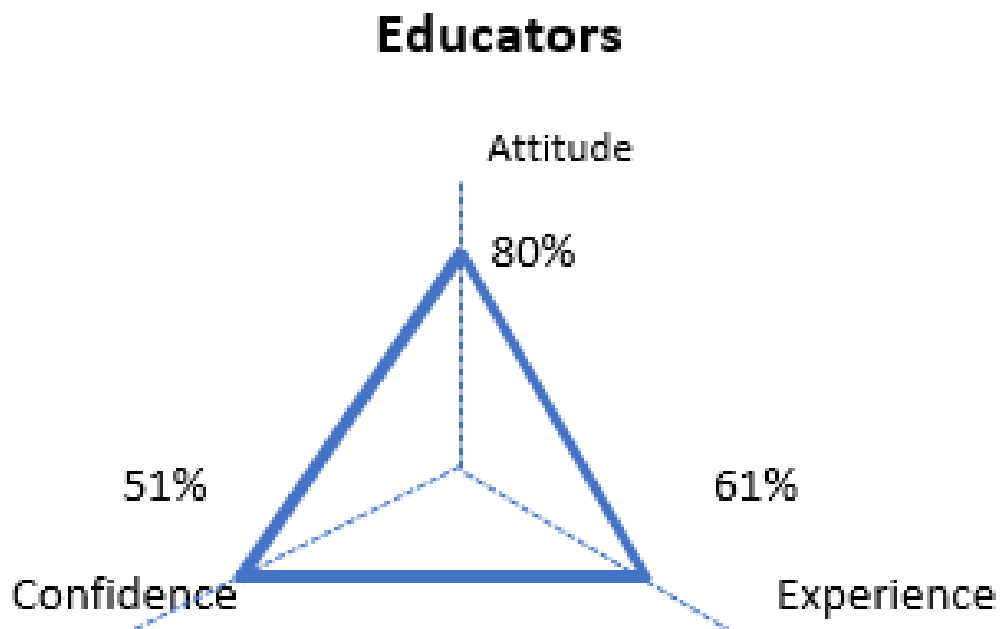


Figure 13: Educators people domain assessment results

The above figure 13 shows the results attained for the e-readiness assessment issues of people domain for the educators. The same issues used for the learners were used to assess the people domain, namely: attitude, experience and confidence.

In terms of the attitude the educators were asked if they believe that using e-learning can increase their productivity and if they believe that e-learning will enable them to accomplish their teaching more effectively than the traditional classroom-based approach.

The results indicated that 80 percent of educators have a positive attitude towards e-learning.

In terms of experience the educators were asked if they owned a laptop/desktop, if they owned an email address and can open/send and add attachment(s), if they were able to minimize and maximize opened application(s), if they were familiar with Microsoft Office and if they could differentiate between .pdf, .docx., .xls and .ppt. The results in figure 13 indicated that 61 percent of educators have basic experience of to operate a computer.

The participants were asked if they are confident that e-learning can improve the quality of teaching, if they believed that it is easy for them to use e-learning, if they believed that learners will find it easy to use e-learning. The results in figure 13 indicated that 51 percent of educators have confidence that they can use e-learning.

#### 4.3.4. THE CONTENT DOMAIN

The content domain was measuring the availability of e-learning resources in the learning institutions. The e-learning resources will include, but not be limited to, eBooks, smart boards, computers and tablets. Two variables were used in the content domain assessment; namely: theory and practical.

The theory variable in the content domain was to determine if sufficient e-learning material was available in the learning institutions. The practical variable in the content domain was used to determine the current usage of e-learning in the learning institutions.

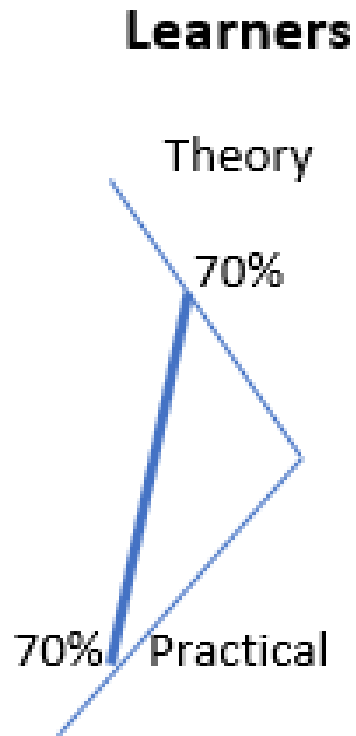
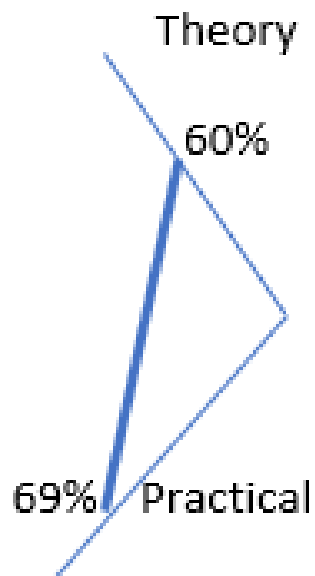


Figure 14: Learners content domain assessment results

Figure 14 above summarizes the results attained for the e-readiness assessment issues of the content domain for the learners.

The results in figure 14 indicated that learners believed that 70 percent of the e-books were adequately provided. In terms of practical learners believed that 70 percent of interactive resources like whiteboards were provided as shown in figure 14.

## Educators



**Figure 15: Educators content domain assessment results**

Figure 15 above summarizes the results attained for the e-readiness assessment issues of the content domain for the educators.

The results in figure 15 showed that educators believed that 60 percent of the e-books were adequate for e-learning. In terms of practical, the educators believed that 69 percent of interactive resources such as whiteboards were provided as described in figure 15.

### 4.3.5. THE INSTITUTION DOMAIN

The aim of using institution domain was to determine if both students and the learners were willing to accept e-learning as a mode of learning and teaching in schools. Only one variable was used in the institution domain assessment; which is the school.

The school variable in the institution domain was to determine if schools were willing to accept e-learning as a mode of learning and teaching in the schools.



## Learners

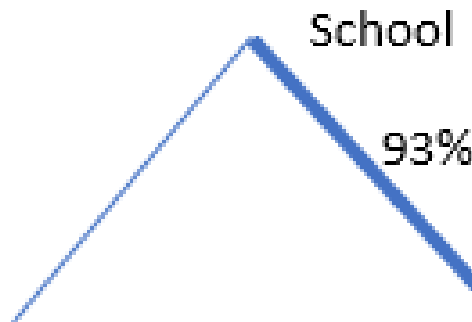


Figure 16: Learners institution domain assessment results

Figure 16 above summarizes the results attained for the e-readiness assessment issues of the institution domain. The issue used to assess the institution domain was school readiness to accept e-learning. This issue was to determine if e-learning is used in schools.

In terms of the institution domain, the learners were asked if their schools were willing to accept e-learning as a mode for learning. The results in figure 16 indicated that 93 percent of the learners believed that their schools are willing to accept e-learning as a mode of delivering education in their schools.

