Exploring Views of Teachers, Teacher Trainees and Educational Experts about E-Learning-based Teacher Training Programs in Saudi Arabia:

An Empirical Study

PhD Thesis

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Declaration of Authorship

I declare that the work described in this thesis is original work undertaken by me for the degree of Doctor of Philosophy, at the software Technology Research Laboratory (STRL), at De Montfort University, United Kingdom.

No part of the material described in this thesis has been submitted for any award of any other degree or qualification in this or any other university or college of advanced education.

DEDICATION

This thesis is dedicated to my parents, my late mother Badriya and my late father Abdullah, may Allah be generous and merciful with them all times.

My wife Um Omar, thank you for your limitless assistance, my son Omar.

All My Brothers and Sisters.

In addition, friends, May Allah bless you all with your children and makes everything easy for them to succeed.

Abstract

Technological developments have led to changes in teacher training processes globally. In Saudi Arabia, a variety of e-learning platforms and processes have been adapted in education and within teacher training processes. However, there is lack of knowledge and understanding of what types of e-learning teacher training programs exist in the country. This research aims to identify and explore the existing systems and to recommend the features that should be included in the future platforms for Saudi Arabia. To accomplish the study adopts a mixed-methods research design consisting the use of literature review, questionnaire, semi-structured interviews to identify and analyse the existing e-learning systems.

The study sample included 432 teachers and educational experts randomly selected among the wider population of teachers, trainee teachers and educational experts. 216 teachers, teacher trainees, and professionals/experts working within teacher training were interviewed while another 216 experts in e- learning and use of technology in training and education were also included in the study. The main data was analyzed through the use of statistical package program (SPSS). The central results indicate no statistically significant differences in the respondents' views and that the existing teacher training system in Saudi Arabia are diverse, generic and generally lack any focus in teacher training.

The research concluded that further investigations should be carried out to analyse the existing teacher training approaches and how technology is used in this process. It calls for development of a strategic plan by the government and those involved in teacher training on how technology can be adapted and used in improving teacher training by working with all parties involved. Finally, it outlines a summary of features to be

included in future e-learning teacher training programmes based on the findings of this research.

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List of Abbreviations

MOEH	Ministry of Higher Education
MOE	Ministry of Education
TTC	Technical Trainers Collage
EET	Electrical and Electronic Technologies
ICT	Information and Communication Technology
MRM	Mixed Research Methods
E-TTP	E-Learning Teacher Training program
SPSS	Statistical Package for the Social Sciences
LMS	Learning Management Systems
OECD	The Organisation for Economic Co-operation and Development
CfBT	Centre for British Teacher

Chapter 1: Introduction

Objectives

➢ Introduction

➢ The problem

➢ Aims and objectives

➢ Research Questions

➢ Significance

➢ Structure

➢ Conclusion

1.1 Introduction

The teacher training programs, like most other aspects of life, have been undergoing tremendous changes in many countries, especially the rapid development in the internet and wider related technology has transformed the field. The government of Saudi Arabia in one of its major strategies in its endeavour to modernise its education services has been investigating the various ways in which e- learning could be adapted to make teacher-training programs more relevant, efficient and effective. However, it is hindered by the lack of a well-structured and formalised teacher training system in the country thereby hindering effective development and implementation of an online teacher-training program in Saudi Arabia. This research seeks to explore how lack of formalised teacher training programmes in Saudi Arabia can be addressed by establishing online teacher training system. The study investigates the content, design and structure of the existing systems and packages used. In addition to the reforms by Ministry of education in Saudi Arabia, there is a huge desire to reform schools and the education systems, both within and outside Saudi Arabia. One such process is the alteration of the ways in which teaching and teacher training education is provided by altering the ways in which education and teaching is offered, such that it aligns with the public discourses and is in context of the community it is serving (Hollins, 2011). This is because teaching and teacher training ought to align to the modernisation processes to facilitate continued relevancy in production and acquisition of knowledge. Ball & Forzani (2009) argue that in addition to teaching practice, the practical proficiency of working within education, including knowhow of relevance and usage of various systems is necessary in producing successful and competent teaching professionals. In a situation such as that of Saudi Arabia where limitations in formalised and structured teacher training programmes exist, understanding the weaknesses in teacher training

processes and how to make them structured, will facilitate new ways of teacher training. This will lead to development of competent e-learning system for teacher training and to the successful usage of online libraries and e-books which is vital in the fast changing world.

The Saudi Arabian society is changing fast in response to the global social and technological developments, which is having a profound effect on Saudi Arabian education system, such as the need to produce competent and employable graduates. Education training systems should thus keep abreast with the best international standards by preparing the teaching fraternity to deal with the demands of schools. According to Musset (2010), teacher education is paramount because it plays a major role in the quality of teaching in schools and by extension the growth and development of the community as a whole. Following the research on e-book library users, Duncan (2011) concluded that increased usage of virtual library has led to increased interest in emerging technologies thus making users effective users of new technologies. In a country where education for teachers at all levels is informal and unstructured, often based on local social demands, application of such technologies and integration of teacher training is difficult to achieve. There is thus demand for structured and formalised teacher training approaches, which will not only facilitate ease of technology application in education but also improve the teacher training provisions in the country while widening the use of technology in schools and education settings.

Redmond & Albion (2008) argued that in the early stages of their practice, teachers teach as they were being taught and hence the most effective way to increase adoption and usage of information and communication technology is to offer effective teacher training programs. Teachers' should be taught to reflect the generation they will teach and live with and it is therefore not good enough to teachers in the ways of that focus on

past practices only but instead they ought to be trained in forward thinking approaches (Jacobsen, Clifford & Friesen, 2002). The desire by Saudi Arabian government to increase adoption and usage of technology and internet in many of the country's sectors can thus be accomplished more successfully by increasing usage and relevance of technology by prospective teachers during their teacher training programs. This requires formalised and structured teacher training system that affords teachers and trainers a standardised and collaborated model of training.

As other changes take place within Saudi Arabia such as the development of new teacher training approaches and systems that seek to keep abreast with the changes occurring in the educational sector and the adoption of pedagogic training schemes that are accessible to female head teachers, there is need to incorporate new teaching processes, such as e-learning systems. Many critics argue that the current problems in Saudi Arabia where young people are unprepared for work are caused by among other things the poor and irrelevant teaching systems that are a reflection of poor teacher training (Allam, 2011). Thus, teacher in training and those in charge of these training programs should ensure that the trainees learn about, learn with, and learn to incorporate technology into their own teaching (Maddux & Gibson, 2012). For such a process to succeed, the current e-learning teacher training programs in Saudi Arabia should be relevant to the trainee teachers and the teacher trainers. It also ought to be centralised and formalised to facilitate nationwide management, ease of resource allocation and improvement in pedagogical approaches. This research seeks to explore this set of interrelated issues by identifying the strength and weaknesses in the existing e-learning systems and offering tangible alternatives, which will help in the implementation of alternative teacher training programmes. This research will also endeavour to outline the benefits of online system as a tangible and ideal option for

implementing formalised and structured teacher training in Saudi Arabia by identifying its benefits and researching on how best to design and implement the e-learning system.

The globalisation of education also means that the latest books, literature and researches are available more quickly online than in print format. Furthermore, many researchers are not published and thus e learning through the internet offers trainee teachers options of more resources than depending on stone and mortar libraries. Online libraries are also better for users in rural and remote areas where publications are rare and transport is difficult. Online resources are also easy to refine to users' needs, rate articles to ensure users access quality and literature that is more relevant and collaborate work among users.

E-learning systems are also suitable in presenting case studies, virtual classrooms, reviews and other integrated training at lower costs and with more convenience for users such that graduate teachers are able to supervise their pupils more effectively and enable them to reach the required standard. Social and cultural changes in Saudi Arabia, such as the increasing number of females in education and the changing roles of women in the society demands a higher number of female teachers who are competent and able to train teachers in line with the contemporary social demands.

E-learning teacher training program will also facilitate more effective establishment and integration of the teacher teaching systems. This is especially so given that there are many programs that exist for men and none have been created for women. For example, the education programs are sometimes set up for male head teachers in provincial level (Schleicher, 2012) but are not available to women. Such programs ought to be offered to female teachers as well but this does not often happen given that men and women are

trained separately. This will help counter the existing systems that are insufficient in meeting the Ministry of Education requirements for teacher training.

1.2 The problem

As noted earlier, Saudi Arabia lacks an effective, formalised and structured teacher-training program with existing teacher training colleges divided not just in terms of their focus on men and women but also with regional differences (MOHE, 2015). The various training schemes such as the Islamic Council courses, semi-structured individual and tailored courses, university education and cultural courses and education behaviour courses are availed for prospective teachers by different institutions for prospective and existing teachers (Garhwali, 2006; Samadhi and Marwan, 2006). Given the role religion and culture plays in Saudi Arabia, the teacher training offered is often religious based plus other courses focused on technical courses. MOHE (2015) states that as of 2015, there were 21 Government Universities and 12 Technical Colleges some of which offer teacher training courses plus 18 Primary Teacher's Colleges for men and 80 Primary Teacher's Colleges for women. Nevertheless, most of these colleges and institutions have diverse courses making it difficult for the trainee teachers to have a shared set of standards and effective skills ensuring competent teaching across the different levels of schooling.

In addition to evidence about the teacher training processes and programmes in Saudi Arabia, the author of this thesis was also involved in teaching activities within Saudi Arabia. The author has learnt that becoming a teacher entailed training through the schemes that are mainly structured based on regional and institutional needs or with respect to the courses that trainees ought to teach students. This is mainly because the education system is based on historical and cultural settings of Saudi Arabia, which are based on two processes. First it is the activities of education focused on an inherited traditional education consisting of the traditional education in religious schools and seminars in the mosques and the scientist's places countrywide (MOE, 2010). MOE (2010) identifies the second teacher training and awareness activities as involving the regular education in Mecca and Al Medina Al Monawara, a traditional education in its essence that is offered in private schools and copies the western and eastern forms of education systems.

There are also no online teacher training programmes that have been identified to date but this will be researched in this research. There are some institutions that have started to offer vocational teacher training programmes such as Technical Trainers College (TTC) which offers Bachelor in Engineering Technology in three areas; Electrical & Electronic Technologies (EET), Information and Communication Technologies (ICT), and Mechanical Technologies leading to initial vocational teacher training skills (Technical Trainers College, 2015). Moreover, information and communication technology (ICT) has become an inevitable modern necessity for the growth and development of societies, especially in light of daily interaction with media, modern means of communication, satellite networks, and data banks (Zembylas & Vrasidas, 2005). These developments have become a part and parcel of education and are contributing in helping both individuals and institutions to get information and knowledge from many sources, regardless of learners or teachers' geographical location. Such developments have led to increased desire by both individuals and institutions to seek solutions that are will help them to access suitable training materials and opportunities. The ministry of education in Saudi Arabia is looking for effective solutions and opportunities for e-learning packages for teacher training program.

One of the major concerns in the educational sectors nowadays is the issue of training teachers and on how to integrate information and communication technology as part of their duties and employ this technology in teacher training programs. It is believed that online training of teachers can improve teaching and learning environment, enrich positive experiences of students, strengthen their participation and enhance their concepts of autonomy by which all they can reach the foundations of continuous learning and personal development (Galanouli, Murphy & Gardner, 2004). Teachers are

considered an essential component in the educational process since they manage and drive education process through their intellect, knowledge, culture, skills, and training that they receive before, during and after training and while in service (Swedan, 2004). Research shows that the essence of the reforms in the educational process must focused on schoolteachers, and that on-going training must use the most modern technological programs and be focused on the developments of their work(Galanouli, Murphy & Gardner, 2004). In this respect, internet is considered as one of the most important changes that has contributed effectively in the production and dissemination of knowledge, especially designing and producing of training programs. Teachers thus need to learn how to make the best of the internet by not only being able to use it in their work but also by having it integrated into their training programs as a method by which teaching is provided so as to increase its relevance and enrich the learning and teaching experience. For example, it is believed that providing training programs online enhances the exchange of experiences and perspectives among educators and encourages trainees to participate effectively in the educational discussions of and specialised conferences. Saudi Arabian government thus ought to look at the best possible ways of making e learning for teacher training programs a reality, a problem this research addressing.

Asiri (2006) argues that good e-learning systems are extremely important in contributing towards the achievement of higher quality results in teacher training programs and processes. He notes that good e-learning systems facilitate distant training of teachers by providing interactive training process to huge numbers of trainees at the same time, facilitating communications and interactions between the trainer and trainees, providing of educational research and transmitting interactive

specialised conferences. Such systems also help in improving communication skills among those involved in the educational processes.

Recent research has found positive results for training teachers online (Shin, 2008; Nelson, 2007; Mosley, 2007). They indicate that e-training got positive effects on teachers' self-efficacy, their daily interactions, their attitudes towards the training programs, their confidence in themselves and their abilities to identify their individual characteristics and professional tasks. It has also been found that principals and teachers got more aware about the internet uses, video conferencing, and programs such as the (ICDL), and (INTEL), which facilitate teachers' presentation of educational material (Romano, 2008). Research on distance teacher training has also revealed positive findings such as trainees' professional abilities are enhanced, their administrative solutions within school and class are developed, their motivation level is raised, their research and administrative skills are promoted, and their methods of dealing with interactive programs are improved (Mangieri, 2008; Mosley, 2007).

Development of quality e-learning teacher training systems requires good understanding of the existing systems, which is acquired through research on users' experiences, views, and testing of the existing systems. These requirements present another problem that this research will address. Most of the local researchers have mainly explored the effectiveness and impacts of the e-learning programs on students' overall achievements. None of these researches have critically analysed the content or the technical design of these programs. This research will attempt to analyse the both the educational content and technical design of these programs in order to determine the quality of the existing systems, suggest a better developmental model and implement it by creating a new updated version of e-learning teacher training program.

This research exist because there is little if any nationwide adoption of e-learning systems both for teacher training programs and for all other sectors of education. The research is also developed on the assumption that no analytical study of the contents, design and availability of e-learning program for teacher training exist in Saudi Arabia. It will investigate areas such as the structure, nature, effectiveness, design, content and technical design of the online teacher training programs in Saudi Arabia. This research will thus examine the existing e-learning teacher training programs, identify their weaknesses and strengths and thereafter design a new package based on the problems and solutions identified in the research phase.

Furthermore, there is a developing controversy in the Saudi educational context regarding the online teacher-training program. Some believe that it is useful for the educational leadership and teachers since it saves funds, time and efforts, and provides all field educators with equal training opportunities. On the other hand, others believe that the content of online training is less proficient, less effective, and harder to track and evaluate compared to traditional training. However, this research will not directly address the need or otherwise of e-learning teacher training programs, it will seek to develop the best possible system by conducting an analytical study on the content of the existing programs and the educational values of these contents.

Furthermore, it will seek to identify the nature and the objectives necessary for the teacher training programs and their importance in facilitating effective teacher training. It will critically review the existing e-learning systems and their role in Saudi Arabia, how to make them more suitable for teachers and teacher training. It will explore what the teacher training needs and e-learning needs are by looking into the available programs and whether they are up to date. It will conclude by outlining the features of a

better e-learning teacher-training program that will facilitate in offering a structured and formalised teacher training in Saudi Arabia.

According to (Ali Al-Asmari &M Khan (2014), the education outcome in Saudi Arabia is poor. Some studies suggested that it is because of the lack of the teaching skills that comes from poor teacher training and inadequate preparation of teaching fraternity (Ali Al-Asmari &M Khan (2014). Therefore, teacher-training programs contribute directly in the improvement of the teacher performance in terms of knowledge and skills, which translates to better teaching and learning processes hence producing better-trained and prepared students and graduates.

In sum, the central problematic of the study is focused on exploring whether the existing teacher training progarmmes in general and   e-learning teacher training programmes in particular are used effectively in KSA and discuss ways encouraging teachers as well as educational policy makers to use and implement e-learning based teacher training programs. This main research problem will be investigated through exploring the views and attitudes of a randomly selected group of teacher trainees and educational experts in Saudi Arabia.

1.3 Research questions

The aims and objectives of this study will be accomplished by exploring the following questions:

1.   What are the views and attitudes of a selected group of teachers, teacher trainees and educational experts concerning the strengths and weaknesses of the existing system of the existing e-learning teachers training programs and how can these be improved?

2. What is teacher training and what does it entail?

3. What is the nature of the existing teacher training programs in Saudi Arabia and to what extend the e-learning strategies can be integrated within such training schemes?

1.4 Broader aims and objectives

Although in Saudi Arabia is not in official e-learning teacher training programs but they are in for model of the small systems, this study aims to identify and critically analyse the existing e-learning teacher training programs in Saudi Arabia and recommend features to be included in future systems so as to improve teacher training in the country. It focuses on teacher training programs which are aimed at those professional who are expected to teach in all the core subjects and areas of the Saudi Arabian primary and secondary schools curriculum. This will be achieved by accomplishing the following core objectives

1. A critical analysis literature in order to determine the teacher training processes and e-learning programmes that exist in Saudi Arabia. In this process, literature review and basic research of teacher training programmes in the country will be analysed.

2. Through questionnaires and semi structured interviews and working with a panel of experts in determining the strengths and weaknesses of the existing systems, we aim to analyse the structure, content, usability and usefulness of the existing e-learning teacher training programs in Saudi Arabia.

3. Outlining a list of recommended features that should be included in future e-learning platforms and teacher training programs for Saudi Arabia. This is done by outlining a list of recommendations and actions that need to be taken in developing a suitable e-learning system teacher training in Saudi Arabia.

1.5 Significance of the study

This study will contribute towards better understanding of the teacher training programs in Saudi Arabia, their weaknesses and how they can or should be improved. Secondly, this research will provide better understanding of the nature, structure and contents of the existing e-learning teachers training program within Saudi Arabia and beyond. It will offer theoretical and practical solutions to the Saudi Arabian government in facilitating better teacher training processes using e learning thereby enabling the government to meet its goals for increased and more relevant teacher training processes. This study will also create an opportunity for further researches and identification of solutions to counter the existing problems faced by the government of Saudi Arabia in its endeavour to counter the problems of graduates who are unemployable. This will be by facilitating better-qualified teachers, employment of more realistic and relevant pedagogical approaches and better suited school leavers. By understanding and offering solutions to the weaknesses and problems that both online and offline teacher training programmes have in Saudi Arabia and proposing ways to counter these problems by launching better and more suited systems, this research will help Saudi Arabia to develop more adaptable and competent graduates.

The results of this study will contribute towards deeper understanding by decision-makers' in education departments in Saudi Arabia by providing them with Saudi Arabian oriented research which will highlight the problems and solutions of teacher training programs in the country. It will also enable other researches, within and

outside Saudi Arabia to gain better understanding of e-learning teacher training programs and create interest for further researches in this area. The results of this study may help electronic content designers get useful and objective feedback so that they can modify their design accordingly. Results may also assist curricula managers, principals and teachers themselves in getting deeper understanding of their duties and messages. Perhaps this research will contribute to the enrichment of research efforts in the field of online training and guide future studies about the content of electronic training and more appropriate methodology to be used.

1.6 Thesis Structure

This PhD research will be structured into seven chapters as illustrated in Table 1

Table 1: Thesis Structure

Chapters	Contents
1. Introduction:	This chapter will introduce this research and its background details by expounding on the problem, aims and objectives of this research, the main research questions, its significance, definition of the main terminologies, and presentation of the general structure of this research.

2. Teacher training explored	A review of existing literature to determine the terminologies, importance, characteristics and types of teacher training processes. It will also introduce importance of teacher training, the teacher training pathways that have been adopted in other countries, the pedagogical theories, perceptions and models.
3. Teacher training in Saudi Arabia	A critical evaluation of the pedagogical theories, perceptions and models on teacher training programs with specific focus on Saudi Arabia. These theories are behaviourism, cognitive, constructivist, activity and connectivism. The pedagogical characteristics of e-learning that have been adopted in Saudi Arabia are explored and the views on the nature and progression of forthcoming teacher training programs in the country reviewed.
4. Research Methodology	In this chapter, the hypothesis of this research is developed based on literature review and methodology that will facilitate test the hypothesis and seek answers to their questions outlined and discussed. This chapter will include discussion on the development of the research process, in terms of philosophy and paradigm, approaches, strategies, choices, time horizons and techniques and procedures to be used in the research

	process.
Questionnaire	A questionnaire is developed based on the aims and objectives of this research and the hypothesis developed in chapter four. This entails questionnaire formulation, design and choice of the research process and methods, discussion of the questionnaire structure, sections and relevance and a summary of the theoretical framework guiding the questionnaire development and the research process.
6. Data collection procedures	This chapter outlines the specific processes, steps and activities that will be undertaken in order to meet the aims and objectives of this research. This entails discussions of the instruments and targets, sampling process, distribution activities, ethical considerations, selection of the methods and measurements to be used. It also outlines the regions where the research will be carried out to answer the questions arising from the

	hypothesis.
5. Data analysis	An analysis of the data collected and results will be presented including the findings and the users experience on the existing systems. The experiences and the views of the trainee teachers and teacher trainers on the existing systems, both e learning and teacher training activities undertaken will also be analysed including the formal and informal teacher training processes. The findings will be presented in terms of factors such as usability, relevance, compatibility, like or dislike of users experiences on various systems and tasks. They will also be presented in form of formal and informal teacher training programs.

	This will outline the details of the findings of Chapter 7 and determination whether the existing teacher training systems – meaning formal or informal – are suitable for Saudi Arabia and how they can be improved. In addition, the requirements for a new, updated and relevant e-learning teacher-training program for Saudi Arabia will also be outlined as a means of complementing any weaknesses in the existing teacher-training program.
7. Conclusions and Limitations and Recommendations	This chapter presents then conclusion of the whole research and contents of this research. This creates helps in summarising the research and creates a foundation upon which the recommendations, as per chapter ten, are developed. It also outlines the limitations and weaknesses of this research to facilitate the readers to understand the areas future researchers ought to look at and improve upon.

Recommendation and Prototype	The recommendations of this research based on the conclusion outlined in the previous chapter and the findings of the entire research are discussed. The recommendations state what the government and other stakeholders ought to do to improve and advance teacher training as a part of the collective education and teaching culture in Saudi Arabia. It also outlines what may be necessary in developing an ideal e-learning teacher training program by discussing how to the requirements and development of a prototype.
References	This will list the literature from which this thesis will cite
Appendix	Literature materials that are necessary in facilitating the reader to understand the work of this research better will be included in this section.

1.7 Conclusion

This chapter set out the general structure of the research, the nature of the problem, aims and objectives and its significance. It outlines the problems of teacher training in Saudi Arabia while stating the aims and objectives of the research, its questions and significance. It also outlines the research background and sets out the structure of the research thereby facilitating the researcher and readers to have reference points in respect to the entire research.

Chapter Two: Teacher Training Explored

Objectives:

➢ Introduction

➢ Rationale

➢ Importance

➢ Initial teaching skills

➢ Keeping abreast with the changes

➢ Sustenance

➢ Pathways to teaching

➢ Pedagogies

➢ Theoretical frameworks

➢ Behaviourism

➢ Cognitivism

➢ Constructivism

➢ Conclusion

2.1 Introduction

To effectively analyse and understand the nature of teacher training programs, and to contextualized the research, this chapter explores what is entailed in teacher training processes namely its rational, importance, pathways, pedagogies and theories. It investigates the contents of the current literature to determine the rationale of teacher training and the core terminologies used in the research. It undertakes literature review on theories, views and practices of teacher training in various geographical regions in the world. It creates the foundation for chapter three, which deals with specific examples of pedagogies and implications of theories of teacher training in Saudi Arabia and countries that share similar scope and views of teacher training such as those in the Middle East, North Africa, Indonesia and Malaysia.

2.2 Rationale

The teacher training ought to be relevant, suitable and competent to meet modern day complex needs and to enable future generations to fit in the future communities. Researches have consistently shown that achievement in schools is determined by the quality of teachers (Eide, 2004; Hanushek & Rivkin, 2006; Metzler & Woessmann, 2010; Musset, 2010; Rivkin et al., 2005; Rowe, 2003). Teacher training is an important area of research because many scholars, institutions, educators, parents, governments and other stakeholders are often wondering how to improve education and the quality of teacher training. This never-ending desire to improve education performance, make students and graduates relevant and compatible to both the present and future societies, is invariably tied to the type of teacher training available. Metzler and Woessmann (2010) argued that affecting the proper skills of high quality is hugely

dependent on the quality of training achieved by the teachers. Quality and high level skills can only adequately impact on students is teachers are well trained (International Alliance of Leading Education Institutes, 2008).

Grayling (2011) argues that teacher training is important because it helps cement the underpinning philosophy and understanding of the community through teaching theories and approaches. Teaching strategies should be structured such that they promote deep and profound learning coupled by active engagement of all learners within the group. This enables teachers to gain deep understanding and enhanced engagement with the concepts and to apply a range of pedagogies in their teaching activities that enhance student learning capabilities and engagement.

2.3 Importance

OECD (2005) noted that teachers are the most important factor in determining students' achievements in any school. Government activities such as education reforms must take into account the ways in which teachers are trained in order to improve students' performance. Failure to consider teacher training while seeking to improve education services will lead to inefficient results (Musset, 2010). It is a major challenge to design   e-learning systems for teacher training and to create policies that are necessary in educating and training teachers capable of assisting students to acquire the required competencies for the fast evolve modern world. These challenges can be tackled by understanding the importance of teacher training.

2.3.1 Initial teaching skills
Training teachers is one of the most challenging processes in the modern day society due to the extensive and rapid expansion of knowledge available to both students and teachers at the same time (Perraton et al., 2001). Teacher training offers skills and

competencies to persons seeking to join teaching profession thereby providing competent teaching workforce. According to Grayling (2011), teacher training enables new teachers to gain in-depth understanding and wisdom necessary for facilitating contextual understanding by the learners, which enables them to become engaged and motivated learners. Teachers should not merely broadcast their personal skills and knowledge but they should instead deliver and establish a context whose resources and environment will encourage learners by making an effort towards learning (Bransford, Brown & Cocking, 2000). It should also help the learners to use the skills and knowledge they have to build bridges to new understanding (Darandari, 2010).

2.3.2 Keeping abreast with the changes

The role and functioning of schools is changing in most countries, which coupled with other social changes are placing new demands upon teachers globally. Research by EURYDICE (2004) and OECD (2009) found that changes and demands in schools and classrooms are becoming more pronounced such as being increasingly multicultural. The requirements for them to integrate students with special learning needs, increasingly required to adopt technology in teaching and other schools activities especially in areas of information and communication technologies, demand to involve parents in more in schools and requirements for them work within evaluative and accountability frameworks. These demands meant that teacher training should be altered to meet these requirements. These changes should be made in both pre-services and in-services levels to ensure teachers are trained to meet the on-going demands in their environments (Musset, 2010).

On the other hand, social changes and reforms are sustained and effected by the community members. Schools play a major role in guiding communities through various types and levels of reforms. Teacher training plays a major role in such reform

processes because well-trained teachers are often competent, capable and motivated to ensure social reforms keep abreast with societal changes (EURYDICE, 2004). It helps to update individual approaches, attitudes, knowledge, skills and understandings in the light of new researches, advancement in teaching techniques and in the application of new theories in teaching practice.

Musset (2010) noted that, many researchers concur that teacher training is crucial in improving student performance in school. Competencies in teaching are achieved through good teacher training and education systems. Improved quality of teachers through enhanced teaching will be reflected by improved quality in education results. Training teachers and ensuring that they are well qualified and competent to carry out teaching jobs increases performance. Teacher training also increases the performance of teachers by enabling them to become more competitive, highly aware of what is happening in their environment and to keep up with the demands of their institutions and communities.

According to Haycock & Crawford (2008), students taught by teachers in the top quartile of effectiveness improved their performance by approximately 5% while students taught by bottom quartile teachers lost their performance by 5% respectively. It has also been found that students taught by effective and competent teachers for three consecutive years tended to score approximately 50% higher than similar students taught by teachers who had been rated in the bottom fifth of teachers' effectiveness ranking (Haskins & Loeb, 2007). Teacher training, especially professional development and in-service courses are important in helping weaker teachers to become more effective, facilitate information exchange with experts and teachers and to improve weaknesses identified in individuals and schools.

2.3.3 Sustenance of standards

Another importance of teacher training is to create some form of standard for instruction of the next generation. This explains why one of the most controversial topics in the teacher training and education sector if the quest for what constitutes an effective teacher training program which is ideal for preparing teachers (Quigney, 2010). According to Quigney (2010), the quality of teachers is a major issue in most countries because many teachers are either untrained or under qualified in the subjects they teach. There is also the need to make the education institutions sustain what is perceived as 'world class' education levels, which is only achievable with 'world class' teachers. Altbach (2011) argues that this is only possible if teachers are able to ensure the teaching helps sustain the required standards in terms of teaching, social engagement, service delivery and all other aspects of the society. Teachers consistently faced with increasing demands to meet the needs of the communities, governments, international organisations and other on-going changes that are dynamic. They are expected to play roles in situations such as multiculturalism, globalisation, social mobility, inclusive education, social cohesion, human rights, accountability for achieving learning targets, dynamic needs of life-skills, changing economic structures and workplace demands and the metamorphosis of the roles (Perraton et al., 2001). To meet these demands and requirements, teachers training programs become a necessity in every country (Knight, 2011; Rumbley, Altbach & Reisberg, 2012; Salmi, 2009; Schneller, Lungu & Wächter, 2009).

2.4 Pathways to Teaching

To practice teaching, many countries require some sort of teaching profession certification to ensure the teachers meet the required competencies and skills. The certification that entails teacher-training activities is attained through different routes.

There different routes or pathways can be classified into different methods in order to analyse teacher training pathways comprehensively. Schwille & Dembélé, (2007) noted that teacher training pathways are broadly classified as those that focus on initial teacher training based on specialised institutions often tutored by teacher trainers while continuing training is often offered as an addition to the teaching practice.

These are offered in form of location based such as classroom or lecture halls, periodic seminars and workshops, distance education programmes or a mixture of one or more of these options. The teacher training options are developed with multiple intentions such as initial teacher training and structures in their entirety by reaching both the teachers and the wider community. In addition, a dissemination of good teaching professional practices, increasing and widening teacher training opportunities such as aiding school-based training and professional development opportunities and as a process by which the link between theory and practice are strengthened (Perraton et al., 2001).

