An-Najah National University

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Employing a Descriptive Model to Assess E-learning Readiness of Palestinian Public Secondary Schools

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Dedications

I dedicate this work to my wife and parents for their consistent support and prayers.

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الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان

Employing a Descriptive Model to Assess E-learning Readiness of Palestinian Public Secondary Schools

أقر بأن ما شملت عليه الرسالة هو نتاج جهدي الخاص, باستثناء ما تمت الإشارة إليه حيثما ورد, وأن هذه الرسالة ككل أو أي جزء منها لم يقدم من قبل لنيل أي درجة أو لقب علمي أو بحثي لدى أي مؤسسة علمية أو بحثية

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degrees or qualifications.

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Abbreviations

Abbreviation	Definition
3G	Third Generation
AEN	Al-Aws Educational Network
ANOVA	Analysis Of Variance
BSA	Bit Stream Access
BTC	Belgian Development Agency
CAI	Computer-Assisted Instruction
CD-ROM	Compact Disc Read-Only Memory
DSL	Digital Subscriber Line
EDSP	Education Development Strategic Plan
EFL	English as Foreign Language
e-Learning	Electronic Learning
e-LRS	Electronic Learning Record Store
ICT	Information And Communications Technology
ISP	Internet Service Provider
IT	Information Technology
JICA	Japan International Cooperation Agency
MB	Mega Byte
MoEHE	Ministry Of Education And Higher Education
MSN	Model Schools Network
N	Number
Paltel	Palestinian Telecommunications Company

PDF	Portable Document Format
PEI	Palestinian Educational Initiative
PSD	Partners for Sustainable Development
PMEHE	Palestine Ministry Of Education And Higher Education
R^2	Coefficient Of Determination
RSS	Rich Site Summary; Originally RDF Site Summary; Often Called Really Simple Syndication
SEED	Science Education Enhancement and Development
SPSS	Statistical Package For The Social Sciences
StD	Standard Deviation
TAM	Technology Acceptance Model
UIS	UNESCO Institute For Statistics
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific And Cultural Organization
USAID	United States Agency For International Development
VLE	Virtual Learning Environments
WiZiQ	Wizard Intelligence Quotient
WWW	World Wide Web

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Abstract

A growing interest in e-learning has increased in recent decades due to the potential it offers in equipping twenty-first century learners with the skills necessary for succeeding in the fast-paced digital world they live in. Despite its promise, numerous challenges have stood in the way of successful implementation of this new learning paradigm in many developing countries. This study examines the overall level of e-learning readiness in Palestinian public secondary schools focusing on the aspects of e-readiness which present as opportunities and challenges to its implementation.

Following a thorough review of the literature, an e-readiness instrument was developed which relied upon an assessment for developing countries. Teachers in public secondary schools in 11 directorates across the West Bank region completed the assessment and twelve experts and professionals in the fields of education and e-learning were interviewed.

The overall readiness of Palestinian public secondary schools was found to be at a *Level 3, Ready but needs few improvements*. Perceived Usefulness, Educational Institution, People, and Technology were at a Level 3 *Ready, but needs a few improvements* and Training, Perceived Ease of Use, and Content Availability were at Level 2 *Not ready, needs some work*.

Perceived Usefulness was found to possess the highest level of readiness amongst the factors studied while Content Availability possessed the lowest level.

The findings provide several implications on the implementation of e-learning in public secondary Palestinian schools in the West Bank including a framework for understanding e-readiness factors which influence the process.

Chapter One

Introduction

Chapter One

Introduction

1.1 Overview

E-learning as a mode to disseminate better quality learning to marginalized sectors of society has gained interest in recent decades due to the potential advantages it offers to people in various sectors of developing countries (Wilson & Heeks, 2000; Al-Mahmood & McLoughlin, 2004; Bada & Madon, 2006; Andersson & Grönlund, 2011). This global force to improve opportunities for lifelong learning and increase the supply of skilled workers has especially contributed as a driving force in employing technology in educational settings (So & Swatman, 2010).

However, despite its promise, an intricate web of social and economical factors has impeded the successful implementation of e-learning in the educational sector of developing countries. In fact, the dropout rate of e-learning in these countries is much higher than traditional classrooms (Ibrahim et al., 2008) and many e-learning initiatives in marginalized areas fail (Andersson & Gronlund, 2009). The literature points to priorities in public spending and distribution and creation of technology (Ibrahim et al., 2008); the digital divide between cities and rural areas (Shraim & Khlaif, 2010); institutional readiness in terms of budget and infrastructure (Karim & Hashim, 2004); the experience, skills, knowledge and attitude of human resources (Karim & Hashim, 2004; Boakye & Banini, 2008; Eslaminejad et al., 2009); adequate teacher training on new e-learning technologies

(Awouters et. al, 2008); cultural and personal attitudes of both teachers and students (Afshari et al., 2009); student technical competency, prior experience in e-learning (Volery & Lord, 2000) and confidence (Datuk & Ali, 2008); and technical access to computers, electricity, and English proficiency (Qureshi et al., 2012) all as factors contributing to the successful implementation of e-learning.

1.2 Research Problem

For countries to take advantage of the benefits granted by e-learning, policy makers and educators must become aware of what e-learning looks like as an educational paradigm and what is required for its implementation (Garrison & Anderson, 2011). This growing need for viable e-learning frameworks and the imposing barriers faced by developing countries has prompted the development and use of assessments to measure e-readiness which is a term used to loosely describe a variety of aspects that are needed for e-learning (Chapnick, 2000). Such measurement tools can be used to help guide initiatives involved in the implementation of e-learning.

Various countries have indeed designed and used e-readiness assessments at the university and business level (Hammoud, 2010; Al- Fadhli 2011; Musa & Othman, 2012; Taha, 2013). Still, few assessments have been developed to evaluate e-readiness of primary and secondary schools in developing countries. In addition, e-readiness instruments created for developed countries may not be a good fit for studying developing countries (Rogers, 2003; Aydin & Tasci, 2005).

Both the scarcity of studies addressing e-learning in public secondary schools and the lack of assessments which take into consideration factors relevant to schooling in developing countries present a challenge for countries interested in improving their educational sector via e-learning. Presently, few studies have been carried out on the use of e-learning in public secondary schools in the West Bank (ex. Shraim & Khlaif, 2010; Trayek et al., 2016) despite national and international initiatives which have been working on integrating e-learning in school curricula (ex. EDSP, 2008-12; EDSP 2014-19; AEN, 2007; PEI, 2008; MSN, 2009). For this reason, the present research will serve as a continuation of previous studies to shed light upon components of e-readiness that already exist in these schools and those which still need to be developed in order to create a framework which promotes the implementation of e-learning in the public secondary educational system.

1.3 Research Objectives

The main objective of this research is to assess the e-readiness of public secondary schools in the West Bank, Palestine. Limited access to the Gaza Strip prevents the study from taking into account all Palestinian schools. In assessing the e-readiness of these schools, the study will attempt to provide a clear understanding of the different variables that promote and challenge successful implementation of e-learning paradigms.

This research focuses on studying three phases associated with the implementation of e-learning which are readiness, acceptance, and training. The main objectives of the study are as follows:

1. To assess the level of readiness of e-learning in public secondary schools in the West Bank as related to technology (stability, software, and hardware), people (attitude, confidence, and experience), content availability, and school management.
2. To assess the level of teachers' acceptance to e-learning as defined by the construct of perceived usefulness, or that e-learning will enhance the educational experience, and the construct of perceived ease of use, or that using e-learning tools will be free of effort.
3. To assess the level of training related to e-learning possessed or needed by the teacher
4. To identify relationships and differences between the different factors associated with e-readiness.
5. To identify differences in e-readiness factors in terms of gender, age, academic degree, teaching experience, school location, hours of internet use per day, and number of training courses if any.
6. To identity challenges to e-readiness and implementation of e-learning initiatives in public secondary schools.
7. To identify components necessary for a framework that can be used to increase the e-readiness of public secondary schools in the West Bank.

1.4 Research Questions

1. What is the overall level of e-learning readiness in Palestinian public secondary schools from the perspective of teachers?
2. Which aspects of e-learning readiness present as opportunities/ challenges to the implementation of e-learning in Palestinian public secondary schools from the perspective of teachers?
3. What differences in e-learning readiness can be attributed to teachers characteristics such as: gender, age, teaching experience, academic degree, their school location and directorate, and prior training received?
4. What differences in e-learning readiness can be attributed to teachers access to ICT, use of ICT, school requirements and pre-existence of an e-learning project at schools?
5. How do the attitudes and perceptions of teachers influence e-readiness?
6. What is a proposed framework for the successful implementation of e-learning?

1.5 Research Significance

The significance of this study resides in the uniqueness of its location and the individuals it involves. The West Bank is a region that is challenged by Israeli aggression and disunity among Palestinian factions. The education of its younger generations is necessary for survival in such a high-conflict climate. The promise that e-learning provides for the young people in this

region has caught the interest of national and international bodies promoting its development.

This study aims to provide policy makers and national and international bodies interested in promoting e-learning in Palestinian educational systems with a better understanding of the factors which support or challenge its implementation. The results of this study will extend findings of previous studies on the secondary school system in the West Bank, possibly serve the Palestinian Ministry of Education and Higher Education (MoEHE) by providing information on the components necessary for adopting an e-learning paradigm in public secondary schools, and provide new information to developing countries in the region. The study hopes to increase the literature on e-readiness of educational sectors in the region and, thereby, increase awareness on the significance and promise it presents.

1.6 Organization of Chapters

The present thesis is divided into six chapters. The first introduces e-learning as an educational paradigm and challenges to its implementation for developing countries with a special focus on the West Bank region. It outlines the objectives and questions of the research and concludes with presenting an argument for the importance of such a study. The second chapter reviews the literature on e-learning and e-readiness instruments addressing the experiences of the West Bank with e-learning. The third chapter describes the research design and methodology employed in the research including the research sample and tools used to collect and analyze

data. The fourth chapter details quantitative and qualitative results and the fifth chapter discusses them thoroughly. The final chapter summarizes the implications and limitations of the findings as well as future directions.

Chapter Two

Literature Review

Chapter Two

Literature Review

2.1 Overview

E-learning as a mode to disseminate better quality learning to marginalized sectors of society has gained interest in recent decades due to the potential advantages it offers to people in various sectors of developing countries including education, health, public service, government and business (Bada & Madon, 2006). However, most initiatives to implement e-learning programs in developing countries have gained little success due to contextual factors distinct to the region including cultural and socio-economic norms (Trucano, 2005). Therefore, e-readiness frameworks and instruments that take contextual factors into account seem necessary for improved implementation of e-learning programs.

The following sections review the research literature on e-learning through discussing the definition of e-learning, advantages and disadvantages to e-learning, e-learning and education, pedagogical theories associated with e-learning, and a shift in the educational paradigm. Next, the construct of e-readiness and assessment of e-readiness is discussed. Instruments that incorporate components to address issues unique to developing countries are highlighted. The chapter concludes by considering e-learning experiences in developing countries in the Middle East region with special emphasis on Palestine, which serves as the focus of this research study.

2.2 E-learning Defined

E-learning emerged over twenty-five years ago and was largely unpopular with learners since it consisted of basic text on a screen (Hage & Aïmeur, 2008). Today, e-learning is at the forefront of a shifting education paradigm that is not only rich with media content and more interactive but more importantly, allows the student to be the focus of learning (Hage & Aïmeur, 2008).