## Educators

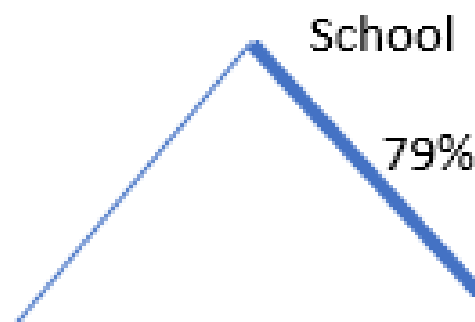


Figure 17: Educators institution domain assessment results

Figure 17 above summarizes the results attained for the e-readiness assessment issues of the institution domain. The issue used to assess the institution domain was school readiness to accept the e-learning. This issue was to determine if e-learning is used in schools.

In terms of the institution domain, the educators were asked if their schools were willing to accept e-learning as a mode for teaching. The results in figure 17 indicated that 79 percent of the educators believed that their schools are willing to accept e-learning as a mode of offering education in their schools.

**Table 5: Learners STIPC = STOPE weighted indicator**

<b>Learners</b>			
<b>Domain</b>	<b>M (1-5)</b>	<b>W(1)</b>	<b>Ind. ( % )</b>
S	4.19	0.21	84%
T	3.66	0.19	73%
P	3.54	0.18	71%
C	3.50	0.18	70%
I	4.65	0.24	93%
Total	19.53	1.00	
Overall	3.91	0.20	
Indicator	78%		

Table 5 above was derived from top level results in table 3. It consists of five domains, namely; strategy (S), technology (T), people (P), content (C) and institution (I). The measure started from 1 to 5 as there are five domains to be measured. The indicators are represented in terms of percentage and were obtained from the respondents on the questionnaires. The indicator of each domain was used to calculate the measure of each domain, ranging from 1 to 5. It was calculated by multiplying the indicator for each domain by five. The last step was to calculate the weighted average of each domain, using the measurements obtained.

Table 6: Educators STIPC = STOPE weighted indicator

Educators			
Domain	M (1-5)	W(1)	Ind. ( % )
S	4.4	0.24	88%
T	3.67	0.20	73%
P	3.21	0.17	64%
C	3.22	0.17	64%
I	3.96	0.21	79%
Total	18.46	1.00	
Overall	3.69	0.20	
Indicator	74%		

As with table 5, the data in table 6 relates to educator's readiness indicator which is 74%.

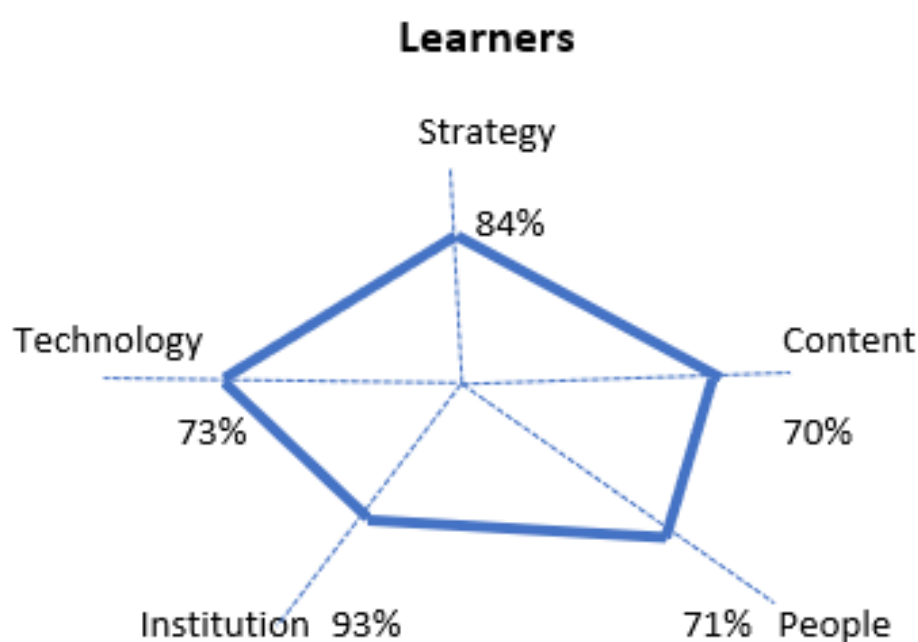
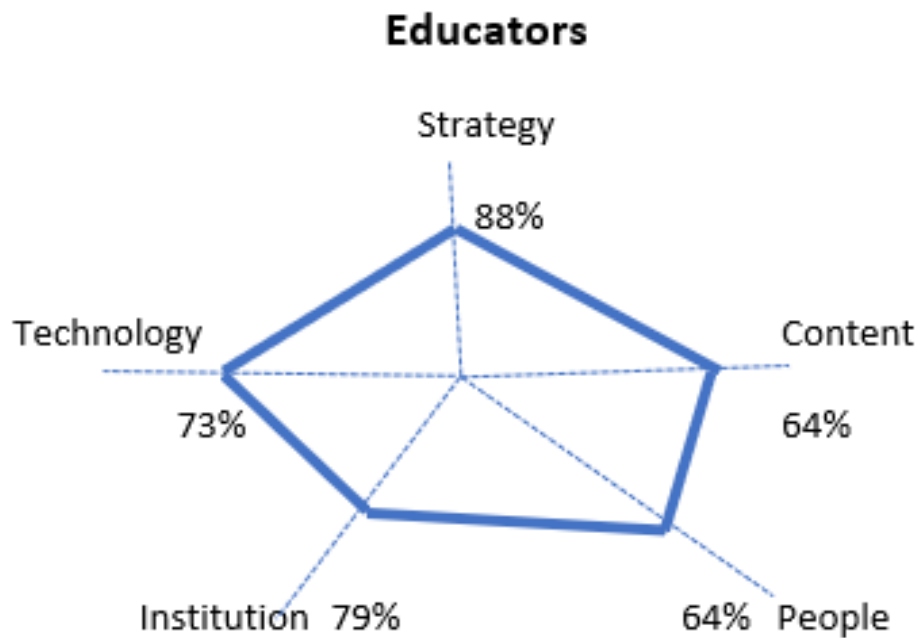


Figure 18: Learners STIPC = STOPE assessment results

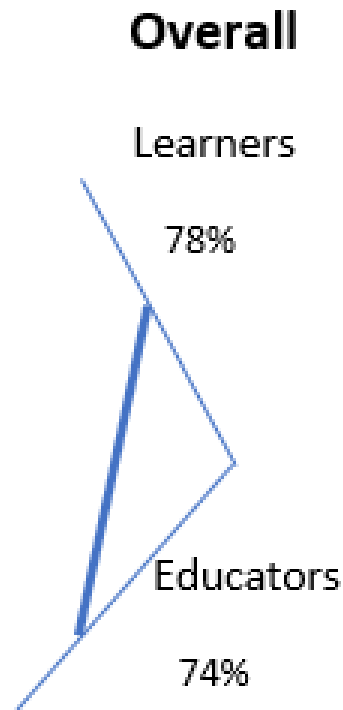
The results from the sub-domain level in table 3 were used to obtain the results as shown in figure 18. The figure above shows the level results of all the domains for the learners. The overall domain results were derived from table 5. Figure 18 shows assessment results of all the components from the proposed model whereby learners' results are as follow:

institution is leading with 93 percent, followed by strategy with 84 percent, then technology with 73 percent and content is 70 percent while people is 71 percent.