2.4.1 Traditional and non-traditional pathways

One of the pathway classification approaches is where teacher training is based on traditional and non-traditional approaches, with different scholars' differing on subject to what each scholar perceives as traditional or non-traditional pathways. Traditional means the process where teachers are trained by joining teaching courses after their secondary or high school education and qualify as teachers. It referred to as the standard certification teacher-training pathway. This teacher training pathway requires prospective teachers to have attained admission to a college or a university with approved teacher training program, to having taken and passed the required courses, exams and practice skills and to have acquired a certificate as qualified teachers (Jorissen, 2003). Traditional method is dependent on countries, education boards and

teacher management. For example, Boyd et al., (2007) noted that in the USA, traditional teacher certification varies according every state's rules of licensure with only 38 out of 52 states requiring teachers to have gained licensure before practicing.

Traditional pathway found to have a positive relationship between the subject the teacher studied and the performance of student being taught (Clotfelte et al., 2008; Wilson et al., 2003). It has also been found to have a positive impact on student outcome of pedagogical preparation and teacher training practice (Gustafsson, 2003; Musset, 2010; Wayne & Youngs, 2003; Wenglinsky, 2002). However, this pathway have been criticised for failing to produce teachers successfully in accordance to demands in terms of numbers and qualifications. Quigney (2010) also noted that traditional approaches have been found weak in that they overload students with unnecessary coursework in addition to being costly and cumbersome processes of teacher training. This approach has also been found lacking in that it trains teachers to use traditional assessment approaches where students are compared with one another using norm-referenced assessment methods whose formulation and structure is to discriminate among students (Darandari & Murphy, 2013).

2.4.2 Non-traditional pathways

The other approach is the non-traditional teacher-training pathway also called non-standard method. This refers to all other pathways that are distinct from the traditional pathway. These alternative pathways to teaching exist in numerous formats, structures and levels of rigor. They have evolved in different countries and regions in order to meet the unmet needs of providing quality educations to pupils and students throughout the education systems. Some scholars see this alternative approach as the process where teachers are trained using other instruction methods such as distant learning, online training irrespective of whether such training is offered within the

traditional teacher training structure or not. Others perceive this as the process where teachers gain teaching skills and qualifications through other processes. One of them is where graduates in other subjects go for short courses in order to gain teaching qualifications. Other non-traditional teacher training is the learning by distant learning (Moore, 2007) and alternative teacher certification programs (Suell & Piotrowski, 2007). This non-traditional pathway has become more common in many countries in the last ten years (Walsh & Jacobs, 2007).

Non-traditional or alternative teacher training pathways were developed due to the deficiency of traditional teacher training pathways (Feistritzer, 2008; Rhee & Keeling, 2008; Suell & Piotrowski, 2006). These pathways also arose in order to fill in teacher shortages caused by factors such as teachers departing to other professions (Haberman, 2006), falling interest in teaching careers at initial entry level, aging workforce and racially diverse populations. They have also become more useful due to the critical shortage of sciences, engineering, mathematics, and special education qualified teachers (Dangel & Guyton, 2005). These programs are often shorter than the traditional teacher training pathways (Abell et al., 2004).

These alternative pathways have had both positive and negative impact in teacher training processes and in the overall school performance. Feistritzer & Haar, (2008) noted that in the US, this non-traditional pathway has enabled more men, non-white, mature and educated people to gain entry into teaching profession. They have also brought about new skills and competencies to classroom and to teaching practices (Humphrey et al, 2008; Rhee & Keeling, 2008) including people from diverse academic interests and disciplines (Humphrey & Wechsler, 2007). It has also helped in addressing teacher shortages especially in western countries such as USA, Canada and the UK where the number of people joining traditional teacher training pathways had been

falling. According to research by Dangel & Guyton (2005), alternative teacher training pathways have positive impact such as better recruitment and selection of teaching candidates based relevant factors that include minorities, academic skills, professional qualifications, knowledge of specific subjects and comprehension of how children learn.

These pathways are also easier to integrate into professional development, modify to suit the social economic needs of the community where teachers are to be placed and to include aspects such as modern learning technologies and personnel needs (Burstein & Sears, 2008). They have facilitated increased entry into teaching of educators in areas such as education in special needs (Quigney, 2010), mathematics, and sciences (Honawar, 2007). They were been lauded for bringing in mature and capable individuals into teaching because it offers more accessible and shorter routes of certification compared to the traditional routes. They have

Non-traditional pathways have been criticised for poor results among students because these teachers often lack pedagogical techniques and are unable to deal with students with the highest needs (Russell & Wineburg, 2007). They have also been seen detrimental because they "short-change both teacher candidates and the students they teach because their preparation, particularly in pedagogy, is inadequate" (Allen, 2003: p. 6). Suell & Piotrowski (2007) also argued that these pathways have also contributed to long-term staff shortages because they increase the number of people reaching retirement age quickly.

These criticisms or inadequacies disapproved because there is limited research (Boyd et al., 2005) and those that exist are either inconclusive (Constantine et al., 2009; Goldhaber & Brewer, 2000; Miller et al., 1998) or are inconsistent (Humphrey & Wechsler, 2007; Quigney, 2010). Darling-Hammond (2009) affirmed that although teachers who gained entry into teaching through alternative routes were less

competent in the first two years, the classes they taught had no differences in performance with those taught by other teachers. However, researches on teaches trained through non-traditional pathways that work in special education needs have been found to have poorer performance (Henderson et al., 2005; Nougaret et al., 2005; Sindelar et al., 2004)

2.4.3 Initial teacher training

Another approach is the classification of teacher training pathways according to the stage at which teacher is trained. Three categories have been identified by Musset (2010 p.12) namely "initial teacher education, induction programmes, and professional development". Robinson & Latchem (2003) identified teacher-training categories as initial teacher education and continuing professional development. Perryton et al., (2001) stated that initial teacher training is that "programme of studies which leads to qualified teacher status according to the official standards of a country". Professional development pathways facilitate those who are already in the teaching profession to gain more skills and expertise in teaching and to keep abreast with the changes in the community.

Initial teacher training pathway involves training teachers without prior teaching qualifications and seen as the basic teacher's level of qualification. This training can be taken either as a pre-service programme, where training is offered to prospective teachers before they begin working as teachers, or an in-service programme, where a teacher working as an untrained when he/she starts teaching is trained so as to become a qualified a teacher. Different methods of training are available in initial teacher training such as classroom based, seminars, workshops, distance learning or a mixture of methods as discussed in chapter three.

2.4.4 Professional development pathways

Professional development pathways are those that enable teachers to extend their present knowledge, skills and expertise in order to enhance their working skills and competencies. This includes all forms of teacher training activities that are not within the initial qualifications training such as re-orientation, new technology enhancement, teachers' professional career development and new skills acquisition pathways. This is unlike Perraton et al., (2001) who categorises teacher training into five different categories being initial qualifications, continuing professional development, re-orientation of teachers for curriculum reform and change and teachers' career development. Table 2 shows a summary of analysis on research by Perraton et al, (2001, p, 35) on types of teacher training processes and pathways.

Table 2: Types of Teacher Training Processes and Pathways

Category	Case
Universities Distance–teaching Universities. Universities, India	UNISA, South Africa Open Universities, UK China TV Teachers College Indira Gandhi National Open
Traditional Universities Providing an online distance education programme	Universidad de la Frontera, Chile
Distance teachers' college	National Teachers' Institute, Nigeria

Donor funded projects South staff. **of** **Training,** **Development** **Education at** **collaboration** **and a**	**Open Learning Systems Education Trust** **Africa, with its own project structure and** **UNICEF in partnership with the ministry** **Science, Technology, Education and** **and the School of Educational** **(a national institute).** **RASAFAD (the African Network for** **a Distance), Burkina Faso. A** **between several countries in West Africa** **development agency in France.**
Consortium of private and public agencies	**TV – Futura, Brazil**

Perraton et al (2001, p. 35).

The best professional pathway models are based on feedback from teachers on how to improve their performance and teaching programs and make them more relevant and applicable in classrooms (Koballa, et al., 2005; Rhee & Keeling, 2008; Russell & Wineburg, 2007). This pathway applauded for its numerous benefits to teacher training, teacher recruitment, education advancement and for its role in the modernisation of school systems. It has been found to be useful in addressing teacher shortages and turnover of teaching professionals by offering support, training and enhancement of skills to meet the changing education and teaching requirements (Haberman, 2006).

Danielson (2002) also noted that professional development pathways greatly contribute to reduced feelings of isolation for teachers that assists them with adoption of new technologies and enhanced teaching and school culture.

2.5 Pedagogies

2.5.1 Definition

Salvatori (1996) defined pedagogy as the art, profession and work of teaching while (Lingard et al., 2003) argued that pedagogy is the teacher-focused education. Gauthier (2008) on the other hand, defined pedagogy as a discourse and a system of order for teaching and educating groups of students because it facilitates control, organisation and timed activities. It enables classrooms to run with structure of teacher and students, sitting teaching and other activities work plans. It denotes teaching techniques and encompasses aspects such as what, why and how contents taught and learned. It looks at the contents, approach and the underpinning values and rationale of the teaching and learning. Quite interesting, in pedagogic model, teachers are responsible for deciding what is to be taught plus when and how it will be learned (Pew, 2007) making pedagogy both teacher-directed and teacher- cantered. In this process, teaching contents and education transmission based on an environment that primarily controlled by teachers. Pedagogy takes both social and material forms (Mulcahy, 2006) and constructed in the relationship between teachers and trainees (McFadden & Munns, 2002).

In the past two decades, interest in pedagogy has become more prevalent due to its linkage with teacher education, production of professional knowledge through teacher education, school performance and professional practice in schools (Lingard et al., 2001; Lovat, 2003; Mulcahy, 2006). These developments seek to make pedagogy central in education reformation and school restructuring globally. The increasing use of e-

learning teacher training systems and further application of online technology in education require extensive understanding of pedagogy. This facilitates the bringing together of research and practice aspects of the teaching profession. Pedagogy includes all aspects of the relationships and actions between among students, classrooms, seminars, teachers, technologies, texts and all other related aspects of teaching materials, those being taught and the teachers.

Pedagogic theory is a process that relates to educating and training of children (Petrie, et al., 2006). It focuses on the manner in which education contents are transmitted to recipients in an environment that is highly controlled by teachers. It is seen as a discourse and a system that creates order and facilitates the teaching and educating of groups of students. Pedagogy sometimes differentiated from other education approaches and theories such as didactics, pedagogics and andragogy. For example, Knowles (1998) tried to show the differences between pedagogy and andragogy in terms of their assumptions and processes. However, this research will use a more encompassing meaning of the term pedagogy and didactics and andragogy are beyond the scope of this research. Pedagogy will be used to describe the art, process and theoretical underpinnings of the teaching covering activities ranging from teaching models, assessment processes, and the development of the student and the curriculum.

2.5.2 Pedagogical approaches
Pedagogical approaches are the strategies "used generally to cover the various aspects of sequencing and organizing the content, specifying learning activities, and deciding how to deliver the content and activities" Dick et al. (2001: p.184). Multiple teacher training pedagogies exist and are developed by institutions and professional bodies such as ministry of education, education institutions, subject leaders or specific teachers. However, specific individual teachers training strategies, which are also

referred to as personal pedagogy. It is worth noting that the essence of this review is to know how teachers acquire subject knowledge as opposed to general teaching skills within education institutions.

Teacher training pedagogies can be divided into two main groups, namely traditional approach where teachers teach, transmit and explain knowledge to students and constructivist methodology, which facilitates learning through active students' involvement (Aversi-Ferreira et al., 2008; Freitas et al., 2008; Tavares & Alarcão, 2001). They can also be categorised through their accomplishment processes such as listening, discovery, doing or blended learning. Listening pedagogy, of 'learning by being told' approach has traditional lecturing and trainer instructions as the fundamental instruction model (Bourne et al., 1997). It is characterized by limited interaction between the tutor and the student and can be offered on face-face or in recorded or transmission through electronic media such as television, DVD or online.

Discovery pedagogy is the kind of learning associated with active search for information in order to identify solutions to facilitate solving of authentic problems. Discovery learning can also said to be highly self-directed and constructivist form of learning (Boylan et al., 2000; de Jong & van Joolingen, 1998) because it requires a multiplicity of perspectives to afford the learners with a wide range of options from which to acquire and construct their own knowledge. It involves active search for information from literature, which can be done in libraries, from books, online and other sources. Online searches have been described as much better compared to traditional library searches (Swan & Shea, 2005). The instructor or tutors offer the basic guidelines and skeleton background to the study to assist the trainee teacher to discover more facts. It entails aspects such as self-study, tutorial schemes and other learning systems that help the individual students to study by themselves.

Doing is another form of pedagogy that is practical in nature requiring hands-on activities by the trainee teachers. Learning by doing pedagogy enables the trainees to acquire skills and test their knowledge through practical settings. Diem (2004) argues that learning by doing pedagogy can be demonstrated through the Experiential Learning Process, which is used by the 4-H Youth Development Program (see figure 1).
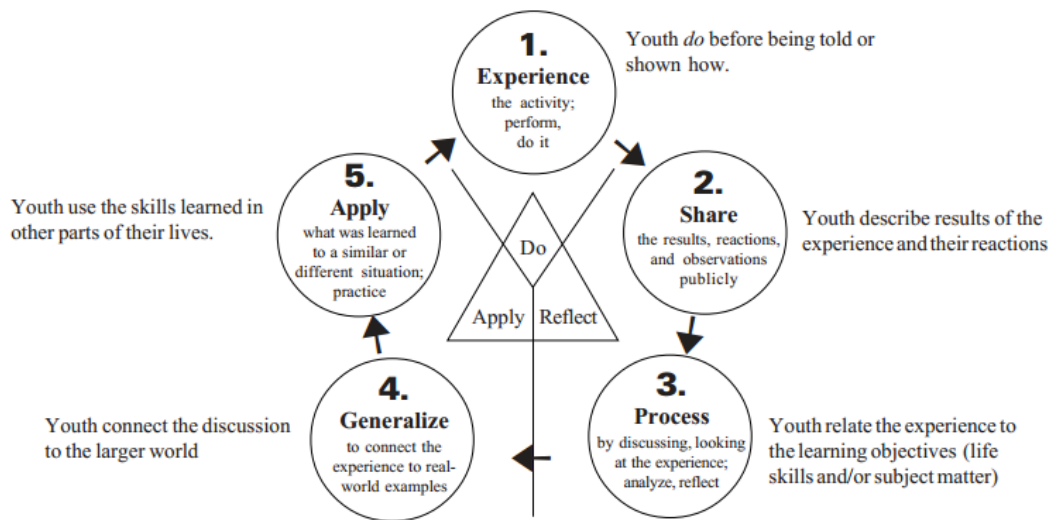
Figure 1: The Experiential Learning Process
Source: Diem (2004:pp.1)

Learning is also accomplished through discussion and debate, which is dependent on the context factors such as group size, role of the instructor and the contents to be learnt. Teacher training pedagogy can also be made of a mixture of the models discussed earlier plus other social interaction processes, otherwise known as blended pedagogy. It entails design and delivery of courses using a combination of both traditional and new technology pedagogical methods making the new learning processes more flexible. This blended approach can also mean the individual pedagogical approaches designed by tutors.

2.6 Theoretical frameworks

Development of effective online learning, within and beyond Saudi Arabia, is dependent on good understanding of sound and proven learning theories. Pham (2011) argues that

there exists a very strong relationship between learning theories and pedagogical practices and that effective learning can only be accomplished where effective teaching strategies have been developed. Understanding teacher-training theories facilitates the grasping of pedagogical approaches adopted in teacher training and thus better prospect of developing quality online learning system (Ally, 2004). Glusac et al, (2007) reiterates that development and implementation of ideal e-learning training programs is achieved by focusing on both the technical and educational qualities of the systems to make them sustainable and successful in providing users with satisfactory solutions by adopting the best pedagogical and methical approaches.

Teacher training processes are based on the principles and fundamentals of education and learning. These learning theories are sometimes classified into descriptive, meaning those that explain how people learn, and into prescriptive categories, those that explain how people learn or taught. The latter category constitutes the teaching or pedagogical theories, which are discussed in details below. Learning and teaching theories have a huge impact on the way teacher-training programs are designed and the types of educational technology used. Having reviewed numerous literature, especially that which relates to educational technology, it is difficult to effectively categorise theories into either learning or educational groups. Driscoll (2005) concurs with these findings by noting that multiple theories and approaches have been used in pedagogy as they endeavour to explain how teaching and learning is or should be carried out. Behaviourism, cognitivism and constructivism are the theories that have been identified as most prevalent by most literature. As shown in Figure 3, literature review also show that these theories can also be analysed based on their historical developments and whether they are individual or social theories (Stahl, 2003). Literature review also shows that these theories fall within a theoretical spectrum whose arguments can be

understood from two poles. This pole analysis has been used to explain the meanings and characteristics of these pedagogical theories.

To one extreme is behaviourism theory which focuses on human behaviour and the main proponents are B.F. Skinner, E. L. Thorndike and J. B. Watson. On the other pole is constructivism theory which as proposed by theorists such as Jean Piaget, Jerome Bruner, John Dewey, Lev Vygotsky, Mitchell Resnick and Seymour Papert (Taylor & MacKenney, 2008). Most literature however classifies the main theoretical frameworks as behaviourism, cognitivism and constructivism (Bigge & Shermis, 2004; Lefrançois, 2000; Pham, 2011; Silberman, 2007; Taylor & MacKenney, 2008). Siemens (2005) classifies these learning theories as behavioural, cognitive, transformation, critical, constructivism. O'Kelly et al, (2006) based on their literature review discuss learning theories as entailing experiential, constructivism, enquiry-based and discovery learning. This research will concentrate on behavioural, cognitive and constructivism as the traditional theories while adopting activity (Morf & Weber, 2000) and connectivity (Anderson & Dron, 2011) as modern pedagogical theories in teacher training. This chapter will present basic definitions and explanations of these theories while chapter three will critically evaluate their application, relevance and impact on teacher training in Saudi Arabia.

2.6.1 Behaviourism

Behaviourism is one of the most prominent education theories and has been discussed widely by most of the literature analysed. Behaviourist perspective regards learning as a resultant of change that is both objectively observable and measurable (Pham, 2011). Learning is based on behaviour change which is in turn influenced by extrinsic motivators such as rewards, incentives, and punishments. The learner is considered to be a system or a process that is influenced by motivation and stimulation whose

stimulus-response relationship is based on observable, measurable, and controllable objectives. The learning objectives are set out by the teacher or organisation and when the learner responds in a certain way, based on controlled stimuli, learning objectives are said to have been met. Teaching and learning activities such as programmed instruction, direct instruction and mastery learning are seen as examples of behaviourist pedagogical strategy or approach (Standridge, 2002). Behaviourists argue that since behaviour is learned, it can be unlearned. Learning thus only happens when the learners' response to some form of stimulus can be observed outside the learner. Since learners' internal and cognitive processes are invisible and cannot be scientifically studied, human learning can only be understood and analysed through observable behaviour. Bigge & Shermis (2004) argue that this theory assumes that there are three basic facets interacting with the learner namely the stimuli (antecedent conditions), the behaviours (responses) and the consequent conditions which entail either rewards or punishments. According to behavioural theories, teacher training pedagogical strategies and systems should be developed and implemented such that they offer the right stimuli to enhance the trainees learning capabilities and competencies.

Another major assumption of behaviourism is that learning is transferable in that knowledge and skills acquired by a learner in one context can be adapted and applied in other settings (Brown & Green, 2006; Orlich et al., 2004). Theoretical and practical skills and knowledge acquired by a trainee teacher can thus be transferred to other learning processes or in their teaching activities. These assumptions shape what is taught, how the teaching is organised and how it is delivered (Moran & Malott, 2004; Pham, 2011). Teaching tactics and motivation processes are guided by desire to facilitate observable behaviour change that is the true and real evidence that learning has taken place. Darandari & Murphy (2013) state that behaviourist approach of learning leads to the

adoption of traditional methods of students' assessment with grading being based on statistical curve irrespective of learners' skills, knowledge and competencies.

2.6.2 Cognitivism

Cognitive theory arose in the 1950's from the behaviourist tradition to counter for weaknesses of behavioural approach such as failure to fully explain some determinants of behaviours such as motivation, attitudes, and mental barriers (Anderson & Dron, 2011; Miller, 2003). It is based on the operations and functions of the brain, intellectual capabilities, knowledge and ability to think. It argues that both learners and teachers attitudes, behaviours, beliefs, identity, knowledge, language, and thinking are determined by each individual's social, cultural, economic and political experiences (Arenas, 2009; Fields, 2005; Mayer, 2001). This theory argues that it is more likely to acquire, retain, and retrieve information more for future use if it is relevant, built upon prior knowledge and learner-constructed. Learners gain knowledge through conceptual frameworks developed through learning by both experiential and discovery processes (Kirschner et al., 2006). Cognitivist theorists assume that learning is a thought based process which occurs within the learner and at a cognitive level (Pham, 2011). Unlike behaviourists, cognitive theorists argue that the learning process may or may not involve behaviour and the change may or may not be observable. Cognitivist theorists also assume that humans make logical choices based on how best they understand what makes most sense to them and thus change in behaviour is only a reflection of learning rather than learning itself (Brown & Green, 2006). This theory also assumes that learning is acquired through the mental process based on individuals' active interaction with their environment and from processes such as experiencing, observing, imitating, instruction, reading, touching, or watching. This is because people interact actively and intentionally with their environment based in their thought and behaviour.

Teacher training processes should be focused on offering the trainee teachers the best possible situations for them to gain new understanding, skills and knowledge necessary for being successful teacher. These processes should be focused on attributes of the trainee teachers such as their interests, knowledge and skills that motivate them to become active learners. Learning is assumed a change in cognitive thinking that is based on the learners' memory. Trainee teachers should be facilitated to gain new or enhanced internal mental processes to help them conceptualise and undertake their teaching activities effectively. Cognitivist theorists propose pedagogical methods such as self-directed learning (Costa & Kallick, 2004) and cognitive strategies (Gagné et al., 2005). This has been instrumental in the adoption of psychometric approaches for measuring learners' ability and achievement (Darandari & Murphy, 2013).

2.6.3 Constructivism

Constructivism purports that "individuals create or construct their own new understandings or knowledge through the interaction of what they already know and believe and the ideas, events, and activities with which they come in contact" (Abdal-Haqq, 1998: p.2). It emphasises on the importance of teacher acting as a facilitator to enable the learners, who are active participants, to explore questions using their own ideas, knowledge and opinions (Abdal-Haqq, 1998; Ciot, 2009; Davis & Sumara, 2002; Ultanir, 2012). It asserts that individuals construct their learning and knowledge based on their experiences, thus sometimes referred to as situated learning (von Glasersfeld, 1995). Learners make tentative interpretations of experiences and test what they learn through their mental structures until they establish a satisfactory structure upon which what is learned becomes internalised. It can be said to be a form of assimilation of the ideas purported by the behavioural and cognitive theories.

Constructivist theorists assume that human beings are capable of constructing knowledge in their minds through the interplay of existing knowledge and personal or social experiences (Abdal-Haqq, 1998). Theorists such as Piaget propose a strand of this theory, Piaget's constructivism, who describes learning as a stage process entailing assimilation, accommodation and equilibrium, and what is learned is organised in mental representations known as schemas (Orey, 2010). This theory claims that there is interconnectedness between learner and the environment in that they influence one another. Environment shapes an individual's understandings or internal processes while similarly, internal processes influence the environment. Thus, individuals create their own knowledge that is interpreted differently by each individual. Driscoll (1994) hence concluded that knowledge acquisition is a process of continuous self-construction. Constructivism can be divided into categories such as constructionism, constructivism and situated cognition (Pratt, 2008).

Constructivist pedagogy enables teaching to succeed by enabling learners to effectively construct knowledge through their own accumulated knowledge and understandings (Mota et al., 2010). According to Proulx (2006), constructivism theory establishes proscriptive discourse on teaching by setting pedagogical boundaries and creating guidelines on how to approach the teaching activities. This framework calls for involvement of trainee teachers in knowledge development, empowering them to become active participants and facilitates self-directed learning based on what the trainees already know to develop new skills and solve problems (Pratt, 2008). It is based on the key principles of constructivism namely the concepts of learning, of fitting, of the subjectivity-objectivity dialectic and of reality (Proulx, 2006). Understanding is subjective and dependent on the learners own knowledge and how it fits to - its compatibility with the experiential world. Constructivists assume that personal learning

is an active, elaborate, on-going and recursive process, where individuals actively construe and modifying our knowledge instead of being a merely accumulative one (Davis, 2004).

Personal knowledge and understanding is based on the individuals' experiences and whether the understanding is fit for purpose and suitable to the person's needs. This changes as the needs, fitness and purposes evolve to ensure it fits the context or circumstance. Davis & Sumara (2003) concluded that these attributes bring about the construal and re-construal of interpretive systems which enables individuals to make sense of wider realms of experience. Constructivism thus sees knowledge and learning as continuous processes that are always happening thus facilitating ever-continuing developments. As noted by Towers & Davis (2002), constructivism does not prescribe any specific teaching approaches but instead enables teachers to understand the students and their needs. It also helps teachers to know that no matter which approaches they use, individual student understandings will be based on their existing understandings and beliefs. Individuals construct reality based on their experiences and beliefs which guide mental activities thereby determining their interpretations of what is learned.

2.6.4 Activity Theory

Activity theory suggests that activities carried out in education processes and the tools thereby determine the nature and kind of pedagogy undertaken. Arising from the works of Vygotsky (1978), this theory postulates that pedagogy can be understood by analysing the activities within the culture in question. It is a conceptual framework which is based on the idea that "activity is primary, that doing precedes thinking, that goals, images, cognitive models, intentions, and abstract notions like "definition" and "determinant" grow out of people doing things" (Morf & Weber, 2000, p.81). According

to activity theory, human culture and experience determines action and any activities undertaken by individual are often goal oriented. Analysing the whole work activities will facilitate in understanding the tacit and explicit meaning of actions.

Activity theory supports the perception that training teachers gives them the understanding of why and how actions should be taken within communities and these are passed onto students when being instructed by teachers. Conceptualisation of pedagogy is best accomplished by studying and gaining insightful understanding of existing or upcoming pedagogical practices (Hardman, 2005). For example, tools used in training, such as interactive white boards influence pedagogical outcomes especially where teachers have been afforded subject-didactic training in how to use these tools (Beauchamp, 2004; Glover & Miller, 2002; Holmes, 2009; Lerman & Zevenbergen, 2007; Lopez 2010; Mercer et al., 2010; Northcote et al., 2010; Schuck & Kearney, 2008; Wood & Ashfield, 2008; Zevenbergen & Lerman, 2008). Teacher training practices thus ought to be developed and structured such that the activities they entail are reflective and relevant to the subjects, communities, and effective performance of the teacher upon qualification.
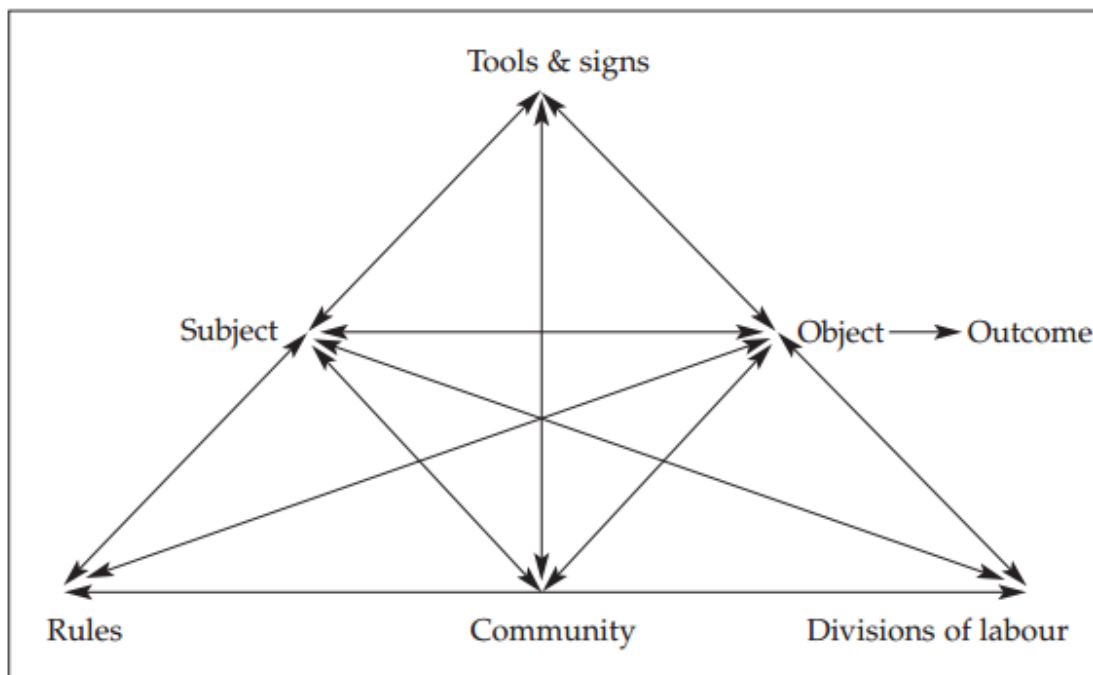
Figure 2: EngestrÖm's Second-generation activity theory

Source: Engestrom, 1987 p.78

Activity theory perceived pedagogy as part of all activities taking place within education and community settings. Changes in one of the sections within Engström activity theory (Figure 2), will cause subsequent changes in others so as to sustain some form of order and competence within communities. Change in technology will invariably require changes in pedagogical structures and systems such as professional and didactic development of teacher training and academic content (EVA 2009). New technology (change in tools and signs) impacts on teacher training such as what is taught, to whom and how (subject, rules, community, division of labour and object) it is taught and the outcome of the teacher training programs. Changes in technology results in marked changes in teaching method.

Egeberg et al., (2011) in their "Bored or Board?" research, the Nordic collaborative project between Denmark, Sweden and Norway, found that teaching takes different forms such use of classroom boards, assignments, discussions and group work which is

led and directed by the teacher. Activities undertaken in teacher training and the tools, both concrete and semiotic, used such as interactive whiteboards facilitates teacher-centred teaching to make a positive contribution to learning. Holmes (2009) also noted that learning activities undertaken by teachers in their lesson preparation and their teaching plans reflect the pedagogical frameworks that guided them during their teacher training. Lack of knowledge causes cynicism (Glover & Miller, 2002) and poor usage of new technology (Armstrong et al., 2005) because teachers find it difficult or are unwilling to adopt new pedagogical styles. Considerable investment in teacher training and professional development is needed to facilitate implementation of effective pedagogical skills among teachers. This theory will be discussed further in the forthcoming chapters and will play a major role in the development of the questionnaire and analysis of the results in chapter five and seven respectively.

According to Hardman (2008: p, 66), in activity theory, pedagogy can be defined as;

"a structured process whereby a culturally more experienced peer or teacher uses cultural tools to mediate or guide a novice into established, relatively stable ways of knowing and being within a particular, institutional context, in such a way that the knowledge and skills the novice acquires lead to relatively lasting changes in the novice's behaviour, that is, learning."