The letter "e" in the term "e-learning" is the abbreviation of the word "electronic". Therefore e-learning implies any learning that is organized through an electronic medium or environment (Anohina, 2005). These media include online and offline computers, video devices, satellite broadcasts, CD-ROM, phones and etc. (Kaplan-Leiserson, 2000).

Anohina (2005) suggests that because e-learning takes place via any electronic medium, online learning and computer-based learning are considered subsets of e-learning. The author also explains that distance learning is broader than e-learning since it includes both non-electronic and technology-based delivering of learning. Technology-based learning is delivered using any type of technology, so, it entails distance learning too. Resource-based learning is the broadest term among these because any technology could be used as a resource in the learning process.

For the purpose of this thesis, e-learning refers to describe forms of learning where learning is organized via an electronic medium including those connected online and offline (Anohina, 2005).

2.3 E-learning and Distance Learning

Distance learning is not a novel concept. Students and teachers use of letters to communicate learning dates back to 150 some years ago (Usun, 2004). The introduction of information communication technology, or ICT, allowed for students and teachers to be separated by space while sharing the same time (Keegan, 1995). E-learning is a term used to describe forms of learning where learning is organized via an electronic medium including those connected online and offline (Anohina, 2005).

2.4 Advantages and Disadvantages of E-Learning

Much of the research literature on e-learning supports that it is a successful way to engage students with sharing knowledge and learning (McConnell, 2006). E-learning offers learners access to needed material and allows them an opportunity to study at their own pace (Roy & Raymond, 2005). E-learning also promotes deep learning as students engage with bundles of information available online as opposed to surface learning (Johns, 2003). In addition, e-learning encourages shared learning since it presents opportunities for learners from diverse backgrounds to interact (Qureshi et al., 2012). Allen (2011) explains that once the material is composed and uploaded on the internet, it can be used anywhere in the world. E-learning also bridges the gap between theory and practice allowing organizations ways to provide services online (Johns, 2003). Some students reported that e-learning facilitated more freedom of speech (Sweeney et al., 2004).

In an online environment, a learner can experience self-directed learning. Self-directed learning refers to the level a learner prefers to be independent and directs their own learning (Hudson & Ramamoorthy, 2009). Self-directed learning readiness has been shown to be correlated to different learning outcomes including, but not limited to, performance (Guglielmino & Guglielmino, 1991), creativity (Torrance & Mourad, 1978), information sharing, (Beitler & Mitlacher, 2007) and life satisfaction (Sabbaghian, 1979). Technology also brings challenges and is not always utilized efficiently. Al-Mahmood & McLoughin (2004) explain that user perception contributes significantly to the usefulness of a technology. This explains why adapting a e-learning to the student perception is important for the success of e-learning schemes. In addition, Esichaikul et al. (2011) suggest that adaptive e-learning systems adapt to user knowledge and information in order to minimize technical difficulties and dropout.

2.5 E-Learning and Education

Because education is fundamental for any development to occur (Bada & Madon, 2006), education must play an integral role in the development of any sector of a given society. For most developing countries this poses as a challenge due to barriers to education. A proposed solution to overcome these hurdles to education is e-learning (Andersson & Grönlund, 2009). The potential advantages that e-learning offers people in the health, education, public service and business field are limitless (Bada & Madon, 2006).

Wilson and Heeks (2000) explain that access to information is essential for knowledge and development. A UNESCO report (2006) suggests that improved access is important for governments who are experiencing both a need for education and an increasing shortage of teachers. E-learning offers governments hope of reaching students who are typically marginalized and people who are in the workforce (Andersson & Grönlund, 2009).

Still, even with the promised advantages which e-learning offers, plans to propagate education to rural or poorer parts of the population commonly fail (Andersson & Grönlund, 2009). The results of a survey conducted in South Asia on distance education found that distance education often fell short reaching middle-class men living in cities (Dhanarajan, 2001).

Concerns related to unequal the dissemination of e-learning and discrepancies in understanding the use of technologies related to learning are usually referred to as the digital divide (Johansson-Hedberg, 2007). Qureshi (2006) explains that while e-learning is often coupled with potential of development, ICT technologies may marginalize disadvantaged groups who have limited access to these technologies. Technology can still be exploited by the advantaged sector of society to hold economic, social and political power (Unwin, 2009). However, even when e-learning is available, drop-out rates continue to be much higher than in traditional classrooms (O'Connor et al., 2003).

E-learning represents a new mode of communication. Because communication is the basis of learning and education, its impact on education systems can be significant. However, to really take advantage of

e-learning, educators and policy makers must understand its features and ways they can be used to impart learning (Garrison & Anderson, 2003). Selinger (2009) explains that e-learning has the potential to improve the quality of the educational system. For this to happen, Garrison and Anderson (2003) suggest that a shift must take place from viewing the teacher as an expert to viewing the teacher as facilitator of learning. In this view, teachers are not the center of the educational paradigm. Instead, students are able to take autonomy of their own learning experience (Zhang et al., 2004).

Research suggests that the transmission model of education continues to be the model of education used in most developing countries (Selinger, 2009). Furthermore, an authoritarian outlook on education defeats the purpose of a student-oriented approach needed for e-learning (Usun, 2004). A major challenge to the implementation of e-learning in developing countries is that students rather have a traditional learning structure, such as a memorization-oriented learning process, since they are not accustomed to the self-studying required in e-learning (Ibrahim, 2008).

2.6 E-Learning and Pedagogical Theories

Because different pedagogical theories can be relied on in a single educational program, a review of how theories of learning have been mediated through technology is necessary (Shoib et al., 2004). Garrison and Anderson (2003) suggest that the first computer learning systems where behavioristic in that they divided large bundles of information into smaller parts of material that could be assessed. Behavioristic pedagogy proposes

that learning is an observable phenomenon and that learners respond to external stimuli such as a teacher lecturing, for example. Thus, the first forms of e-learning relied on applications that indicated whether the learner provided a correct or incorrect answer such as self-assessments of simple skills.

As technology advances, e-learning is supplemented by more multimedia built around cognitive learning theories (Ally, 2008; Garrison & Anderson, 2003). While behaviorist theorists rely on reinforcement, cognitive theorists rely on facilitation (Shoib et al., 2004). Ally (2008) explains that technological applications help students interpret information so that it can be transferred to working memory and later retrieved from long-term memory. For this reason, technological interfaces used to mediate this form of learning are designed to minimize cognitive burden.

Communication is the focus of e-learning in constructivist pedagogy. According to Garrison and Anderson (2003) students are expected to individually and within groups create and re-create knowledge. This theory of learning suggests that knowledge is shared and learning is interwoven with social action (Shoib et al., 2004). E-learning should be used to support this interaction and communication as well as individual learning. Access to data and discussion are integral to this understanding.

Although behaviorism once took the lead in using technology as learning medium, e-learning paradigms focus on students being more active participants in their learning (Garrison & Anderson, 2003). Constructivist theorists perceive students as active participants in their learning interpreting

information based on their own knowledge and experience and can be altered through interaction with others.

2.7 E-learning and a Shifting Paradigm

Researchers are not in agreement over what can be called traditional learning versus constructive learning. Many have criticized the lumping of all traditional practices as one (Halperin, 2005). Cooper (1993) explains that some behavioristic software can be used to support learning. Some researchers also argue that although technologies might be used more in learning systems, they are mostly relied on to enhance existing practices instead of transforming education pedagogy (Garrison & Anderson, 2003).

Garrison and Anderson (2003) propose that technology should not be used to mimic poor learning practices but instead be used to completely transform instruction to become student-centered. This idea stems from constructivist views of continuity and interaction. A "transactional view" on e-learning relies both on constructivism and collaboration with a community of learners (Garrison & Anderson, 2003). This approach suggests that technology empowers the learner to not only generate knowledge but to do so in collaboration with others.

According to a UNESCO (2004) report, there are generally three approaches taken by teachers to implement e-learning: the integrated approach, enhancement approach, and complementary approach. The integrated approach incorporates the use of ICT to enhance particular concepts and skills to improve student learning. The enhancement approach incorporates

ICT to enhance learning such as using an innovative presentation method to promote discussions. And, finally, the complementary approach uses ICT to empower students such as allowing students to complete classwork using a computer or sending homework over e-mail.

2.8 E-Readiness

E-readiness is a term used to loosely describe a variety of aspects that are needed for e-learning. By understanding students' readiness for online learning, not only can instructional designers provide better online courses, but also teachers can help students enhance their online learning experiences. Warner et al. (1998) suggest that e-readiness incorporates three aspects: students' preferences for the form of delivery; student confidence in using electronic communication for learning (competence and confidence); and ability to engage in independent learning. Later, researchers found that assessments must address other components such as technical computer skills, internet-navigation skills, and learner control (Hung et al., 2010).

Lin and Hsieh (2001) found that successful e-learners make their own decisions to meet their needs and at their own pace. They also found that e-learners do this in harmony with their own existing knowledge and learning goals. These learners are typically described as self-directed. Guglielmino (1977) created a Self-Directed Learning Readiness Scale to assess student's learning and personality characteristics as related to the process of self-directed learning. The SDLRS is a self-report questionnaire with Likert-type items which measure attitudes, skills, and characteristics that comprise an

individual's current level of readiness to manage his or her own learning. Garrison's (1997) model of self-directed learner incorporated the roles of self-monitoring and self-management processes on learning outcomes.

In addition to autonomy in the learning process, a student's motivational orientation, intrinsic and extrinsic, plays a key role on their learning outcomes (Ryan & Deci, 2000). This is because learning relies on both cognitive and motivational variables (Stefanou & Salisbury-Glennon, 2002). Intrinsic motivation to learn acts on an individual's inherent interest to learn whereas extrinsic motivation is learning to achieve a specific reward (Stefanou & Salisbury-Glennon, 2002). The literature on motivation suggests that intrinsic motivation is correlated with higher-quality learning, better learning strategies and greater enjoyment of learning (Czubaj, 2004). Ryan and Deci (200) found that e-learners were able to benefit from intrinsic motivation since an online setting afforded them significant freedom to determine their learning. Research by Saadé et al. (2007) suggested that both intrinsic and extrinsic motivation were important to e-learning.

A study found that students' task performance is affected by learner control in online learning (Wang & Beasley, 2002). Shyu and Brown (1992) define learner control as the degree to which a learner can direct his/her own learning experience and process. E-learning affords students more opportunities to exercise learner control as opposed to traditional learning environments (Reeves, 1993). Therefore, those learners who possess qualities associated with learner control exhibit better performance in the online environment.

A study by Compeau and Higgins (1995), which relied on Bandura's (1977) self-efficacy theory, found that computer self-efficacy significantly influenced computer-use outcomes, emotional reactions to computers, and computer use. Their definition of computer self-efficacy represented a learner's perception of his or her ability to use technology to accomplish a task and not simple computer skills. Eastin and LaRose (2000) went further to test internet self-efficacy as a learner's ability to apply higher-level computer skills such as troubleshooting rather than simple tasks such downloading files. Another study by Chou et al. (2011) found that students with high internet self-efficacy had better learning outcomes than student's who exhibited low internet self-efficacy in a Web-based learning task.

2.9 Assessing E-Readiness in Teachers

Many researchers have studied the e-readiness of teachers, especially at the university level in developing countries. For example, Paturusi et al. (2015) studied both lecturer and student readiness for e-learning at the National University in Indonesia. The results of the questionnaires distributed to the 240 lecturers and students indicated that both teachers and students showed interest and desire in using e-learning and spent leisure time at home using a computer. However, teachers indicated that their IT competency was insufficient for developing e-learning and required more training by the university. In addition, both teachers and students were dissatisfied with the computer facilities provided by the university. Respondents of the study indicated that it was the right time for the university to make efforts to

implement e-learning indicating the development of a culture of computer use.