**Figure 19: Educators STIPC = STOPE assessment results**

The results from the sub-domain level in table 3 were used to obtain the results as shown in figure 19. The figure above shows the level results of all the domains for the educators. The overall domain results were derived from table 6. Figure 19 shows the educators' assessment results are low compared to learners' results. The results are as follow: the strategy is leading with 88 percent, followed by institution with 79 percent, then technology with 73 percent and content together with people are both on 64 percent.



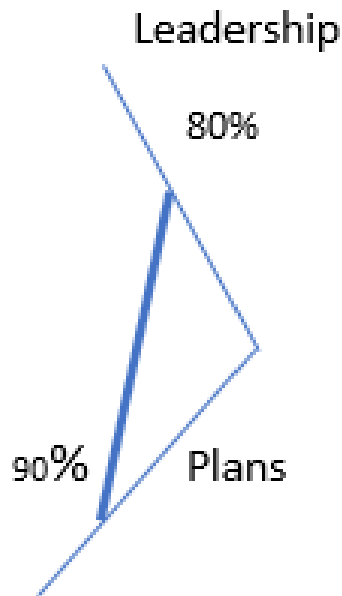
**Figure 20: The overall STIPC = STOPE e-readiness indicator**

Figure 20 shows the overall stope assessment that were derived from table 5 and table 6. The learners are on 78 percent which is higher level than the 74 percent of educators. This clearly shows that the educators have negative attitude towards e-learning. In terms of technological skills, it is clear that the learners are familiar with technology than the educators due to their age.

As per table 5 and 6 above, the mean score of the learners who participated was 3.91 which, on the Likert scale explains that they are ready but few improvements are needed. In terms of percentage, the learners are on 78 percent whereby 22 percent needs to be improved. The mean score for educators who participated was 3.69 which, on the Likert scale, also explains that they are ready but few improvements are needed and their percentage is on 74 percent whereby 26 percent needs to be improved.

#### 4.4.COMBINED RESULTS

### Combined Results



**Figure 21: Combined strategy domain assessment results**

#### 4.4.1. THE COMBINED STRATEGY DOMAIN

Figure 21 above summarizes the combined results attained for the e-readiness assessment issues of the strategy domain. The issues used to assess the strategy domain were plans and leadership. The plans issue shows how the learners and educators are prepared to partake in e-learning and how much they are willing to sacrifice to benefit from e-learning.

In terms of leadership, it displays the preparedness of the institution to provide sufficient computers in the labs.

In terms of plans, the participants were asked if they were willing to spend money to introduce e-learning, and 90 percent of the participants indicated that they were willing to spend more money. The remaining 10 percent did not agree with spending more because of e-learning. Assessing plans as a measure of strategy, 90 percent of the participants

agreed to be involved in e-learning. Therefore, the plans as a measure of strategy resulted in an average of 90 percent participants agreed with e-learning.

In terms of leadership, the participants were asked if sufficient computers are provided for e-learning, 80 percent of the participants indicated that sufficient computers were provided. The remaining 20 percent did not agree that sufficient computers were provided.

When combining the results from plans and leadership, where the plans indicated positive results of 90 percent and leadership indicated 80 percent positive results, this resulted with an overall strategy domain score of 85 percent.

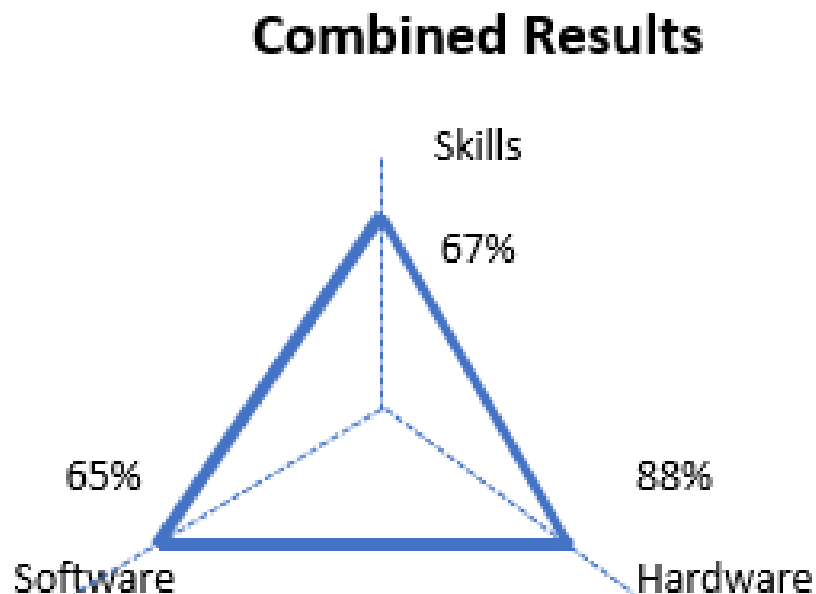


Figure 22: Combined technology domain assessment results

#### 4.4.2. THE COMBINED TECHNOLOGY DOMAIN

Figure 22 above summarizes the combined results attained for the e-readiness assessment within the technology domain. The issues used to assess the technology domain were skills, hardware and software. Skills are the technology skills that learners and educators

believe that they have. With software and hardware, the aim was to determine the availability of the vital software and the required equipment.

In terms of the skills the participants were asked if they know how to resolve basic hardware or software problems, how to download files using different browsers, how to resolve common errors while surfing the internet and how to navigate web pages. 67 percent of the participants indicated that they had skills. The remaining 33 percent did not agree.

In terms of hardware, the participants were asked if they could easily get access to a computer in the ICT center, if sufficient tablets are provided, and if the IT infrastructure in their school can support e-learning. 88 percent of the participants indicated that hardware resource is readily available. The remaining 12 percent did not agree that hardware resource is readily available.

In terms of software, the participants were asked if they can easily get access to the web and if software is adequately available. 65 percent of the results indicated that software resource is readily available. The remaining 35 percent did not agree that software resource is readily available.

The assessment in terms of technology domain indicated that on average technology is 73 percent readily available to be used in the form of e-learning.



## Combined Results

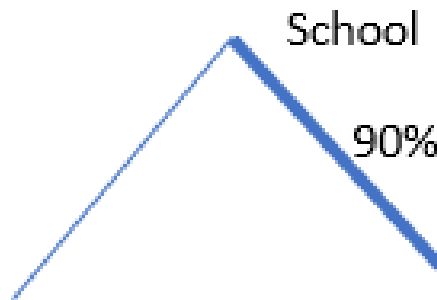


Figure 23: Combined institution domain assessment results

### 4.4.3. THE COMBINED INSTITUTION DOMAIN

Figure 23 above summarizes the combined results attained for the e-readiness assessment issues of the institution domain. The issue used to assess the institution domain was school. This issue was to determine if e-learning is used in schools.

In terms of skills the participants were asked if their schools were willing to accept e-learning as a mode for teaching and learning. 90 percent of the results indicated that they were accepting e-learning. The remaining 10 percent did not agree that their schools were accepting e-learning.