Pedagogy and learning can thus be understood as a functional system, which is affected by what is happening within and around the teacher training processes. Researchers such as Daniels (2007) and Edwards (2005) show that pedagogy can be best understood using the systems thinking.

2.6.5 Connectivist Theory

Connectivist pedagogy theory argues that "learning is the process of building networks of information, contacts, and resources that are applied to real problems (Anderson &

Dron, 2011: p.87). It is mainly attributed to George Siemens and Stephen Downes. It is focused on establishment and maintenance of networked connections, which are applicable to existing and emerging problems by being dynamic and current in nature. It is a post-network or information age theory because its main assumptions are based on the networks made capable by internet.

Connectivism is based on a number of assumptions as outlined by various authors such as Anderson & Dron, 2011, Downes, 2007 and Siemens, 2005. It assumes that there is mass connectivity created by networked technologies, making it highly relevant to e-learning programs because learning takes place within a network. Connectivist learning is a process that connects specialised sources of information and that knowledge only exists because there is a diversity of opinions. Connectivism also assumes that learners need not memorise or even understand everything because there is infinite amount of information and knowledge but instead they ought to know how and where to get information when it is required.

According to Siemens' (2005), learning may reside in non-human appliances because machines can carry out problem solving activities and mental processing. Ubiquity of networked connections is paramount in facilitate continual learning by bringing together, digital artefacts, content and people. Understandings and knowledge are dynamic in nature with a right answer in one day becoming obsolete the next due to alterations in information and decision making processes (Weller, 2011). Dron & Anderson, (2007) argue that connectivist learning is most effective within network contexts and not in wither individual or group contexts. Connectivism assumes that learning and teaching processes are often open, persistent and accessible and its success is hinged on the based as both effective production and consumption of educational content.

2.7 Pedagogical Characteristics of E-learning

E- learning is used to denote an array of open, flexible and distributed activities in the learning and teaching processes based on various computer technologies. Glusac et al. (2007) noted that e-learning is often used because it take into account the paradigm of learning based on electronic technology as well as other technologies used in the development of computerised learning and teaching processes. Other terminologies used include Advanced Distributed Learning, Distance Learning, Distributed Learning, Internet Based Training, Mobile Learning, Online Learning, Remote Learning, Web Based Learning, and Web Based Instruction. E-learning in this research is mainly used to mean a learning system which is based on the intelligence and the use of information systems on the web.

E-learning has brought about numerous changes in the traditional pedagogy and has been instrumental in accelerating the inception and uptake of the modern pedagogical systems. It has brought about flexibility of time and place in terms of teaching and learning (Ellis et al, 2009; Ferguson & DeFelice, 2010; Glusac et al., 2007). Geographic location and time factors which was previously necessary for classroom based teaching has become irrelevant in current e-learning systems. Teachers can be trained from whenever they are located at different times or subject to technological, tutors and course structure requirements.

Ease of communication and interactivity has also accelerated the shift of power by facilitating students to become more active. Items such as online collaboration, discussion forums and other platforms such as posting own work online, emailing, instant messaging, audio communication plus other activities such as animations and simulations. This has empowered participants and facilitated further skills transfer and acquisition by both the tutors and students. This attribute has been instrumental in the

development of individual approach to students (Glusac et al., 2007). For example, students are able to work at their own pace and to become more creative and willing to share their perceptions and understanding. This is especially so where the students work from the relative safety of their personal space and natural surroundings.

This new approach has also democratised availability and distribution of data and information. Nevertheless, hindrances such as government rules of internet accessibility, information to be accessed and shared or the affordability of computers and internet still act as barriers to effective data and information distribution. However, the success with which data and information sharing has been transformed by e-learning systems. For example, teaching can take place across different geographical and time regions at highly reduced costs while guaranteeing data consistency, equal opportunities and individualised learning.

2.8 Islamic Pedagogy

The Islamic pedagogy is a group of educational rules and principle which are found in the Islamic traditions (in the Holy Qur'an and the Prophetic tradition). It could be considered as foundation that explains and informs the reasons and the way of teaching Islamic approach. The Islamic pedagogy, can be regarded as a significant ingredient that helps teachers how to be an affective in the classroom.

This study will practically integrate the Islamic pedagogical implication in the process of improving teachers. The Islamic school teacher should be able to establish a unique context for the students. Specifically, the Islamic principles, rules and norms can be used as an effective way for impressing the students. More particularly the traditions and sayings of the Prophet Muhammed (peace be upon him) can be used as an instructional and advisable procedure for providing the students with a significant learning and experience. In the classroom, the teacher can be able to create strategies which inspired by the Prophet Muhammed (peace be upon him). Those strategies can be labelled according the teaching material.

The Islamic pedagogy would be beneficial in terms of the following points: it is very necessary to cooperate with the student since it is one of the Islamic principles that urges teacher to be kind and cooperative and patient with the students. Another Islamic procedure is that the direct discussions and the direct consultation are very needful in the process of teaching. In this way, the students would be comfort and willing to learn what they are offered.

Another Islamic pedagogy is the reward and punishment. The teacher can offer rewards and punishments for students as an encouraging step to do well in their study. But the punishments could be used positively rather than pushing them physically.

Teaching ethics can also be an affective medium for the students. Having the knowledge of Islamic ethics would make them unable to cheat in the exams in particular or in the learning and their everyday life in general.

2.9 Conclusion

This chapter concluded that in line with most literature that many teaching and learning theories exist and it is difficult to effectively categorise teacher training approaches and methods into exclusive groupings. Most theoretical frameworks that explain pedagogical approaches on teacher training and learning processes and activities lack a clear demarcation in terms of to whom they are aimed at or in how or where they are offered. However, there is a consensus that different pathways have been adopted and they are often used together to enhance teacher training activities. The research will mainly use the three core teacher training theories being behaviourist, cognitivist and constructivism.

Table 3: Summary of Teacher Training Theories

Aspect	Behaviourist	Cognitivist	Constructivism
Instruction	Directed	Non-directed	Non-directed
Learning process	Changing behaviour	Internal mental processes such as memory, perception, insight and information processing	Personal action in response and based on the social context. Movement from social periphery to centre of the community
Measure	Objectivist	Open-ended process	Objectivist
Cantered	Teacher-centred	Learner- centred	Learner- centred
Process	Behavioural observations	Cognitive operations	Constructive operations
Focus is on	Individual	Group and individual	Group work
Approach	One approach	Multiple approaches	Holistic in approach
Purpose in education	Production of behaviour change towards a desired direction	Enabling individuals to develop skills and capacity to learn better	Facilitate full participation by utilising resources and practicing within the community

The major theoretical frameworks namely behaviourism, cognitivism and constructivism also work together in order to enhance teachers experiences in their learning and teaching activities discussed in this chapter can be analysed as per Table 3. Despite the difficulties of demarcation, understanding these pathways and theories is necessary in researching and understanding teacher training in Saudi Arabia and in undertaking further research and development of teacher training programs. They are also important in facilitating trainers and program developers to focus on new or existing teacher's processes of gaining teaching skills, enhancing their experiences and qualifications. Chapter Three will expand on the findings on this chapter by exploring the pathways and theories of teacher training in Saudi Arabia and surrounding regions.

This chapter has systematically focused on arguing the research questions of the present study in terms of reviewing theories and previous research about e-learning teacher training program in the KSA. The Theoretical framework discussed in the present study did not focus on what is the nature of teacher training and what does it entail in. In addition, there was a literature gap that concerns the main strengths and weakness of the existing system of the existing e-learning teachers training programs and how can they be improved.

Chapter Three: Teacher Training in Saudi Arabia

Objectives

➢ Introduction

➢ The Kingdom of Saudi Arabia

➢ The Education System

➢ Teacher Training Processes

➢ Proposed Changes

➢ Theoretical Implications

➢ Behaviourism Theory

➢ Cognitive Theory

➢ Constructivist Theory

➢ Activity Theory

➢ Connectivisit Theory

➢ Pedagogical characteristics of e – learning

➢ Conclusion

3.1 Introduction

This chapter will explore the teaching theories, perceptions and models of teacher training programs with a specific focus on Saudi Arabia. It expands on the definitions and explanations of learning and teacher training pedagogies, theoretical frameworks, training approaches discussed in the previous chapter and their relevance to and application in Saudi Arabia. It looks at how these approaches impact on the teacher training activities in aspects such as planning, designing and implementing the existing teacher education programs. It sheds more light on the understanding of how teacher-training programs are designed and implemented, the theoretical models and frameworks guiding them and their relevance in the design and implementation of e-learning systems. It presents a critical evaluation of the pedagogical characteristics, theories, perceptions and models on teacher training programs and their relevance to Saudi Arabia. The pedagogical characteristics of e-learning that have been adopted in other countries and in Saudi Arabia will be explored and the views on the nature and progression of forthcoming teacher training programs will be reviewed. This is necessary in the development of a more comprehensive research required for e-learning teacher training program in Saudi Arabia.

3.2 The Kingdom of Saudi Arabia

King Abdul-Aziz Ibn Abdulrahman Al Saud founded the Kingdom of Saudi Arabia in 1932. Saudi Arabia, officially called The Kingdom of Saudi Arabia, is located in the Arabian Peninsula, bounded in the north by Iraq, Jordan and Kuwait, and from the east the United Arab Emirates Qatar, The Kingdom of Bahrain and the Arab Gulf. In the southeast is Oman, and Yemen from the south, and the Red Sea from the West (Ministry of Economy and Planning, 2010; Saudi Arabian Monetary Agency, 2013).

Some of the holiest places in Islam, the Holy Mosque in Mecca and the Prophet's Mosque in Al Medina Al Monawara are located in the western part of the Kingdom (Ramady 2010). Oxford Business Group (2013) states that Saudi Arabia is the cradle of Islamic religion, which impacts hugely on all its aspects of life of the people in Saudi Arabia including education and business operations. Arabic is the official language and Islam is the official religion (Kauffeldt, 2003). The ethnicity constitution is 90% Arab and 10% Afro-Asian with 78.8% literacy rate (Water, et al., 2007).

3.2.1 The Education System

In Saudi Arabia, students enter first grade when they are aged 6 years and upon completion of the sixth grade, they finish the elementary school. Thereafter, they go to middle school (7th to 9th grade and proceed to high school (10th, 11th, and 12th grades) before joining college and university (Rugh, 2002). The roots of the current education systems in the kingdom extend back to the Islamic history given that the inspiration descended upon the messenger of Allah peace be upon him (Ministry Of Education, 2010). Religion in Saudi Arabia is regarded as the bedrock of all educational decisions. Education system is based on the core teaching and learning approaches of core memory which are often guided by the Quran, the Hadith, and the Sharia (Al Mohsen, 2000). According to Smith & Abouammoh (2013: p.2), education in Saudi Arabia has four core defining characteristics namely:

1. A focus on the teaching of Islam.

2. Agreed system of control and education support.

3. State funding (free education at all levels).

4. A general policy of gender segregation.

The Ministry Of Education (2010) also states that the role of education is "to safeguard Islamic values by duly observing, disseminating and confirming Allah's Shariáh (God's Divine Law)". The activities of education focused on the mosques and the religious schools that taught reading and writing based on the Holy Quaran (Onsman, 2011). This led to the development of the regular education in the kingdom based on three core stages. This inherited traditional education consisted of the traditional religious education schools and seminars in the mosques and all over the country. Then there is the governmental education which is regulated by the education ministries and officials by including some of the new sciences in its curricula. Finally, the currently developing special and modern private schools are based in the eastern and western regions of the kingdom.

Education is free at all levels and is composed of elementary, intermediate, and secondary schools with large part of the curriculum at all levels is devoted to Islam (Smith & Abouammoh, 2013). Classes are segregated by gender (Al-Dali, Fnais & Newbould, 2013). Aina (2009) noted that the huge influence of Islamic religion and teachings is evidenced in the education and skills development systems in Saudi Arabia. Saudi Arabia's education system includes 25 public and 10 private universities, with more planned; some 30,000 schools; and a large number of colleges and other institutions. The system is open to all citizens, and provides students with free education, books and health services (Royal Embassy of Saudi Arabia in Washington, 2015). According to House (2012), a core part of the Saudi Arabian educational curriculum largely entails memorisation of the Qu'ran, its interpretation and understanding (Tafsir) and application of Islamic tradition to everyday life. The education curriculum and socialisation programmes in public schools are based on the importance of Islam in the personal, familial, social, and national levels. It focuses

primarily on *Quran*, *Tajwid* (conventions of Quranic recitation), *Tafsir* (Quranic Interpretation), *Hadith* (sayings of the Prophet), *Fiqh* (Islamic jurisprudence), and *Tawheed* (the Oneness of God) (Onsman, 2011).

3.2.2 Teacher Training Processes and Models:

Teacher training programmes are often developed to serve the social, economic and other educational requirements in any specific country or society. As argued by Alnassar & Dow (2010), learning and teaching differ in terms of region and times given the societal requirements, levels of educational advancement, nature of education development, economic priorities of an economy and the country's wealth, economic drivers and aspirations. In Saudi Arabia, the desire for Saudisation coupled with economic diversification have been instrumental in the development of the desire to create education system that focuses on building human capital with knowledge being central to the economic development. Thus, considerable national resources are being used in seeking and implementing models that seek to create and produce well-educated, trained, and skilled people. This is evidenced by the growth of education institutions with 35 universities, 494 colleges, 1211 number of college departments and 400,000 students in 2009 compared to 7 universities, 116 colleges and 515 college departments and 130,000 students in 1995 (Alnassar & Dow, 2013).

Such growth requires teacher training to expand swiftly to keep abreast with the changes and demand all within common standards and planned teaching staff development. However, as noted by Al-Hazmi (2003), teacher training and preparation programs in the Saudi Arabia are mainly non-systematic and inadequate. Most teachers are mainly graduates in general education programmes and faculties of arts in Saudi Arabia that offer student's literature, arts, Arabic and religious studies. It is also worth noting that in Saudi Arabia, education and other aspects of life are structured on gender

basis (Darandari & Hoke, 2007; Darandari et al., 2009). Thus, some institutions, such as technical teacher training colleges, exist and they offer training to men focused on enabling them to gain technical competencies as vocational teacher trainers. Teachers qualify within higher education where merit and assessment are core drivers of the courses and training processes and schemes that are used (Smith & Murphy, 2013). Education and training is based on a norm-referenced assessment culture leading graduates and those qualifying as trainers, teachers and other professionals and practitioners to be barely prepared for the professional work they endeavour to engage in. This is especially so for teachers whose courses and subsequent placement in teaching roles is often based on non-teaching focused training approaches. Courses such as education, despite having very high numbers of students (39% of enrolled students in the university) (Alnassar & Dow, 2013), the courses offered are often limited in terms of teaching activities and responsibilities upon qualification.

As noted earlier, Islam and Islamic lifestyles dominate the education and lifestyles of the people of Saudi Arabia. This has led to the development of teacher training programmes that predominantly driven by the desire to sustain and produce superb Islamic teachers and instructors who will sustain the social order and facilitate learners to gain the best possible understanding of Quaranic teachings and their interpretations and application in day-day life. The World Bank (2009) states that education systems in Saudi Arabia seek to establish continued understanding and practice of Islamic faith hence the inclination of teacher training towards religious oriented instruction and testing processes. Religious teachings is compulsory at all levels of training and thus the traditional teacher training processes focused on Islamic instructions dominate the existing teacher training approaches (International Religious Freedom Report, 2011).

On the other hand, the education system in Saudi Arabia is heavily influenced by the views and attitudes of the Islamic curriculum drawn up by the great and noble Prophet of its nation, Prophet Muhammad Peace Be Upon Him (PBUH). Historical developments among the Arab people show a huge progression due to the role of education in the community which is central to the teachings of the Qur'an. According to the Qur'an, the first directive to the human beings is the command to read. When the Quran began to be revealed, the first word of its first verse was 'Iqra' that is, read. Allah says, (what means):

"Read! In the Name of your Lord Who has created (all that exists). He has created man from a clot (a piece of thick coagulated blood). Read! And your Lord is the Most Generous. Who has taught (the writing) by the pen. He has taught man that which he knew not" [Quran, 96: 1-5].

Thus according to the Qur'an, education is the starting point of every human activity. Allah created man and provided him with the tools for acquiring knowledge, namely hearing, sight and wisdom. Allah says (what means):

"And Allah has brought you out from the wombs of your mothers while you know nothing. And He gave you hearing, sight, and hearts that you might give thanks (to Allah)" [Quran, 16:78].

The holy prophet also stated that search for knowledge is obligatory to all capable human beings in that "the preference of a scholar over normal worshipper is the same as the difference between the moon and the stars" (Prophet Muhammad PBUH). Therefore, Saudi Arabia has built itself on the search for knowledge with the Qur'an acting as a guiding factor. Approaches and perceptions on teacher training and curriculum are thus influenced by Qur'anic teachings (Ottaway & Choucair-Vizos, 2008).

The Qur'ans view approach shapes Saudi Arabia's attitudes, social, cultural, and political norms thereby shaping the citizens social, linguistic, emotional and belief perspectives (Jamjoom, 2010). It also shapes the development of education programmes for teachers in all subjects . This shapes the socialisation processes and messages, the literature and text books produced and distributed and the contents and views that communities possess and thus seek to instil in young people, through teaching and training.

Most teachers are not trained through teacher training colleges and most do not attain teacher training knowledge from colleges but they rely on guidelines in textbooks and seminars which are core in their understanding of how to teach in schools. Textbooks thus play a major role in the teacher training, educating and socialising processes. The new and emerging teacher training courses are mainly focused on a curriculum heavily focused on Islamic studies and Arabic language, grammar, and literature (Smith & Abouammoh, 2013). The changes in teacher training by engaging more males in teacher training activities through workshops and other teacher training models means men are better trained and prepared than women in becoming teachers (Doumato, 2002). The hiring of foreign trained teachers has also been instrumental in changing the teaching habits and by extension widening the teacher training methods (Hamdan, 2005; AlMunajjed, 1997). Teacher training is also focused on traditional teaching approaches where teachers act as the central sources of information and learners are mere recipients, leading to teaching approaches that are focused on ranking students (Darandari & Murphy, 2013).

Alnassar & Dow (2013) argue that the fundamental weakness in effective delivery of high-quality teaching and learning in Saudi Arabia arises due to a number of factors. They identify the lack of formal training for academic staff for their teaching role, the constraints arising from the very strict and rigid curriculum lacking in critical thinking

and 'learning how to learn' and the failure of the existing system to enable participants to engage in an information-based global environment as key weaknesses and hindrances of successful teacher training. Such approaches can be understood best by changing approaches and adopting systems such as e-learning teacher training programmes that facilitate users to share data and learning contents online. However, writers such as Al-Ghreimil and Colbran (2013: p.126) found that despite these expectations, attempts to improve teaching and learning processes using technology such as e-learning and mobile systems are very difficult to adopt due to "lack of and failure of infrastructure, blocked websites and software issues and lack of training and support". Prokop (2005) states that at elementary, 30% of students total classroom hours are focused on religious teaching level while at the intermediate and secondary levels, it is 24% of the time. Passing religious studies is mandatory for one to proceed to the next level. Religious studies determine all lessons including geography, sciences, literature, language (Arabic) and history (Prokop, 2003). In the recently past, there has been Saudisation project arising due to lack of employment among local young people leading to new official curriculum and school textbooks based on the need for making graduates more employable (Jamjoom, 2010; Looney, 2004, Ramady, 2010).

Even in cases where private institutions exist that offer teaching and training activities that purport to be less influenced by the government, such as private schools and education institutions, there is little evidence of independence in thought and practice. Al-Eisa & Smith (2013) state that this is mainly because Saudi Arabia funds almost all education in the country. The government's role and influence in education is hence paramount, such as the need to produce graduates who provide social benefits including employability and social integration (Alkhazim, 2003; Al-Swailem & Elliot, 2013; Deem, 2004). This hinders institutions from being autonomous in all their

operational processes thereby limiting their ability to meet diverse needs of all their stakeholders. The limited autonomy also extends in the institutions resource allocation, promotion of quality teaching and learning processes and teacher training and support programs. Sustenance of the traditional academic and cultural structures are thus instrumental in the design, implementation and sustenance of the teacher training programmes in Saudi Arabia.

Gender roles in Saudi Arabia are also structured such that *ulama* acts as a core determinant of what is taught and availed for women's education and in their teacher training processes (Prokop, 2005). This creates a prominent gender structured teacher training approach where Islamic ideology on what is expected of Muslim Saudi Arabian woman is reinforced and sustained. However, there is also a major gap in understanding teacher training in Saudi Arabia because there is very limited literature and researches on this subject. In Saudi Arabia, there is very little attention given to the various experiences, perceptions and narratives of teachers. The institutions that train and support teachers are ran in non-coordinated manner with seminars and workshops dominating the teacher recruitment and training processes. There is little or no attention given to teacher's knowledge, perceptions, experiences and narratives in the development and implementation of the teacher training programmes and activities (Jamjoom, 2010; Kirk & Winthrop, 2008). Jamjoom (2010; p.548) purports that this is mainly because "teacher is still regarded as an implementer of reform policy who may occasionally require 'retraining' rather than as an active stakeholder in the reform process".

The changes in society, with the widespread literacy and mass media coupled with the role of internet and social media has led to increased familiarity of the religious concepts and interpretation among individuals in Saudi Arabia. This has led to

'objectification of religion,' leading to debates in meaning and purpose of specific issues in Islam (Mahmood, 2005). This has led to discussions about religion and its role in Saudi schools and training institutions thereby requiring the teachers being required to ensure students sustain the authenticity and sanctity of their religion (Jamjoom, 2010). Mahmood (2005: p.79) argues that this has led teacher training processes to engage in the "pedagogy of persuasion" aimed at sustaining the religious beliefs. The current teacher training programmes face a number of challenges which Alnassar & Dow (2010: p7) states that these factors are:

➢ The lack of formal training of academic staff for their teaching role;

➢ A lack of incentives to improve the quality of teaching;

➢ The constraining nature of a rigid curriculum that does not sufficiently promote the skills in critical thinking, problem solving and 'learning how to learn' necessary for participation in an information-based global environment.

Existing education courses have also been criticised for a variety of failures and limitations by different authors. First, Alnassar & Dow (2010) purport that in Saudi Arabia, lectures form core model or teaching based on large group teaching in lecture rooms. In this process, lecturers act as the centre of information disseminating it to the recipients, teacher trainees in a one-way communication model. Though lecturers can be inspirational and effective, often teacher trainees end up in dull, repetitive and boring lectures and take such teaching approaches with them when they go to schools and other institutions as teachers.

On the other hand, education in Saudi Arabia has been criticised for limited student support. Studies in the country attribute lack of success by some students to the fact that many of them are taught and tend to adhere to the traditional learning methods,

which entail memorising of information for the purpose of passing an exam (Al Dawood 2007; Boud & Falchikov, 2007). As such, there is lack of skills and knowledge by students and learners to test undertake research, experiments and independent learning. This leads to teachers learning study and teaching skills that are inadequate methods whose teaching methods largely adopted focus on giving students theoretical information in a curriculum that lacks sufficient emphasis on teaching critical and creative thinking (Alnassar & Dow, 2013). The teachers have been found to lead to academic failures as per arguments by Alnassar & Dow (2010: p.58)

> The most important academic factors leading to student failure appear to be inability of some members of the faculty to deliver scientific material, lack of academic guidance in solving students' social and psychological problems, lack of sufficient care for students with learning difficulties and inadequate or inappropriate methods used in teaching the curricula.

In Saudi Arabia, teaching processes is prevalently based on norm-referenced assessment culture (Darandari & Murphy, 2013) which impacts on teacher training as it directs student learning approaches (Hargreaves, 2006; Heywood 2000). Teacher training is hence directed by the need for teachers to pass exams and succeed as required by the trainer and the examination, which by extension means by which the qualified teacher teaches when they go back to their schools and institutions. Boud & Falchikov (2007) state that assessment plays a role in certifying achievement, aiding learning and fostering lifelong learning. Effective assessment process entails engaging students as active participants unlike the current Saudi Arabian system where the focus is often teacher-centred (Darandari & Hoke, 2007). Prevalence of traditional assessment processes in Saudi Arabia means that assessment of learners is not linked to contemporary theories and practices. Saudi Arabian assessment of learning outcomes

have been found to be weak in that approaches adopted for student assessment and learning are disintegrated and disconnected at all institutional levels making them neither clear nor holistic (Darandari, 2010).

3.2.3 Current Status

Teacher training and education processes in Saudi Arabia are undergoing unprecedented changes and development. It is worth noting that in this chapter, teacher training means higher education as teachers are not trained for teaching per se but are instead taken through higher education processes where upon qualification are then placed as teachers in the various courses they took during the higher education stages. However, they still lack in their capacity to increase teacher competencies and to enable the existing education systems to achieve and maintain international quality and standards and to contribute to the future of the country. These failures and weaknesses have led to a variety of initiatives, which are discussed here and also will be elaborated in chapter seven and eight. However, at the current stages, it is clear that there is a drive and demand for change, albeit on paper, on what ought to be done to make teacher training better and more representative. More specifically, the current teacher program training in the KSA can be addressed by arguing the following elements: (a) proving sufficient funds, (a) improving teaching practices, (c) gender basis, (d) assessment of learning outcomes and (e) information technology. Smith & Abouammoh (2013) noted that funds have been set aside to target teacher training and professional development among teachers, supervisors and trainers. There are a range of initiatives for teacher training development to improve the teacher training programmes, review of the curriculum and textbooks and adoption of technology and innovation in education through information technology for teaching and learning practices (Smith & Abouammoh, 2013). This approach has been termed as 'Horizon' or 'AAFAQ'.

Alnassar & Dow (2010) suggests that in Saudi Arabia, the responsibility for improving teaching practices should be shared by engaging teachers and all related parties. This form of partnership should be based on bringing together individual teachers, supervisors, department heads, college and institutional leaders and the national government. Similarly, Darandari & Murphy (2010) stated that traditional teacher training approaches have led to continued students training and teaching practices that focus on testing and assessment, with learning being focused on ranking students in order of achievement. Teacher training should be altered to focus on proactive approaches that are student-centred and whose assessment models are outcome-based. The pedagogical practice and curriculum design and development should thus be undertaken as part of an integrated strategy designed to improve the quality of teaching and learning in Saudi Arabia (Darandari & Hoke, 2007).

The training programmes for teachers for schools teaching and technical institutions teachers have been developed based on the Saudi Arabian needs and requirements (Smith & Algosaibi, 2013). They are thus structured on gender basis Therefore, some institutions, such as technical teacher training colleges exist and they offer training to men focused on enabling them to gain technical competencies upon qualification as vocational trainers. As they are driven by employability targets and interest to the Saudisation process, the training is focused on greater human resources and participation in technical and vocational areas. The specialisation of the training processes and the participation of staff in the courses and teacher training has however failed to keep abreast with the global developments and needs. There is thus an increasing need for improved educational outcomes at the primary, secondary level and vocational levels led to the increased desire to develop better teacher training

programmes. This led to the development of King Abdullah Project for Tatweer project whose vision states:

> "We have to face present and future challenges and found the educational project on the basis of high quality, excellence, shared vision, proclaimed institutional values, and teamwork spirit. We should also encourage teachers to create, rather than consume, knowledge"

(Centre for British Teacher, CfBT, 2015: p.1).

For the changes to be relevant and applicable there is an increasing demand that the programmes ought to deepen "Islamic values, morals and allegiance to family, society and nation, and appreciating and preserving national achievements" (Smith & Abouammoh, 2013: p.4). These initiatives, such as Tatweer (development) and 'AAFAQ' (horizon) have been criticised for a number of fundamental weaknesses as discussed by Smith & Abouammoh, 2013:

1. They are said to be strong on stating objectives and outcomes but weak on specific detail about the strategies and action plans necessary to convert the vision into reality.

2. Though they outline the expected dates of delivery, in this case five year period, they lack robust quality framework or structures for review and monitoring which can be adopted on an ongoing bases so as to make it easy for progress to be reviewed and evaluated.

3. Some authors and researchers argue that Saudi Arabian authorities are demonstrating remarkable weakness in their short term ability to identify the expected outcomes, inputting funds and great energy and enthusiasm for

effecting improvements but there is a perception that they may be trying to do too much too quickly.

4. There lacks the strategic planning given that there is failure of development due to the limitations in the process given that the conceptual discipline and procedural rigour underpinning this process are yet to be outlined and explored. This is because there is limited human and physical resources, poor administrative infrastructure, technological systems, weak innovative and collaborative networking and limited adoption of technology and innovation in education.

5. The Saudi Arabian teacher training and education system have also been criticised for multiple weaknesses especially in terms of content of its curriculum and the didactic nature of its pedagogy. The weak quality of teaching and learning standards which is mainly due to limited ability of trainers and teachers to offer quality training. This can be resolved by increasing the teachers and trainers capability to engage students and learners so that they are able to acquire learning skills through increased and efficient processes of knowledge delivery through interactive system through advanced technological teaching facilities and contemporary curriculum.

Improvement of assessment of learning outcomes have also been proposed whose aim is to get widen and increase flexibility for assessment methods which is ideal for the various learning domains (National Commission for Academic Accreditation and Assessment in Saudi Arabia, 2010; Almusallam, 2007; Darandari, 2010). Adoption of cognitivism and constructivist theories has also been found as an important step in that it helps alter the assessment in teachers and learners. These changes should continue to be implemented so as to establish a more proactive approach to staff training and

development with assessment models being linked to intended learning outcomes. Darandari & Murphy (2013) suggest that such achievements can mainly be accomplished if innovative information technology could be integrated into the education system and in teacher training. This is because they will help in collecting, analysing and reporting on students assessment thereby making assessment a part of academic planning and review and with information accessibility being democratically available at all levels for all stakeholders.

3.4 Conclusion

This chapter analysed the concept and processes of teacher training pedagogies. Understanding the concept and processes of pedagogies in education is essential in the development of a suitable teacher training programs and in enabling this research to determine its realms. In addition to definitions, some theories, pedagogical approaches and different teacher training systems adopted globally were briefly reviewed. To tie together the main theme of this paper, which is the e-learning systems and the theme of this chapter, pedagogies, a small review of pedagogical characteristics of e- learning were also examined. This chapter thus served to examine the concept of pedagogy in teacher training processes. It also formed the foundation for the rest of this research by making it possible for readers to gain a better understanding of pedagogies and teacher training activities.

This chapter concludes that the teacher training programmes in Saudi Arabia are neither adequate for preparation of teachers nor do they offer the technical skills and knowhow necessary for making teachers competent users of online and e-learning systems and platforms. This chapter helped create the background of this research and concluded that it is important to improve the teacher-training programme in the

country. This can be achieved by developing systematic approach for pre-service and in-service education system for teachers especially by integrating them into online and e-learning systems.