Similarly, a study assessing the e-readiness of teachers and students of a nursing program at Benghazi University (Contreras & Hilles, 2015) found that their surveyed sample of teachers was well equipped to engage in e-learning since their access to technology was high and the majority knew how to use web browsers on their own computers. However, access to a stable Internet connection was low and the availability of an Internet connection was absent on campus due to the conflicts the country has been experiencing. While the majority of teachers in the sample were found to have basic internet skills, many struggled with literacy in the application of software because they did not possess experience in attending online classes or a learning management system and have not participated in any seminar or workshop related to online learning. The study found that teachers indeed possessed positive attitudes possessed positive attitudes towards the usefulness of e-learning and an interest in embracing e-learning technology, but a need to improve facilities and support with time management was reiterated.

Al-Sayyed and Abdalhaq (2016) studied the factors influencing instructors' adoption of an e-learning system in Palestinian universities applying a version of the Technology Acceptance Model (TAM). The study found that a positive relationship existed between management support, design characteristics, organizational support, training, perceived usefulness, perceived ease of use and the intention to adopt e-learning.

Some studies have also looked at the characteristics of teachers and students in secondary schools. For example, Aldhafeeri and Khan (2016) studied teacher and student views on e-learning readiness in Kuwait's secondary schools surveying a sample of 1,314 teachers and 1,307 students. The study which specifically addressed the initial stages of e-learning implementation found that while teachers believe that their schools are ready for implementation of e-learning, they lack confidence in the quantity and quality of support provided by higher positions including support from the Ministry of Education, adequate funding, a flexible work schedule, incentive, and adequate preparation time.

Chege (2014) studied the factors influencing teacher readiness in public secondary schools in the North District of Kenya where little or no studies on the subject have been done. A significant finding of the study indicated a lack of computer training, which would was found to increase teacher readiness since it supported access to knowledge increasing both confidence and competence. A lack of ICT infrastructure also was found to negatively influence teacher readiness in the study.

Al-Furaydi's (2013) study of e-learning readiness in public schools in Saudi Arabia found computer literacy and positive attitudes to be significantly correlated. Still, teachers in the research indicated their belief that administrations did not support them in the adoption of e-learning including lack of time and software support.

Ibrahim (2009) study of teacher e-readiness in Sudanese Secondary Schools found an absence of strategic implementation of computer training, lack of

adequate information on ICT, misuse and mismanagement of computers in secondary schools, lack of training of teachers on integrating e-learning in teaching curriculums, and a lack of ICT infrastructure to all impede teacher readiness.

Trayek et al. (2016) also studied the structure of e-learning readiness in Palestinian secondary school teachers in Nablus, Palestine. The study's findings supported four of Chapnick's (2000) e-readiness dimensions and they are technological, physiological, infrastructure, and equipment readiness. The researchers found that technological capabilities accounted for a little more than 30% of teachers' e-readiness and teachers' beliefs that they can implement e-learning in their classrooms as accounting for that variance.

2.10 Assessing E-Readiness in Learners

Predicting readiness is problematic due to the fact that e-learning is an evolving field of practice. Researchers are constantly being challenged to validate theories and concepts across a range of media, technologies, and teaching strategies. Many online programs publish student readiness surveys to enable students to assess their preparedness for e-learning (Parnell & Carraher, 2003; Smith, 2005; Smith et al., 2003; Watkins et al., 2004). Other programs rely on surveys to assess whether a student will be successful at e-learning or not (Bernard et al., 2004). However, although the research literature documents characteristics of successful online learners (Dabbagh,

2007), educational institutions must find ways to use their knowledge of these characteristics to support e-learning.

Most surveys which test e-readiness for students focus on general learner characteristics including self-directed learning and interpersonal communication skills (Bernard et al., 2004; Mattice & Dixon, 1999; McVay, 2001). They also tend to focus on basic technology skills.

In the late 1990s, Mattice and Dixon (1999) created a survey to test their graduate students' interest in learning including their readiness for distance education. Their survey asked students about their previous experience in distance education, their access to technology, and whether or not they would likely enroll in an online course. The survey had three indices: student readiness, student access to/use of technology, and student interest in distance education. The readiness index did not account for student self-concept nor student self-efficacy (Bruner, 1977). The technology index focused on student access and level of online experience while the interest index asked students about their interest in distance education.

Bernard et al. (2004) developed a new survey which expanded McVay's 13 items to 38 items to predict student online learning achievement. The majority of the questions tested beliefs about distance education, confidence in prerequisite skills, self-direction and initiative, and desire for interaction. The survey incorporated self-efficacy questions as well as students' confidence that e-learning can provide learning.

Kerr et al. (2006) developed a survey to assess students' readiness for online learning by using the following existing instruments: Rosenberg's self-

esteem scale (1965), Felder and Soloman's index of learning styles (1991), Taraban et al. metacognitive reading strategies questionnaire (2000; 2004), Shia's academic intrinsic motivation questionnaire (1998), and Trice's academic locus of control scale (1985). Kerr et al.'s (2006) survey comprised of subscales on computer skills, independent/dependent learning, need for online learning, and academic skills.

Dray et al. (2011) developed a more detailed survey which incorporated learner characteristics and technology capabilities as their two subscales. Learner characteristics were defined as self-direction, academic self-concept, and locus of control and technology included skill and access to technology. The results of Dray et al. (2011) show learner characteristics as yielding high criterion validity emphasizing the importance of the relationship between the user and the technology and not necessarily the existence of the technology alone.

Validity is a quality that is achieved when an instrument's face, content and criterion are tested (Trochim, 2006). Trochim (2006) divides construct validity into translation validity and criterion-referenced validity. Translation validity involves the extent to which the instrument translates in the construct being measured. Translation validity includes face and content validity, which are non-statistical interpretations of the items and instrument as a whole. Criterion-referenced validity is a statistical analysis whereby how individuals answered the questions are analyzed within the instrument and across items, as well as in comparison to other similar items from other

instruments (Trochim, 2006). Reliability ensures that an instrument produces similar results when used in comparable situations (Fowler, 2009).

Dray et al. (2011) suggest that survey instruments continue to miss important factors such as student engagement with ICT across the digital divide. For example, a study (Chelus, 2003) that examined the relationship of bandwidth connectivity to student success in e-learning, found that students with higher bandwidth had higher grades. Because the digital divide is fluid and in constant change, van Dijk (2006) proposes incorporating four main gaps of access within the digital divide: material access, skills access, usage access, and motivational access.

A study conducted by Hsieh, Rai, and Keil (2008) found that enjoyment and confidence were critical aspects for shaping future ICT use by the disadvantaged. Hsieh et al. (2008) found that perceived ease of use, attitude of family and friends, and personal attitudes were influential toward the use of ICT to both the sides of the social sphere. However, they found that self-efficacy, availability, and perceived behavioral control were more influential in the use of ICT among the socially disadvantaged. Dray et al. (2011) propose revising the technology capability subscale to incorporate measures of ICT engagement such as basic technology skills (ability to use applications), access to technology (ownership and connectivity), and usage of technology (nature and frequency of use), and relationship with ICT technology (beliefs, values, confidence and comfort). Therefore, instruments that measure readiness should incorporate scales that measure learner characteristics, technology skills, and also level of engagement with and self-

efficacy about ICT (DeTure, 2004).

2.11 Instruments for Measuring E-Readiness in Developing Countries

Chapnick (2000) defined e-readiness as a process for determining the difference between what students know and need to know. Chapnick's study identified eight categories of e-readiness: psychological, sociological, environmental, human resource, financial, equipment, content and technical skill readiness. Her study lists 66 factors from each of these categories and provides multiple-choice questions for managers to assess their organization's level of readiness. Each response has a point value that can be added up at the end of each section. A cumulative score summing points from all sections represents the grade of the organization. Chapnick's instrument helps organizations identify strengths and weaknesses in their organization's e-readiness.

Haney's (2002) instrument for e-readiness incorporates 70 questions classified into 7 categories: human resources, learning management systems, learning, content, information technology, finance and vendor. The instrument comprises of a checklist used by managers to determine level of importance ("not very", "moderate", or very") for each question. The literature on e-readiness discusses similar instruments developed to assess organizational readiness and offer organizations direction on which areas need improvement for successful implementation of an e-learning approach. These instruments, however, may not be culturally-relevant for organizations in developing countries. Rogers (2003) explains that every system has its own distinct norms that can be effective in diffusing

innovation. For developing countries, the human resource field has only recently shown advancement and thus implementation of an e-learning program might differ from that of developed countries (Aydin & Tasci, 2005). Aydin and Tasci further explain that learning style continues to be a new concept in the literature on human resources in developing countries (2005). Therefore, an e-readiness assessment tool containing questions on learning style, for example, might not be relevant in some organizations and skew the result of the assessment. Aydin and Tasci (2005) developed an e-readiness assessment instrument that would be more relevant for emerging countries. Their first section of their survey consisted of 10 items related to demographic characteristics while the second section included 30 items that assessed the respondents' perceptions of their organization's e-readiness.

Aydin & Tasci (2005) chose factors after detailed analysis of available e-readiness instruments and cultural characteristics of companies in Turkey. They identified four factors which organizations can measure to assess their level of readiness for e-learning based on Rogers' (1962) diffusion of innovation theory. These factors are technology, innovation, people, and self-development. Each of these factors incorporated three constructs: resources, skills, and attitudes.

The items of each section of the instrument were first formed as a five-point Likert-scale but later another version was developed using a question format with five alternatives for each question ("None", "Just a few", "Half", "Almost all", and "All"). These alternatives were coded into a five-point Likert-scale. Aydin & Tasci (2005) identify 3.41 as a mean score for the expected level of readiness with the item, while other responses enable

organizations to show higher or lower levels of readiness. Thus, the levels of readiness were determined as depicted in **Error! Reference source not found. Error! Reference source not found.**.

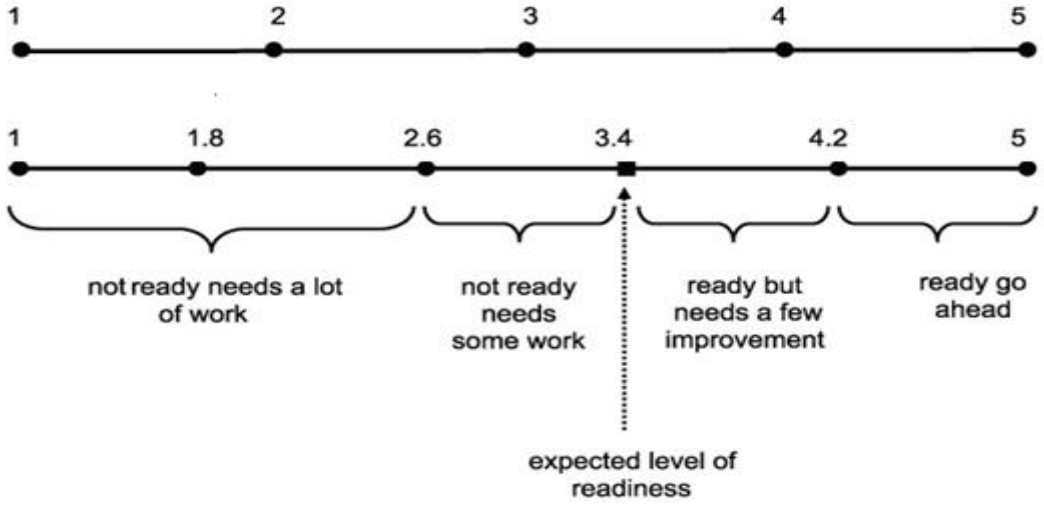

Figure (2. 1): Assessment Model of e-LRS (Aydin & Tasci, 2005, p. 250)

Akaslan and Law (2011) developed a model which they suggest can be used to assess e-readiness in developing countries. To validate their model, Akaslan and Law (2011) used a web-based survey to research the readiness of students in the electricity subject in higher education institutions. They relied on Chapnick's (2000) model for identifying items (technology, people, institution, and content) and Aydin and Tasci's (2005) model for measuring instrument items. Their study focused on assessing e-readiness in three steps: readiness, acceptance, and training as can be seen in **Error! Reference source not found. Error! Reference source not found.**. The results of their study indicated that much training is needed for teachers, students, and

personnel as well as a strengthening of facilities that will offer e-learning in universities.