The assessment in terms of institution domain indicated that on average institutions are 90 percent ready to introduce e-learning.

## Combined Results

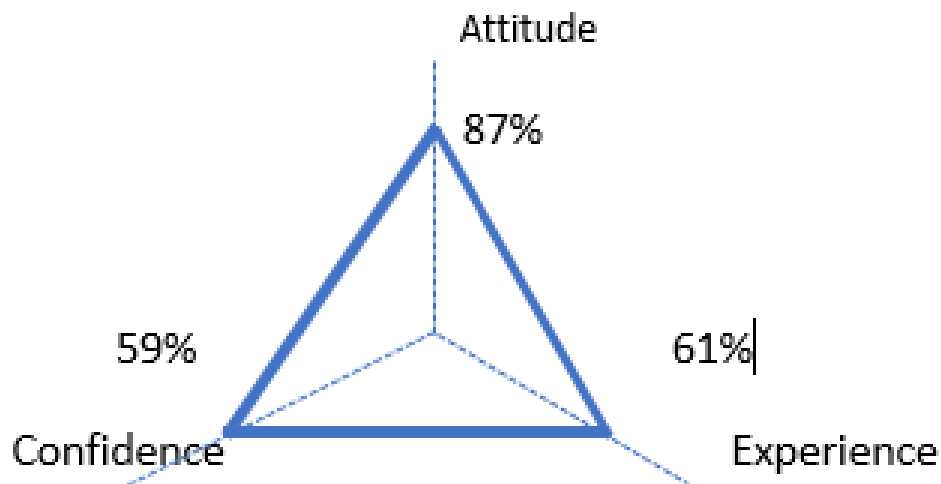


Figure 24: Combined people domain assessment results

### 4.4.4. THE COMBINED PEOPLE DOMAIN

Figure 24 above indicates the combined results attained for the e-readiness assessment issues for the people domain. The issues used to assess the people domain were attitude, experience and confidence. The attitude issue demonstrate how people perceive the usefulness and ease of use of e-learning. The confidence issue indicates to what extent the participants feel that they can rely on the e-learning process, while experience determines the knowledge acquired by the learners and educators around e-learning.

In terms of the attitude, the participants were asked if they believe that using e-learning can increase their productivity and if they believe that e-learning will enable them to accomplish their learning and/or teaching more effectively than the traditional classroom-based approach. 87 percent of the participants indicated that they do believe in e-learning. The remaining 13 percent did not agree.

To test the experience issue, the participants were asked if they owned a laptop/desktop, if they owned an email address and whether they can open/send and add attachment(s). They

also had to indicate if they were able to minimize and maximize open application(s), if they were familiar with Microsoft Office and if they could distinguish between file types such as pdf, .docx, .xls and .ppt. Sixty-one percent of the results indicated that learners and educators had basic knowledge and experience on how to operate a computer. The remaining 39 percent did not agree.

In terms of confidence, the participants were asked if they believed that e-learning can improve the quality of learning and/or teaching, if they believed that it is easy for them to use e-learning. 59 percent of the results indicated that have confidence that they can use e-learning. The remaining 41 percent did not agree.

The assessment in terms of the people domain indicated that on average people are 69 percent ready to use e-learning.

## Combined Results

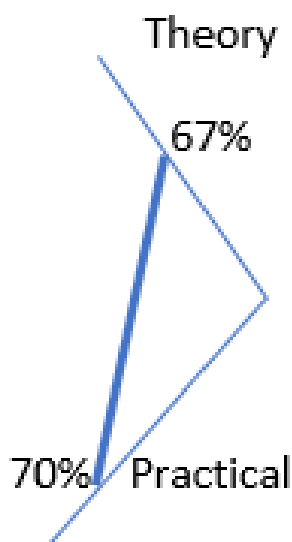


Figure 25: Combined content domain assessment results

#### 4.4.5. THE COMBINED CONTENT DOMAIN

Figure 25 above summarizes the combined results attained for the e-readiness assessment issues of the content domain. The issues used to assess the content domain were theory and practical. The practical was to determine the usage of e-learning and theory was to determine the understanding of e-learning.

In terms of the theory the participants were asked if E-books were adequately provided. 67 percent of the results indicated that E-books were available for e-learning. The remaining 33 percent did not agree that E-books were readily available for e-learning.

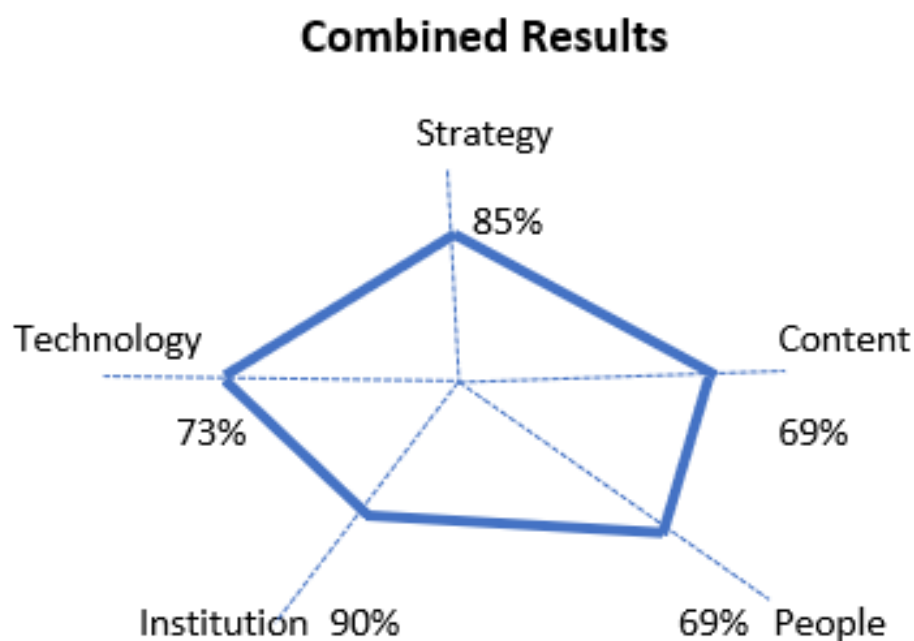
In terms of the practical the participants were asked if the interactive whiteboards were available in their schools. 70 percent of the participants indicated that interactive whiteboards were available in their schools. The remaining 30 percent did not agree that interactive whiteboards are available in their schools.

The assessment in terms of content domain indicated that on average schools are 69 percent ready to use e-learning.

**Table 7: The combined STIPC = STOPE weighted indicator**

Combined table			
Domain	M (1-5)	W(1)	Ind. ( % )
S	4.25	0.22	85%
T	3.65	0.19	73%
P	3.45	0.18	69%
C	3.45	0.18	69%
I	4.50	0.23	90%
Total	19.30	1.00	
Overall	3.86	0.20	
Indicator	77%		

Table 7 above was derived from top level results in table 3. It consists of five domains, namely; strategy (S), technology (T), people (P), content (C) and institution (I). The measure were done from 1 to 5, as there were five domains to measure. The indicators are represented in terms of percentage and were obtained from the respondents on the questionnaires. The indicator for each domain was used to calculate the measure for each domain, ranging from 1 to 5. It was calculated by multiplying the indicator for each domain by five. The last step was to calculate the weighted average of each domain, using the measurements obtained.