Chapter Four: Research Methodology

Objectives

➢ Introduction

➢ Methodology Background

➢ Questionnaire

➢ Research Process

➢ Conclusion

4.1 Introduction

This chapter is devoted to present and discuss the research methodology in the present study. It starts with presenting the data collection methods which included questionnaire and interview, sampling the data, the data analysis and procedures and research ethics. It details how the research design, questionnaire development and the relevance of each and every question and what each question seeks to accomplish. It outlines the sampling, data analysis procedures and research ethics for this research, the instruments adopted and all related facets of research process and explains each of them.

4.2 Methodology Background

According to Densmond (2014), the role of research is only served where research has been well designed and executed using good research methodology. This chapter outlines the methodology adopted in the process of this research as guided by literature to meet the aims and objectives of this research. Explanations on the actual research process are outlined, such as sampling, survey design and process, questionnaire distribution and reaching out to respondents are presented. It describes the steps adopted by describing, explaining and justifying why the methods and processes were adopted. It helps the researcher to articulate how the data was collected by describing the research philosophy, research approaches, strategy, choices, time horizon, techniques and methods of data collection as shown in Figure 3. The fundamental purpose of research is to gain further knowledge and understanding based on collation and analysis of data hence the need for consideration in the choice of techniques and procedures adopted (Saunders, Thornhill and Lewis, 2012). A choice of model of study

should be based on relevance, applicability, suitability and in respect to when and where the research will be carried out. These factors are guided by the choice of research techniques, theoretical frameworks and the philosophies adapted by the researcher. According to Saunders, Thornhill and Lewis (2012), shown in Figure 3, researchers can understand each phase of their research work by using a research onion so as to be able to work systematically through layers and get to the core of the research process. This was in line with the guidance of literature on qualitative research formulation (Gibson and Brown, 2009), questionnaire research processes and methodologies (May, 2011) and research management processes (Bell, 2010). These steps are discussed below and the final research onion for this work outlined in Figure 3.
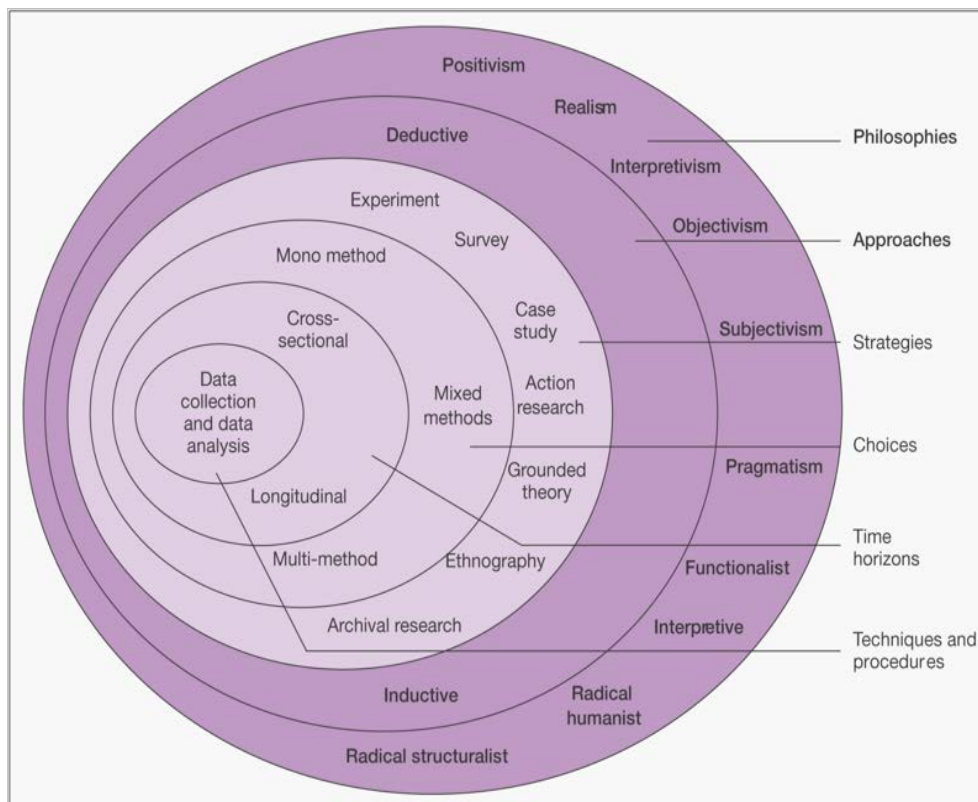
Figure 3: The Research Onion

In addition, other scholars such as Creswell (2009) argued that research methodology and design is a result of interactions of various research aspects such as philosophies, strategies and methods, as shown in Figure 4.

**Selected Strategies
of Inquiry**

**Philosophical
Worldviews**
strategies

                                                        Qualitative

Postpositive   (e.g., ethnography)
strategies   Quantitative
Social construction   (e.g., experiments)
Advocacy/participatory   Mixed methods
strategies
Pragmatic   (e.g., sequential)

Research Designs

Qualitative
Quantitative
Mixed methods

Research Methods

Questions
Data collection
Data analysis
Interpretation
Write – up
Validation

Figure 4: Framework for the Research Design Interconnection

Source: Creswell, 2009: p5

4.3 Research Philosophy and Paradigm

This is the belief or idea that guides the research being undertaken in terms of the ways in which data is collected, interpreted and analysed. Hesse-Biber & Griffin (2013) argue that it is the view that data items and research materials relating to a particular phenomenon should be collected in a certain way. It is based on the set of shared concepts, views, practices, assumptions and values and hence acts as a function of how researcher thinks about the research and knowledge being developed (Johnson and Christensen, 2012). Research philosophies guide the formation and character of the knowledge sought and disseminated by the research (Creswell, 2009). Saunders, Thornhill & Lewis (2009) identify some of the core philosophies as positivism, realism, interpretative, objectivism, subjectivism, pragmatism, functionalist, interpretative, radical humanist, humanist and structuralism.

Based on literature and the researcher's previous work in schools and education systems in Saudi Arabia, it is evident that E-TTP are not as developed as they are in the West. Gaining an understanding of the E-TTP and its present form and relevance in Saudi Arabia and to be able to develop a new and relevant system, this research adopts positivism research model. Moreover, there is a view that what the research will find in terms of the selected sample will be representative, hence the formulation of this research using positivism philosophy. Positivism is also ideal in this case because it facilitates data collected from various sources to be treated as wholly representative and hence a generalisation of the results (Hesse-Biber & Johnson, 2013; Johnson & Christensen, 2012). The observed realities and facts based on the data collected will hence be used to deduce the conclusion of this research given, as they will be assumed generalizable (James & Vinnicombe, 2002; Saunders, Lewis & Thornhill, 2009; 2012). This research adheres to views described in Creswell (2013) that researchers ought to be clear about their understanding of the research they seek to undertake by

comprehending the existing philosophies and worldviews and explaining the reasons as to why they selected the research methods they adopt. Though positivism has been found to have many weaknesses especially in researches relating to education (Mack, 2010), the research on e-learning and technology usage is more practical and similar to natural science than education paradigms which are more of social sciences in nature, hence requiring different paradigms.

4.4 Approaches

The two core approaches of research are deduction (deductive) and induction (inductive) (Riemer, Lapan & Quartaroli, 2012; Saunders, Lewis & Thornhill, 2009). According to Matthews & Ross (2010), research such as this one, which adopts positive approach, should use deductive approach, which sets out to answer questions in form of statements, or informed speculations about the subject the researcher believes are answerable. This research adopts scientific approach to achieve measurable results through objective methods to collect credible data. Given that it has adopted could only be derived through quantitative analysis and not by inference or intuition as guided by May (2011). This approach signifies the most commonly held view on how theory relates to research. The data collected and results obtained from this approach are compared against the findings in Chapter 1, the literature review, to ascertain if the E-TTPs results are representative.

4.5 Strategies

The strategies adopted mean the kind of research style that is used in collecting and analysing the data and they are often associated with different kinds of philosophical perspectives (Alessi & Martin, 2010). Since this research is deductive and inductive in nature, it adopted survey approach in form of questionnaire as discussed in the next chapter. Saunders, Lewis & Thornhill (2012) identifies survey as a process of collecting data in a structured format from a sizeable number of people and is often highly

economical in addressing issues of who, what, where, when and how on many given issues. These two core approaches, deductive and inductive, form the core reasons as to why this research adopted survey approach as it helps generate data that is both rich and statistical in nature Moreover, Hassanzadeh, Kanaani & Elahi (2012) stated that survey is often ideal for testing and understanding the nature of e-learning and online behaviours. Survey is also said to be easy to apply while seeking to understand the thoughts, views, feelings and opinions (Sapsford, 2007) which is what this research seeks to identify and capture.

4.6 Research Design and Procedure of data collection and Analysis

Choices entail the methods and the ways in which the research will actually be designed, data collected, and the methods are identified as mono, mixed and multi (Saunders, Lewis & Thornhill, 2009). Mixed methods research (MRM) or triangulation entails the use of both the quantitative and qualitative methods (Bergman, 2008; Cameron, 2011; Harwell, 2011; Wisdom et al., 2012). It is advantageous in that it combines the major strengths of quantitative and qualitative methodologies (Onwuegbuzie & Collins, 2007). This research uses mixed method given that it is both qualitative and quantitative in nature. VanderStoep & Johnston (2009) stated that using a mixture of both qualitative and quantitative approaches is becoming more common in research and can be said to be giving social science oriented researches added advantage.

In this study, I have used both quantitative and qualitative methods approach. The data collection methods used in this study are questionnaire and interview. Before the data collection, we have offered the methods adopted to experts who are specialised in the field of education, (see: section 4.11).When the data have been collected, they were also

offered to other external experts who confirmed that the data are valid for analysis. The data validity and realaibiliy are discussed in details in (4.11)

Chapter Three and Chapter Four coupled with the development phases are mainly qualitative in nature since they are based on literature research and data in form of personal accounts, opinions and description (May, 2011; Riemer, Lapan & Quartaroli, 2012).). It's formulation and execution is based on the theoretical frameworks outlined in the previous chapters while interpretation of the data will be based on the understanding gained from the literature research.

This research is also quantitative in nature in that uses the data collected through questionnaire and is concerned with quantity and measurements to explain why and how (Trochim & Donnelly, 2007) the existing E-TTP are used, understood and perceived in Saudi Arabia. Thus, as noted by Johnson & Christensen (2012), that most researches are not qualitative or quantitative but they instead fall into both categories. Moreover, some researchers believe the differences between qualitative and quantitative studies are false in that all valid research requires a blend of both models to build a comprehensive knowledge base (Cohen, Manion & Morrison, 2011; Cook & Gorard, 2007; Halcomb & Sharon, 2009). This research may thus purport to have used both approaches, hence adopting a mixed research method (Cameron, 2011; Curry, Nembhard & Bradley, 2009; Denscombe, 2008; Hesse-Biber & Griffin, 2013; Onwuegbuzie & Collins, 2007).

Tashakkori & Teddlie (2003) purported that mixed methods offer better opportunities to answer research questions, facilitate better evaluate and make the research results to be trusted and inferences made from them. This is advantageous in this research because it helps determining whether advanced system is required and if so what areas ought to be upgraded or updated. It is argues that when only one method of data

collection is used, there are dangers of possible bias of claims that might make it impossible to validate or sustain and hence the need for additional process of countering such weaknesses. MRM have also been found ideal compared to mono methods because they out-perform individual approaches, especially where multiple sources of data are used or required to make informed decisions (Creswell & Plano, 2011).

4.7 Time Horizons

On time horizons, Saunders, Lewis & Thornhill (2009) suggest that there are two time horizons namely cross-sectional, which is a short-term study, and longitudinal which is research carried out over a longer period. This research is cross-sectional as it is short-term and only explores status of E-TTP in Saudi Arabia. This can also be termed 'snapshot' study and has adopted survey approach as stated earlier and as noted by Saunders, Lewis & Thornhill (2012).

4.8 Techniques and Procedures

Brace (2008) stated that techniques and procedures are the way in which research is designed and the practicalities of data collection and analysis are accomplished. This research adopted literature review, questionnaires and statistical techniques and MRM, which facilitates additional explanations and exploratory undertakings to be undertaken before making generalised conclusions. Quantitative research was adopted to facilitate analysing survey undertaken using the questionnaires to prove or disapprove the acceptable views and theories (Tashakkori & Teddlie, 2010). In addition, Pope and Mays (2006) argues that qualitative research is focused on the criteria of credibility, the rough comparability of the quality of data attained and most importantly on the dependability and transferability of the findings.

Adoption of both qualitative and quantitative data collection and analyses were opted for because they help in both statistical and thematic analysis. It is anticipated that this triangulation approach is important in providing timely and suitable snapshot of the current situation in terms of teacher training and use of technology in teacher training and within educational activities in Saudi Arabia (Colbran & Al-Ghreimil, 2013).

Research questionnaires will be developed as per chapter five and distributed using online survey. This research will also adopt one of the many computer packages that exist in helping the researcher to analyse the data collected such as SPSS, Amos, and LISERL (Albright, 2007; West, 2009). The results from the qualitative research and the literature analysis plus personal experiences will be used to make informed decisions on what the results of E-TTPs are. This is the main reason why this research adopted MRM approach. It has also been argued that MRM approach helps in adoption of a variety of guidelines that are necessary for undertaking research as suggested by literature (Cameron, 2011; Creswell & Plano Clark, 2011; Curry, Nembhard & Bradley, 2009; Onwuegbuzie & Collins, 2007; Tashakkori & Teddlie, 2010). This helped in adoption of guidelines and frameworks of past researches thereby addressing challenges of MRM such as the need for transparency, rational in the decision-making and consistency in the research process (Wisdom et al, 2012). It has also been argued by writers such as Heyvaert, Maes & Onghena (2013) that MRM is ideal in enabling researchers' to make use of alternative data collection strategies and methods. This complements the strengths of the models adopted while reducing weaknesses of using a single approach.

4.9 Questionnaire

This section discusses the process by which the questionnaire was developed, designed and structured. The questionnaire development is based on the aims and objectives of

this research and as per the literature research in chapters two and three and methodology in chapter four. This chapter entails questionnaire formulation, design and choice of the research process and methods, discussion of the questionnaire structure, sections and relevance and a summary of the theoretical framework guiding the questionnaire development and the research process. The development of the questionnaire is influenced by the activity theory (Engestrom, 2001; Hardman, 2008) as discussed in chapter three. With an aim of testing the experiences teacher trainees in using e-learning teacher training programmes.

The questions seek to determine the ways in which the teachers in Saudi Arabia are trained and taught, their experience and relationship with the e-learning teacher training programmes, and their views on developing an ideal e-learning teacher training programs. The questionnaires are aimed at identifying and providing useful insights into the complex relationships between teacher trainees, teachers, their pedagogic goals and the technological tools available (Kervin, Jones & Verenikina 2010). They were also focused on reviewing the existing teacher training programs to identify the advancements and further developments necessary in these programs to facilitate the development of a new online teacher-training program. As seen earlier, behavioural, cognitive and constructivism theoretical frameworks are fundamental in activity (Morf & Weber, 2000) and connectivity (Anderson & Dron, 2011) approaches within teacher training pedagogical theories. These were fundamental in shaping how the research questions would be structured and what the questionnaire ought to accomplish.

4.9.1 Aims

Robson (2002) argues that questionnaires are important in facilitating researchers to collect the necessary data for analysis and providing facts about a research subject. They help to gather people's opinions (Wright & London, 2009) which are fundamental

in this research, as there is a huge importance in understanding what people think of the existing and ideal e-learning teacher training programs. The questionnaire developed was aimed at meeting the aims and objectives of this research and in answering the questions set out by this research in chapter 1. The questionnaire seeks to determine how the teachers in Saudi Arabia are trained presently. Secondly, the questionnaire aims to determine what the experience of teacher trainees, teacher trainers and other teacher training stakeholders is on the existing e-learning teacher training programs in the country. Various levels of experience such as the effectiveness of the system in meeting the e-learning needs are researched. The respondents' views seek to determine the experience of the e-learning teacher training programs in terms of previous training, experience or knowledge of e-learning systems, relevance, ease of use, features, presentation and helpfulness of the current systems the current systems. They also endeavour to identify and determine the structure, contents, usability and usefulness of the existing e-learning teacher training programs in Saudi Arabia. This second aim helps to identify weaknesses of the existing systems and what ought to be included in the new systems to improve their usefulness, accessibility and relevance.

Thirdly, the questionnaires help determine if new e-learning teacher training programs are required for Saudi Arabia and if so what they ought to include. This is by determining what role the existing e-learning packages play and the users' views and experiences of the existing systems. The questionnaires also help to determine what the weaknesses of the existing systems and ways in which these can be countered. These questions coupled with the desire to identify the effeteness of the existing systems in helping through the process of teacher training schemes were aimed at helping gather information on what would be the ideal ways of developing more user-friendly and effective e-learning teacher training program. Based on these factors, the questions can

be said to have been formulated and designed such that they are able to meet these aims and objectives of this research as recommended by most researchers (Artino et al, 2014; Montee, 2011; Radhakrishna, 2007; Rowley, 2014; Saris & Gallhofer, 2007).

4.9.2 Questionnaire Formulation

The questions focused on identifying the main dimensions that influence e-learning activities such which have been broadly categorised as the learner (the student), the instructor, the course, information technology and the institutional support (Selim, 2007; Sun, 2008). Selim (2007) added design and environmental factors to this list.

4.9.3 Design

The questionnaire was designed so as to meet the aims discussed above and as recommended by scholars such as Artino et al, (2014), Robson (2002) and Rowley (2014) who argue that questionnaires should be designed such that they capture the best possible information of the research and in a manner that is ideal for analysis and interpretation. This research is developed in line with researches undertaken in Saudi Arabia such as those by Colbran & Al-Ghreimil (2013) on application of information technology in teaching and learning within higher education in the country. This research hence explores how e-learning can be applied to education by university administrators, academics and students in improving teacher training. The design is aimed at finding specific answers hence the categorisation of the questionnaires into demographic attributes of the respondents, experience of using the e-learning systems, views of the existing systems and suggested areas of improvement.

The design hence starts with the demographic analysis of the respondents, with questions of gender, age and role of respondents. These questions tries to explore the existing teacher training processes and how Saudi Arabian teachers are taught and the extent to which information technology is applied in the process. It also explores the

experiences of the teachers, teacher trainees and trainers in respect to the e-learning systems in Saudi Arabia and the effectiveness of the existing systems. The questionnaire then seeks to establish the respondents' views on how best to use information technology, to make e-learning for teachers more effective and productive. This helps this research in determining how teacher training can be improved in the country by developing a suitable e-learning teacher training platform which is able to meet the needs of higher education teaching and learning. The design of the questionnaire is hence influenced by the aims and objectives of the entire research and by a variety of other researches in this area.

The design is based on past questionnaires that have been used by researchers understanding the nature and scheme of e-learning systems and teacher training activities. This enabled the questionnaires to be comparable and relevant to acceptable metrics, reduced the need for further testing of specific questions, metrics, and increased the prospects of successful research by testing measurable and relevant variables. The design starts with the general demographic questions on age, gender and other personal data, to help identify the respondents' characteristics. These questions are based on multiple choices unlike most of the other questions, which are formulated on the scoring structure. Scores are used to compare responses to individual questionnaire items and were coded using a 5-point Likert scale arrangement from as used in most similar researches (Li et al., 2011). These range from strongly agree to strongly disagree or very poor to very good in terms of experiences.

On the other hand, the questionnaires, research area and the target population were selected based on the author's experience, knowledge and understanding of the Saudi Arabian education and academic sectors. The expansive knowledge and skills developed by the researcher in his previous work within Saudi Arabia in teaching, managing

schools, developing and implementing curriculum development, learning systems and pedagogies also helped the author to formulate the questions and target them to specific institutions. The questionnaires thus reflect the extensive understanding and knowledge the researcher has on the research population and location. Saris & Gallhofer (2007) argue that developing reliable and valid survey questionnaires requires consideration of many different variables, which affect the quality of the data collected. Such variables include personal experience in questionnaire development. Having been educated and worked in Saudi Arabia, Having been educated and worked in Saudi Arabia, the author has extensive understanding and good knowledge of the existing systems, their strengths, weaknesses and capabilities. To bring these experiences to the research questionnaire, some aspects of the questions and answers were included to capture the knowledge and understanding held by the author and thus facilitating capture of more ideal and relevant information. It will also be of great importance in giving the author a good knowledge and insight of where to start enquiries from, the most plausible approaches, the cultural and operations dynamics and the ability to identify subtle meanings in answers provided.

The differences in cultural, social and practical processes of education and pedagogy in Saudi Arabia compared to those of the western world mean that there is need for localised questionnaire structure. For example, the differences in resource accessibility by people based on gender, age, technology and location mean that different research approaches should be applied in Saudi Arabia compared to similar researches in the western world. These questionnaires were also adopted because they are ideal for Saudi Arabian huge geographical area of coverage and in identifying the weaknesses of inability to adopt online learning system within a huge country. Moreover, the globalisation processes have an impact on all communities. This means that there is a

need for some form of acceptable questionnaire and analysis process that will show the nature of online and eLearning systems within most communities.

4.9.4 Choice

The choices of the questions and answers were based on an extensive survey of the existing literature and on personal experience in Saudi Arabia's e-learning schemes available to teacher training. References were made to works of scholars such as (Al-Ghamdi & Tight, 2013; Colbran & Al-Ghreimil, 2013; Hassanzadeh, Kanaani & Elahi, 2012; Liaw, Huang & Chen, 2007; Ozkan & Koseler, 2009; Wang, Wang & Shee 2007). The choice was also based on Saris & Gallhofer (2007) views that effective questionnaires should be able to assists the researcher in constructing a questionnaire of the highest relevance and accuracy while capturing the meta-analysis that unveils the relationship, characteristics and quality that exist between individual questions and the overall questionnaire. Liaw, Huang & Chen, (2007) noted that in choosing questions and answers to include in research of the learners views of existing e-learning systems, researchers are best choosing questions that explore respondents activities with the system using activity theory approach. The choice of the questions and answers was selected in line with e-learning activities and the e-learners experience with the system structure, environment, guidelines, relevance and assistance available before and during system usage.

Suggestions by scholars on the choice of questions adopted in researches influenced the choice of questions included in the questionnaire. Handal et al., (2013: p.25) stated that:

"Questionnaires (may) deliberately be focused on the concept of ability as a measure of a respondent's capacity to carry out a particular task, rather than focusing on the enactment itself".

The questions hence seek to determine the users experience and ability to carry out tasks based on scale 1 to 5, which shows both existing and potential use of the e-learning systems. The questionnaire will hence collect data on both the existing effectiveness and weaknesses of the system and the potential of the user to opt for alternatives based on their skills and needs. Therefore, questions and answers were chosen and structured to facilitate statistical analysis that led to the selection of questions whose answers enable researchers to employ mathematical analysis.

4.9.5 Structure

The questions used in this research were specifically adopted from a variety of online research questions and resources (Cheek & Anderson, 2006; Bentley, Selassie and Shegunshi, 2012; Hine, 2004; Jara, Mohamad & Cranmer, 2008; Marshall and Rossman, 2011; McKinstry, 2003). The questionnaire, which is available in Appendix 1, has twelve questions, divided into five main sections. The structure hereby was adopted as per the guidelines by Dillman & Bowker (2001) who argued that questionnaires should have a flow and a structure which makes the questionnaire acquire the appropriate flow for the respondents' to comprehend the questions, the questionnaire and the entire structure. Such understanding increases the prospects of the respondents offering comprehensive and flowing answers.

The structure of the questionnaire has the following sections:

1. **Guidelines** – The guidelines section, which is titled *Teacher Training*, forms the first part of the questionnaire and outlines the guidelines for those answering the questions. This section is in Arabic language as all respondents who are expected to take part in the research are expected to have excellent command of both spoken and written Arabic. This is unlike all other sections whose contents is offered in both Arabic and English languages to facilitate ease of data

collection, as some words are easier communicated in English. It also helps in the analysis and ease of comparison and linguistic articulation of the questions, which would sometimes have been otherwise lost if they were to have been presented only in Arabic language.

2. **Demographics** – This section has three questions (1, 2 & 3) which are aimed at collecting the background information of every respondent to help categorising of the respondents into specific categories and groupings based on age as a differentiation attribute. The second question identifies gender of respondents and finally the role of each respondent. These questions have been previously found to be hugely important in researches as outlined by some researchers. For example, demographic attributes of age and gender were found to impact on students' interest in e-learning (Alstete & Beutell, 2004; Coldwell et al., 2008; Essam & Al-Ammary 2013; Hong, 2002). The questions also help to determine the attributes of the individuals this research is working with. Role of individual respondents are also vital in informing the researcher whether there are any differences in the views of trainers, trainees and other teacher training stakeholders in Saudi Arabia.

3. **Teacher Training** – Questions 4 and 5 will inform the researcher about what teacher-training programmes exist in the country and if they are available in online version. Question 6 seeks to clarify the e-learning technologies that teachers, trainees and other academic professionals to deliver training and assessment. Respondent's views help the research to determine the learning and educational technologies in Saudi Arabia and the prevalent technology thereby shaping the model prototype proposed by this research.

4. **Effectiveness** – These questions capture the views of the respondents in terms of their individual experiences with the existing e-learning platforms. This helps to develop a better understanding of the respondents and by extension the Saudi Arabian's relationship with the information technology in learning and training processes. This starts with questions 7, which explores respondent's views in respect to their experience in using e-learning platforms in carrying out a variety of activities and roles such as creating, saving, editing and uploading documents and other multi-media products. Question 8 focuses on satisfaction of using the system and is analysed by exploring the perspectives of the respondents in terms of the organisations approach to the e-learning contents, reliability of the learning platform system, engagement and support provided. This informs the researcher on the levels of satisfaction the teachers, learners and other academic professions have in respect to the e-learning teacher training systems.

5. **Improvements** – This set of questions, 9 to 12, seek to determine the kind of improvements that are required on the existing e-learning systems and how the respondents perceive that such upgrades ought to be implemented. Question 9 seeks to determine the different ways in which the e-learning systems can be improved. It uses Likert scale question format to gauge the level to which the respondents agree or disagree with how the existing e-learning technology can be enhanced and measures put in place to make it most effective for them to use. This question is more about personal views and their relationship with the e-learning system than the e-learning as a teacher-training tool as this will help capture general information about technical competence and needs for recipients in adopting education technology. Question 10 asks respondents to state the positive aspects of e-learning systems while question 11 looks at

negative impacts. Question 12 seeks to identify the core barriers in adopting e-learning teacher training systems.

In summary, the five core parts of this questionnaire can be summarised into four main sections, which help in identifying the demographic information about the respondents, their experience in using the e-learning systems, the effectiveness of the e-learning system and the necessities of future or ideal e-learning systems.

4.9.6 Relevance

As noted earlier, the questionnaire developed was based on activity theory given that the most ideal way of understanding relevance and usage or otherwise of an e-learning system is to use an appropriate theory for understanding e-learning systems (Liaw, Huang & Chen, 2007). Understanding the usability of any e-learning systems, which is a core factor in this research, is based on exploring its "usability evaluation, as a combination of behaviour and opinion based measurements, enabled to quantify usability in terms of users' (teachers' and students') performance and satisfaction" (Granić, 2008:209). In this case, usability mean having systems that are easier to use and that match more closely the users' needs and requirements.

According to the international standard, ISO 9241-11 provides guidance on usability and defines it as the extent to which specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a particular context of use can use the product. Effectiveness means the users can complete tasks, achieve goals with the product and do what they want to do effectively; efficiency means how much effort uses require doing this; satisfaction is what users think about products ease of use. The questionnaires were developed with focus on specific tasks and how easy it is for the users to be able to accomplish them and navigate through the system. Activity theory is

central in the development of the questionnaire and analyses of the activities carried out in the teacher training activities.

The questionnaire investigates the students and/or trainers experience based on their ability and process of undertaking specific tasks by comparing the results of different e-learning systems and experiences of different individuals in each of the systems. These tasks are to create, edit, save, share, collaborate, convert, upload videos, upload audio files, give assignments, mark assignments, allocate and distribute marks, create reference list, share references and link articles referenced and saved to libraries. The users experience indicates the useful usability - or lack of – in respect to the specific e-learning system analysed. They also help identify each interface limitations and suggestions of how such limitations can be addressed and modified and hence the development of the attributes and features of a new e-learning teacher training program. They also help raise a series of questions which require further comprehensive research so as to understand how best to design more universally acceptable e-learning system. Anderson & Kanuka (2003) argued that questionnaires should have relevance to the research being undertaken.

4.9.7 Theoretical Framework

Many researchers in the education, information systems and humanities have found that activity theory provides a worthwhile framework for understanding their field of study. The questionnaires were designed in line with the activity theory because that makes them useful able to capture the description of activities in a hierarchical manner and provides a model for decomposing activities into actions and operations. It insists that tools mediate activity, which helps to explain relationships between the user and the tool. This is because activity theory stems from its fundamental view of purposeful

activity in a cultural historical context as the fundamental unit for the study of human behaviour.

4.10 Research Process

This section outlines the specific processes, steps and activities that will be undertaken in order to meet the aims and objectives of this research. This entails discussions of the instruments and targets, sampling process, distribution activities, ethical considerations, selection of the methods and measurements to be used. It also outlines the regions where the research will be carried out so as to answer the research questions given in chapter one.

4.10.1 Pilot Phase

The process entails sample selection, piloting and questionnaire distribution and results collection. Thereafter, the results are analysed in the data analysis phase and the structure of the proposed development of an e-learning teacher training system outlined. At first, the existing researches and websites such as Survey-reviews (2013) were used to select the two systems for the distribution and completion of the questionnaire leading to the selection of Smart Survey The questionnaires were uploaded onto these two online research platforms to reach students and teachers in the Saudi Arabian teacher training fraternity. They were mainly selected because they are commonly used in Saudi Arabia, they are easy to use and access, the analysis and review of data collected is easy and they are free to use with lots of powerful features.

For the validity of the data and to gain better insight the views of experts on education on use of technology in teacher training, a second sample group of respondents was identified. These were senior academicians and those working in education sector and those who use e-learning platforms. The questionnaire was also distributed among 216 senior academicians and delegates, including panel of experts on e-learning, who were

attending a four days International Conference for e-Learning and Distance Education in Riyadh, KSA (http://eli.elc.edu.sa/2015/). This process formed the initial pilot phase of this research so as to refine the sampling and sample to be used for both testing the instruments and for the full research to be carried out.