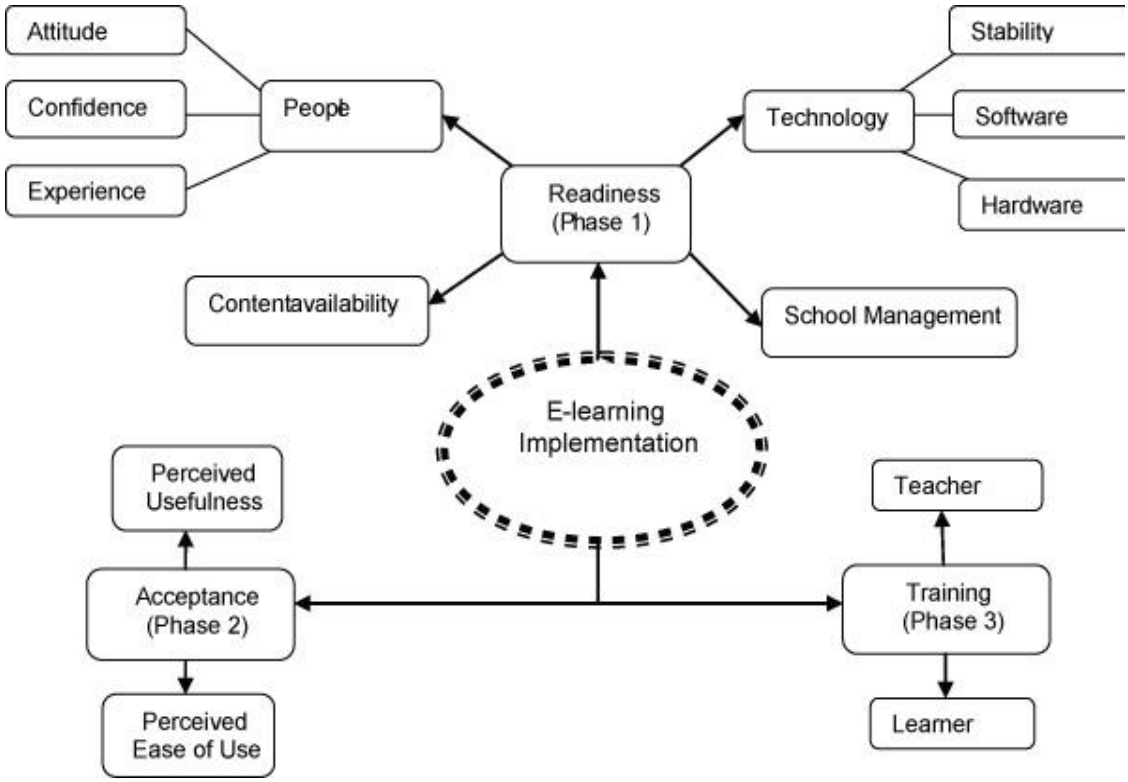

Figure (2. 2): Akaslan's Model for Measuring Student's Readiness for E-Learning (Akaslan & Law, 2011, p. 211)

Akaslan (2014) assumed technology to be the most significant factor because e-learning is based on the use of it. Akaslan (2014) relied on Rogers (2003) definition of technology readiness to be of two components: hardware and software. Aydin and Tasci (2005) define hardware to be physical components whereas software is the information aspect.

Akaslan (2014) points to the experiences and confidence of people with ICT and their attitudes towards e-learning as significant readiness components since e-learning is essentially implemented by people. Therefore, the

characteristics of the teachers, for example, in our study and their skills can influence e-learning implementation.

The institution as defined by Akaslan (2014) is the environment, which contains a group of faculties and departments that support e-learning by offering infrastructure, a supportive culture, incentives, models and resources and their readiness for e-learning. For the purposes of our study, institution incorporates schools, school administrators, directorates, education ministry, etc.

The construct of content includes existing content, its format, levels of interactivity, reusability, and interoperability (Lopez, 2007, as cited in Akaslan, 2014). Perceived usefulness refers to the extent to which a user believes using a system can support the achievement of a goal (Akaslan, 2014) and perceived ease of use refers the extent to which the user believes that using e-learning would be free of effort.

Training refers to the readiness that needs to be considered for the process of implementation and understanding people in the institution can determine the need for training (Akaslan, 2014).

2.12 E-Learning Implementation in Schools

Aydin and Tasci (2005) suggest that successful implementation of e-learning requires an up-front analysis of readiness. According to a study by Karim and Hashim (2004) on implementing e-learning by an organization can be achieved by utilizing one of three methods: using ICT to supplement the traditional methods, integrating online activities into a traditional course to

enhance learning, or to deliver a course entirely online. Choosing which method to use should depend of on the level the institution is ready in terms of budget and infrastructure and the experience, skills, knowledge and attitude of its human resources (Karim & Hashim, 2004).

Prior experience in ICT largely determines teachers' success in the implementation of e-learning programs (Boaky & Banini, 2008). For students to benefit from an e-learning program, teachers must be fluent enough in it. Teachers must be trained in how to integrate ICT into their instruction (Eslaminejad et al., 2009). Teachers' Attitude towards technology, teaching style and control of technology all influence student performance in e-learning programs (Webster & Hackley, 1997). In order for teachers to implement successful e-learning, they require courses in the technical use of virtual learning environment (Awouters & Jans, 2009), as well as remain updated on new technologies that can be integrated in instruction (Awouters et al., 2008).

In addition to technical competency, teachers' cultural and personal attitudes towards e-learning can serve as a barrier to online instruction (Afshari et al., 2009). A research by Paraskeva et al. (2008) suggests that teachers' perceptions and attitudes towards technologies influenced the effectiveness of the technologies use in e-learning. Due to the high incidence of failure in ICT initiatives, user acceptance of particular technologies plays a key role in effective implementation (Park et al., 2009).

Students' technical competency also plays significant role on implementation of e-learning. Students with prior ICT experience are better

e-learners (Volery & Lord, 2000). Although, prior experience is not necessary for e-learning, an assessment of the current technical competency of the student can support schools to design programs that can help students interact successfully in an e-learning program (Haverila, 2011).

Students' attitude and perception are also an important component of e-learning implementation. Students who lack confidence in a shift in learning practices find difficulty in e-learning programs (Datuk & Ali, 2008). Schools and institutions account for the reactions of students to a changing paradigm of learning and should work to tailor courses to different competency levels and learning styles.

2.13 E-learning Experiences in Developing Countries

Sahay and Walsham (2006) suggest that the context of a region plays a key role in the importance of adapting e-learning practices. Although implementing an e-learning paradigm in educational sectors is a major challenge for developing countries, it is crucial to their development because of its potential to reduce barriers for education for the underserved and push the country to respond more effectively to globalization (Sahay & Walsham, 2006). Kendall et al. (2006) suggest effective implementation of e-learning depends on a complex network of social and economic factors that often prevent developing countries from using ICT. E-learning projects in developing countries succeed when technology is adapted to local conditions (Van Reijswoud, 2009). The concrete contributions of ICT in the educational systems of developing countries continue to be less evident (Trucano, 2005).

In a study of a Pakistani private university (Qureshi et al., 2012), researchers suggest that although the effectiveness of e-learning is well-documented in the literature, it does not guarantee success of such programs, especially in developing countries like Pakistan, for example. And, although, this gap is highlighted in the research on e-learning in the region, the empirical evidence remains scarce. Qureshi et al. (2012) identify several key issues which serve as barriers to successful integration of e-learning including: technical difficulties, access to computers, English competency, need for face to face interaction, level of awareness, computer literacy, resistance to change, student assistance, and privacy and security. Notably, their research findings point to electricity failure and English proficiency as the most significant barriers to successful integration of an e-learning program.

Al-Furyadi (2013) conducted a study on the e-readiness level of English as a Foreign Language (EFL), teachers in intermediate public schools in Saudi Arabia. By employing a Technology Acceptance Model, TAM, to predict user acceptance of technology, the results of the research indicated that computer literacy had a positive influence on attitude towards e-learning. His research found that although most teachers surveyed were fluent with social media use, they displayed a poor literacy rate in dealing with e-resources overall. Furthermore, Al-Furyadi (2013) suggests that not every teacher who was surveyed had information about e-learning. The results of the research also showed that an administrative gap existed between the Minister of Education and the schools' administration since the schools' administration

did not support e-learning even though teachers showed a positive attitude towards adopting e-learning.

A report conducted by the UNESCO Institute for Statistics, or UIS, assessed the ICT integration of five countries in the Arab State region: Egypt, Jordan, Palestine, Oman, and Qatar (UNESCO, 2013). The report suggests that integration of ICT in education across the Arab States is slow as compared to other social and economic spheres. In fact, youth in the Arab world learn more about using ICT outside of school than in school. In Jordan, Qatar, and Oman basic computer skill courses are integrated into three levels, primary, lower secondary and upper secondary schools. In Egypt and Palestine, these courses and objectives are not present in the primary level and begin in the lower secondary level. Recommendations for ICT-instruction in the national curriculum are heavily integrated in Jordan, Qatar, and Oman while integration only permeates specific subjects in Egypt. The report suggests that the West Bank in Palestine lies between both groups in that it has recommendations for use of ICT in all grade levels for learning second languages. Palestine also has ICT recommendations for at least one grade for all levels of education in mathematics, science, and language arts. In addition, the UNESCO (2013) report found that Jordan, Oman, and Qatar possess higher levels of integration of ICT infrastructure, including basic hardware and internet connectivity, than Egypt and Palestine. In Palestine and Egypt, 120 children on average share the same computer, while only 15 or less do in Jordan, Qatar, and Oman. Except in Palestine, computer-assisted instruction, CAI, is a priority for policy-making in these countries.

Ibrahim (2008) explains that the lag Middle Eastern and North African countries experience with regards to e-readiness are due to priorities of public spending and the diffusion and creation of technology. The study suggests that both cellphone and internet use can be seen growing substantially in most countries in the region, while spending on educational institutions are insufficient. Ibrahim (2008) highlights several initiatives in the region that promote e-learning as an educational tool for development including: in Oman (Knowledge Oasis Muscat, 2006); Jordan (Ministry of Planning and International Cooperation Jordan, 2004); Syria (Albirini, 2004); Lebanon (UNDP, 2003, 2006b); Qatar (ICTQatar, 2005); Bahrain (Kingdom of Bahrain Ministry of Education, 2004); United Arab Emirates (Digital Opportunity Channel, 2007); Saudi Arabia (Nair, 2006); Kuwait (Digital Opportunity Channel, 2007); Palestine (Hammad, 2005); and Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia (United Nations Economic Commission on Africa, 2005b). Despite these initiatives, Ibrahim (2008) points to weak policy and implementation capacity as barriers to the adoption of e-learning.