**Figure 26: Combined STIPC = STOPE assessment results**

The results from the sub-domain level were used to obtain the results as shown in figure 26. The level results of all the domains for combination of learners and educators. The results were derived from table 7 above.

Figure 26 shows combined assessment results for all the components from the proposed model whereby institution is leading with 90 percent, followed by strategy with 85 percent, then technology with 73 percent and content together with people are both on 69 percent.

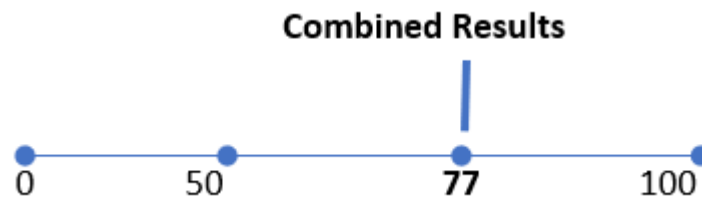


Figure 27: The combined STIPC = STOPE e-readiness indicator

As shown in figure 27, the combined results of e-readiness indicator for the learners and educators is 77%. Using STOPE model, the results indicates an e-learning overall readiness level of 77%, which is above the mid-point of 50%, showing that the schools in Gauteng are ready for adoption of e-learning.

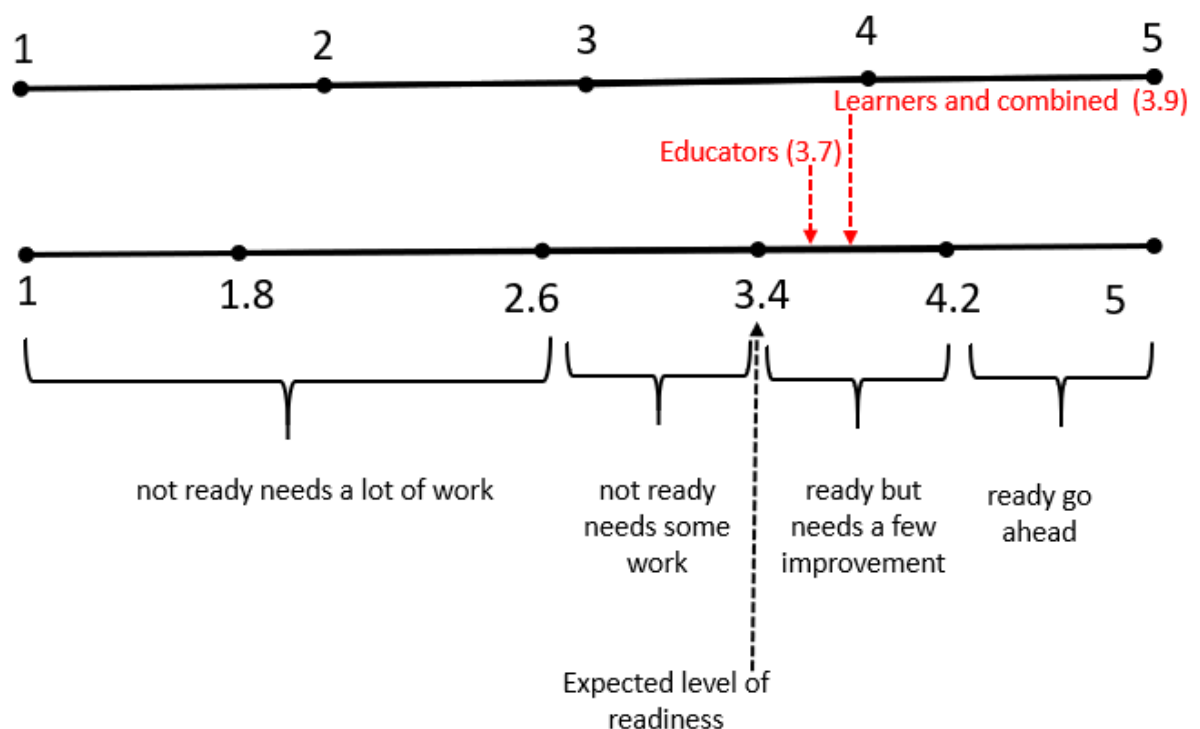


Figure 28: Likert Scale

Using the five-point Likert scale as shown in figure 28, the results revealed the readiness level of 3.86 converted to the nearest value of 3.9. The readiness levels of 3.7 for educators and 3.9 for both learners and overall indicates that participating schools in Gauteng is above the expected level of readiness of 3.4 given by Nisperos (2014); Ouma et al. (2013).

#### 4.5.CHAPTER SUMMARY

This chapter discussed the findings and analyzed the results from the questionnaires completed by participants in certain section of Gauteng high schools. The levels of readiness are as follow: learners are on 3.9, educators are on 3.7 and the overall is 3.9. On the five-point Likert scale, these levels infers, “ready but need a few improvements”.

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1.OVERVIEW**

E-learning is a innovative way of delivering education electronically. South African schools are aiming to adopt and implement e-learning. In this study, e-learning readiness of learners and educators of participating high schools in a certain part of Gauteng were tested with a paper-and-pen questionnaire. A total of 29 questions were asked in this questionnaire to measure the readiness of e-learning in South African schools.

The results showed that in this part section of Gauteng schools, the educators and the learners are at the expected level of e-learning readiness. They are equipped to adopt e-learning as a method of education.

### **5.2.CONCLUSION AND RECOMMENDATIONS**

In this research, e-learning readiness was the main concern. For e-learning benefits to be obtained, it is important to understand the level of readiness. It is remarkable to see the readiness of the learners being higher than what the educators are. It is clear that the learners are millennials and technologically skilled while educators are unfamiliar with technology because of age and attitude. Learners levels of readiness in terms of content (70%), people (71%), strategy (84%) and institution (93%) are all higher than the levels of educators. Then technology is on the same level of 73% on both the learners and educators. Both content and people levels for educators are on 64%. The educators need to be educated about e-learning to improve their readiness level. The educators' age and attitude issues need to be investigated more to understand the educators challenges towards e-learning.



The objectives of this study were fulfilled as follow:

#### 5.2.1. OBJECTIVE ONE

Objective one was to determine the e-readiness in South African schools to assure success and quality in use of e-learning technology.

The schools in Gauteng that participated in the study are ready for e-learning adoption but need to improve on their people and content readiness. The improvements needed are on people issues, i.e. both learners and educators need to cultivate a positive attitude towards e-learning. The educators will also need to see e-learning as a new method of learning, not a threat to their jobs. In terms of content, interacting whiteboards and e-books need to be provided. The results indicate that schools will greatly benefit from adopting e-learning.

#### 5.2.2. OBJECTIVE TWO

Second objective was to determine the level of readiness by developing frameworks.

Previous papers discussing e-learning readiness models were studied and a model was proposed for this study. The frameworks were able to show the level of readiness in participated schools and clearly specifies which areas need improvements. The proposed model can be used to measure any new technology readiness prior to implementation and/or adoption of new technology methods. This paper used the STOPE model, derived from the paper written by Schreurs & Al-Huneidi (2012) and the case study was focused on previously disadvantaged schools in Gauteng.