4.10.2 Instruments and Targets

Given that ICT usage and presence has spread differently in different parts of Saudi Arabia, the research process was implemented such that it covered the areas where ICT was mainly used – being only in the two major cities of Jeddah and Riyadh. The research process also entailed targeting the known teacher training institutions and staff and requesting them to facilitate their people to help answering the questions of this research. The targets groups were those that are involved in teacher training and those that have some knowledge and understanding of internet usage since the questionnaire is supposed to be completed online. Before the distribution was carried out, discussions were undertaken with five existing and two previous teacher trainers to identify the nature and competence of the questionnaires and the target process. Three current teacher trainees and two teachers who graduated in the last twelve months were also sent the questionnaire including the introduction section and the proposal of the target groups.

The feedback from these twelve people was taken into consideration by going through the questions and identifying their views based on modification guidelines. The questionnaire modification and target guidelines were based on Law, Huang & Chen (2007) questionnaire modification guidelines using three-point Likert scale assessments as follows:

1. Necessity of the questions and answers – This was based on a three-point Likert scale:

a. 1 - It is not necessary to ask the question

b. 2 - It is useful, but not essential to ask the question

c. 3 - It is essential to ask the question

2. Clarity of the questions – This was undertaken by using a three-point Likert scale:

a. A - Clear questions

b. B - Needed modification

c. C - Unclear questions

3. Translation of the questions and instructions - This was undertaken by using a three-point Likert scale:

a. I – Translation is acceptable

b. II – Minor Arabic translation needed

c. III – Major Arabic translation needed

This led to modifications of the questionnaires and targets as follows: On Necessity of the questions, one question with '1' was deleted and two with '2' were modified and all the rest were retained as they had been previously as they all had 3. A few questions with '2' were left as they were as only one or two respondents identified them and further review showed no need to refine or edit them. On clarity, 2 questions and three answers were identified as needing modifications. No question was unclear while all the rest were clear. Those needing modifications were modified. On Arabic to English translation, nearly half of the questions and answers needed slight modification while the introduction and five of the answers needed complete review of the translation. All

respondents agreed that the two survey websites and the nine institutions were a good questionnaire distribution and target process. Thus no modification of target or survey processes was done.

4.10.3 Sampling

Invitations were sent to students and teachers working in nine teacher-training institutions within or near Riyadh and Jeddah to gather their views and experiences with the online teacher training programs within Saudi Arabia. Random sampling method was used as expounded on by Denscombe (2010) given that all education institutions in these two regions were selected and requests sent for anyone working in them within education fraternity – teachers and students – to complete the questionnaire. (See appendix 1). The core reasons for selecting these institutions was that the other few places spread around the country have little if any internet connectivity. In addition, very few institutions have been known to use e-learning teacher training systems in Saudi Arabia that are outside the main cities. There was also need to focus on institutions whose feedback and follow-up would have been easier than attempting to contact those that are difficult to contact and follow-upon.

Johnson and Christensen (2008: p223) defines sample as "a set of elements taken from a larger population according to certain rules". Sampling is an important step in the research, and its main purpose is to gather data covering the whole population. Gay (1976: p66) on the hand defines the sampling process as "the process of selecting a number of individuals for a study in such a way that the individuals represent the larger group from which they were selected". These definitions fit into the sample collected for this research. The total sample size was 432, which included two groups being the public and the experts in e- learning. They general respondents included teachers, trainee teachers and other staffs in general teacher-training institutions while the panel

of experts on e-learning was gathered from a group who were attending a four days conference on e-learning and technology in education within Saudi Arabia. Random sampling was adopted as the most appropriate sampling technique for this research. According to Johnson and Christensen (2008: p225) random sampling is a way "in which every member of the population has an equal chance of being selected". Gay (1976, 81) points out that random sampling is "the best single way to obtain a representative sample".

The choice of the respondents through sampling and effective questionnaire distribution is necessary in ensuring that the results of the research are valid and reliable (Tsai, 2009). The questionnaire included a cover letter to enable the recipients to understand what was required of them. There was also an inclusion of both Arabic and English versions of the questions to encourage respondents to use the language that they are most comfortable and familiar with especially given that most e-learning systems use English language as the default mode of communication. Translation and bilingual nature of the questionnaires helped contextualise the research to Saudi Arabian and to the samples and target groups that were to be selected. The language and questionnaire formulation formed a core part in the determination of the population, which was to be targeted by this research. It is hence correct to purport that part of the sampling process was done during the questionnaire formulation where the target groups were identified as those that were comfortable with some command of albeit Basic English language.

The selection of the target institutions and the focus on individual departments was adopted as a means of ensuring that both male and female respondents were equally represented. All teacher-training activities are offered in gender specific institutions. This was considered in selection of institutions to include in the sample by ensuring

that all institutions and departments included has almost an equal number of male or female students and teachers. All institutions were selected such that the gender representation in the final target group was similar. Previous researches in Saudi Arabia such as those on online shopping and online banking (Al-Ghaith et al., 2010, Al-Hudhaif & Alkubeyyer, 2011; Al-Subaihi, 2008) were used to ensure the research was gender sensitive and was not impacted upon by cultural and social settings demarcating gender location and positioning.

To expand reach and widen prospects of respondents seeing the questionnaire and responding to the research, link and details about the questionnaire was sent to specific institutions in Saudi Arabia. Institutions focusing on teacher training (both workshops and technical teacher training institutions) were specifically included in the research. Links were established with departments, faculty and trainees at King Abdulaziz University in Jeddah and six universities being King Fahd University of Petroleum and Minerals, King Abdulaziz University, King Saud University, Princess Nora bint Abdul Rahman University, King Faisal University and Imam Muhammad bin Saud Islamic University were specifically targeted. Organisations such as CfBT Educational Trust and Technical Teacher Training in Riyadh, who engage in teacher training, were also approached to help inform the trainee teachers and their faculties about this research. Moreover, a group of professionals, senior academicians and individuals working in education sector and those who use e-learning platforms were also targeted for response during a four days International Conference for e-Learning and Distance Education. The group represented countrywide education and academic institutions and professionals, government officials and stakeholders in education and use of technology in teacher training and within education sector.

4.10.4 Distribution

The ability to gather primary data during this study was dependent on gaining access to an appropriate source within the organization. The level to which this source is appropriate relies on the research question, related objectives and research designs (Saunders et al, 2007). Therefore, the author, as a former employee within the education system, was in a good position to understand the organisations, teacher trainers and trainees and how to access them. Due to the non-intrusive nature of this research, there were no objections or limitations raised by the participants about the questions asked or the purpose of the study.

This questionnaire was distributed by email, through calls or by post to all teacher-training institutions in Saudi Arabia. Heads of teacher training institutions and the personnel involved in facilitating and offering teacher training were targeted to enable the questionnaire to identify the nature of current virtual learning environment in Saudi Arabia in relation to teacher training processes. The questionnaires tried to capture the factors that determine the nature of teacher training in Saudi Arabia and have a better understanding of the impacts those cultural, technical and cultural effects on e-learning activities. The aim is to gather an up-to-date understanding of the existing teacher training programs in Saudi Arabia that use any form of e-learning teacher training programs so as to undertake the second phase of research, on what are the strengths and weaknesses of such e-learning systems. For the group of professionals, senior academicians and individuals working in the education sector and those who use e-learning platforms, there was no sampling, but instead the questionnaires were distributed to participants attending e-learning and distance education conference as a means of analyzing and understanding the existing systems. The questionnaire was used as a means to review the necessary changes and upgrades required for the teacher training systems in Saudi Arabia.

4.10.6 Method Selection

Smart Survey was adopted to execute the data collection process. Online survey was adopted because it has a variety of merits compared to other research and survey methods. It reduces the collection of unwanted data, as it sometimes happens during speech interviews, and given its effectiveness in measuring specific other than general variables (Wright, 2005). Online surveys are cheaper to develop, more effective and faster for researchers and respondents and possible to undertake in different regions at the same or at different times (Biemer & Lyberg, 2003; Tarrow, 2004; Van de Vijver, & Chasiotis, 2010). They are more effective in eliciting relevant information such as use of internet and online interactivity (Axinn & Pearce, 2006; Best & Krueger, 2004; Fricker & Schonlau, 2002). According to Morse & Niehaus (2009), online survey eases the accessibility of wider range of respondents quickly and offers results that are easier to manipulate and analyse. Al-Subaihi (2008) noted that online surveys are more popular among academic researchers because they are convenient, affordable, and accessible, require no special skills and are easy to administer and manage for researchers and respondents. The respondents from the group of professionals, senior academicians and individuals working in education (Panel of Experts) were also given the questionnaire in the smart survey for their responses to be collected. This research was based on responses to a questionnaire survey from 432 Teachers, Trainee Teachers and Staffs in general teacher training institutions and a Panel of Experts on e-learning in Saudi Arabia. The data were analysed using basic descriptive statistics and relationships within the dataset were examined using Standard Deviation and Correlation Coefficient technique.

4.10.7 Measurements

The research questionnaire and measurement tools were developed and based on Likert-type scales with five scale levels of good and poor as per Tables 4, five scales levels of agree or disagree as per Tables 5.

Table 4: Five Levels Likert Point Scale (Good and Poor)

Measure	Scale
Very poor	1
Poor	2
Average	3
Good	4
Very Good	5

Table 5: Five Levels Likert Point Scale (Agree and Disagree)

Measure	Scale
Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

Statistical Package for the Social Sciences (SPSS) version 21.0 used to analyse the results. SPSS was selected because of its analytical capabilities, popularity with

researchers and it is comparatively ease of use (Field, 2009; Li & Lomax, 2011). SPSS is been hailed as ideal statistical analysis software that is excellent for comprehensive data analysis, manipulation, generating of reports, and presenting the findings in simple yet comprehensive and exhaustive ways (Nie, 2007).

4.10.8 Data Collection

The questionnaires were used in collecting survey interviews with all participating teachers based on the Smart Survey. The surveys were distributed and conducted with academics and trainee teachers across the country based on the selection methods previously outlined. These entailed respondents from varying disciplines and in different levels of engagement in the teacher training processes thereby capturing rich data on issues relating to teacher training and the use and adoption of technology in educational within Saudi Arabia. Data collection entailed the capturing of both qualitative and quantitative data thereby facilitating carrying out of both statistical and thematic data analyses.

4.11 Validity and Reliability of the data questionnaire

In order to ascertain the validity and reliability of the data cognitive testing, there should be face and content validation. This validation includes both the data reliability and consistency. Therefore, the data of the present study have been sent to external assessors in the field of education in the KSA. Those assessors are specialised in the e-learning and teacher training. They have confirmed that the data are valid and reliable to be analysed. See appendix (2). A statistical test which is (Alpha Coefficient) has been employed in this study to reveal the validity of the results.

4.12 Limitations of the study

Similar to other research, this thesis has a number of weaknesses and limitations. Firstly, research in this area is lacking in KSA and where available it is weak. This is a

common feature in most developing countries because documenting the nature and impact of electronic learning is still in its infancy due to the newness of programs. The contents in terms of books and papers were hence widened to all publications relating to electronic learning, internet usage, use of technology in education and teacher training in Saudi Arabia to get some clear picture and background of education systems in the country. Secondly, accessing the teachers and teaching fraternity was very difficult due to initial suspicions of what online research the researcher was carrying out. Speaking to education institutions and getting permission from religious leaders took longer than anticipated and the initial form of questions were changed and refined numerous times to help the researcher meet the goals of the study while sustaining positive aspect of the teacher training systems. Never-the-less, this pragmatic consideration that led to these changes in surveys, survey site and platforms including the timings of when the research was carried out (during Ramadhan) and suitable occasions on which student surveys could be carried out without interrupting teaching schedules did have some impact on the expected answers as the questions remained the same albeit in different formats and with less Arabic translations as earlier anticipated. As such, the results should be taken with some caution especially where Arabic translations would have made differences. Nevertheless, set against this, the respondents were almost overwhelmingly highly competent in English language, and as such, on balance, the conclusions can be said to be useful and reflective.

Thirdly, the initial proposal to carry out the research on the ground was too expensive and very difficult to accomplish on time. The problems of translations and co-operation by authorities meant that it would have taken years to get concrete data. Yet, with the e-learning systems and other online technologies, things are changing very fast. As thus, it was decided to proceed with surveys using online platforms, which meant all those

people lacking internet and online accessibility were excluded. Such self-selection could have led to bias in the results of this research. However, the research was expected to inform about usage and accessibility of e-learning systems and as such, the respondents reached were the best possible target as they had experience and knowledge of using the e-learning systems hence able to comment and contribute positively. As such, the results are not a predicament but instead a reflection of what is truly happening in the e-learning sector in Saudi Arabia.

Fourth, this research found age limit as an issue in tools usage. The attribute that the respondents were predominantly youthful with about 87% of all respondents being under 36 years of age could also be explained by three other factors. First, the Saudi Arabia has a very youthful population with nearly 60% of the population being under 35 years of age (Al-Ghaith et al., 2010). Secondly, most of the people attending teacher-training colleges are either taking professional teaching qualifications after having acquired a first degree or are enhancing their skills and competencies in teaching career. Most of these trainees are however young. This is highly likely given that most Saudi Arabian teachers attain their teaching qualifications as a specialty or a secondary certification after having gained an initial qualification. Thirdly, the respondents, both teacher trainees and teaching staff who responded are those who have some knowledge or exposure to use of technology in education or those who are seeking to learn more about e-learning in teacher training. This may explain why the uptake of the research was limited despite attempts to increase awareness in the teacher training institutions, as those unaware or disinterested in use of technology in teacher training processes would have shied away from engaging. Finally, the satisfaction of both general and expert participants has not been examined in this study in term of gender.

Overall, the research applied rigorous academic and professional measures and as thus, common-sense considerations in the questions, survey, research and interactions with various institutions and individuals indicate that the results are robust. Though this is not possible to quantify, the research forms the foundation for further similar researches with future researchers having something to build on. Moreover, as an e-learning system is a living product that will need continues upgraded and modifications, this could be said to form the first step in this long journey of such a tool.

4.12 Ethical Considerations

This research was based on voluntary survey that was administered online to a sample of teacher training academics and learners in Saudi Arabia. Tarrow (2004) stipulated that it is paramount for researchers to adhere to ethical research methods and guidelines in the entire research process, especially during the data collection. In this respect, the initial discussions were carried out between the individuals and where necessary, with the institutions to get the necessary confirmation and permissions to proceed with the research. Appropriate protocols on issues such as confidentiality for respondents and data reliability were adhered to as guided by literature and university research requirements.

4.13 Conclusion

In conclusion, this research has adopted Saunders, Thornhill and Lewis (2009) research onion to develop the methodology discussed above and will use MRM to research on eLearning techier training programs in Saudi Arabia. The methodology adopted in this research including the data collection and analysis processes will help the researcher to meet the goals and objectives of this research and answer the research questions. The methodology adopted was hence based on the best possible options for meeting the aims and objectives of this research. This is by ensuring that the research to be undertaken asks the right questions and gets the most suitable answers on teacher

training in Saudi Arabia and in evaluating the adoption, implementation and usage of technology in education within Saudi Arabia. It also helps determine the views of teacher trainees and other stakeholders on the role of technology can play in teacher training within the country.

Chapter 5: Data Analysis

Objectives

- ➢ Introduction
- ➢ Results
- ➢ Data Analysis
- ➢ Respondents Demographic and Profile
- ➢ Teacher Training Process and Experience
- ➢ Existing System
- ➢ Effectiveness of Existing Systems
- ➢ Improvement Required
- ➢ Validation
- ➢ Conclusion

5.1 Introduction

This chapter presents the main part of this research by outlining and presenting the data analysis and the findings of the empirical study. Conclusion of the entire research is also provided here summarising the core findings and deductions from primary and secondary data. The findings of the respondents' views on the existing e-learning systems, their experience on the existing systems and suggested solutions are discussed in this chapter. The experiences and the views of the teachers, trainee teachers and other participants on the existing systems, both e-learning and teacher training activities undertaken were analysed. The findings are presented in terms of the four core sections of the questionnaire namely demographics, teacher training processes, effectiveness of the existing e-learning systems and improvements suggested or proposed by the respondents. This chapter analyses the findings of the research carried out by bringing together the findings of the research in form of data, which is analysed to come up with the results of this research (Bell, 2010; Gibson and Brown, 2009). It outlines the statistical results of the collected data and presents interpretations, which help in the development of conclusions and the features that a new and upgraded or new e-learning teacher training system should possess.

The official data on teachers and teachers training in Saudi Arabia is not very systematic but this research gathered that there are between twelve and twenty-four thousand teachers undergoing training and about a sixth of the number in the teaching and academia fraternity. The research targeted on about half of this population. The numbers were obtained from all the institutions that received the research data showed

about 4,800 recipients would have accessed the survey if it was comprehensively distributed. There were nearly 1,200 students and teachers – equal numbers of males and females – who received the   survey questions. There were attempted by 314 respondents, about 26% of the recipients. Of these, only 216 responses were fully completed and ideal for inclusion in this research that accounted for about 18% of the target group. These responses were from departments of nine institutions, which account for 60% of the teacher training institutions in Saudi Arabia, as per the number of institutions listed in various education and publicity materials on teacher training in the country.

The general population was selected to understand the generic nature of the use of e-learning teacher training programmes in Saudi Arabia. It was also important in getting the data necessary in this research to determine the existing teacher training programmes in the country. On the other hand, the panel of experts was included in the data collection and analysis to make the results more valid and to gather the truer nature of the e-learning teacher training programmes in Saudi Arabia. The sample used in this data represents the entire population in both general (based on the first sample) and on professional and experts as represented by the panel of experts. It is thus a reflection of teachers and teacher trainers in general and they have either basic or expert experience in relation to e-learning.

5.2 Data Analysis

The data collected is analysed using a mixture of nominal, ordinal and scaled data. 0.05 Statistical significance levels are used to explain if the results represent a positive or negative relationship to the existing or prospects of a new e-learning teacher-training program. The data relates to the systems that were identified as e-learning systems and online courses that offer interactive and technology based learning opportunities. As

such, the data collected and analysed is on online collaboration, discussion forums and other platforms such as posting own work online, emailing, instant messaging, audio communication plus other activities such as animations and simulations that are used online to help in teacher training activities. All the respondents had above average competence in English language hence the ease of completion of the survey with little need for translation of responses. With exception of a few Arabic responses in prose questions which were in Arabic and insignificant in affecting the rest of the data, all other responses were in English.

5.3.1 Respondents Demographics and Profiles

Age	Respondents (in numbers)	Percentage (%)
18 to 25	70	32
26 to 35	99	46
36 to 45	27	13
45 and over	20	9

Table 6: Summary of the Respondent's Age Group (General Sample)

This table shows the age variables classified into four groups. Nearly 18% (n=216) of the sample targeted for this research responded comprehensively to the survey. The age of the respondents ranged from 18 to 45+ but for data analysis purposes, the groups were categorised into four groups. The group aged 26 to 35 had the largest number of respondents accounting for 46% (n=99) followed by 18 to 25 year olds who accounted

for 32% (n=70). 36 to 45 year olds accounted for 13% (n=27) and 45 accounted 9% (n=20) respectively. The median age of the sample was 26 to 35.

The second population of respondents ranged from 18 to 45+ but for data analysis purposes, the groups were categorised into four groups namely. The group aged 36 to 45 had the largest number of respondents accounting for 49% (n=105), 26 to 35 had 42% (n=90) followed by 45+ accounted 8% (n=18), 18 to 25 year olds who accounted for 1% (n=3). The median age of the sample was 26 to 35.

Table 7: Summary of the Respondent's Age Group (Panel of Experts)

Age Groups	Respondents in Numbers	Percentage %
18 - 25	3	1
26 - 35	90	42
36 - 45	105	49
45+	18	8

People aged over 45 years accounted for the smallest number of respondents. Though this research did not go into details to determine why most of the respondents were younger, there is evidence from literature, such as Alnassar and Dow (2013); Alstete and Beutell (2004); Smith and Abouammoh (2013), who argue that when it comes to the use of e-learning, the age has been found to be a significant factor. Older students are more likely to engage in e-learning compared to younger students in terms of using discussion boards and other related tools (Coldwell et al., 2008). Cain (2008) also

indicated that as many more college students join employment, such as teacher training, there has been steady increase of employees who are adopting online learning due to its convenience and flexibility with their work schedule. This could also explain why there was a very small representation of older respondents.
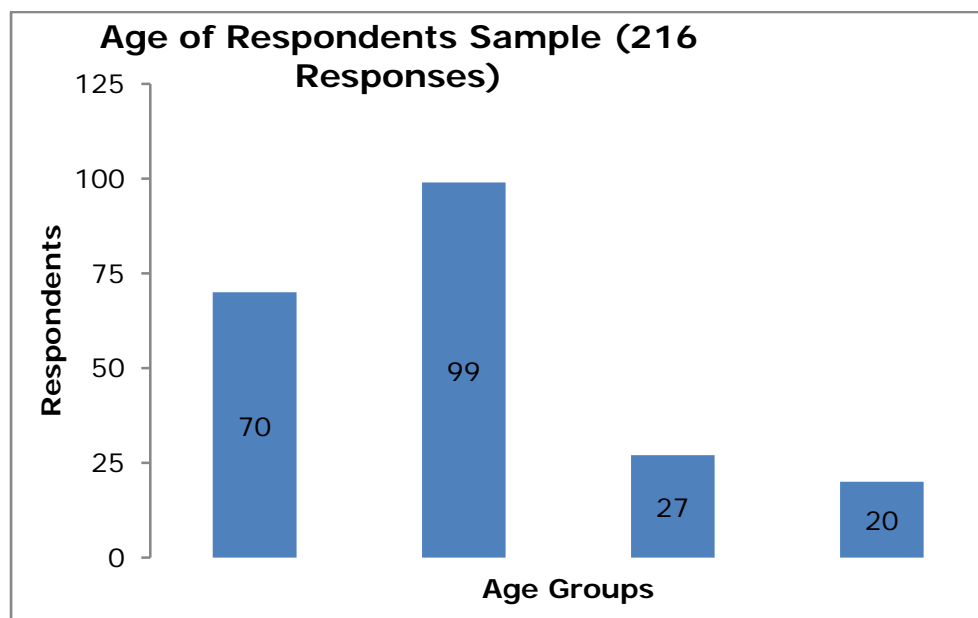
Figure 5: Summary of the Respondent Age Group (General Sample)

This figure shows the respondent age group which has been divided into four groups. It can be noted that the attribute of the respondents were predominantly youthful with about 61% of all respondents being under 36 years of age. This could also be explained by three other factors. First, the Saudi Arabia has a very youthful population with nearly 60% of the population being under 35 years of age (Al-Ghaith et al., 2010). Secondly, most of the people attending teacher-training colleges are either taking professional teaching qualifications after having acquired a first degree or are enhancing their skills and competencies in teaching career. Most of these trainees are however young. This is highly likely given that most Saudi Arabian teachers attain their teaching qualifications as a specialty or a secondary certification after having gained an initial qualification.

Thirdly, the respondents, both teacher trainees and teaching staff who responded are those who have some knowledge or exposure to use of technology in education or those who are seeking to learn more about e-learning in teacher training. This may explain why the uptake of the research was limited despite attempts to increase awareness in the teacher training institutions, as those unaware or disinterested in use of technology in teacher training processes would have shied away from engaging. This is discussed on more details in chapter 7, on limitations of this research.

On the other hand, the profile of panel of experts and professionals who were attending training on use of technology in education had almost similar response rates in terms of population representation. However, there were slight differences with the population distribution being more representative among the education and technology trainees compared to the general research sample. As shown in Table 7, those aged 36 to 45 accounted for the highest number of respondents with 49% (n=105) respondents in total. This was followed by those aged 26 to 35 who accounted for 42% (n=90) of the respondents. 45+ represented 8% (n=18) of the respondents while those aged over 18 to 25 accounted for 1% (n=3) of the respondents. The median age of the sample was 26 to 35, which is similar to the general population of the respondents who were sampled from the general population. These 216 respondents who included senior academicians and panel of experts in e – learning considered themselves as very good in their units or departments. Therefore, their views are vital in the progression of the state of the existing e-learning systems, the improvement of the areas where these systems should be, and then upgrading these systems to meet the needs of e-learning platforms for teacher training in Saudi Arabia
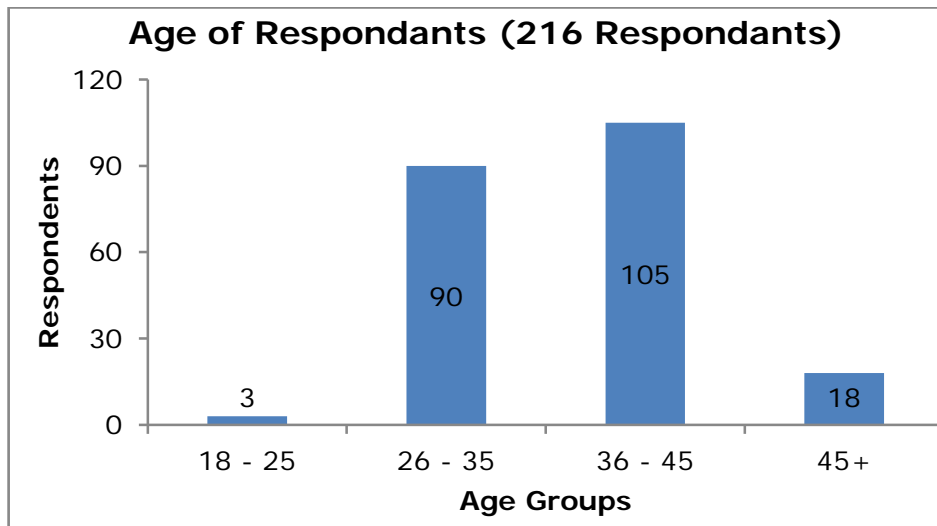
Figure 6: Summary of the Respondent Age Group (Panel of Experts)

Figure 6 shows the age variable ranging from 18 to 45 years old. The age variable is divided into four groups (18-25, 26-35, 36-45 and 45+). It can be noted that the largest number of respondents was seen in the adult age group from (36-45). It is also worth mentioning that the age group 36-45 represents the well experienced people in the country who have the sufficient competence to evaluate and assess the E-learning processes.

As for the gender variable, it has also been effective in the comparsion of respondents. This can be shown below in Tables 8. The gender analysis shows that there were more female respondents compared to male respondents with females accounting for 57% (n=123) and males 43% (n=93). As per Table 9, the gender analysis shows that there were more female respondents compared to male respondents with females accounting for 56% (n=120) and males 44% (n=96). The results show that there are more women respondents compared to men. This was in line with the existing researches, which show that gender is instrumental in determining the extent to which students use e-learning systems. Gender, for instance, has been found in previous studies to be a very influential factor in terms of using e-learning (Coldwell et al., 2008). Thus, online

courses tend to favour women, as they are generally more motivated, more network oriented, more collaborative, and better at scheduling their time (Coldwell et al., 2008).

Table 8: Respondents Gender Analysis (General Sample)

Question	Respondents	Percentage (%)
Gender		
Female	123	57
Male	93	43

Table 9: Respondents Gender Analysis (Panel of Experts)

Question	Respondents	Percentage (%)
Gender		
Female	120	56
Male	96	44

However, our study focused on institutions which offer teacher-training programmes for new trainees, religious courses and in-service courses to teachers who are either yet to start teaching or those already working as teachers, irrespective of their level of qualifications. As shown in Table 10, on respondents' role, teacher trainers and trainees formed the largest number of respondents totalling 79%, with by 40% (n=87) and 39% (n=84) respectively. As shown in Table 11, on respondents' role, teacher trainers and

trainees formed the largest number of respondents totalling 78%, with 41% (n=90), 37% (n=80) and 22% (n=46) respectively. This means that teachers and trainee teachers responded more than other staff and stakeholders in teacher training making the results more significant in the views of e-learning teacher training systems. This is because the research seems to have captured more views of those who engage in day-to-day teacher training and learning processes thereby giving it a more authentic inclination towards the specific features, needs and views of teacher training programmes on practical bases. Though this research had only 21% of other people participating in the research process, it can be argued that it is representative of what teachers and trainee teachers feel about existing and prospective e-learning systems for teacher training.

Table 10: Respondent's Role (General Sample)

Respondents role	Respondents	Percentage (%)
Trainer / Lecturer / Teaching staff	87	40
Learner / Teacher trainee	84	39
Other stakeholders	45	21

Table 11: Respondent's Role (Panel of Experts)

Respondents role	Respondents	Percentage
Senior Academician (e- learning)	90	4

Education Consultants (ICT)	80	3
E-learning providers /other stakeholders	46	2 2

5.3.2 Teacher training process and experience

The respondent's views on the teacher training programmes offered show that almost all the courses offered are teacher training oriented. As illustrated in Tables 12, the teacher 91% (n=196) of the respondents saw the courses offered in these institutions were predominantly oriented towards teacher training. Only 9% (n=20) had saw their courses as religious in nature and hence not being related to teacher training.

Table 12: Mode of Teacher Training Programmes Offered (General Sample)

Programme Offered	Respondents	Percentage (%)
College / University	196	9
Religious studies	20	9

On the views of how the teacher training courses and qualifications received, this research found that teacher training in Saudi Arabia is acquired through universities and colleges based training. As shown in Table 13, 98% (n=211) and Table 14 99%

(n=214), the respondents stated that they gained their teacher training qualifications from courses offered in colleges and universities. The others stated that they had either not received any teacher training 1% (n=3) or they had acquired their qualifications through practice as religious leaders and Imams 1% (n=2) and 1% (2) respectively.

This research categorised the last section where respondents identified their teacher training qualifications as having been attained from Imams knowledge and skills. Teachers who joined teaching profession through this process and teacher trainers who were going through this type of training were termed as religious apprenticeship qualifications for data analysis purposes. This is because qualifications are attained through this process when the individuals spend long hours learning and working as Imams thereby gaining knowledge and skills to become competent trainers and instructors.

Table 13: Teacher Training Qualification Received (General Sample)

Qualification offered at	Respondents (in	Percentage (%)
College / University	211	9
None	3	1
Religious apprenticeship	2	1

Table 14: Teacher Training Qualifications Received (Panel of Experts)

Qualification offered at	Respondents	Percentage (%)
College / University	214	9
None	-	-
Religious apprenticeship	2	1

5.3.4 Existing Systems

The analysis of the data revealed that respondents' views show that there is no specific e-learning teachers training program or system in Saudi Arabia. Instead, there is a collection of technology driven platforms where contents are shared or sent through. The respondents' views show a possible linkage between their understanding, experience or views of e-learning or virtual learning processes and systems or platforms used in distant learning and sharing information using internet technology. In this respect, the respondents' views include different types of internet technology primarily emails, in-boxing, real-time chat, messaging, calling, video-conferencing and videoing. For the sake of this research and to facilitate ease of reporting, analysis and recommendation, the responses to the question on e-learning technologies used in the training and assessment processes of teacher training were grouped into seven main categories and analysed as per tables 15 and 16 respectively.