2.14 E-learning Piloting in Palestine

Secondary schools in the West Bank serve as an ideal context for studying a diverse range of dimensions e-readiness since there is variation in school location, ICT technology, internet access, distribution of teachers, etc. Nicolai (2007) (as cited in Shraim & Khlaif, 2010) points to, this region is also unique because of the restrictions imposed on mobility and the

separation wall. These challenges have fostered the incorporation of core objectives in the Educational Development Strategic Plans (EDSP) of 2008-2012 and 2014-2019 to improve the quality of learning and promote student acquisition of twenty-first century skills by the Palestinian Ministry of Education and Higher Education (MoEHE) the results of which can be seen in the adoption of some forms of e-learning by most Palestinian universities (Mikki & Jondi, 2010) (as cited in Shraim & Khlaif, 2010).

The Palestinian Educational Initiative, PEI, launched in 2005 intended to improve the use of ICT in the education system through collaborating with non-government stakeholders and international organizations such as the Massachusetts Institute of Technology, Birzeit University, and the World Economic Fund. However, this initiative was immobilized due to corruption and political rivalry between Palestinian parties (Euler & Seufert, 2008) (as cited in Shraim & Khlaif, 2010). The Belgian government also worked with the MoEHE to start a new program in 2008 to develop the e-learning curriculum in primary and secondary education (Risler, 2009) (as cited in Shraim & Khlaif, 2010) .Several other e-learning initiatives, smaller in scale, were implemented by a limited number of schools.

A research study conducted in by Shraim and Khlaif (2010) found that although students and teachers held positive attitudes towards the usefulness of e-learning, they were not necessarily ready to adopt e-learning methods. Their study suggests that issues related to the existing digital divide and technical limitations of the network, lack of e-learning skills, lack of autonomy, lack of institutional support, poor time management, language

barriers, and workload pressure all play a role in inhibiting the successful implementation of e-learning programs.

In another study, several researchers studied the underlying structure of e-learning readiness among secondary schools in Nablus, a city in the West Bank (Trayek et al., 2016). The results of the study correlate with three of Chapnick's (2000) dimensions which were technological, psychological, and equipment factors as being of importance to e-readiness. The results of the study also supported the results related to infrastructure and equipment in Darab and Montazer's (2011) research which studied e-learning readiness in Iranian Universities. Trayek et al. (2016) found that 30% of e-learning readiness is a result of technological capabilities further emphasizing Akaslan's (2011) results of the importance of ICT skills and training in influencing readiness. However, this study only studied teachers in Nablus city and did not pool from schools from rural areas.

Pacetti (2008), studied the quality of education in Palestine, and found that after completing a basic ICT skills course, teachers were able to use computers and internet and to prepare presentations. The results of the study also suggest that basic ICT skills training yields in changing the attitude of teachers about ICT and teachers wanted to learn more.

Japan International Cooperation Agency (JICA) supported the Science Education Enhancement and Development (SEED) aimed at employing technology in scientific experiments as a part of science curricula in elementary schools up to 4th grade. The SEED program lasted for three years (2012-2015) and included training for science teachers and providing them

with technical resources. Its first step in implementation targeted 2000 teachers from 650 schools.

The World Linux Organization also supported an initiative run by the ministry to train teachers and students to use ICT tools such as computer and Internet as well as obtaining useful information for use in education. The initiative also included training on building e-learning content in the subjects of Math, Science, and language. It aimed to train 50 trainers and 500 teachers, who would eventually reach 15000 students for two years (2014-2015).

From 2011 until 2015, the Palestinian Ministry of Education and Higher Education (MoEHE) and the Belgian Development Agency (BTC) jointly implemented an e-learning project to introduce the use of ICT in education to enhance student-centered learning. The four million euro project was funded by Belgium. It was piloted in 288 schools in the West Bank. By the end of the project, a total of 1,600 learning objects were developed by teachers and uploaded to the teacher web portal developed by the MoEHE. Over 1,200 teachers were trained on the use of ICT tools. The project developed a digital teacher portal, where teachers can share their learning objects with each other, the portal has approximately 30,000 active users, 5,000 learning objects and more than 3.5 million hits.

The Palestinian MoEHE launched Rawafed in 2013 as the biggest learning website that offers hundreds of learning materials both online and offline and can be downloaded to student computers for later use. The ministry also developed e-school, a website which contains learning resources to support

teachers in their teaching practices. The initiative was implemented in four stages, each serving as an educational semester. The initiative ended in 2015 and continues to be available to the more than 1000 teachers trained to use the website as an online environment which connects them to students, parents, schools, and the ministry.

The Palestine Telecommunications Foundation Group Company (Paltel Group) launched a two-phase initiative called Abjad Net. The first phase was launched in 2013 and the second phase in 2015. In each phase Paltel Group offered one year of free Internet to a thousand Palestinian schools, totaling two thousand schools. The purpose of the initiative is to connect these schools to Internet.

In cooperation with Paltel Group and Partners for Sustainable Development (PSD), the MoEHE launched Net Kitabi to help in creating content and provide training for both teachers and students. Net Kitabi helped in creating content for the subjects of mathematics and science for 5th-8th grades. By the end of 2011, about 4500 lightweight notebooks were distributed to students and teachers and 1400 students and 140 teachers attended training on ICT tools.

E-learning programs appear to offer a viable alternative to educational paradigm in developing countries such as Palestine due to the unique challenges they face. However, although e-readiness assessment tools have proliferated over the last decade, more tailored frameworks and instruments are needed for assessing the level of e-readiness of educational sectors in developing countries that have distinct cultural, social and economic factors

such as the West Bank in Palestine. The information gained by these instruments can then be used to inform the necessary people, policies, and processes involved in implementation.

2.15 Chapter Summary

The preceding discussion emphasizes the significance of e-learning on shifting educational paradigms in general, and more specifically, in developing countries. E-learning programs potentially offer a viable alternative to the current educational paradigm in Palestine due to the unique challenges it faces including mobility restrictions and increasing dropout rates. Unfortunately, previous initiatives were immobilized due to corruption and political rivalry between Palestinian factions. Several small-scale initiatives also implemented e-learning components into education systems but only in a limited number of universities and schools and typically promoted e-teaching but not necessarily e-learning. The review also outlines different approaches and instruments used to assess e-readiness to better address challenges with implementation. Although e-readiness assessment tools have proliferated over the last decade, more tailored frameworks and instruments are needed for assessing the level of e-readiness of educational sectors in developing countries that have distinct cultural, social and economic factors such as Palestine. Therefore, the development and dissemination of e-readiness instruments become a necessary component for creating a framework that will lead to successful implementation. The

following chapter outlines the research design and methodology used to answer the questions presented in this research study.

Chapter Three
Research Methodology

Chapter Three

Research Methodology

3.1 Overview

The following sections describe the research design and methodology adopted by this research study. The chapter is divided into several major sections. The first section addresses the adopted research methodology paradigm, which outlines the approach used to answer the research questions and the advantages and disadvantages of such an approach. The section that follows describes the instruments used to collect data followed by sampling techniques. Analysis methods are highlighted next. Finally, the validity and reliability of the research are established as well as ethical considerations.

3.2 Research Methodology

To address questions raised by this research investigating the level of e-readiness in public secondary schools in Palestine with a focus on the West Bank region, the research design incorporated both exploratory and descriptive approaches. The objective of exploratory research is to gather information to define problems and form hypotheses (Kotler & Armstrong, 2006). It focuses on obtaining insight to the problem and leads to further research (Majumdar, 2011). Descriptive research aims at acquiring an accurate description of the characteristics of the phenomena being studied and attempts to answer questions such as “what” about a construct related to

that phenomena or one of its characteristics and “how” it is related to other constructs or their characteristics (Majumdar, 2011). A mixed methods strategy incorporating both qualitative and quantitative data collection methods was adopted to address exploratory and descriptive research aims respectively. The process of data collection and methods are outlined in the next section.

3.3 Data Collection Methods

To explore the e-readiness of schools, the researcher conducted a literature review to define the constructs of e-learning and e-readiness, their relationship to education, and their implementation in developing countries in the Middle East region with a particular focus on the Palestinian experience. The literature review also served to inform the researcher on findings of previous empirical studies of e-readiness in schools. Based on this review, the researcher developed a survey containing demographic items, technology usage items, and items that relied on the constructs of readiness, acceptance, and training outlined by Akaslan and Law’s conceptual framework for measuring e-readiness (2011) and also drew from the findings of previous instruments used in empirical research on e-readiness that incorporated components unique to developing countries. Psychometric measurements in the survey allowed the researcher to analyze data collected quantitatively. The researcher also designed an interview guide to conduct semi-structured interviews of experts and professionals in

the field of education and e-learning. Qualitative data was acquired through thematic analysis of transcriptions of the interviews.

The described mixed-methods approach was chosen to adequately address the questions of the research by overcoming limitations of choosing either approach alone. Advantages and disadvantages of such an approach are outlined in **Error! Reference source not found. Error! Reference source not found.**:

Table (3. 1): Advantages and Disadvantages of Mixed Method Approach (Tashakkori & Tedllie, 2003)

Advantages	Disadvantages
Utilizes strengths of both quantitative and qualitative research methods	High in cost
Provides a more complete picture of a research problem	Requires training in both methods
Allows analysis of process or problem from several directions	Requires support staff
Allows for focus on a single process and confirms accuracy of data collected	Requires time

The process of data collection and analysis used by this research can best be described as concurrent rather than sequential or transformative, meaning the researcher collected data by both quantitative and qualitative methods at the same time in order to answer research questions comprehensively (Creswell, 2003). The following flow chart outlines the steps of data collection and analysis adopted by this research.