By using STOPE model, the results indicated an overall e-learning readiness level of 77%, that is above the mid-point of 50%, showing that the schools in Gauteng are ready for adoption of e-learning. The levels of readiness measured in terms of the elements of STOPE model are that institutional readiness is the highest with 90%, followed by strategic

readiness that is at 85%, technological readiness is at 73% while content and people are the lowest with a readiness of 69%. This shows that people (learners and educators) need to improve their computer skills. Improved computer skills of both learners and educators, will promote confidence in the use of e-learning. Their attitude towards e-learning will also be enhanced by improved computer skills. The content required to offer e-learning must be adequate.

### 5.2.3. OBJECTIVE THREE

The third objective was to measure e-learning readiness in South African schools.

By using the five-point Likert scale the results showed the combined (learners and educators) readiness level of 3.86 while learners only are on 3.91 and educators only are on 3.69. All the levels for the participating schools in Gauteng are above the expected level of readiness of 3.4 given by Nisperos (2014); Ouma et al., (2013a). Therefore, the schools in Gauteng that participated in our study are ready to adopt e-learning according to the results we obtained.

### 5.3.SUGGESTIONS

E-learning implementation is currently an ongoing project in South African schools, especially in Gauteng province. To ensure the successful implementation of e-learning in schools, it is essential to assess the readiness of e-learning. For future study, a different e-learning readiness model should be used to measure technology readiness prior to e-learning implementation.

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## APPENDICES

### 2.5.APPENDIX A: CONSENT FORM

#### 5 ANNEXURE A

##### LETTER OF PERMISSION – PARENT/GUARDIAN

To Whom It May Concern:

Sir/Madam

I am Dittlalane Irene Kolo, currently studying for a Masters Degree in Information Technology at Vaal University of Technology. As part of my research study, I have chosen to measure the readiness of eLearning in the Gauteng schools. This letter serves to request permission from you to interview your child in the form of questionnaires.

Kindly note that I, the researcher (Irene Kolo), guarantee the following:

- The child is not forced to participate
- The questionnaire will be anonymous with closed ended questions
- All information gathered will be strictly confidential
- No implication will be received by the learner if he/she doesn't participate
- The questionnaire will be no more than 20 minutes
- Please note that the data will be used for research purpose only

##### PART A TO BE COMPLETED BY THE CHILD

I ..... Agree to take part in the study on ASSESSMENT OF ELEARNING READINESS IN SOUTH AFRICAN SCHOOLS.

Age .....

Signature .....

##### PART B TO BE COMPLETED BY THE PARENT/GUARDIAN

I have read and understood the above letter and give permission for the child named above to be included.

Name .....

Relationship to child .....

Signature ..... Date .....

## 2.6.APPENDIX B: QUESTIONNAIRES

Annexure B									
ELEARNING READINESS QUESTIONNAIRE FOR THE LEARNER									
<b>Instructions</b> Please use a black pen to clearly select your answer (s) by making <b>X</b> in the correct box. See example below.									
e.g I own a desktop/laptop				YES <input type="checkbox"/>		NO <input checked="" type="checkbox"/>			
1. Gender	Female <input type="checkbox"/>			Male <input type="checkbox"/>					
2. Race	Coloured <input type="checkbox"/>		White <input type="checkbox"/>		African <input type="checkbox"/>		Indian <input type="checkbox"/>		
3. Age	≤ 13 <input type="checkbox"/>		14-15 <input type="checkbox"/>		16-17 <input type="checkbox"/>		≥ 18 <input type="checkbox"/>		
4. Which social network(s) are you familiar with?			Twitter <input type="checkbox"/>		Facebook <input type="checkbox"/>		Whatsapp <input type="checkbox"/>		
			LinkedIn <input type="checkbox"/>				Instagram+ <input type="checkbox"/>		
<b>1 - Strongly Disagree</b> <b>2 – Disagree</b> <b>3 – Neither</b> <b>4 – Agree</b> <b>5 – Strongly Agree</b>				1	2	3	4	5	
5. I own a laptop/desktop.				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
6. I know how to resolve basic hardware or software problem.				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
7. I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
8. I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
9. I know how to navigate the web pages (e.g next or previous page).				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
10. I own an email address and can open/ send and add attachment(s).				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
11. I am able to minimize and maximize opened application(s).				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
12. I am familiar with Microsoft Office.				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
13. I can differentiate between .pdf, .docx., .xls and .ppt.				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<b>Please Turn Over</b>									



14. I will spend more money because of e-learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I think I want to be involved in e-learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Computers are adequately provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Learners can easily get access to a computer in the ICT Centre.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Interactive whiteboards are available in my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Tablets are adequately provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. E-books are adequately provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Software is sufficiently provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Access to web is not a problem to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. The IT infrastructure in my school can support e-learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. The school is willing to accept e-learning as a mode for teaching and learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I believe that e-learning can improve the quality of my learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I believe that using e-learning can increase my productivity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I believe that e-learning will enable me to accomplish my learning more effectively than the traditional classroom-based approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I believe that it is easy for me to use e-learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I believe that I will find it easy to use e-learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**This is the end of the questionnaire.**

**Thank you very much for your cooperation!**

## 2.7.APPENDIX C: LEARNERS RESULTS

Results	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I own a laptop/desktop.	70%	5%	2%	9%	13%
I know how to resolve basic hardware or software problem.	91%	3%	1%	2%	4%
I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.	4%	6%	5%	23%	62%
I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).	1%	3%	6%	36%	54%
I know how to navigate the web pages (e.g next or previous page).	2%	3%	10%	25%	60%
I own an email address and can open/ send and add attachment(s).	49%	20%	5%	19%	7%
I am able to minimize and maximize opened application(s).	0%	0%	0%	34%	66%
I am familiar with Microsoft Office.	5%	5%	9%	22%	58%
I can differentiate between .pdf, .docx., .xls and .ppt.	4%	11%	6%	28%	51%
I will spend more money because of e-learning.	2%	2%	5%	20%	70%
I think I want to be involved in e-learning.	1%	2%	6%	22%	69%
Computers are adequately provided.	0%	10%	13%	27%	51%
Learners can easily get access to a computer in the ICT Centre.	0%	2%	11%	27%	59%
Interactive whiteboards are available in my school.	9%	10%	10%	20%	50%
Tablets are adequately provided.	2%	3%	5%	28%	61%
E-books are adequately provided.	4%	10%	16%	36%	34%
Software is sufficiently provided.	0%	3%	8%	28%	61%
Access to web is not a problem to me.	27%	20%	9%	31%	13%
The IT infrastructure in my school can support e-learning.	1%	2%	10%	30%	56%
The school is willing to accept e-learning as a mode for teaching and learning.	2%	2%	4%	35%	58%
I believe that e-learning can improve the quality of my learning.	4%	3%	6%	38%	49%
I believe that using e-learning can increase my productivity.	0%	2%	11%	43%	44%
I believe that e-learning will enable me to accomplish my learning more effectively than the traditional classroom-based approach.	3%	4%	2%	23%	67%
I believe that it is easy for me to use e-learning.	10%	11%	28%	29%	22%
I believe that I will find it easy to use e-learning.	15%	15%	21%	20%	29%