Respondent views on having used and the identification of existing e-learning teacher training systems, programs and platforms showed that many of them had some experience. Almost all the general sample respondents, 94% (n=203), had received or offered some teacher training through e-learning or online instructional technologies as per Figure 7. Only 6% (n=13) stated they had not received or offered teacher training using online instructional technologies. As for the panel of experts, 96% (n=207), had received or offered some teacher training through e-learning or online instructional technologies as per Figure 8. Only 4% (n=9) stated they had not received or offered teacher training using online instructional technologies. This means many of the

respondents, and by extension, Saudi Arabians are aware of e-learning platforms and
online educational technologies.
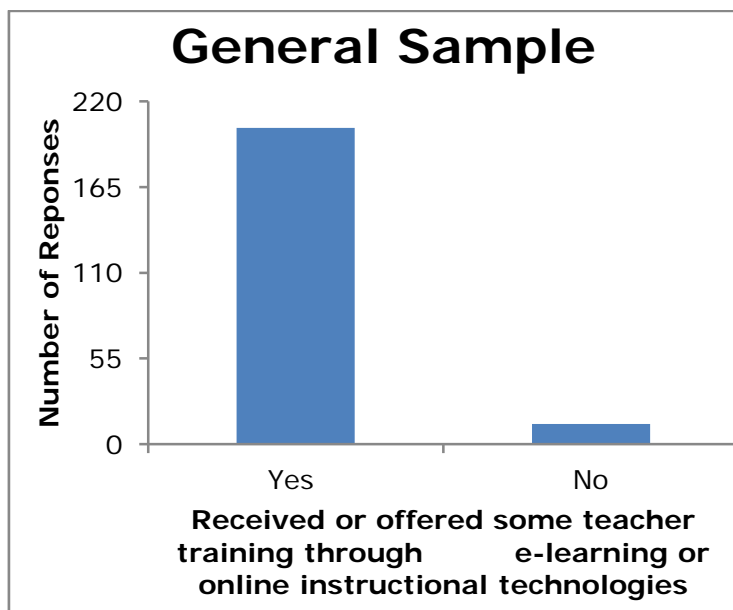
Figure 7: Respondent Views on Having Used and the Identification of Existing E-Learning Teacher Training Systems, Programs and Platforms
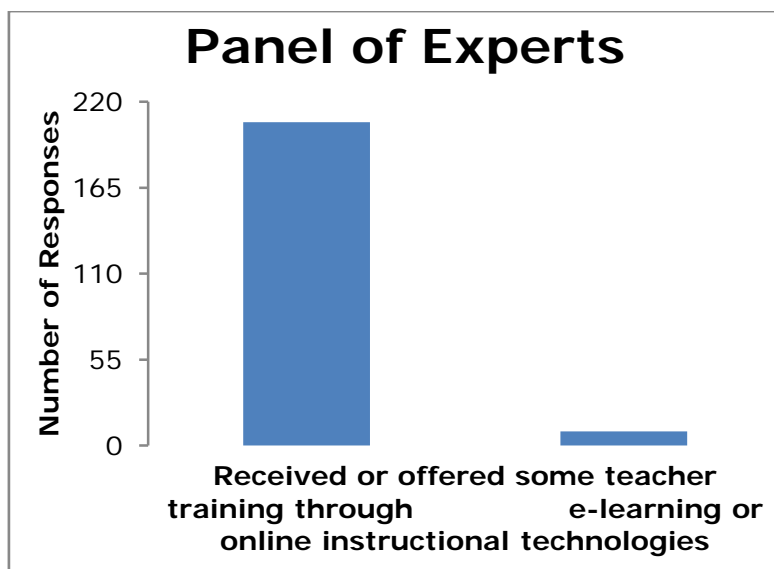
Figure 8: Respondent Views on Having Used and Identification of Existing E-Learning Teacher Training Systems, Programs and Platforms

The respondents match the findings in the literature that Saudi Arabia adopt mixed models of teacher training and instruction processes. Though most of them are based on face-to-face models, these models integrate instructional technologies that support dissemination of information and knowledge. The use of instructional technologies in Saudi Arabia is however limited since the government pays for the most of the courses thereby retaining the national format of face-to-face training. However, the increased accessibility of technology as a means of communication has led to its adoption in the universities and other training institutions.

The summary of existing e-learning teacher training system and platforms which are referred to in this research and for which the respondents' views are discussed in 7.3.4 (effectiveness of the existing systems) and 7.3.5 (improvements required) can be illustrated as follows:

- **Internet / Websites / Online:** This was generally to mean general use of internet to access contents, information and learn. The accessibility was not specific in most cases and did not specify where the connection happened. However, some people gave details and mentioned specific websites and links such as:

  o Search engines link: www.google.com.sa and www.google.com

  o Websites: www.youtube.com, www.yahoo.com, www.live.com, www.ask.com, www.wikipedia.org and www.kat.cr

  o Online: These include things like in-boxing (emails sent onto an online social, collaboration or communication platform (other than email), real-time chat, instant messaging, audio communication, calling, video-conferencing, videoing,

- **Emails:** Most people just stated 'emails' but others specifically stated the email platform they use such as Gmail and Outlook (Hotmail).

- **Mobile devices and tablets:** Contents shared in mobile devices including phone calls, text messages, photos, downloadable files (such as papers sent through WhatsApp)

- **Social media and networks:** The platforms and tools categorised here are those that respondents cited as social media and networks that help them learn online and by use of technology such as www.facebook.com, www.twitter.com,

- **Electronic exams and tests:** These are mainly the online and technologically driven courses and

- **Learning management system:** These mainly included the MOOCs (Massive Open Online Courses) with some of the most common ones being www.edraak.org, www.alison.com, www.edx.org, www.rwaq.org, www.coursera.org, www.udacity.com and www.menaversity.com.

- **Other electronic devices / technologies:** All responses that could not be categorised in the groupings above, such as those that stated, '*materials sent on electronic devices*' or '*accessed materials using electronic technologies*' were put in this category.

Table 15: List of Technologies Used (General Sample)

Instructional technology used	Times mentioned	Percentage (%)
Internet / websites / online	2	1
Emails	2	1
Mobile devices and tablets	1	1
Social media and networks	1	1

Electronic exams and tests	1	1
Learning management system	1	1
Other electronic devices /	1	1

Table 16: List of Technologies Used (Panel of Experts)

Instructional technology used	Times mentioned	Percentage (%)
Internet / websites / online	2	1
Emails	2	1
Mobile devices and tablets	2	1
Social media and networks	1	1
Electronic exams and tests	1	1
Learning management system	1	1
Other electronic devices /	1	1

The views that instructional technologies are used should however be cautiously accepted. This is because many different instructional technologies can be used for online or e-learning teacher training or instructional technologies systems. As tabulated in Tables 17 and 18, there were a huge array of views on what is instructional technologies mean and hence need for differentiation between sync synchronous and asynchronous technologies. These technologies show that there is also usage of learning management systems, which is the core interest of this research. However, this is not as commonly used as in most countries in the west. Technologies such as e-mail, Internet and mobile devices and social media are very popular accounting for over 70% of uses

by general public respondents and 89% of the delegate respondents. On the other hand, the listing and subsequent tabulation was based on generic categorisation to facilitate analysis. All respondents who stated or mentioned any items which could be related to online such as YouTube, internet, videos and audio files, without expressly stating any of the other listed categories, were classified as having used Internet / Website / Online. Responses such as technology and interactive white board were ignored, as they were too general and did not necessarily fall into the wider categories of e-learning and online teacher training programmes.

Table 17: Learning Management System (General Sample)

Previously Used Learning	Times mentioned	Percentage
Yes	1	7
No	6	2

Table 18: Learning Management System (Panel of Experts)

Previously Used Learning Management System	Times mentioned	Percentage (%)
Yes	2	9
No	5	2

This data on existing systems or the current instructional technology used is interpreted further to determine the e-learning system that the respondents will test

and compare with what they would expect to see in a centralised tool. As illustrated in Table 17, 71% (n=154) of the respondents mentioned that they had previously used learning

management systems (LMS) while 29% (n=62) had not used LMS in their teacher training studies. On the other hand, as per Table 18, 98% (n=211) of the respondents mentioned that they had previously used learning management systems (LMS) while 5% (n=2) had not used LMS in their teacher training activities. Though there is no specific LMS that the respondents identified as the most widely used and given that most of the LMS identified have some common attributed – structure and usability – it was deduced that the respondents' views and responses to the questions of effectiveness and improvement of existing systems was mainly based on their experiences of using the LMS than all other instructional technologies identified. This research thus uses the term 'Existing' or 'Current' teacher-training platforms, tools in two forms. In wider sense, the entire instructional technology used and in a narrow sense the LMS used.

5.3.5 Effectiveness of Existing Systems

The effectiveness of the e-learning teacher training systems and the general online learning platforms available in Saudi Arabia were explored using questions 7 and 8, which sought to capture experiences and views of the users. The respondents' views mean their experience in using the LMS identified in their response of the existing teacher training systems they have used previously. The experiences of the respondents were based on a series of questions with statements indicating the respondents experience when using the e-learning systems in accessing the teacher training programmes. The questions were based on a 5-point LIKERT scale from 1 = Very poor, 2 = Poor, 3 = Average, 4 = Good and 5 = Very good. The results are shown in Table 9

indicate that most respondents had an average experience with the e-learning teacher training programmes and online learning systems. A large number of respondents found it easier to access the contents and were happy with the structure of the site, with the mean being 3.52. The general views and response to the experience of the users is overall average with most respondents seeming unimpressed by the accessibility, navigation, layout, structure, guidance on using the system and the presentation of the existing system. The respondents view that there is lack of help and guidance in using the system.
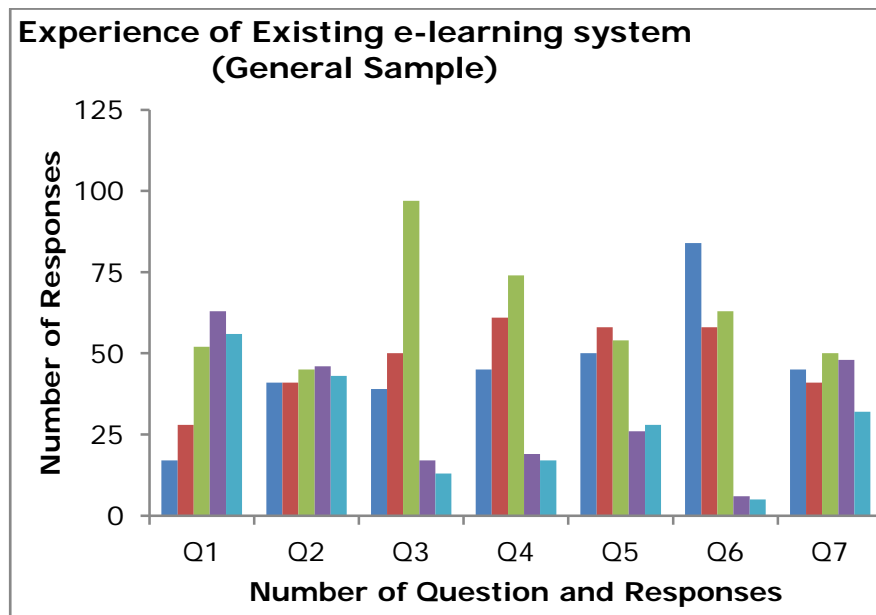
Figure 9: Experience of Existing E-Learning System (General Sample)

This figure shows the overall level of experience for each respondent. It can be noted that question3 and question 6. The graph shows the level of experience ranging from very poor to very good respectively as indicated in the figure. The first question which is about the accessing the site and its various sections and content has been evaluated and answered as the respondents were more agreeable than others. The other prominent question is (Q3) which has been answered as neutral in making the layout. Then, question 6 which is concerned with guidance and help indicates that they are very poor in getting help and guidance. Generally, it could be noted that the respondents' experience is good for each question.

Table 19: Experience of Existing E-Learning System (General Sample) Average and Standard Deviation

Q1	Q2	Q3	Q4	Q5	Q6	Q7
17	41	39	45	50	84	45
28	42	50	61	58	58	41
52	45	97	74	54	63	50
63	45	17	19	26	6	48
56	43	13	17	28	5	32
43.2	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**
19.6901	**1.788854**	**33.75204**	**25.20317**	**15.07315**	**35.77289**	**7.120393**
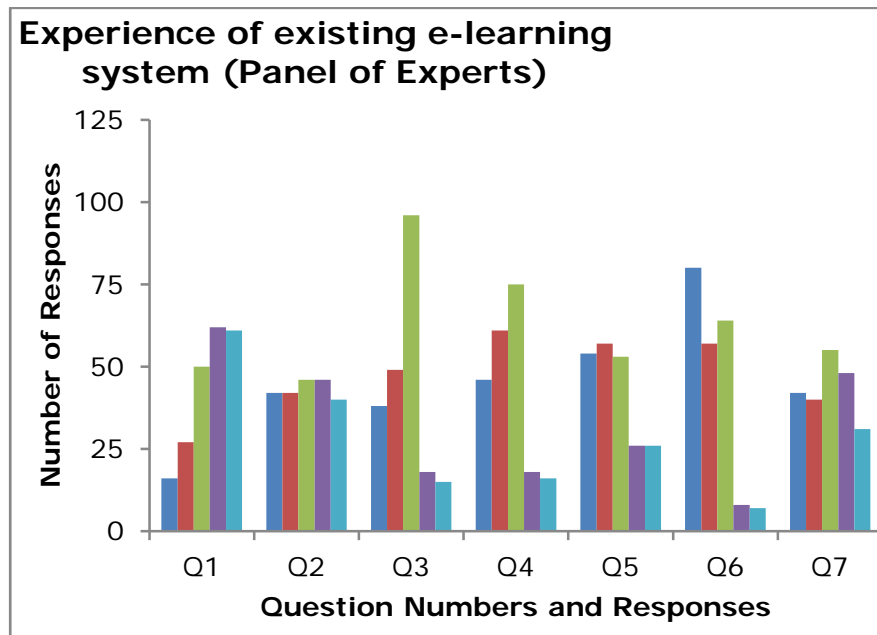
Figure 10: Experience of Existing E-Learning System (Panel of Experts)

The same as avobe.

Table 20: Experience of Existing E-Learning System (POE) Average and SD

Q1	Q2	Q3	Q4	Q5	Q6	Q7
16	42	38	46	54	80	42
27	42	49	61	57	57	40
50	46	96	75	53	64	55
62	46	18	18	26	8	48
61	40	15	16	26	7	31
43.2	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**
20.72921	**2.683282**	**32.70627**	**26.03267**	**15.77023**	**33.64075**	**8.983318**

Correlation: The views of general delegates and the panel of experts in respect to the experience of existing e-learning system are correlated in that the result 0.997 shows a perfect correlation as it is in the range of 0 to +1.

This result has been revealed by using [T- test, Z- test, U- test, F-Test, Fisher- test] which is the 0.997 that indicates that there is no significant different between the general samples and the panel of experts.

The following statements indicate the users' views on existing e-learning systems and the support offered by the institutions to the existing e-learning management systems. In this case, the wider meaning of the existing e-learning system is used as both LMS and the other instructional technologies can be used in determining the ways in which the respondents feel about instructional technologies that they use. This is especially in cases where the respondents had not used the LMS but had used internet and other instructional technology to undertake their teacher training or teacher teaching activities.

The respondents used LIKERT scale by using 1-5 to indicate their level of agreement with the statements. The scale had: 1 = Strongly disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly agree. The respondents' views are outlined as per Table 22, which show that the satisfaction with the current systems is about average. Though the respondents find the systems consistent, possibly in that the contents are not changing too much, and that the system plays a major role in helping them teach and engage with

the students, they feel that there is insufficient support and guidance in use of the systems.
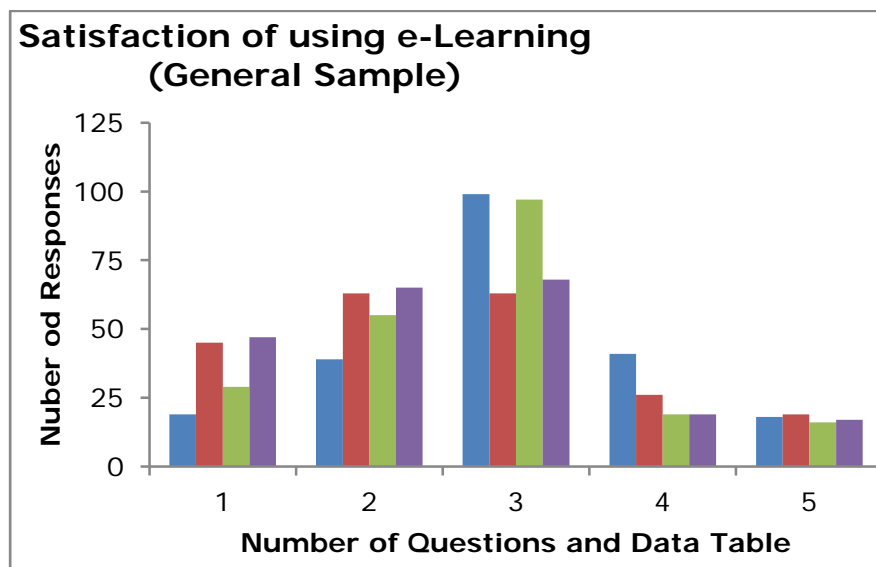
Figure 11: Satisfaction of Using Existing E-Learning Systems (General Sample)

This figure shows the statistical results of the general sample of the satisfaction about the E-learning system. The satisfaction is based on four questions: (1) consistent approach to the e-learning courses provision, (2) the e-learning system is reliable, (3) the system helps me to engage with and monitor students and (4) sufficient support is provided in using the system. As shown in the figure, the respondents were more satisfied with the questions 1 and 3, specifically, they agree that the e-learning system is a consistent approach to the courses provisions and it is helpful to monitor students.

Table 21: Satisfaction of Using E-Learning (General Sample) Average Standard Deviation

Q1	Q2	Q3	Q4
19	45	29	47
39	63	55	65
99	63	97	68
41	26	19	19
18	19	16	17
43.2	**43.2**	**43.2**	**43.2**
33.00303	**20.42547**	**33.76685**	**24.37622**
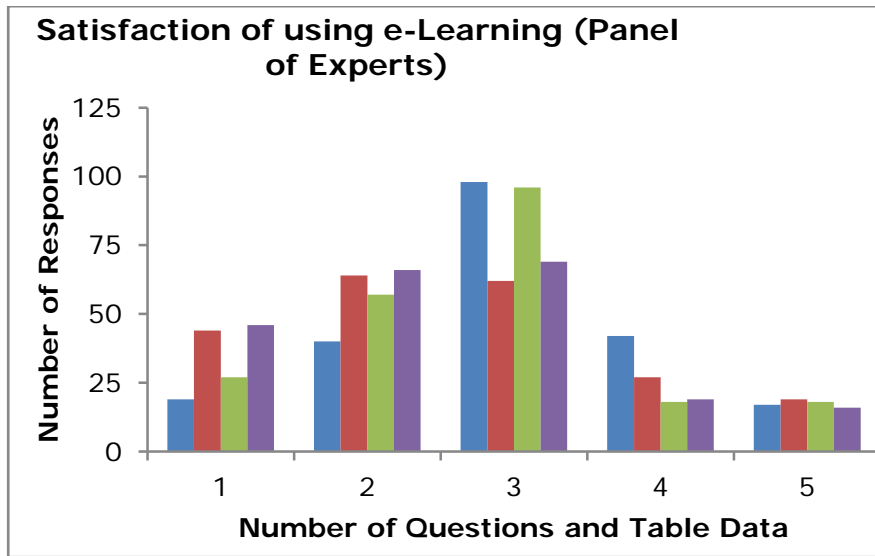
Figure 12: Satisfaction of Using Existing E-Learning Systems (Panel of Experts)

As for the experts' satisfaction of the using-learning system, it can be noted that there is no a big difference between the answers for each question. Also, question 1 and 3 have been answered by the experts as being neutral in their satisfaction. Question 1 and 3 have been answered with a similar percentage (98% and 96%) respectively.

Table 22: Satisfaction of Using Existing E-Learning Systems (Panel of Experts) Average and Standard Deviation

Q1	Q2	Q3	Q4
19	44	27	46
40	64	57	66
98	62	96	69
42	27	18	19
17	19	18	16
43.2	**43.2**	**43.2**	**43.2**
32.73683	**20.21633**	**33.58124**	**25.09382**

Correlation: The views of general delegates and the panel of experts in respect to satisfaction of using existing e-learning systems are correlated in that the result 0.997 shows perfect correlation as it is in the range of 0 to +1.

5.3.6 Improvements Required

Respondents in their response to using questions 9 to 12 outlined the improvements necessary in the existing e-learning teacher training systems and the online learning platforms available in Saudi Arabia. For question 9, an analysis of the respondents' views on what they feel ought to be done to improve adoption of e-learning systems in teacher training activities. The improvements in this case were in respect to both the LMS and the instructional technologies used as identified by the respondents. The

argument for improvement is based on the wider understanding of the term existing e-learning systems.

To determine the ways in which the existing e-learning training programs and systems can be improved and the features that ought to be included in the new generation systems, the respondents were given statements outlining the ways in which e-learning systems and training programmes can enhance engagement and teacher training processes. The questions were based on a 5-point LIKERT scale from1 = Strongly disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly agree, with the results outlines in Table 24.
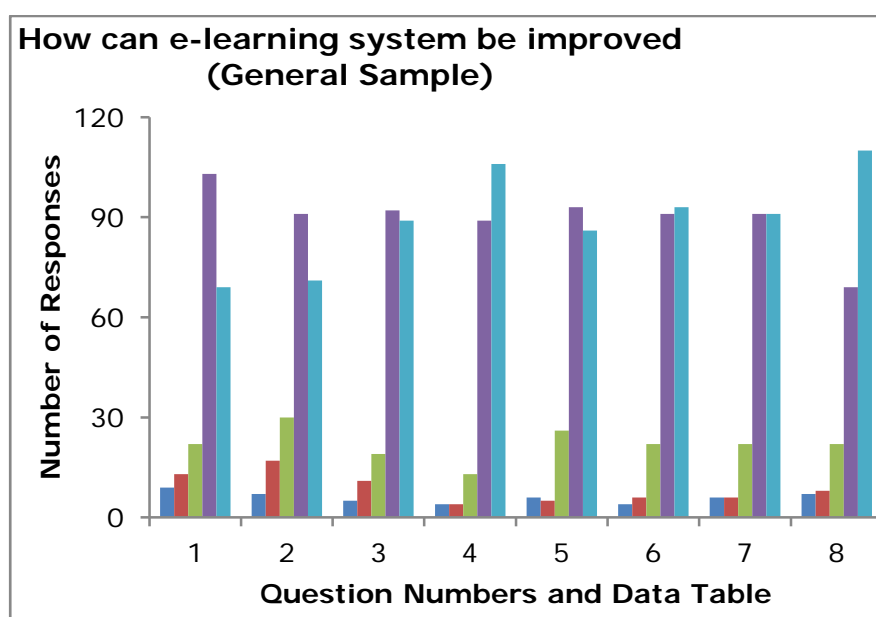
Figure 13: How Can E-Learning Systems be Improved (General Sample)

This figure shows the overall perception of how to improve the e-learning system in the KSA. The improvement in this study has been based on eight questions (see appendix 1). All respondents have stated in their answers, all questions were necessary as they indicated their agreement. In particular, it has been agreed that receiving update of existing or new e learning system is very necessary as well as the accessibility of

support. For more information, see appendix 1 which shows the all questions about improving the e- leaning system.

Table 23: How Can E-Learning System be Improved (General Sample) Average and Standard Deviation

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
9	7	5	4	6	4	6	7
13	17	11	4	5	6	6	8
22	30	19	13	26	22	22	22
103	91	92	89	93	91	91	69
69	71	89	106	86	93	91	110
43.2	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**
41.14851	**36.15522**	**43.47643**	**50.06696**	**43.15901**	**45.09656**	**44.12142**	**45.07438**
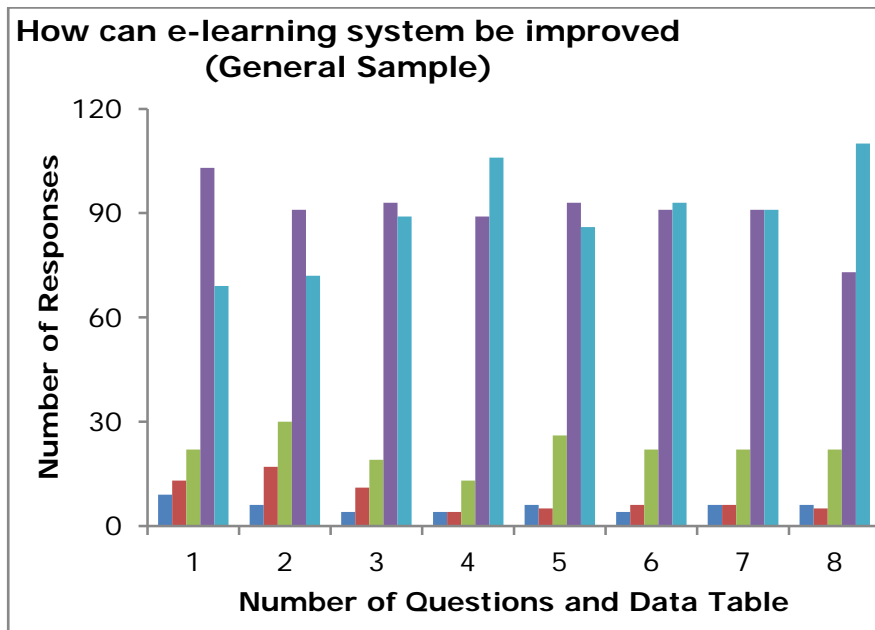
Figure 14: How Can E-Learning Systems Be Improved (Panel of Experts)

As for how to improve the e-learning system in the general sample, the table below shows that there is no significant difference between the expert panel and general sample in their perception to improve the e-learning system.

Table 24: How Can E-Learning System be Improved (Panel of Experts) Average and SD

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
9	6	4	4	6	4	6	6
13	17	11	4	5	6	6	5
22	30	19	13	26	22	22	22
103	91	93	89	93	91	91	73
69	72	89	106	86	93	91	110
43.2	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**	**43.2**
41.14851	**36.60191**	**43.97954**	**50.06696**	**43.15901**	**45.09656**	**44.12142**	**46.48333**

Correlation: The views of general delegates and the panel of experts in respect to improvements needed in the existing e-learning systems are correlated in that the result 0.991 shows a perfect correlation as it is in the range of 0 to +1.

According to Table 24, the results show that the respondents have a very high level of interest in having a system that is more engaging. They also showed a great desire to be trained and supported to be able to understand how the system works and how best to use it for learning and training processes. The responses also indicate the need for support and help with implementing and using the new technologies and opportunities to network with other people on the use of educational technology. There is also high interest in being updated about upgrades and changes in the system with well-supported online systems, which is accessible for users. Overall, question 9 shows that respondents are very eager to get an interactive and supported system hence the conclusion that availability of systems and their use is primarily dependent on the relevance, accessibility, ease of use and support availed in accessing and continually using the e-learning system.

Questions 10, 11 and 12 were open-ended sought to solicit the views of teacher trainees, teacher trainers and those involved in teacher training. Question 10 sought to explain what the respondents view as positive aspects of using e-learning systems in teacher training activities and the following 8 responses were summarised from the respondents:

1) The systems facilitate unlimited number of users to access the same materials at the same time.

2) The system supports and facilitates self-study and active learning for the trainers, trainees and other people involved in teacher training activities.

3) It is easier to use and access for many people compared to conventional teacher training schemes thereby saving time and resources.

4) E-learning systems are accessible from anywhere at any time which gives convenience to trainers, trainees and support staff

5) The nature of e-learning online systems makes it easy and more effective to communicate and broadcast messages quickly and in a timely manner.

6) It facilitates the reuse of materials and contents developed by individuals and institutions and also helps in the sharing of good learning and teaching practices and tools.

7) Easier to scale up, is highly portable and facilitates accessibility on multiple platforms – mobile, computers, TVs and can be copied and shared on offline devices.

8) Facilitates use of multiple teaching and learning tools such as audio, visual and interactive images and platforms.

Question 11 sought to investigate what the respondents view as the negative aspects of using e-learning systems in teacher training activities. The respondents' answers were summarised as follows:

1) Technical and accessibility issues will hinder effective usage and mishaps such as data loss, viruses and abuse of networks.

2) Effective e-learning usage is subject to widening of infrastructure and device ownership, which are expensive thus requiring costly investments.

3) The de-personalisation nature of e-learning systems will lead to disadvantage of some students and also hinder success of the system especially where people perceive learning as a group and not individual activity.

4) Extensive training and contents development is required to ensure the system is friendly and accessible.

5) Internet is not accessible in most places and its availability is subject to censorship and control by powers beyond education and academic sectors.

6) Easy to share bad practices and poor quality training materials and information unless stringent measures are put in place, which are also difficult to police.

7) The learners will usually be forced to learn or be competent in English in addition to Arabic as there is an incline of using English on most existing e-learning systems in Saudi Arabia.

Question 12 sought to investigate the respondents' views on the most common barriers to effective use of e-learning systems in teacher training processes in Saudi Arabia. These were summarised as:

1) Almost all institutions and regions in the country lack adequate technical systems and infrastructure to run e-learning systems successfully. This is because the existing technology is either unreliable, inadequate, poorly adopted and used or is totally unavailable. There are also views that the technology – computers, networks, mobile devices and other forms of devices and technology for e-learning systems is either too old or diverse and incompatible hence limitation in connectivity.

2) Internet is also poorly distributed and accessed and where available, there is censorship and sometimes lack of enthusiasm in using it in innovative and more vibrant ways such as in education other than just to access emails. Moreover,

internet accessibility is also limited in terms of bandwidth which hinders serious attempts to adopt e-learning teacher training approaches.

3) Staff, professionals and learners often lack in skills that are relevant and appropriate for best use of e-learning systems. There is also lack of necessary preparation time for using the technology and e-learning systems among most individuals and in most institutions.

4) There are views that education institutions are responsible for everything. Making lower level professionals and learners disengaged and when they use technology to learn, they use it in localised and on individual bases instead of working through institutional or regional levels.

5) There are views that use of e-learning systems will create too much work thereby increased workload for trainers and learners compared with the existing forms of teacher training.