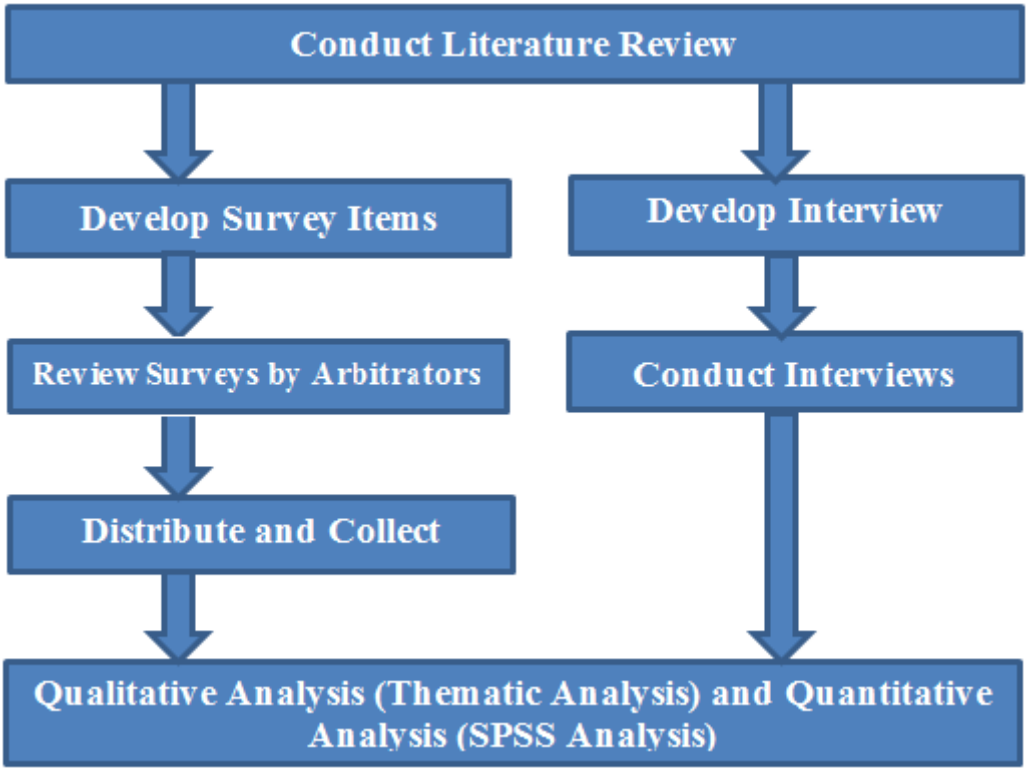

Figure (3. 1): Methodology Process Diagram

3.3.1 Qualitative Data Collection

3.3.1.1 Interview Design

An interview guide was designed (Appendix B) to conduct semi-structured interviews of a total of 12 experts and professionals in the field of education and e-learning selected by snowball sampling which is suggested as a recommended number for effective thematic analysis (McCracken, 1988). The interviews selected met one or more of the following criteria: (1) possesses expertise in the field of e-learning; (2) involved in writing and/or adapting e-learning curriculum in high schools; (3) serves as key player in Palestinian Ministry of Education and Higher Education; (4) interacts with students face-to-face as an administrator or teacher; (5) uses e-learning

within their own classroom; (6) manages the implementation and/or evaluation of e-learning curriculum; and (7) works as a liaison with international initiatives such as the Belgian government on e-learning projects. Other topics discussed included the current ICT infrastructure of secondary schools in Palestine, identify differences and similarities across regions in the West Bank, provide information on past and present e-learning projects, and discuss the level of e-readiness of average teachers and students. Interviewees were also asked to speak on what was needed in terms of training and resources to support the e-readiness of teachers and students in addition to measures needed for improved implementation of e-learning in the public secondary schools in the West Bank.

Qualitative data was acquired through thematic analysis of the transcripts of these interviews collected concurrently to the data being collected from the surveys. Thematic analysis is an analytic method used to analyze and identify themes in a data set to allow for interpretation of main factors of the topic of research (Braun & Clarke, 2006). The interviewer obtained informed written consent to record interviews for the purpose of the study that lasted for an hour each. The researcher also obtained written letters of approval from the Palestinian Ministry of Education to ease arranging interviews.

3.3.2 Quantitative Data Collection

3.3.2.1 Survey Design

This research study relied on on-site surveys rather than online versions due to the many advantages associated with on-site distribution and collection.

Martins (2010) suggests that on-site surveys allow respondents to work with the survey directly, possess a moderate level of confidentiality, allow for modifications, and can be completed anytime, anywhere. On-site surveys do have disadvantages including the cost of printing, require good writing skills, costly with regards to processing data, time-consuming, and may have low response rates (Martin, 2010). For these reasons, the researcher relied on the Palestinian Ministry of Education to disseminate the surveys with an accompanying cover letter provided from the Ministry to encourage schools to have teachers complete the surveys in a timely fashion. The response rate was quite high approximately 80%, a total of 644 surveys were returned out of 800 surveys distributed.

To determine the items of the survey, the researcher of this study gathered information from empirical studies conducted globally on the constructs of e-learning and e-readiness. The researcher especially focused on instruments used to measure e-readiness of educational sectors in developing countries. In addition to demographic concerns, the components of the survey drew on the conceptual framework for measuring e-readiness as developed by Akaslan and Law's (2011), which incorporates the constructs of readiness, acceptance and training. The researcher submitted several drafts of the survey to 5 arbitrators who are experts in the field to refine the survey.

The final survey consisted of 7 demographic items, 6 technology usage items, 19 readiness items, 7 acceptance items, and 7 training items as described in the following sections. The demography section of the survey included several variables: gender, age, teaching experience, academic

degree, school location and directorate, and prior training received. The technology section examined the usage of technology by the surveyed and included items such as: access to a computer connected to the internet at work or home, existence of a wireless connection to the internet at the school, number of hours of internet use per day, whether use of e-learning was required at the school, and whether the school relied on an e-learning system. The Readiness section addressed issues that precede the implementation of an e-learning initiative. Major sub-items of this dimension are technology (stability, software, hardware), people (attitude, confidence, experience), content availability, and institution. The Acceptance section addressed perceived usefulness and perceived ease of use. Perceived usefulness here refers to the degree that to which an individual believes that using e-learning will enhance their performance (Sun & Zhang, 2006). Perceived ease of use measures the degree the individual believes that using e-learning will be free of effort (Sun & Zhang, 2006). The Training section addressed knowledge and skills needed for further implementation.

3.4 Sampling Techniques

This research only sampled schools in the West Bank due to mobility and access restrictions in the Gaza Strip. The researcher contacted the Palestinian Ministry of Education to release the number of teachers who teach at least one secondary level class (11^{th} or 12^{th} grades) in the public schools of the West Bank Region. A total of 17 directorates of education oversee the public schools in 11 governorates of the West Bank.

According to a representative from the Ministry, the number of teachers who taught at least one secondary level class totaled 9,581 (Males = 4,438, Females = 5,143) during the 2014-2015 academic school year according to the head of statistics in the Ministry (M. Suleiman, personal communication, March, 2015). The distribution of number of teachers across each directorate is shown below in

below:

Table (3. 2): The distribution of number of teachers across each directorate by gender in the year 2014-2015.

Educational Database: General Administration for Educational Planning (Palestinian Ministry of Education and Higher Education, 2014-2015)

Directorate of Education	Males	Females	Total	Percentage
Jenin	416	440	856	8.9%
Nablus – South	247	313	560	5.8%
Nablus	451	495	946	9.9%
Salfit	204	220	424	4.4%
Tulkarm	396	421	817	8.5%
Qalqilia	261	247	508	5.3%
Ramallah and Al-Bireh	596	716	1312	13.7%
Jerusalem Neighborhood	148	205	353	3.7%
Jerusalem	58	180	238	2.5%
Bethlehem	338	361	699	7.3%
Jericho	55	118	173	1.8%
Hebron – North	209	250	459	4.8%
Hebron	227	296	523	5.5%
Hebron – South	468	453	921	9.6%
Qabatya	263	303	566	5.9%
Tubas	101	125	226	2.4%
Total	**4438**	**5143**	**9581**	**100%**

3.4.1 Survey Sample Size

According to the above numbers of teachers, the researcher calculated the sample size for the survey using the following equation:

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal (.5 used for sample size needed)

c = confidence interval, expressed as decimal

(e.g., .05 = ±5)

Equation (3. 1): Survey Sample Size Equation ("The Survey System", n.d.)

By using this equation, the sample size of teachers for the survey would equate 369 with a confidence level of 95% and a confidence interval of 5. To ensure a high return rate of surveys, the researcher used a sample size greater than the calculated size, totaling to 800, a total of 644 surveys were returned with a response rate of 80%. This total was distributed amongst the directorates in proportion to the percentage of teachers working in each as shown in

(above).

3.4.2 Interview Sample Size

The researcher selected interviewees who met one or more of the following criteria:

1. Possesses expertise in the field of e-learning
2. Involved in writing and/or adapting e-learning curriculum in high schools
3. Serves as key player in Palestinian Ministry of Education
4. Interacts with students face-to-face as an administrator or teacher
5. Uses e-learning within their own classroom
6. Manages the implementation and/or evaluation of e-learning curriculum
7. Works as a liaison with international initiatives such as the Belgian government on e-learning projects

While an ideal number of participants in qualitative research does not really exist, a total of eight interviews are required for successful thematic analysis (McCracken, 1988). The researcher employed a non-probability sampling technique to select interviewees called snowball sampling (Blackstone, 2015). It is considered non-probability since random selection methods were not used. To do this, the researcher interviewed several experts from the field referred by the Palestinian Ministry of Education and then asked those interviewees for referrals and so on. The interview sampling technique relied upon in this research study can also be categorized as purposive in that individuals were interviewed because they were of interest to the study and

met the criteria outlined above and thus it may also be considered expert sampling (Blackstone, 2015).

3.5 Data Analysis

3.5.1 Interview Analysis

Thematic analysis was used to code the data collected in the twelve interviews. Thematic analysis is an analytic method used to analyze and identify themes typically within a qualitative data set. It aims to describe and organize the data to allow for interpretation of main factors of the topic of research (Braun & Clarke, 2006).

Braun and Clarke (2006) outline the steps of thematic analysis as follows:

1. Becoming familiar with the data by searching for patterns
2. Generate initial codes to refer to featured items the researcher is interested in
3. Search for themes by reviewing the codes and sorting them under broader themes
4. Review themes and modify them for consistent patterns that take into account validity
5. Define and name themes thoroughly
6. Produce a coherent and rational report to summarize themes drawn from the data set

Advantages of thematic analysis include increased flexibility, access, insight, interpretation, and can be used to inform policy development (Braun

& Clarke, 2006). Disadvantages include lack of concentration on data aspects and tendency to be too descriptive.

3.5.2 Survey Analysis

Collected surveys were entered into the SPSS database by the researcher for descriptive and inferential analysis. Descriptive analysis was used to present percentages and means while inferential analysis tested research questions using One-Way ANOVA and Independent Sample t-tests (Sawyers, 2007). The researcher investigated statistical differences in the schools used in the study with regards to gender, teaching experience, school location, academic degree as well as statistical differences associated with school usage of the internet such as whether it is mandatory or not, how much time it is used per day, computer availability at school, internet access, and the school implementation of a school-wide e-learning application. The researcher conducted post-hoc tests to shed light on significant differences found between surveyed schools due to a specific independent variable (Hilton & Armstrong, 2006).

3.6 Research Validity and Reliability

A research adds little to existing empirical evidence if instruments and measures used do not maintain reliability and validity on all levels.

3.6.1 Validity

Test validity refers to a construct measuring what it was intended to measure (Majumdar, 2011). To maintain test validity, the researcher in this study took several measures including:

- The researcher constructed the survey based on a thorough review of the literature and under supervision of a professor.
- The survey was sent to several arbitrators who are specialists in the field of education and e-learning to refine the questions further and modifications to the instrument were made several times.
- An expert translated the survey into Arabic because the native language of the respondents was Arabic. The translated surveys were sent to arbitrators a second time to ensure authentic translation.
- The researcher relied on a mixed-methods approach for data collection to allow for more representative results.
- The researcher interviewed experts and professionals from the field to support findings and provide in-depth interpretations.

3.6.2 Reliability

Reliability refers to the consistency of a test: its ability to produce similar results each time it is used (Majmudar, 2011). According to Majumdar (2011) reliability requires both objectivity and consistency. In this study, the researcher secured the reliability of the survey by checking its consistency through use of the Cronbach Alpha Test for all levels (Technology, People, Institution, Content Availability, Perceived Usefulness, Perceived Ease of Use, and Training) in each item. In addition, the researcher categorized Technology, People, Institution, Content Availability under Readiness and Perceived Usefulness and Perceived Ease of Use under Acceptance, while Training remained its own category. The following table displays these results:

Table (3. 3): Cronbach Alpha Test Results for All Levels and All-in-all level of the Survey

Level	Cronbach Alpha
Technology	0.663
People	0.862
Content Availability	0.802
Institution	0.792
Total – Readiness	**0.881**
Perceived Usefulness	0.857
Perceived Ease of Use	0.630
Total – Acceptance	**0.811**
Training	**0.745**
All Statements	**0.919**

Findings of the Cronbach Alpha Test resulted in 91.9% indicating high consistency and supporting the reliability of the instrument (Vogt, 1999). The findings also indicate that all levels are considered reliable (values>0.6) with 0.881 for Readiness, 0.811 for Acceptance, 0.745 for Training statements (Vogt, 1999).