Strategy	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Plans</i>						
I will spend more money because of e-learning.	2%	2%	5%	20%	70%	90%
I think I want to be involved in e-learning.	1%	2%	6%	22%	69%	91%
						<b>90%</b>
<i>Leadership</i>						
Computers are adequately provided.	0%	10%	13%	27%	51%	<b>77%</b>
<b>Strategy level</b>						
<b>84%</b>						

Technology		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Skills</i>							
I know how to resolve basic hardware or software problem.		91%	3%	1%	2%	4%	5%
I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.		4%	6%	5%	23%	62%	84%
I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).		2%	3%	10%	25%	60%	85%
I know how to navigate the web pages (e.g next or previous page).		2%	3%	10%	25%	60%	85%
							65%
<i>Hardware</i>							
Learners can easily get access to a computer in the ICT Centre.		0%	2%	11%	27%	59%	87%
Tablets are adequately provided.		2%	3%	5%	28%	61%	89%
The IT infrastructure in my school can support e-learning.		1%	2%	10%	30%	56%	87%
							88%
<i>Software</i>							
Access to web is not a problem to me.		27%	20%	9%	31%	13%	45%
Software is sufficiently provided.		0%	3%	8%	28%	61%	89%
							67%
<b>Technology level</b>							
<b>73%</b>							

People		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Attitude</i>							
I believe that using e-learning can increase my productivity.		0%	2%	11%	43%	44%	87%
I believe that e-learning will enable me to accomplish my learning more effectively than the traditional classroom-based approach.		3%	4%	2%	23%	67%	91%
							89%
<i>Experience</i>							
I own a laptop/desktop.		70%	5%	2%	9%	13%	23%
I own an email address and can open/ send and add attachment(s).		49%	20%	5%	19%	7%	26%
I am able to minimize and maximize opened application(s).		0%	0%	0%	34%	66%	100%
I am familiar with Microsoft Office.		5%	5%	9%	22%	58%	80%
I can differentiate between .pdf, .docx., .xls and .ppt.		4%	11%	6%	28%	51%	79%
							61%
<i>Confidence</i>							
I believe that e-learning can improve the quality of my learning.		4%	3%	6%	38%	49%	87%
I believe that it is easy for me to use e-learning.		10%	11%	28%	29%	22%	51%
I believe that I will find it easy to use e-learning.		15%	15%	21%	20%	29%	49%
							62%
<b>People level</b>							
<b>71%</b>							

Content		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Theory</i>							
E-books are adequately provided.		4%	10%	16%	36%	34%	70%
<i>Practical</i>							
Interactive whiteboards are available in my school.		9%	10%	10%	20%	50%	70%
<b>Content level</b>							
<b>70%</b>							

Institution		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>School</i>							
The school is willing to accept e-learning as a mode for teaching and learning.		2%	2%	4%	35%	58%	93%
<b>Institution level</b>							
<b>93%</b>							

Learners			
Domain	M (1-5)	W(1)	Ind. ( % )
S	4.19	0.21	84%
T	3.66	0.19	73%
P	3.54	0.18	71%
C	3.50	0.18	70%
I	4.65	0.24	93%
Total	19.53	1.00	
Overall	3.91	0.20	
Indicator	78%		

## 2.8.APPENDIX D: EDUCATORS RESULTS

Results	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I own a laptop/desktop.	71%	4%	2%	6%	17%
I know how to resolve basic hardware or software problem.	88%	2%	2%	4%	4%
I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.	4%	6%	4%	29%	56%
I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).	2%	2%	6%	21%	69%
I know how to navigate the web pages (e.g next or previous page).	4%	2%	10%	17%	67%
I own an email address and can open/ send and add attachment(s).	52%	21%	4%	17%	6%
I am able to minimize and maximize opened application(s).	0%	0%	0%	33%	67%
I am familiar with Microsoft Office.	4%	4%	13%	15%	65%
I can differentiate between .pdf, .docx., .xls and .ppt.	4%	8%	6%	15%	67%
I will spend more money because of e-learning.	2%	2%	8%	17%	71%
I think I want to be involved in e-learning.	2%	2%	8%	21%	67%
Computers are adequately provided.	0%	6%	6%	17%	71%
Learners can easily get access to a computer in the ICT Centre.	0%	2%	8%	29%	60%
Interactive whiteboards are available in my school.	10%	10%	10%	27%	42%
Tablets are adequately provided.	2%	2%	4%	27%	65%
E-books are adequately provided.	1%	10%	29%	39%	21%
Software is sufficiently provided.	0%	2%	4%	31%	63%
Access to web is not a problem to me.	38%	21%	6%	23%	13%
The IT infrastructure in my school can support e-learning.	2%	2%	10%	19%	67%
The school is willing to accept e-learning as a mode for teaching and learning.	4%	4%	13%	27%	52%
I believe that e-learning can improve the quality of my teaching.	4%	15%	17%	31%	33%
I believe that using e-learning can increase my productivity.	0%	2%	25%	40%	33%
I believe that e-learning will enable me to accomplish my teaching more effectively than the traditional classroom-based approach.	2%	8%	2%	48%	40%
I believe that it is easy for me to use e-learning.	10%	15%	35%	25%	15%
I believe that my students will find it easy to use e-learning.	15%	15%	21%	19%	31%

Strategy	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Plans</i>						
I will spend more money because of e-learning.	2%	2%	8%	17%	71%	88%
I think I want to be involved in e-learning.	2%	2%	8%	21%	67%	88%
						88%
<i>Leadership</i>						
Computers are adequately provided.	0%	6%	6%	17%	71%	88%
<b>Strategy level</b>						
<b>88%</b>						

Technology		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Skills</i>							
I know how to resolve basic hardware or software problem.		88%	2%	2%	4%	4%	8%
I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.		4%	6%	4%	29%	56%	85%
I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).		2%	2%	6%	21%	69%	90%
I know how to navigate the web pages (e.g next or previous page).		4%	2%	10%	17%	67%	83%
							67%
<i>Hardware</i>							
Learners can easily get access to a computer in the ICT Centre.		0%	2%	8%	29%	60%	90%
Tablets are adequately provided.		2%	2%	4%	27%	65%	92%
The IT infrastructure in my school can support e-learning.		2%	2%	10%	19%	67%	85%
							89%
<i>Software</i>							
Access to web is not a problem to me.		38%	21%	6%	23%	13%	35%
Software is sufficiently provided.		0%	2%	4%	31%	63%	94%
							65%
<b>Technology level</b>							
<b>73%</b>							