6) The existing staff seem focused and guided by the current and past learning and teacher training approaches. There are also views that pedagogical structures are all structured and formatted such that they are only suitable for face-to-face teaching processes. This makes it difficult for discussions and prospects of change in the teacher training approaches including any possible ideas of logical and constructive discussions of having the "foreign, alien and non-Islamic" teacher training approaches that are offered on the internet.

5.4 Chapter Overview

The results show that most people are familiar, albeit in different levels, with e-online teacher training programmes and the different types of e-learning processes and use of technology in teaching and learning processes. They appreciate the role of technology in

modernising and enhancing teacher training in Saudi Arabia. They view the existing systems as just being able to meet certain needs and expectations but feel that there could be ways in which the systems can be improved and made more effective. The chapter found that support, engagement, guidelines and help offered through networks, on the systems and by preparation courses on using e-learning systems are core in making the system acceptable and relevant. Saudi Arabia however needs to explore how best to support the teachers and learners by increasing technical capacity, training opportunities, giving individuals and institutions leeway to be innovative and experimental and by making internet less controlled and widely available. There is also need for huge investments in technology and infrastructure that is vital in increasing usage and understanding of e-learning systems.

Chapter Six: Discussion of Findings

Objectives

➢ Introduction

➢ Existing Systems

➢ Usefulness and Effectiveness

➢ Accessibility

➢ Benefits

➢ Attitudes

➢ Environment and Culture

➢ Contents

➢ Conclusion

6.1 Introduction

This chapter outlines the details of the findings of chapter 7 and determination whether the existing teacher training programmes are suitable for Saudi Arabia and how they can be improved. In addition, the requirements for a new, updated and relevant e-learning teacher-training program for Saudi Arabia will also be outlined as a means of complementing any weaknesses in the existing teacher-training program. It discusses the current situation and provides contents for the next two chapters being conclusion and recommendations.

These empirical findings show that e-learning teacher training systems have not been extensively used or adopted in Saudi Arabia. There is also an understanding that use of technology is not widely adopted and where it has been adopted there is more focus on technical issues relating to the learning platform and system as opposed to pedagogical engagement. Current forms of E- learning in Saudi Arabia is thus not of any use. This is in line with Serow & Callingham (2011) findings that many researchers have found use of technology in education is not being used for constructivist processes and approaches in e-learning but instead as a sophisticated process of transmitting teaching. Moreover, it was found that most online learners tend to focus on specific user generated contents or collaborative learning or what Jones, Geraniou, & Tiropanis (2013) calls cooperative online learning.

6.2 Existing systems

This research found that there is no specific or coherent integrated system, program or platform that offers e-learning teachers training program in Saudi Arabia. Instead, it

identified that there is an ad hoc collection of tools that support teacher training in the country. The respondent's views were not based on what literature may specifically define as an e-learning teacher-training platform but instead is based on identification of any platforms, systems or structures that are used for distant learning and sharing information using internet technology. This helped to create a comprehensive list of tools that the research identified are currently in use in Saudi Arabia thereby making it possible to analyse the data, develop the discussion and identify the ways prototype should be developed and structured. The multiple platforms and systems were summarised and grouped into seven tools, which are:

1. Internet / websites / online.

2. Emails.

3. Mobile devices and tablets.

4. Social media and networks.

5. Electronic exams and tests.

6. Learning management system.

7. Other electronic devices / technologies.

Further review of the respondents' views on their use of the existing e-learning teacher training systems showed that despite there being an array of tools that they have used, many of them have used some form of LMS in their learning or teaching processes. The significant number of people who had experienced some form of LMS means that they would be able to comment with a good level of confidence in their experiences in using existing LMS systems and hence influence a future LMS. This is the fundamental factor for this research as it seeks to identify what the existing teacher training programs exist

in Saudi Arabia and how to improve them. Thus, the views on usefulness and effectiveness, accessibility, benefits, environment and culture and contents are all based on both the ad hoc tools identified in the research and in respect to the LMS systems that are used by a significant part of the population.

6.3 Usefulness and Effectiveness

The research found that there is limited success, if any, of any specific e-learning teacher training programs in Saudi Arabia. This is despite the fact that many respondents agreed that online and e-learning systems would be good or ideal for better and more effective teacher training processes. This is attributed to the ad hoc number of tools that are used in this process, with the research identifying over 50 tools, which were categorised into seven core categories. The research found that most respondents have found and continue to feel that e-learning systems are very useful and highly effective in their support of teacher training processes. The research concluded that most respondents think e-learning teacher training programs can be an effective way for training teachers and keeping them updated with the changes in the sector. Though their experience varied in terms of satisfaction of the tools they had used, many found that the tools were very useful in sharing contents, ease of accessibility and enabling users learn and get contents on an ongoing basis. As such, a useful and effective tool can be said to be the one that meets the Saudi Arabian's needs such as:

1. Effective and better communication and collaboration tool as they help broadcast messages quickly and in a timely manner.

2. Ability for contents to be accessed and used by a large number of users at the same time.

3. Facilitate self-study and active learning.

4. Saves time and resources for all stakeholders.

5. Facilitates re-use of materials and contents.

6. Easier to improve and scale-up.

7. Accessible in multiple platforms.

8. Unlimited number of users to access the same materials at the same time.

It is thus clear that the respondents would like improvements and modifications to the existing systems, which make them more useful and effective. This calls for a coordination between different educational institutions, which can feature the identified improvements for more useful and effective systems and tools such as:

1. Improving feel, look, structure and layout for ease of navigation and contents accessibility.

2. Making them better structured for effective engagement of learners, tutors and all other stakeholders.

3. Facilitating continuous training and updates of users of these systems on how best to use them so as to attain the best possible outcomes – in both usefulness and effectiveness of use.

4. Enhancing the guidelines, training and knowledge on how to use these tools to make sure the users get the best possible outcomes.

The findings of this research echo the existing literature in some areas such as the usefulness and effectiveness of e-learning teacher training tools and the areas, which they can be improved. This could be because most teachers and teacher trainees find the interactive e-learning systems as being wonderful interactive multimedia platforms that can be used by individuals or entire classes at the same time while combining

different and multiple types of digital materials (Doe, 2010; Essig, 2008). Digregorio & Sobel-Lojeski (2009) also argued that such views exist because students and teachers perceive ICT in learning as being motivational and as facilitating the establishment of a more interactive environment hence leading to better educational and training outcomes. The research also found that most respondents accessed and used other online platforms but did not use e-learning systems. This is because there are no e-learning systems that have been developed or availed to the users given that most have few if any contents that relate to e-learning for teachers who are in training within Saudi Arabia. Creating a system that is useful, relevant and understood by both the teachers and trainees will facilitate better understanding and relevance of use hence increasing use of e-learning teacher training programs. Technology ought to be relevant, understandable and enjoyable to ensure that it increases interest and usefulness among teachers and learners (Aytekin et al., 2012; Essig, 2011). The proposed system should thus be structured such that the contents are useful, relevant and of purpose to the users. For example, it should ensure that teachers and those learning to be teachers are able to get contents that are relevant and useful to their course. It should provide users with an increasingly valuable learner service, perceived learning assistance and perceived academic performance as purported by authors such as Islam (2012) and Liaw, Huang & Chen (2007).

6.4 Accessibility

The research found that accessing the e-learning tools and the various sections and contents that users were seeking was not very difficult. It is worth noting that this accessibility means those people who already have internet and other tools necessary to access the e-learning platforms. The conclusion hereby does not look at internet access, cost of tools and other difficulties of accessing the internet but just looked at the ability

to access the contents in the e-learning tool. In addition to ease of accessibility, there were views that navigation was not too difficult either and hence accessing sections and contents was not too difficult once the user was able to understand and grasp the layout of the tool in use. However, accessibility was greatly hindered by the difficulties in the way the sites are structured and the limited support and guidance available on how to use the tools. The layout, features and presentation text also hindered some users from being able to access the tools and their contents successfully. The current tools are hence not very accessible and would need some modifications and improvements to make them suitable for future use.

Literature also supports these findings in that successful integration of new and innovative technology in education has been found to increase interactivity and learning outcomes between teachers and students (Aytekin et al., 2012; Essig, 2011) while reducing budgetary impacts (Gruber, 2011). However, this research shows that insignificant success has been achieved in integrating e-learning systems in teacher training programs within the Saudi Arabian education system. This research also found that though respondents have exposure and understanding of various internet and online resources, there is limited use of e-learning systems. This could be because few institutions have adopted e-learning systems in Saudi Arabia. Moreover, factors such as limited technological advancement and disparity in computer technologies, software and internet infrastructure within most educational institutions in Saudi Arabia (Essam & Al-Ammary, 2013; Hussein, 2011) could also have contributed to these limitations. This is despite the knowledge and understanding by most of the respondents that employing modern communication technologies and mechanisms in educational processes enrich and improve the quality of teaching and learning.

The research found that there is need to improve the accessibility through improving the systems to offer how-to guides and develop schemes to support training and knowledge on how to use the tools better. The tools or the new system should also be structured such that it is accessible on they are easy to navigate through and access contents. This will facilitate ease of learning by the users without needing too much knowledge of how to use the systems. Further improvements in accessibility that are either limited or lacking in the tools being used is the need for the tools to be accessible easily in multiple devices and areas such as mobile, computers, TVs and can be copied and shared on offline devices. This will make them more accessible to teachers and trainers in different areas at the same time and at any time without limitations of geographic or time boundaries. Accessibility was also found necessary in terms of contents to use such as audio, visual and interactive images, which means users with different needs will be able to learn using this tools and / or platforms. These findings are also widely supported by literature that identifies the benefits of e-learning systems, both in respect to Saudi Arabia and global tools needs.

Accessibility was also found to be a hindrance of using the e-learning tools due to the limited knowledge, limited internet accessibility, restrictions of using internet and accessing some contents online and the speed of internet in Saudi Arabia. Censorship and control by powers beyond education and academic sectors make e-learning and use of technology in teacher training difficult to effectively implement. In addition, the accessibility in Saudi Arabia is also hindered by the ineffective adoption of technology in aspects of internet accessibility, and technical problems such as inadequate technology hindering effective usage of the tools and leading to mishaps such as data loss, viruses and abuse of networks. Saudi Arabian institutions and individuals lack adequate technical systems and infrastructure to run e-learning systems successfully. This is

because the existing technology is either unreliable, inadequate, poorly adopted and used or is very unavailable. There are also views that the technology – computers, networks, mobile devices and other forms of devices and technology for e-learning systems is either too old or diverse and incompatible hence limitation in connectivity. There is also a limited infrastructural accessibility in terms of people or institutions with devices and ability to use such devices in the best way possible to access and make use of the e-learning tools. Technological difficulties and hindrances of effective accessibility to the e-learning tools has also been found to be exacerbated by the fact that most tools use English as the default language with a few using Arabic and other western languages. This makes accessibility often left to those able to use English language. These views are widely supported by literature in chapter two and three.

6.5 Benefits

According to this research, most of the respondents understood or had an idea about the possible benefits of the e-learning teacher training programs despite never having used any of them. Such benefits ranged from better process of transmission, storage, accessibility, interactivity, easy to use, networked, easy updating, information storage, retrieval, distribution and sharing, universally available. E-learning tool also provides the benefits of multi-users of the contents at any time and without limitations of how any user can use or share the contents. There were views that use of contents by many people where collaboration and sharing is wide is also improves the learning experiences of teachers and teacher trainers in many ways. This includes good practices, solving problems and gaining knowledge or local and external approaches towards issues in teacher training. Other benefits of accessibility, usage, sharing and management were found to be another reason for developing a better teacher-training programme in Saudi Arabia. This is similar to the views by Liaw, Huang & Chen (2007)

who noted that well implemented e-learning systems have numerous benefits compared to costs and often go beyond the reach of traditional training paradigms. This can be construed to mean that availability of a system that offers such features will provide an ideal e-learning system for teacher training processes. Thus, the proposed system will have an inclusion of these features to give prospective users better experience and hopefully increase the levels and rates at which teachers and teacher training use the e-learning systems. Success of such a new system will only be possible if users can understand the benefits and are educated about them and when the teachers and learners perceive such technology to be necessary for their success in education processes (Handal et al., 2013). Respondents thought that e-learning teacher training systems should be or are cheaper as they lower costs and are more dependable. However, many have had trouble in understanding how to use the systems especially where interactions have been difficult to establish and sustain hence leading to failure of continued use of e-learning systems.

6.6 Attitudes

The research also found that for accessibility to be improved, the adoption and improvement of the tools, technology and language medium need to be addressed. However, this will succeed only if the users are supported with better understanding of how to use the e-learning tools in the learning and teaching process. This is difficult given that Saudi Arabia's teacher training programmes and systems are affected by the lack of knowledge and competencies by those working in the sector on how to use the existing or new technologies and incompatibility in technologies. This is hugely affected by the low levels of technical training and knowhow among teaching fraternity, and the wider community. It was found that staff, professionals and learners often lack in skills that are relevant and appropriate for best use of e-learning systems. Those using these

tools lack of necessary knowhow as often there limited or no preparation for using the technology and e-learning systems among most individuals and in most institutions. Instead, the views are that there should be specialised technology departments which can develop how to guides and systems to use thus enabling teacher trainers and trainees to use the e-learning teacher training tools.

This research found that many people view teacher training and preparation as an important step in making e-learning teacher training systems relevant and acceptable. However, it also found that others feel that technology should not be part of teacher training process. These education institutions lack either the knowledge, commitment or investment necessary to invest in a high level of integrated e-learning system. Instead, these education institutions work as standalone institutions where technical knowhow is disengaged and focused on those in technical departments and not among the teacher training fraternity. Such approaches increase the views that technical knowledge is too specialised for those in teacher training unless in the technical institutions. This leaves many lower level professionals and learners disengaged and when they use technology to learn, they use it in localised and on individual bases instead of working through institutional or regional levels.

Moreover, there are views that use of e-learning systems in some institutions creates too much work thereby increasing the workload for trainers and learners compared with the existing forms of teacher training. Such perceptions are supported by the views that teacher training is an age long system whose approaches and implementation should not be dramatically modified and altered. Instead, there is a silent consensus that the existing systems and pedagogical structures are all structured and formatted such that they are only suitable for face-to-face teaching processes. Such attitudes and views makes it difficult for discussions and prospects of change in the teacher training

approaches including any possible ideas of logical and constructive discussions of having the "foreign, alien and non-Islamic" teacher training approaches that are offered on the internet.

There is thus increasing need for the government and teacher trainers to engage more widely with the people and take lead in enhancing adoption of technology and its relevance to the community. The change of attitudes and views of using technology in teacher training processes and modifying the current pedagogies should be explored and addressed. The pros and cons of these technologies should also be investigated and understood with open minds to safeguard the well-being of the country and the community at large while facilitating adoption of relevant and useful technologies in the Saudi Arabia. As proposed by Colbran and Al-Ghreimil (2013), there ought to be a joint plan between the government and institutions on developing a model of e-learning systems that are relevant and suitable in meeting the needs of the country.

6.7 Environment / Culture

Accessing online and mobile platforms was found to be almost similar within and outside the education institutions. With the exception of outside the major cities whose coverage in the research was advertently left out, major cities have a wide accessibility of internet within both computers and online devices. However, the corporate culture of most education institutions and the perceptions of what entails 'education' coupled with the views of the society at large on the need and relevance of e-learning systems hinder wider adoption of e-learning for teacher training activities. Technology limitations, infrastructural problems, religious and cultural views of what should or should not be viewed have created a disabling environment and culture for adoption and use of   e-learning tools. The attitudes towards change, the need to sustain existing pedagogies and not adopting the foreign and non-Islamic teaching models have

made decision making in some education institutions closed. This hinders possible changes and growth of new models and development of better e-learning teacher training tools.

This is supported by literature such as Aytekin et al, (2012) who concluded that technology affects learning and education processes including achievement, interaction, motivation, pedagogy and perception. For these to be accomplished, there is a need for a variety of contextual factors that ought to be in place such as culture towards education and technology, confidence by both the teachers and the learners, technical and system usage support and the time taken to prepare for the lessons (Essig, 2008). There is also a need for a general support and motivation for both the leaners and teachers in terms of having a motivating and supporting learning and teaching systems and environments (Digregorio & Sobel-Lojeski, 2009). The system to be developed should thus facilitate and encourage e-learning activities by creating a more interactive, supportive and motivating environment for teachers and learners. Respondents showed interest in a more interactive environment. Other researchers have found that students have prefer e-learning platforms because they enjoy mutual interdependence, experience a sense of online community and interact with other members hence creating a sense of trust among the online community (Bernard et al., 2004; Lou et al., 2006; Rovai, 2002; Zhao et al., 2005).

6.8 Contents

The research also found that the e-learning systems should include multiple formats and a variety of resources. The respondents' had views that websites and e-learning platforms such as YouTube (Khan Academy) and online blogs that offer more contents are more useful than purpose designed e-learning systems without contents. The benefits of using e-learning tools where contents can be accessed and used by many

people simultaneously was identified as a major advantage of having a good e-learning tool. This research identified the lack of knowledge of how the systems work and their capacity hinders good interaction with the contents thereby decreasing capacity of users to enjoy the contents available.

The use of English as the main language in the e-learning tools means that those not conversant with English language will have limited capacity to access and use contents. There are also views that use of e-learning teacher training systems leads to accessibility of contents that are not suitable for cultural and social continuity in Saudi Arabia. This has led to censorship and limitations of internet usage and some views that there should be reduced use of internet as a teaching tool. However, many respondents see the importance of sharing data and the role e-learning plays in helping learners generate and share contents online. The research also found that users preferred sites whose contents are easy to use, find, store, save, personalise and comment. Similar to Liaw & Huang (2000), the research also found that e-learning systems should be able to support collaboration, facilitate interaction, and offer viable options to implement web-based activities as part of e-learning framework ideal for all kinds of users. The respondents noted that there is a greater prospect of having more effective way of learning. This was in line with the views of other researches on e-learning which concluded that compared to the traditional teaching methods, e-learning systems are more effective as they have more contents and are more versatile (Essam & Al-Ammary, 2013; Selim, 2007; Singh, O'Donoghue & Worton 2005).

6.9 Conclusion

The conclusion of this chapter are that the existing technologies and e-learning systems are inadequate and do not meet the needs of the Saudi Arabia in teacher training processes. There is hence need to develop a system that is suitable and that which will

help the country address the teacher training weaknesses using online technologies. This led to the proposal outlined in chapter 10 about the prototype that can be developed for teacher training purposes.

Chapter Seven: Conclusions and Recommendations of the study

Objectives

➢   Introduction

➢   Conclusion

➢   Learning Models and Teaching Tools

➢   Instructional Structure

➢   Accessibility

➢   System Structure

➢   Learning Metacognition

➢   Training Programmes

➢   Leadership

➢   Limitations

➢   Conclusion

7.1 **Introduction**

This chapter brings together the findings of the whole research, both the literature review and the questionnaire results. The conclusion is a culmination of the whole research and contents of this dissertation from chapter one to chapter eight. This creates the premise upon which the recommendations are developed and discussed as per chapter ten. The recommendations included the contents and features of the proposed partial system that needed to be developed for the online teacher training thereby increasing the prospects of trainees and institutions sharing good practice, better course materials and improving the whole teacher training and learning processes. This chapter also outlines the limitations and weaknesses of this research to facilitate the readers to understand the areas future researchers ought to look at and improve upon.

7.2 The main conclusions of the study and its central recommendations

The main conclusions of the study are that the existing technologies and e-learning systems are inadequate and do not meet the needs of the Saudi Arabia in teacher training processes. There is hence need to develop a system that is suitable and that which will help the country address the teacher training weaknesses using online technologies. The central finding of the current study strongly indicate that there is a need for a concerted action towards improving teacher training in Saudi Arabia. This is vital in developing a centralised tool and refrain from the current use of ad hoc tools which hinder development of quality e-learning teacher training programmes. The analysis of findings and discussion show that there are a variety of action plans that ought to be and implemented thereby leading to establishment of a more formal and effective teacher training while increasing the quality of teaching and qualifications attained by students. The discussions of the findings of this research support the need

of a more user friendly and better suited e-learning teacher training system in Saudi Arabia. The general views are that the new system ought to be able to meet the needs of the Saudi Arabian community while addressing concerns of costs, culture and the pedagogical processes. The views on the existing systems that ought to be addressed when developing new tool were analysed in chapter eight as usefulness and effectiveness; accessibility; benefits; attitudes; environment and culture; and contents of the existing systems. These contents guided the discussion in this chapter supported by literature.
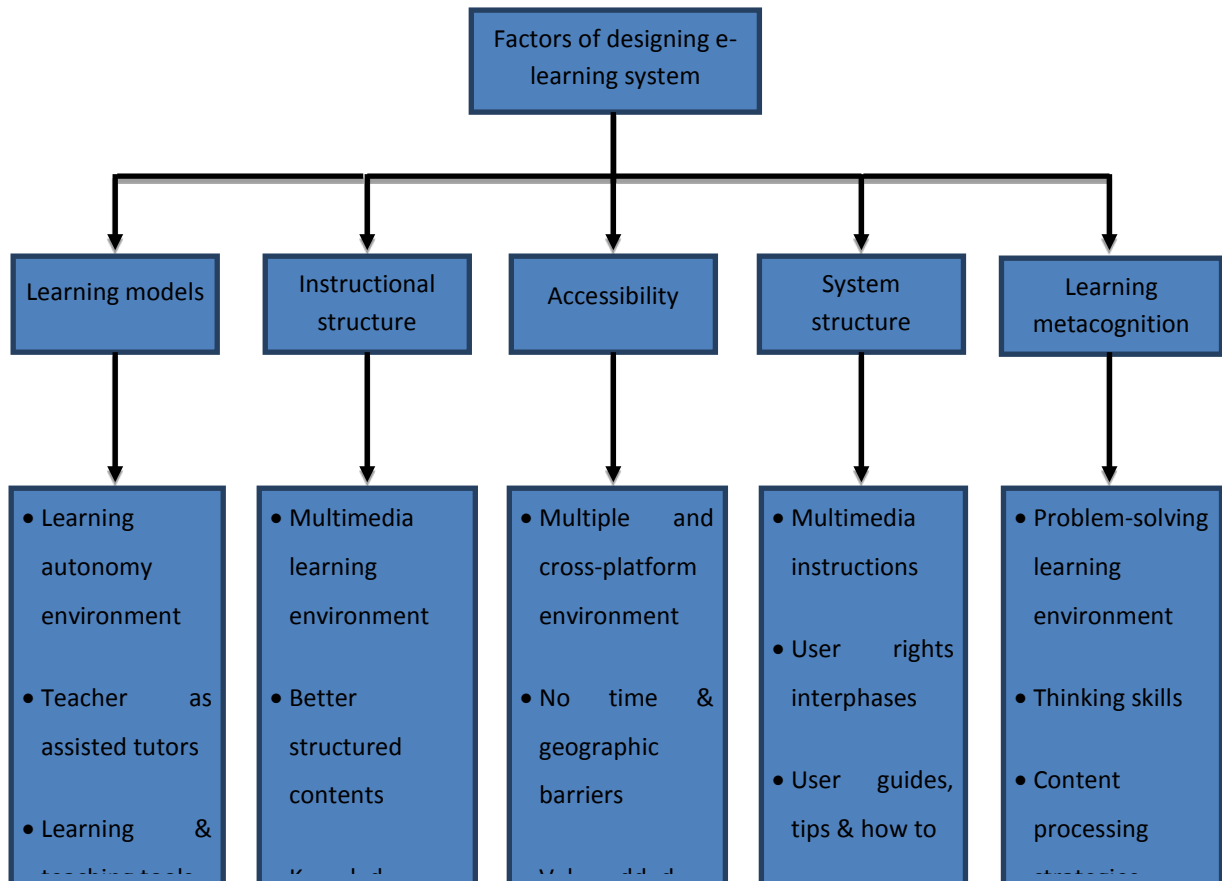
Figure 15: Factor Consideration of Designing E-Learning Systems

Adapted with modifications from Liaw, Huang & Chen, 2007: pp.1912

The new system will take into consideration the attributes identified in the conclusion to the findings above, which tally with Liaw (2000) recommendations that e-learning systems should have learning models, instructional structure, and learning metacognition. E-learning systems should be designed such that users can access them anywhere and anytime. This was identified by the respondents as the benefits of using e-learning teacher training tools, which should facilitate development of a tool that meets the needs of Saudi Arabian teacher training needs. The structure of the new system must facilitate users to be active and self-regulatory learners, satisfy the needs of the teachers and the students and improve their learning experiences (Essam & Al-Ammary, 2013; Liaw, Huang & Chen, 2007; Wang & Newlin, 2002; Whipp & Chiarelli

2001; Zariski & Styles 2000; Zhang & Nunamaker, 2003). The results from this research and the literature review offers guidance to the new system and the kind of features to include as illustrated in Figure 15.

7.2.1 Learning Models and Teaching Tools

The new e-learning system shall provide more ideal teaching and learning tools which will provide assisted functions, such as teacher and specialists made online based instruction, conference, collaborations, help and suggestions, examinations, monitoring (Liaw, Huang & Chen, 2007). It will provide users with superior teaching tools and methods that evoke performance, determining sequence of learning activities, and prompting/guiding the learning process. This will create autonomous and self-regulatory learning environment giving learners' ability to control their learning time and processes themselves thereby making learners active participants. This will give both the teacher trainers and the trainees a better experience and motivation.

On the other hand, the system, both in terms of the e-learning system and the proposed advancement of teacher training, ought to entail student support contents and services. This will entail support of students to learn how to use the system, understand what is required of them, study techniques and approaches of research and issues such as essay writing. Nevertheless, it can be argued that all respondents found e-learning as a means by which students can be supported and effectively supported in becoming competent teachers and trainers.

7.2.2 Instructional structure

The system will encourage involvement by teachers and students in the online community by facilitating increased interaction and instructional structure (Murray et al., 2012; Paechter et al., 2010; Sher, 2009). The structure will enable the e-learning

system users to experience better multimedia instructions, better-structured contents and gain abilities to share knowledge due to the enhanced features. It will have multimedia facilities – videos, audio, images and interactive text and videos – to facilitate enhancement of the learners' experience and knowledge acquisition as purported by Paivio in the dual-coding theory (Moreno & Mayer, 2007; Paivio, 2006) through content sharing, collaborations and knowledge sharing such as:

- Student-content sharing – Accessing, using and commenting on the contents that are within the platform.

- Student-student – Features such as chats, groups, comments, emails and reviews will facilitate collaborative activities among students. This will happen with or without the instructors thereby enabling the students and other learners that are using the e-learning system to share knowledge and information more effectively and democratically.

- Student-instructor interaction – By delivering and presenting information, providing feedback, encouraging and guiding students, communicating course activities, asking questions, (Sher, 2009; Paechter et al., 2010).

- Stakeholders-content users' interaction – Facilitate other stakeholders and knowledgeable individuals to comment, question, criticise and contribute to the debates, views, researches and other contents uploaded thereby challenging students and other stakeholders to develop further knowledge.

7.2.3 Instruction Medium

Another factor that affects teacher training, both in terms of the online and offline teacher training in Saudi Arabia is the medium of instruction. This is in form of how the teacher training staff use more effective methods of instruction such as language, giving

students clear understanding about course objectives, using approaches that facilitate enhanced learner interaction and response and using innovative technologies effectively. Alnassar and Dow (2010) also recommend the need for students to be active participants in their learning process including being explicitly taught learning skills such as how to find

> "the relevant information, learning through doing and practising skills and techniques and connecting their learning and setting it in context… (Hence teachers) become more effective in their classrooms… while students develop greater confidence in mastery of learning, both in class and in their individual study time outside of formal classes". Alnassar & Dow (2010: p.49).

The current teacher training approaches based on lecturer speaking to a large group of often-inactive students ought to be replaced by better approaches that facilitate increased interaction and engagement. As such, e-learning teacher training programmes based on a system that is effective for interactive learning ought to be developed and adopted. In addition, small group teaching methods should be adopted but due to costs, they would best be based on centralised format with online presence but driven or offered within set groups in institutions nationally. This is important in developing competent teachers and trainers because the students are able to listening and engage, ask probing questions, facilitate students to ask questions and meet their goals in education while giving them skills to engage students they will be teaching upon qualification. Such a two-way approach is necessary in teaching teacher trainees interactive teaching techniques because by practising them, they become confident in a teacher role within school settings (Alnassar & Dow, 2013).

There is also a need for ongoing active, regular, and progressing assessment during sequential learning instead of one major exam at the end of the course. This is most

applicable in online systems as e-learning teacher training programme can facilitate testing at any time both within school setting and by individual when they feel ready to test their competence. This is also good in that it gives the students, teachers and other stakeholders a timely feedback and plays a major role in the success or failure of teacher training process. Adopting technological solutions in form of information technology and e-learning makes such learning possible and easy to accomplish because materials become readily available and the processes encourages and facilitates response to students queries online, using emails, text messages and other e-learning products and methods thereby helping teacher trainees to reinforce their learning in their own time and place.

The teacher training, and in general teaching process supported by partnerships among all stakeholders is especially important in determining the language usage. The use of Arabic and English languages in Saudi Arabia is a major issue, especially in higher institutions. These impacts on both teacher-teaching processes and on the teaching practices when teachers go to their respective schools to teach. This is mainly because the language of instruction is set as Arabic yet textbooks, subject's presentation and specialist terminologies are often in English. This creates hindrances in the instruction medium as though it is assumed that teachers should switch easily between English and Arabic, in real life, this is not so easy to accomplish (Alnassar & Dow, 2013). This research did not go into details of the role of other languages, other than Arabic, in teacher training nor is it in a position to argue for or against such usage of language. However, it found that most respondents had limited command of English and the difficulties of having Basic English language by many teachers means English terminologies in textbooks and teaching processes become difficult to communicate. There is hence need to streamline the extent to which English language is to be used in

the teaching process and hence the extent to which teachers ought to be taught English language.

7.2.4 Accessibility

The new e-learning system will widen accessing of the e-learning system by including in the new structure modern technology and innovations. The accessibility of the system will be widened in terms if device accessibility. The existing e-learning systems that are available for various universities and for instructing teachers are mainly available on computers (PC and macs). This is unlike the users' needs and increased mobile devices accessibility, which is offering the students online, and mobile devices accessibility of platforms such as YouTube and Facebook, which they use for sharing all kinds of information including learning. The e-learning system will thus be accessibility on multiple platforms including mobiles, tablets and phablets. This will eliminate some of the time and geographical barriers by improving accessibility and convenience, which has been lacking in the computer only accessibility, which leaves out people in the rural areas or where internet accessibility is limited.