3.7 Ethical Considerations

The researcher in this study aimed to maintain the highest levels of ethical standards related to human subjects testing throughout the research including protecting the confidentiality of respondents and data collected. Interviewees and respondents were thoroughly informed of the purpose of the study and consented to providing data. The researcher used the data only for the purpose of the research protecting the identities of respondents and interviewees.

3.8 Chapter Summary

Guided by the research questions and objectives of the study, the researcher relied on both quantitative and qualitative data collection tools in the form of surveys and semi-structured interviews respectively. Although all approaches and instruments have their unique disadvantages, the researcher relied on a mixed-methods approach to provide a balanced understanding of the items influencing the e-readiness of Palestinian secondary schools. Validity, reliability, and ethics were considered on all levels of the research study. The following chapter addresses data analysis procedures.

Chapter Four

Data Analysis

Chapter Four

Data Analysis

4.1 Overview

This chapter presents data results and analysis from two research methods used by the researcher: surveys and semi-structured interviews. The researcher used both quantitative and qualitative methods to enhance the reliability and validity of conclusions drawn from the results of the research. The first portion of this chapter analyzes findings from the surveys and the second addresses information gathered from the semi-structured interviews. As indicated in the previous chapter on methodology, SPSS was used to analyze data from the surveys using One-Way ANOVA Tests and Independent Sample t-Tests. When significant differences surfaced, the researcher relied on post-hoc tests to shed light on differences resulting from a particular independent variable. Thematic analysis was used to analyze the data collected from interviews.

4.2 Thematic Analysis of Interviews

As presented in the previous chapter, the researcher of this study conducted twelve hour-long semi-structured interviews to acquire qualitative data concerning themes drawn from the review of literature on e-learning and focused specifically on the experience of the educational sector in the West Bank region of Palestine. Using snowball and expert sampling techniques and relying on an interview guide consisting of 8 open-ended questions found in, the researcher interviewed individuals who met one or more items

from the following criteria: possesses expertise in the field of e-learning; involved in writing and/or adapting e-learning curriculum in high schools; serves as key player in Palestinian Ministry of Education; interacts with students face-to-face as an administrator or teacher; uses e-learning within their own classroom; manages the implementation and/or evaluation of e-learning curriculum; works as a liaison with international initiatives such as the Belgian government on e-learning projects.

After completing the interviews, the researcher transcribed audio-recorded versions of the interviews, which were used to serve as raw data for the subsequent thematic analysis. The raw data was then studied thoroughly until the researcher became familiar with the content. Each statement was labeled with a code that represented its main idea. The generated codes were grouped based on their relative relationship with each other. The themes drawn from these groups were then reviewed by checking against the individual transcripts and the entire set of raw data. After several reviews, themes were finalized from generated codes as shown in the **Error! Reference source not found. Error! Reference source not found.**.

Table (4. 1): Codes, Issues Discussed, and Themes

Codes	Issues discussed	Themes
Learner Development	- Student-centered learning - Development of individual skills - Opportunities for creativity - Student enjoyment	Advantages to E-Learning
Enhancing Learning Environment	- Transformation role of teacher into facilitator - Blended learning - Accommodation of diverse learning styles - Access to new sources of knowledge	

	- Access to teacher outside of school - Extension of classroom boundaries	
National Advantages	- Promotion of dialogue - Continued learning and advancement - Progression towards global trends	
Difficulties with Teachers	- Teachers less ready than students - Resistance to change by older teachers - Teachers overburdened - Lack of motivation and compensation - Lack of material - Lack of tools for delivery and use - Lack of e-learning knowledge and skills	Challenges to E-Learning
School Obstacles	- Resistance to change - Focus on only a few taught subjects - Financial challenges - Lack of managerial support - Short-lived initiatives - Select schools used for initiatives - Biases in choosing prototypes of e-learning success	Challenges to E-Learning
Ministry of Education	- Buy-in - Funding - Need e-learning curriculum and benchmarks - Lack of clear policy - Lack of follow-up of initiatives - Biases in choosing schools for implementation - Lack of expert e-learning curriculum writers - Need platform for cooperation between e-learning experts	

National Challenges	- Developing and adopting national standards - Need for shift from private initiatives to national initiatives - E-learning is not a priority - Need for cultural awareness - Faction rivalry - Occupation restrictions - Financial challenges	
Electricity Problems	- General electricity challenges	Infrastructure Availability
	- Lack of consistent electricity	
Location	- Urban areas are more equipped than rural areas	
ICT Infrastructure	- Inconsistent/ lack of internet connectivity - Inconsistent/ lack of access to computers - Old technology - Lack of computer labs - Inconsistent infrastructure across schools	
ICT Tools	- Need e-books, tablets, and tools for mobile learning	
Training attendees (Teachers)	- Need for training staff/ teachers Lack of compensation for attending training	Training
Training Structure	- Inconsistent/ lack of training - Trainings are crowded - Trainings are time-consuming	
Training Content	- Lack of experts in e-learning and e-learning support - Trainings are too general	

The researcher summarized the findings of the interviews in the following sections associated with each theme.

4.2.1 Advantages to E-Learning

All interviewees expressed their view of e-learning as a viable educational paradigm offering many advantages on multiple levels, namely, the learner and the learning environment. Interviewees indicated their belief that e-learning promotes student-centered learning as opposed to traditional systems of learning and, in doing so, transforms the roles of teachers to be facilitators. Such a paradigm supports students to develop individual skills and to participate in opportunities for creative expression. Interviewees generally agreed that students enjoy e-learning. In addition, e-learning extends the walls of the traditional classroom allowing access to teachers and material after school hours. Several interviewees emphasized the potential e-learning carries in making material accessible to teachers especially in the years following the Intifada when access posed as a challenge. Finally, a recurring sub-theme was the belief that e-learning served as a form of resistance to the debilitative consequences of mobility restrictions on Palestinians equipping them with tools for continued learning and dialogue and, in turn, pushing the country to align with global trends in technology advancement.

4.2.2 Challenges to E-Learning

Challenges to e-learning served as a predominant theme in all of the interviews. The discussions on challenges revolved around four categories or sub-themes: teachers, schools, the Ministry of Education, and national initiatives. Most of the interviewees were in agreement that teachers did not

fair as well as students with regards to e-readiness. Several interviewees, especially those who work in schools, mentioned that older teachers were particularly resistant to change while most teachers, in general, were not ready to implement e-learning. The reasons suggested to explain the lack of readiness of teachers included lack of knowledge, motivation, and skills related to e-learning. In addition, interviewees pointed to the lack of tools to support the creation, delivery, use and improvement of e-learning content. Teachers were described as not receiving incentives for using e-learning nor being rewarded if they chose to do so.

Most school systems were portrayed as experiencing challenges to e-learning according to the interviews. Although some schools and teachers occasionally gained special attention on their use of innovative e-learning approaches, those teachers and schools were considered few and far between. Interviewees expressed that e-learning initiatives, are short-lived and terminated as soon as funds ceased. Furthermore, these initiatives were only implemented in atypical schools that exhibited an exceptional level of e-readiness. This was attributed to lack of funds and a lack of follow-up from the Ministry of Education. Several interviewees echoed a need for buy-in from all levels of the educational sector. The Ministry, they believed, should assume a more critical role in developing standards for e-learning curriculums and benchmarks for all subjects. The Ministry was also expected to assume leadership in creating policy for the management and evaluation of e-learning systems in schools. Some interviewees suggested that the Ministry should create a medium like a forum, for example, to foster

collaboration between e-learning experts in the educational sector; although some have been already created, other interviewees suggested they were not sufficient and more is needed.

Interviewees generally agreed that the Ministry itself was short on funds and that e-learning was not a national priority in practice even though it appears to be in strategic plans. They highlighted occupation-imposed challenges to implementation and faction rivalry. ; although some experts find this to be unrealistic. A national initiative to raise awareness on the significance of e-learning and the promise it offers Palestinians was suggested as one way to overcome challenges.

4.2.3 Infrastructure Availability

Although infrastructure readiness and training may arguably fit in the theme of challenges to e-learning, they presented as distinct discussions in most of the interviews. Challenges to electricity in some schools illustrated the existing disparity in the experience of the Palestinian student, especially, in regards to attending school in urban versus rural areas. Schools located in the cities were described as having more consistent ICT as compared to villages and rural areas. In general, however, interviewees expressed that ICT infrastructure was relatively poor across the board due to old technology, lack of computer labs, lack of computers, lack of internet connectivity, and lack of insufficient resources.

4.2.4 Training

The final theme drawn from the interviews is the need for training teachers and staff on designing e-learning materials. Teachers explained that although they have attended trainings dedicated to e-learning they were overly crowded and more time-consuming than beneficial. Teachers expressed the lack of relevance with regards to the content of trainings and lack of reproducibility in their classrooms. Several interviewees mentioned a lack of compensation for attending trainings as problematic, while a single interviewee insisted that trainings be mandatory without compensation. Nonetheless, all interviewees agreed that teachers and school staff lacked necessary training in different aspects of e-learning such as content creation, content delivery, and use of related technology.

4.3 Survey Analysis

As indicated in the previous chapter on methodology, the survey was constructed based on a thorough review of the literature and under supervision of a professor, then it was sent to several arbitrators who are specialists in the field of education and e-learning to refine the questions further and modifications to the instrument were made several times. The response rate was quite high approximately 80%.

4.3.1 Demographic and Descriptive Statistics:

4.3.1.1 Personal Information:

Demographic characteristics of the respondents Personal Information as found in section one of the survey, summarized in the following sections.

4.3.1.1.1 Gender

Error! Reference source not found. (**Error! Reference source not found.**) presents the respondents' distribution according to gender. These findings show that gender composition was roughly 50% for each gender implying a fair representation of genders in the sample.

Table (4. 2): Sample Distribution attributed to Gender

Gender	Frequency	Percentage %
Male	314	48.8
Female	330	51.2
Total	644	100%

4.3.1.1.2 Age

Error! Reference source not found. (**Error! Reference source not found.**) presents the respondents' distribution according to age. The highest percentage, 40.80%, is represented in the 31-40 years range followed by 41-50 years.