People		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Attitude</i>							
I believe that using e-learning can increase my productivity.		0%	2%	25%	40%	33%	73%
I believe that e-learning will enable me to accomplish my teaching more effectively than the traditional classroom-based approach.		2%	8%	2%	48%	40%	88%
							80%
<i>Experience</i>							
I own a laptop/desktop.		71%	4%	2%	6%	17%	23%
I own an email address and can open/ send and add attachment(s).		52%	21%	4%	17%	6%	23%
I am able to minimize and maximize opened application(s).		0%	0%	0%	33%	67%	100%
I am familiar with Microsoft Office.		4%	4%	13%	15%	65%	79%
I can differentiate between .pdf, .docx, .xls and .ppt.		4%	8%	6%	15%	67%	81%
							61%
<i>Confidence</i>							
I believe that e-learning can improve the quality of my teaching.		4%	15%	17%	31%	33%	65%
I believe that it is easy for me to use e-learning.		10%	15%	35%	25%	15%	40%
I believe that my students will find it easy to use e-learning.		15%	15%	21%	19%	31%	50%
							51%
<b>People level</b>							
<b>64%</b>							

Content		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Theory</i>							
E-books are adequately provided.		1%	10%	29%	39%	21%	60%
<i>Practical</i>							
Interactive whiteboards are available in my school.		10%	10%	10%	27%	42%	69%
<b>Content level</b>							
<b>64%</b>							

<b>Institution</b>								
<i>School</i>		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	<b>Results</b>	
The school is willing to accept e-learning as a mode for teaching and learning.		4%	4%	13%	27%	52%	<b>0%</b>	79%
<b>Institution level</b>								
79%								

<b>Educators</b>			
<b>Domain</b>	<b>M (1-5)</b>	<b>W(1)</b>	<b>Ind. ( % )</b>
<b>S</b>	4.4	0.24	88%
<b>T</b>	3.67	0.20	73%
<b>P</b>	3.21	0.17	64%
<b>C</b>	3.22	0.17	64%
<b>I</b>	3.96	0.21	79%
<b>Total</b>	18.46	1.00	
<b>Overall</b>	3.69	0.20	
<b>Indicator</b>	74%		

## 2.9.APPENDIX E: COMBINED RESULTS

Results	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I own a laptop/desktop.	70%	5%	2%	9%	14%
I know how to resolve basic hardware or software problem.	90%	3%	1%	2%	4%
I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.	4%	6%	5%	25%	60%
I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).	1%	3%	6%	32%	58%
I know how to navigate the web pages (e.g next or previous page).	2%	3%	10%	23%	62%
I own an email address and can open/ send and add attachment(s).	50%	20%	5%	18%	7%
I am able to minimize and maximize opened application(s).	0%	0%	0%	34%	66%
I am familiar with Microsoft Office.	5%	5%	10%	20%	60%
I can differentiate between .pdf, .docx., .xls and .ppt.	4%	10%	6%	25%	55%
I will spend more money because of e-learning.	2%	2%	6%	20%	70%
I think I want to be involved in e-learning.	1%	2%	7%	22%	68%
Computers are adequately provided.	0%	9%	11%	24%	56%
Learners can easily get access to a computer in the ICT Centre.	0%	2%	10%	28%	60%
Interactive whiteboards are available in my school.	10%	10%	10%	22%	48%
Tablets are adequately provided.	2%	3%	5%	28%	62%
E-books are adequately provided.	3%	10%	20%	37%	30%
Software is sufficiently provided.	0%	3%	7%	29%	61%
Access to web is not a problem to me.	30%	20%	8%	29%	13%
The IT infrastructure in my school can support e-learning.	1%	2%	10%	28%	59%
The school is willing to accept e-learning as a mode for teaching and learning.	2%	2%	6%	34%	56%
I believe that e-learning can improve the quality of my teaching.	4%	6%	9%	36%	45%
I believe that using e-learning can increase my productivity.	0%	2%	15%	42%	41%
I believe that e-learning will enable me to accomplish my teaching more effectively than the traditional classroom-based approach.	3%	5%	2%	30%	60%
I believe that it is easy for me to use e-learning.	10%	12%	30%	28%	20%
I believe that my students will find it easy to use e-learning.	15%	15%	21%	20%	29%

Strategy		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Plans</i>							
I will spend more money because of e-learning.		2%	2%	6%	20%	70%	90%
I think I want to be involved in e-learning.		1%	2%	7%	22%	68%	90%
							<b>90%</b>
<i>Leadership</i>							
Computers are adequately provided.		0%	9%	11%	24%	56%	<b>80%</b>
<b>Strategy level</b>							
<b>85%</b>							

Technology		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Skills</i>							
I know how to resolve basic hardware or software problem.		90%	3%	1%	2%	4%	6%
I know how download files using different browser(s) e.g Chrome, Internet Explorer etc.		4%	6%	5%	25%	60%	85%
I know how to resolve common errors while surfing the Internet (e.g Page cannot be displayed).		1%	3%	6%	32%	58%	90%
I know how to navigate the web pages (e.g next or previous page).		2%	3%	10%	23%	62%	85%
							<b>67%</b>
<i>Hardware</i>							
Learners can easily get access to a computer in the ICT Centre.		0%	2%	10%	28%	60%	88%
Tablets are adequately provided.		2%	3%	5%	28%	62%	90%
The IT infrastructure in my school can support e-learning.		1%	2%	10%	28%	59%	87%
							<b>88%</b>
<i>Software</i>							
Access to web is not a problem to me.		30%	20%	8%	29%	13%	42%
Software is sufficiently provided.		1%	2%	10%	28%	59%	87%
							<b>65%</b>
<b>Technology level</b>							
<b>73%</b>							

People		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Attitude</i>							
I believe that using e-learning can increase my productivity.		0%	2%	15%	42%	41%	83%
I believe that e-learning will enable me to accomplish my teaching more effectively than the traditional classroom-based approach.		3%	5%	2%	30%	60%	90%
							<b>87%</b>
<i>Experience</i>							
I own a laptop/desktop.		70%	5%	2%	9%	11%	20%
I own an email address and can open/ send and add attachment(s).		50%	20%	5%	18%	7%	25%
I am able to minimize and maximize opened application(s).		0%	0%	0%	34%	66%	100%
I am familiar with Microsoft Office.		5%	5%	10%	20%	60%	80%
I can differentiate between .pdf, .docx., .xls and .ppt.		4%	10%	6%	25%	55%	80%
							<b>61%</b>
<i>Confidence</i>							
I believe that e-learning can improve the quality of my teaching.		4%	6%	9%	36%	45%	81%
I believe that it is easy for me to use e-learning.		10%	12%	30%	28%	20%	48%
I believe that my students will find it easy to use e-learning.		15%	15%	21%	20%	29%	49%
							<b>59%</b>
<b>People level</b>							
<b>69%</b>							

Content		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>Theory</i>							
E-books are adequately provided.		3%	10%	20%	37%	30%	67%
<i>Practical</i>							
Interactive whiteboards are available in my school.		10%	10%	10%	22%	48%	70%
<b>Content level</b>							
<b>69%</b>							

Institution		Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Results
<i>School</i>							
The school is willing to accept e-learning as a mode for teaching and learning.		2%	2%	6%	34%	56%	90%
<b>Institution level</b>							
<b>90%</b>							



Combined table			
Domain	M (1-5)	W(1)	Ind. ( % )
S	4.25	0.22	85%
T	3.65	0.19	73%
P	3.45	0.18	69%
C	3.45	0.18	69%
I	4.50	0.23	90%
Total	19.30	1.00	
Overall	3.86	0.20	
Indicator	77%		