The system will also have value added features that enhance accessibility and learning by increasing networking, relevance, usefulness and usability of the e-learning system. This includes enhanced social networking with ability to sign up using social media, posting of contents and comments on open or closed social media platforms, facilitating online data and information storage, editing and management. For example, to help students to enhance their learning and exercise completion activities, the system will include upload, storage, editing and collaboration features. There will also be links to contents in the online library and ability to manage ones contents on one platform hence reducing the complexities of document transfer, download, management and editing. The users will also be able to create and access multimedia contents in multiple

devices on one common e-learning system. Liaw & Huang (2000; 2003; 2007) summarise the accessibility features and attributes as multimedia, integrated, interactive, networked and cross-platform accessibility.

7.2.5 System Structure

The research concluded that most respondents faced problems of poor knowledge, lack of guidance and training before and during the use of the systems and assumption that all users are competent and capable at the point of use. The e-learning system will counter these weaknesses by including within its structure multimedia instructions on how the system works and what is happening at various phases and sections of the system. This will be based on triggers and other design features such as pop-up window where new features are added or actions taken by users require guidance. The system will also have different levels of accessibility and user rights interphases to prevent system corruption, enable different users – students, teachers, examiners, librarians among others, to upload and manage contents more effectively. A number of user guides, manuals, user tips and how to contents, in multimedia formats, will be included to help users to learn how to work with the system on a day-to-day basis.

7.2.6 Learning Metacognition

Cater (2013) argues that one core goal of academic education is to assist students to become self-regulated learners by helping them to acquire metacognitive skills. The proposed e-learning system for teacher training system will help the students to gain better understanding in solving academic and lifelong problems, especially those arising from their teaching work. The features included will help students, and other e-learning system users, to develop their thinking skills by creating a better learning environment, which is educational, attractive and efficient. The e-learning system will also be created

such that it is easy to improve continuously while retaining affinity and relevance with the users' perceived skill, as proposed by Tsai (2009). Salovaara (2005) found that effective e-learning systems offer students higher levels of cognitive strategies thereby enabling them to have better knowledge construction abilities. The system will include features that help the learners to gain better understanding of how knowledge is constructed and to be able to consciously control the how to do so. The learners and system users will be able to acquire understanding and be consciously active in controlling instruction and content processing strategies during their learning processes.

7.2.7 Training Programmes

This research also concurs with the proposals by CfBT that there is need to design, develop and implement new training and teacher support programme aimed at over 25,000 new teachers and 3,000 supervisors in Saudi Arabia to help them gain better competencies thereby being able to deliver high quality teaching and training services (CfBT, 2015). Such a high quality educational content will include features such as guidelines for teachers and supervisors, an assessment and certification framework and online resources such as videos, contents which are SCROM (sharable content object reference model) compliant, talks and other toolkits. Such contents are best offered through online platform thereby giving the teachers who are being trained and those who are newly qualified to learn better skills and acquire new knowledge for teaching and training processes. An e-learning and e-library system is fundamental in such a process because it will offer some of the following contents:

- Contents in screens of SCORM-compliant learning management system

- Videos demonstrating best teaching processes in multiple languages and with contents such as:

  - Sharing lesson objectives and outcomes,

  - Lesson episodes

  - Cooperative learning (group work)

  - Classroom setup

  - Behaviour management

  - Assessment for learning (AfL) strategies such as questioning and effective feedback

  - Differentiation and effective teaching techniques to promote active learning in the classroom.

- Motivational, inspirational and proactive talks from global leading figures in education

- Interactive online and e-learning training toolkit for trainers, teachers and supervisors.

Moreover, as Saudi Arabian teacher training and education system have been criticised for multiple weaknesses, there is need to increase teachers and trainers engagement with students and learners by adopting new technology. This will help in the delivery of contemporary curriculum, with most ideal pedagogy. This is in line with arguments by authors such as Smith & Abouammoh (2013) that such programmes will encourage teachers to become creators rather than consumers of knowledge. Alternative teacher training programmes will alter the existing traditional learning methods where students learn how to memorise and prepare for exams and instead learn now to

acquire and analyse knowledge thereby developing self-learning skills coupled with deeper professional and cultural abilities (Al Dawood 2007; Alnassar & Dow, 2013). New teaching and training programmes that emphasise on teaching critical and creative thinking should be adopted in teacher training thereby giving the students.

Teacher training also ought to be driven by and based on proactive approach to staff training and development with training and assessment linked to intended learning outcomes. Thus, teachers should be encouraged and trained to be independent in their thinking with reduction in norm-referenced assessment culture, which dominated Saudi Arabian teaching practices. Segers et al. (2003) states that such changes can be achieved by having assessments that are based on collaborative approaches y learners and teachers with portfolio, performance and formative assessment supported by self, peer and co-assessment. Training programmes should thus involve students by ensuring trainee teachers are part of the process. Involving trainees and students in the assessment process is the only way to improve future performance and future assessment processes (Nicol and Macfarlane-Dick 2006; Stiggins 2008). This research proposes adoption of e-learning teacher training programme as a means of improving teacher training, which, like other domains of learning, requires a different model of assessment compared to other forms of teaching. It is hence important because it will help the country to address the shortage of teachers and learning materials, improvement of the quality of education and provision of skills and competencies in information and communications technology for students and trainers.

7.2.8 Leadership

This research also found that there is a major limitation in developing an effective teacher training programmes because of limited leadership and administrative weaknesses. Though this was not an attribute that was investigated by the research, the

research deduces that the development of infrastructure, the development of new training models, development of partnerships, investment in teacher training and adoption of more open information technology system will require new form of leadership and drive in the teacher training schemes and approaches. According to Al-Ghamdi and Tight (2010), improvement of teacher training skills, discipline-based knowledge and general quality of faculty members, is the most important step in elevating the quality of higher education in Saudi Arabia. There is hence need for a visionary leadership driven by the demands in the education sector and integrating the needs of all stakeholders in the teacher training processes.

Leadership is also important in developing suitable teacher training programmes because within academic institutions, there is need for having an individual who is able to link the cultural affinity with academe ideas (Al-Swailem & Elliott, 2013). According to Koen and Bitzer (2010), leadership is fundamental in developing the ideologies of the education programmes as it acts as the glue that directs, accommodates and inspires the academic fraternity. Developing teacher training programmes that are led the stakeholders in line with the needs of the country will help Saudi Arabia to have a suitable teacher training programme. Transformational leadership will bring necessary competencies, effective communication (Coates & Anderson, 2007) and confidence in stakeholders' expectations and system structure. Inspirational and charismatic leader will help inspire the participants to work towards a common goal, mission and vision (Middlehurst et al. 2009). Such a leader will be able to keep abreast with the conflicting demands and pressure from stakeholders and on areas such as academic, governance, curricula and research structures (Deem, 2004; Koen & Bitzer 2010; Northouse, 2010).

The growing number of students and institutions require growth in the number of teachers and teaching fraternity. For Saudi Arabia to keep abreast with the ongoing

demands such as improving teaching and learning of teaching staff and improving students' performance in the classrooms, there is a need to have leadership that is effective and oversees the shaping of teaching medium and models (Centre for Higher Education Research and Studies, 2010). For example, teacher qualifications, language of instruction and the nature and types of partnerships between college and institutional leaders, government officials, departmental heads and individual teachers. Leadership in the way forward is hence paramount, especially in clarification of the role of each party ought to play and how the teachers ought to be trained and supported to have mutual support of individual teachers. This is supported by the views of Alnassar & Dow (2010) who states that effective leadership in teacher training is required at the national level instead of the role being left to the individual members of staff and their immediate department. Differentiation, both between and within institutions, ought to be reduced in terms of pedagogical structures and expectations with quality in learning and teaching being core driver in production of the quantity and quality of teachers required in Saudi Arabia. There is hence need for a strong unequivocal leadership on the advancement and the effectiveness of learning and teaching.

Hines (2000) suggested that there is a need for autonomy in teacher training that gives institutions some academic freedom, autonomy supported by open and responsive governance. Rather than a centralised e-learning system, the co – ordination between different educational institutions is important in creating direction and synergy. There is hence need for institutions to adopt sound principles of governance, which will help them, develop sound teacher training practices within the framework of sound systems of control implemented by informed and knowledgeable policymakers (GDPHE, 2011; Shattock, 2002). This is in line with Bleiklie & Kogan (2007) views that internal and external leadership and management of teacher training institutions should be focused

not only on power and resource allocation but also on ensuring that the stakeholders' needs and expectations are met. This approach of institutional independence is being tried in King Abdullah University for Science, Technology, and King Saud University (Al-Eisa & Smith, 2013).

However, the prevalent leadership and administrative structures in Saudi Arabia are based on traditionalist approaches where institutional control is driven and managed as per the needs of the ministries and central government. The prospective changes that have been implemented in some institutions are driven by western views of education and private business management driven by accountability and quality (Jacob & Hellstrom¨ 2003; Rhoades & Sporn, 2002; Shattock 2002). In both cases the government retains control teachers training institutions by limiting their or other stakeholders' prospects of influencing courses, course delivery and pedagogical models, appoints the heads of institutions. Major stakeholders in teacher training therefore ought to get involved in the teacher training activities including courses design, delivery and monitoring processes. This will enable the institutions to remain relevant to Saudi Arabian goals and activities. Academic institutions ability to keep abreast with government, market and social demands and expectations is dependent on their internal and external leadership's ability to meet the constant evolution of their stakeholders (Currie, 2005; Dobbins et al. 2011; Trakman, 2008). Hence, leadership changes ought to be implemented thereby making the governance and institutions more flexible, efficient, less bureaucratic and free of overregulation. This will not only increase innovativeness among learners and teachers but it will also help in the development of pedagogies, curriculums, and teaching materials that are suitable for Saudi Arabia.

Another facet of leadership is the need to go beyond theoretical agreement of changes. There are numerous reports and activities focusing on changing the direction of Saudi Arabia in respect to teacher training and how this can be improved. However, many are not implemented or the changes are so cosmetic such that they fail to make lasting and fundamental changes. Leaders, especially departmental heads and college deans ought to engage in systematic and continued improvement of the teacher training processes (Al-Eisa & Smith, 2013; Darandari & Abouammoh, 2013). Alnassar & Dow (2013) suggests that one of the best ways is to create a position for skills development, citing example of King Saud University who have established 'Deanship of Skills Development' aimed at helping build study skills of students and continuous development of teaching professional's. This will also help in establishing effective partnerships and expand learning and teaching outcomes across institutions. Others argue that the best solution for Saudi Arabia is to develop competition among institutions thereby creating education model that is competition driven hence achieving quality improvement as an ultimate outcome in the country (Christensen 2011; Jacobs & van der Ploeg 2006; Steier 2003). Saudi Arabian teacher training institutions require transformational leaders who have possess characteristics of good communicators, ability to reconcile conflicting interests of different academic stakeholders by focusing on a common vision and establishing structures and processes to meet the organisations goals and objectives (Middlehurst, Goreham & Woodfield, 2009; Northouse, 2010).

This chapter also outlines the recommendations of this research based on the conclusion outlined in the previous chapter. It outlines what ought to be done for the teacher training activities and processes to be improved and sets a climate where teacher training becomes a valued and important activity in Saudi Arabia. It outlines

what the government and other stakeholders ought to do and act upon to improve and advance teacher training as a part of the collective education and teaching culture in Saudi Arabia. It also outlines what may be necessary in developing an ideal e-learning teacher training program in terms of needs, time scale, design, structure, testing and implementation. This is done in form of prototype features and an outline of the requirements that ought to be included in a prototype for e-learning teacher training programme. The recommendations are shown below:

7.6 Specific Educational Policy Recommendations of the Study

First, it is worth mentioning that this study is sponsored by the ministry of education in the KSA. Therefore, there are certain recommendation for the policy makers, practitioners and experts. These recommendations can be categorised into three core processes namely programme, system and strategic plan. First, the ***programme***: given that the research explored the e-learning teacher training programmes, its findings conclude that adoption of a suitable e-learning teacher training programme will make the teachers better qualified, more competent and improve overall teaching and education in Saudi Arabia. As such, the features of the teacher-training programme are discussed in details in 7.7 under the title prototype features. The major reasons for developing this e-Learning system as found in the present study are: (a) Counters the shortage of teachers and teacher training professionals, (b) Counters the shortage of learning material and resources, (c) Improves the quality of education by providing improved informational content and learning approaches, (d) Provides learners and tutors with information and communications technology skills, (e) Shifts pedagogy from teacher-centred to learner-centred with multisensory stimulation, multimedia contents, collaborative working, multipath progression active learning with critical thinking and

informed decision-making and (f) Provide communities throughout the country, especially those in rural and remote areas with quality education.

The second process is the system that the results and literature of this study clearly showed that there is need for understanding how the teacher training is undertaken and its relevance to Saudi Arabia. As such, there is need for further research and better understanding of the existing teacher training programmes. Given the weaknesses in data collection and analysis, this report recommends that there is need for the development and maintenance of a suitable system for data collection and analysis. Such a system ought to be compatible, comprehensive and rigorous for the collection, analysis and reporting of performance and progress of teacher training programmes at levels especially at the institutional and system levels. Researches, literature and personal experience show that within Saudi Arabia, there is an ongoing process of data collection and researches that are weak, poorly coordinated and rarely cross-referenced and used. Teacher training is rarely studies and analysed in Saudi Arabia thereby leading to limited data availability. Moreover, the existing data, researches and system for reviewing teacher training fails to coordinate the results thereby showing extreme weaknesses in prospects of establishing strategic focus on the critical information needed in improving teacher-training programmes. Moreover, the data collected over time is rarely specified or comparable given that it is based on multiple and varied approaches and methods. It is also analysed and measured in dissimilar ways and parameters used are often varied making it difficult to compare and use over space and time.

As such, this report concludes that Saudi Arabia ought to adopt or develop a system for analysing teacher-training programmes thereby establishing a common approach for data collection, analysis and reporting. This will improve the validity of data available

and the competence of decisions made because there will be increased professionalism in data collection, more centralised and availability of data collected and easier ways of understanding and using the data. As recommended in the first process `the programme` the development of an online teacher-training programme will also be suitable for bringing the information available to the forefront for teachers, teacher-training institutions and all other stakeholders to a common platform making it easier to access the data and adopt it for multiple uses. Such an approach will help counter the problem of the numerous data which is available on teacher teaching in Saudi Arabia but it is either not accessible or it is not ideal for usage and application. A well-structured and effective system will also help improve the data storage and retrieval processes. An improved system will also increase data accessibility and better sharing of ideas and views this enhancing the type of teacher training programmes developed and adopted in Saudi Arabia. There will also be an increased ability to measure and benchmark the progress of teaching models and approaches as they develop based on the demands as per Saudi Arabia. Development of a good system is hence fundamental in improving the quality and usability of teacher training data thereby improving the future teacher training programmes in the country.

This research also recommends that assessment systems should be improved to help the teachers not only learn well and pass their exams as participants and proactive learners (Almusallam, 2007; Boud & Falchikov, 2008; Darandari & Murphy, 2013) but also for them to pass on the good learning skills to students. This proposed new teacher training system and processes should be focused on improving the weaknesses identified in this research especially in what is trained, how it is trained, assessment processes and assessment of learning outcomes. The quality of assessment ought to be addressed at both individual and institutional levels (Darandari et al., 2009; Darandari

& Hoke, 2007). Researchers such as Darandari & Murphy (2013) suggest that there is progress towards quality of training and assessment, but this research found that there is a long way to go before effective assessment of student learning have been implemented in Saudi Arabia. The findings of my research also show that the ad hoc nature of e-learning systems in teacher training processes ought to be refined by creating a coordination between educational institutions and an agreement of common standards that is better than the ad hoc and incoherent collection of tools that is currently used.

Thirdly, the present study recommends for a strategic plan. According to respondents, conclusion and literature such as Algosaibi (2010) and Smith & Abouammoh (2013), it is clear that there is need for the government and those involved in teacher training to develop a single and integrated strategic plan that is achievable, detailed and well-articulated. Such a strategic plan should be developed and adopted collaboratively by engaging all major stakeholders especially the government, the universities and colleges, teacher trainers and supervisors, representatives from the teacher training and teaching fraternity and community representatives. Such a plan ought to have within it specific goals that are clear and measurable. An example is the Academic Leadership Center Initiative, an academic leadership development scheme developed by Saudi Arabia's Ministry of Higher Education programme in 2006 (Al-Swailem & Elliott, 2013). Titled AAFQ, the scheme aims to develop transformational leadership in Saudi Arabian education system led by academics to help the country develop effective and quality higher education institutions. This will transform teacher training in short and long-term periods by taking into consideration institutions exogenous and endogenous factors thereby mediating the tensions and challenges that exist within and outside the institutions.

The vision developed and outlined in such a strategic plan should be very clearly articulated and widely communicated thereby setting out the vision of how teacher training ought to be carried out, who will do what and the critical times in the future, which will help monitoring the progress. The specific times should also be specified such as five, ten or twenty years. Such a strategic plan will require four core characteristics for the vision to be attained (a) Very specific and well-defined objectives that must be achieved, (b) Well-articulated processes and tactics for achieving each of the objectives outlined in 1 above. Clearly detailed implementation plan that states the:, Sources and means of financing, Sourcing and maintaining appropriately qualified and experienced staff, Means of sourcing and sustaining the appropriate equipment and infrastructure and Rigorous mechanisms for providing regular and constructive feedback in respect to the progress towards goals set out by the system. Having, within the strategic plan, a set of integrated strategies for development and sustenance of the proper curriculum development, teaching, learning, infrastructure, leadership, governance and quality assurance mechanisms.

The adoption of these three recommendations will make Saudi Arabian teacher training programme better education. They will help Saudi Arabian academics and educationists to look for best possible ways to improve teacher teaching and improve quality of teachers posted to schools and colleges. They will facilitate researches and dialogue on existing teacher training and assessment processes thereby leading to more ideal and suitable approaches as identified by stakeholders. For example, customisation of assessment models to make them compatible with the teaching and learning culture of the trainees and institutions will facilitate development of homegrown solutions. This is unlike what is happening in the country, which is the adoption, and borrowing of ideas

from other countries and researches and assuming such approaches will lead to better teacher training and assessment in Saudi Arabia.

These recommendations will also help address the nature of e-learning and online teacher training programmes in KSA, which is such that new systems continue to be developed while the old ones struggle to survive or die out. The government ought to develop a strategy of system where the existing systems are upgraded and supported to survive or new systems are built on existing ones to prevent the loss of talent, drive and innovation where very new systems are supported while those that are about to stabilise are disregarded. For example, my research identified systems that have been around for a while and that respondents mentioned but they have either been neglected or have completely vanished, with websites going offline, when the owners and developers either move on to other things or die.

7.7 Partial Specification of Prototype (Proposal)

The conclusion and recommendation of this research are that Saudi Arabia ought to develop an e-learning teacher training system that meets specific needs to enhance teacher training and improve education provision in the country. As such, it proposes that the expected system ought to have some specific features. In this respect, thus research proposes that a prototype ought to be developed with the features outlined hereby. The prototype proposed by this research that could best bridge the gap between the needs and expectations of teacher training and information technology capabilities. It will help in enabling the education institutions, learners and trainers to engage with one another more effectively and ensures that the adopted instructional technologies are easy to evaluate, implement and support.

However, this proposed prototype is not blind to the findings of the research, that Saudi Arabia has some major inhibitors for successful adoption of educational technology especially the limitations arising from lack of trained staff, service denial and websites blockage, lack of support, software issues and poor infrastructure that is either unsuitable for use or that fails continuously. As such, the proposed prototype will only work if there are concerted efforts in addressing these specific problems.

The research found that e-learning teacher training systems ought to have technology that is not just available but also accessible and understandable by those expected to use it. Literature review, interviews and research found that in Saudi Arabia, the core inhibitors that hinder the successful adoption of educational technology in teacher training can be attributed primarily to weaknesses in learning and understanding systems, lack of and failures with infrastructure, existing blockages and limitations in accessing websites, outdated software and lack of training and support for users. Thus even a proposal for a prototype ought to also address these issues or to be developed in line with solutions to technological and infrastructure development.

All academic stakeholders should be engaged in the development of this new e-learning system to be part of the solution to ensure all possible factors are identified and used in developing the final version. Their engagement is also necessary to help in determining the ways in which technology ought to be used and what the system requires. Understanding the core role technology and internet plays means that these people will work towards making internet fast and reliable. They will also help in determining the levels of engagement and collaboration in the development of the new e-learning system and the role different parties will play. The levels of engagement and collaboration among learners, especially given the role of gender in face-to-face learning, which will not be the case in online systems, will need to be addressed.

The role of technology in pedagogy of learning and teaching and how the different teaching fraternity and courses will interact and be deliver courses and monitoring will need to be explored. It is evident from the previous chapters that in Saudi Arabia students are already aware and competent in using the mixed-model of teaching and learning, where both technology and face-to-face approaches are used. However, there is need to determine the time allocation for different models especially with the desire to offer distant learning and support communities that are not living in the main cities. Issues such as local and national benchmarking, quality indicators and national support systems for those using the system should be explored.

The weakness identified by various respondents should hence be addressed to counter the weaknesses and make the new system relevant and useful to the learners. Issues of infrastructure enhancement and system development against to costs and benefits should also be addressed. This research looked at the nature and structure of the systems and their role, which shows considerable scope for improvement of the e-learning systems, similarly to many other countries. However, there needs to be a research on the cost implications and whether such development of systems will surely have positive impact on teacher training, albeit in the long run. The lack of and failures of the infrastructure, blocked websites, incompatible technologies, software issues and lack of training and support should be costed and their costs compared to expected outcomes and effective teacher training. Based on this research, it would be simply put that there is need for a high quality teacher-training programme in Saudi Arabia.

Issues such as medium of instruction and language should also be addressed. The views that increased use of e-learning will inadvertently push Arabic to the back banner while promoting English should be considered and addressed. Though most people see that there is need for improvement, there is need to understand and consider how to sustain

Arabic as the main language of the e-learning system thereby increasing its adoption in the country and supporting national interest of Saudi Arabia and its people. This will also be fundamental in developing and implementing effective means of instruction. Considerations on the course objectives, best teaching methods, understanding and promoting genuine interactions with students, and facilitating effective use of modern technologies should be addressed before developing the e-learning teacher training system.

Models for enhancing active participation by the trainees and ability for them to improve their own learning should be integrated into the new systems. This includes a course that offers explicitly taught learning skills for using e-learning teacher training systems in all possible ways such as finding information, learning through doing and practising skills and techniques, searching, sorting and storing information and managing their learning on the platform. Issues such as searching for other learners and engaging with them and collaborating work with other learners, teachers and staff should also be addressed. Models for including teaching staff and students' development, monitoring and testing systems, such as exams, feedback on competencies of individual trainers in their classrooms and review of teaching materials provided should be explored and included. The fundamental focus is that the proposed e-learning platform will act as a teaching and learning system where both of these activities happen in a continuum with facilitated learning (andragogy) on one end and directed learning (pedagogy) on the other.

7.7.1 Summary of Features

This research found that literature and respondents have a similar view that the diverse yet inadequate e-learning systems in Saudi Arabia fail to help the trainers and trainees meet their needs. It is also clear that respondents feel frustrated in the incapacity of the

existing technologies to meet their promises making their needs unmet and expectations for future systems high. As such, the proposed prototype should have features that the respondents feel is ideal for an e-learning teacher training system. The core features hereby identified are based on generic components that the respondents identified as most ideal. This paper will refrain from being too specific because the e-learning technologies are developing very fast and their application changing swiftly. Thus, these features and components are broadly outlined as follows:

- **Individual usage and accessibility:** The system should facilitate accessibility by students anywhere, anytime with the learners and tutors being able to work in a stand-alone, self-paced format.

- **Interactivity:** Facilitate interactive usage learners being able to check and review their understanding of the information. Wherever possible, individual learners should have some form of interactivity because learning is most effective where there is interaction with others as this helps learners to process information and keeping motivation high. This can be by partnering and working with other learners and teachers and will enable teachers, support staff and more experienced tutor to guide, support and assess the learners course work. It will also offer users ability to communicate with some other persons directly on the platforms and collaborate the work through joining of an online discussion forum.

- **Collaboration and groups:** This is by helping the users to establish study and collaboration groups, classroom groups, interest or regional groups and all other kinds of groups where they will be able to discuss and share issues on self-paced and group-driven learning. The groups can have experts and specialists who will offer support to the group members thereby acting as mentoring platform with

leaners and trainers creating a symbiotic relationship. Such groups help the learners to work through the courses and learning processes in at their own pace with group members and possibly experienced trainers available to offer guidance and support. Trainers can also create classrooms and study groups that are fully supported with assessment contents and other types of work necessary to give the learners ability to keep abreast with the courses. The groups will also act as platforms on which work and progression timelines and milestone markers are set out and monitored. This is fundamental in making an e-learning teacher training platform suitable as a means of providing support and guidance for the individuals, including trainers, to take an active educative and assessment role.

- **Multimedia communication capabilities:** The system should have abilities for contents and users to access multimedia contents such as videos, text, images and audio files. In addition, it ought to facilitate multimedia communication processes such as text (emailing, in-boxing, instant messaging and online chatting), audio (voice calls and chats) and video (video calls and teleconferencing). These should be usable by individuals on one-to-one basis or by groups in online classes and discussions thereby enabling trainers and learners to have high quality interaction and communication.

- **Hybrid training capability:** This means the system should be structured such that online courses and activities can easily be transcended to face-to-face communication. In this case the online and face-to-face components will make the platform effective in enhancing learning and giving the trainers and trainees ability to complete parts of the courses online and others in classroom setting.

To meet the four outlined features, the proposed platform should have certain attributes / components that are specific to Saudi Arabia. First, registration for users through self-registration, institutional registration and by supervisors and group managers with privacy and accessibility settings to ensure different accessibility options depending on if one is admin, public, registered or the type of membership a user has. Secondly, personal development reviews for users to check and monitor their progress on *How-To-Use* the site and in their courses. Third, training needs analysis and feedback feature to request updates, changes and reviews. Fourth, monitoring and archiving of all training, current and historic (via evidence upload where applicable). Fifth, guidance and help section with ability to discussion with system admin and other users on features, feel and views of the system including necessary updates. Finally, other general features include administration, administrative reporting, authentication, authoring, storyboarding, content library with papers and referencing tools, reference generators, course catalogue and search tool, paper, personalised language settings, E-Commerce, events listing and management, examination generation engine.

7.7.2 Future Research

This research will act as a trigger for a debate and a means for further research on e- learning in Saudi Arabia. It also leads to arguments on the need for future research to define, more specifically, a future work can be conducted on the conditions under which specific e-learning norms prevail and how these could influence the results on e-learning researches and re-design in Saudi Arabia.

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Appendix

Appendix 1: Questionnaire

Guidelines

Thank you in advance for your interest and to spend time to read and respond this questionnaire.

The porous of this research is to identify teacher training program via e-learning available in Saudi Arabia and analyse them to determine the progress of these programs and to identify the way in which these programs can be developed. This porous can only be achieved by your kind response to the questionnaire provided below. Your answers will greatly contribute to the understanding of the necessity of these programs, the need of these programs, and the possibility to develop them, eventually.

You should know that the responses to this questionnaire will be handled and analysed anonymously and no names shall be provided in the questionnaire. You should also know that you have the right to withdraw you participation in this study at any time and you also have the right to request withdrawing your answers from this study even after you have submitted them.

Your participation will be greatly appreciated.

Demographics and Profiles

1. **Background questions**

* 1. Please indicate your age range?

    ☐   18 to 24 years

25 to 34 years

35 to 44 years

Age 45 or older

2. Please indicate your gender?

☐ Male

☐ Female

3.

3. Please indicate your role?

☐ Trainer / Lecturer / Teaching staff

☐ Learner / Teacher trainee

☐ Other stakeholders

4.

Teacher training process and experience

4. **What teacher training programmes are offered in your institution(s) or how did you receive your teacher training qualifications?**

   _____

   _____

5. **Are any of these teacher training programmes offered using e-learning systems otherwise called online instructional technologies?**

   ☐   Yes

   ☐   No

6.

6. **List all the e-learning technologies that you use in your courses at training, trainer and / or assessment processes.**

Effectiveness of existing e-learning systems

7. **Experience of existing e-learning system.**

   The following statements indicate your experience when using the e-learning systems in accessing the teacher training programmes. State your experience by selecting only one number between 1 (Very Poor) and 5 (Very Good):

   [1 - Very Poor   2 – Poor   3 – Average   4 - Good   5 - Very Good]

Question	1	2	3	4	5
1) Accessing the site and its various sections and contents					
2) Ease of navigation					
3) Layout					
4) Features					
5) Structure					
6) Guidance/ Help					
7) Presentation / Text					

8. **Satisfaction of using existing e-learning systems. The following statements indicate the users' views on existing e-learning systems and the support offered by the institutions to the existing learning management systems.**

Choose between (Strongly disagree) and (Strongly agree): [1- Strongly Disagree 2 – Disagree   3 – Neutral   4 – Agree   5 – Strongly Agree]

Question on existing e-learning systems	1	2	3	4	5
Consistent approach to the e-learning courses provision					
The e-learning system is reliable					
The system helps me to engage with and monitor students / studies taken					
Sufficient support is provided in using the system					

Improvements required

In which ways do you think e-learning teacher training programmes can be improved and made more suitable for users and increase academic engagement in Saudi Arabia?

9. **How can e-learning systems be used to improve engagement in teacher training. The following statements indicate views of respondents to the ways in which e-learning systems and training programmes can enhance engagement and teacher training processes.**

Choose between (Strongly disagree) and (Strongly agree): [1- Strongly Disagree 2 - Disagree   3 - Neutral   4 - Agree   5 - Strongly Agree]

Question on existing e-learning systems	1	2	3	4	5
1) Engagement with educational technology group in your institution as a learner (Learners group)					
2) Engagement with educational technology group in your institution as a trainer (Trainers group)					
3) Receiving updates on upgrades of existing or new e-learning systems					
4) Continuous training on upgrades or new e-learning educational technologies					
5) Availability of well positioned and manned online support system for the e-learning systems					
6) Attending events at our institutions on using existing or new e-learning systems					
7) Attending events showcasing best approaches and uses of existing or new e-learning systems					
8) Accessibility of support					

10. **What would you say are the positive aspects of using e-learning systems in teacher training activities (List 4)**

    a. _____

    b. _____

    c. _____

    d. _____

11. **What would you say are the negative aspects of using e-learning systems in teacher training activities (List 4)**

    a. _____

    b. _____

    c. _____

    d. _____

12. **What would you say are the most common barriers to effective use of e-learning systems in teacher training processes in Saudi Arabia?**

    a. _____

    b. _____

    c. _____

    d. _____

Thank You.