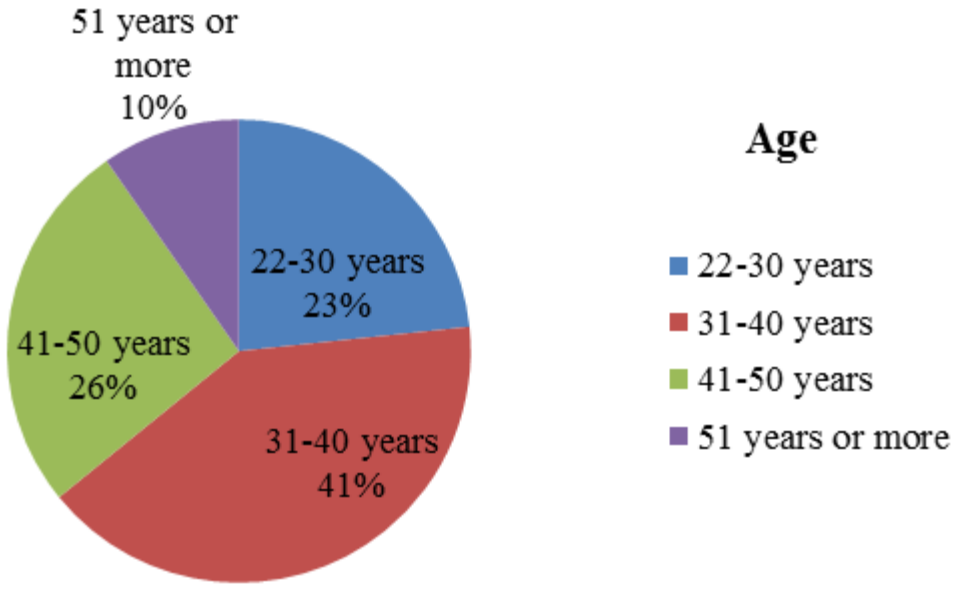

Figure (4. 1): Sample distribution attributed to Age

4.3.1.1.3 Academic Degree

Error! Reference source not found. Error! Reference source not found. presents the respondents' distribution according to level of education. The highest percentage 81.1% belonged to the Bachelor's degree level indicating that teachers in public schools are mostly university graduates.

Table (4. 3): Sample distribution attributed to Academic Degree

Academic Degree	Frequency	Percentage %
Diploma	57	8.9
Bachelor's Degree	522	81.1
Master's Degree	62	9.6
Doctorate	3	0.4
Total	**644**	**100%**

4.3.1.1.4 Teaching Experience

Error! Reference source not found. Error! Reference source not found. presents the respondents' distribution according to years of teaching. The

highest percentage 29.7% was found in the 16 years or more level. A natural distribution can be seen across other levels ranging between 20-30%. This suggests that the Ministry of Education typically appoints new graduates and most stay in their jobs.

Table (4. 4): Sample distribution attributed to Teaching Experience

Experience	Frequency	Percentage %
1-5 years	134	20.8
6-10 years	161	25.0
11-15 years	158	24.5
16 years or more	191	29.7
Total	**644**	**100%**

4.3.1.1.5 School Location

Error! Reference source not found. Error! Reference source not found. presents the respondents' distribution according to school location. Villages scored the highest at 72.7 % indicating that most public schools are located in villages.

Table (4. 5): Sample distribution attributed to School Location

School Location	Frequency	Percentage %
City	169	26.2
Village	468	72.7
Refugee Camp	7	1.1
Total	**644**	**100%**

4.3.1.1.6 School Directorate

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to the directorate they work in. Ramallah and Al-bireh directorate scored the highest at 9.8%, however, the sample distribution shows that the researcher intended to present a

natural distribution of the sample according to the number of schools in each directorate.

Table (4. 6): Sample distribution attributed to School Directorate

Directorate	Frequency	Percentage %
Jenin	55	8.5
Tubas	58	9.0
Tulkarm	62	9.6
Nablus	62	9.6
Qalqilia	58	9.0
Salfit	56	8.7
Jericho	59	9.2
Jerusalem	60	9.3
Bethlehem	59	9.2
Hebron	52	8.1
Ramallah and Al-bireh	63	9.8
Total	**644**	**100%**

4.3.1.1.7 Number of Training Courses

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to the number of e-learning training courses they have taken, if any. Surprisingly, having taken two or more training courses had the highest percentage at 36.6%. However, the sample was distributed almost equally at the three levels.

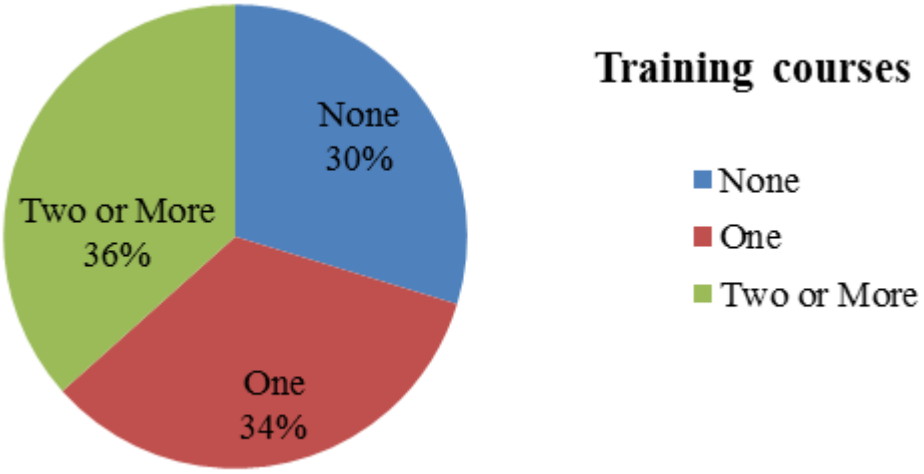

Figure (4. 2): Sample distribution attributed to Number of Training Courses

4.3.2 Technology Usage

Characteristics of the respondents Technology Usage, as found in section two of the survey, summarized in the following sections:

4.3.2.1 Whether there is a Computer connected to Internet at Teacher's home:

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to whether they had

computer connected to Internet in their home or not. 74.7% responded “Yes” while 25.3% answered “No”.

Table (4. 7): Sample distribution attributed to Whether a Computer is connected to Internet at Teacher’s home

Having Internet	Frequency	Percentage %
No	163	25.3
Yes	481	74.7
Total	**644**	**100%**

4.3.2.2 Internet at School

Error! Reference source not found. Error! Reference source not found., presents the respondents’ distribution according to whether they had Internet in the school or not. 83.7% responded “No” while 16.6% answered “Yes”.

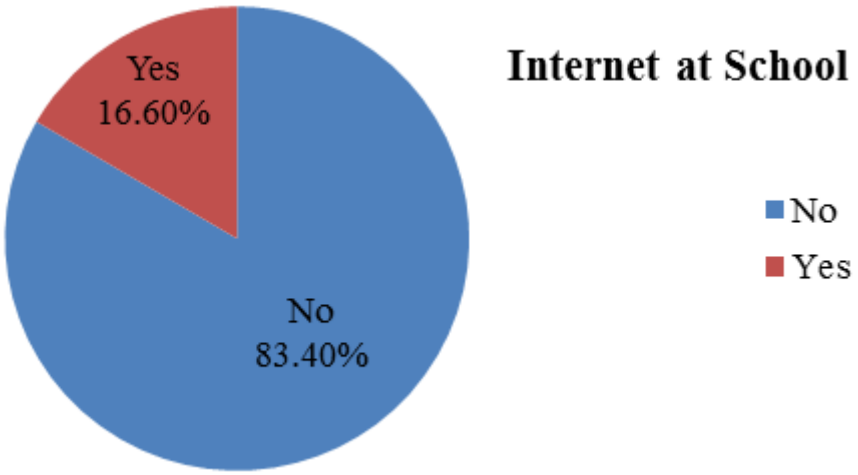

Figure (4. 3): Sample distribution attributed to Having Internet at School

4.3.2.3 Wireless Internet at the School

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to having wireless Internet at the school. 74.2% said they do not.

Table (4. 8): Sample distribution attributed to Having Wireless Internet at School

Wireless internet	Frequency	Percentage %
No	478	74.2
Yes	166	25.8
Total	**644**	**100%**

4.3.2.4 Hours of Internet Usage per Day

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to number of hours they used the Internet per day. The highest percentage, 41.9%, represented the "Less than 1 hour" response and "2-4 hours" came in second at 41.0%.

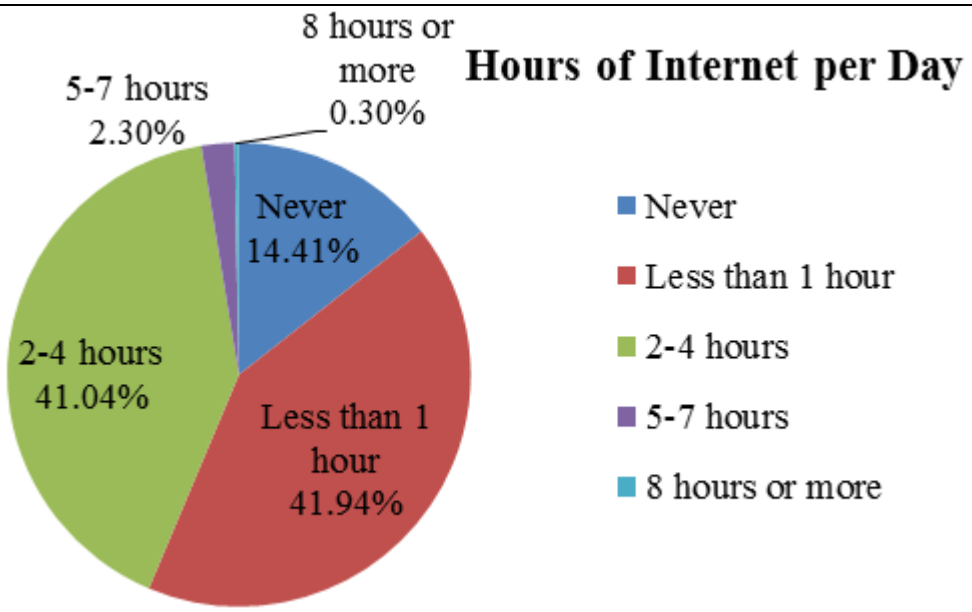

Figure (4. 4): Sample distribution attributed to Daily Hours of Using Internet

4.3.2.5 If e-Learning tools are Mandatory at school

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to whether their school required the use of certain tools of e-learning. 61.3% responded with "No".

Table (4. 9): Sample distribution attributed to Whether e-Learning is Mandatory at School

Obligatory of e-learning	Frequency	Percentage %
Yes	249	38.7
No	395	61.3
Total	**644**	**100%**

4.3.2.6 Existence of e-Learning Project at School

Error! Reference source not found. Error! Reference source not found., presents the respondents' distribution according to whether or not they had an e-learning project at their school. 51.6% answered "No".

Table (4. 10): Sample distribution attributed to the Existence of e-Learning Project at School

Existence of e-learning project	Frequency	Percentage %
Yes	283	43.9
No	361	56.1
Total	**644**	**100%**

4.3.3 Analysis of Survey Statements, e-readiness assessment

Statements in this section (section three) of the survey consist of 33 questions (see Appendix CAppendix C: Survey Questions (Arabic)) aimed to assess the three constructs outlined below and as described in the previous chapter.

1- Readiness of school teachers' to use e-learning as defined by the following categories:
   a- Technology
   b- People
   c- Content Availability
   d- Educational Institution
2- Acceptance of using e-learning in school defined by the following categories:
   a- Perceived Usefulness
   b- Perceived Ease of Use
3- Training of school teachers

Respondents rated their level of agreement with each statement based on a five-point Likert-scale with 1 being 'strongly disagree' and 5 being 'strongly agree'. Based on Aydin and Tasci's (2005) assessment model for measuring e-learning readiness, 'expected level of readiness' is defined at 3.40 and

serves as the mean score. Four interval points depicted in **Error! Reference source not found. Error! Reference source not found.** and five categories are drawn from the scale depicted in **Error! Reference source not found. Error! Reference source not found.**. The five categories are: 'not ready needs a lot of work' for scores falling between 1 and 2.6, 'not ready needs some work' for scores falling between 2.6 and 3.4, 'expected level of readiness' at 3.4, 'ready but needs some improvements' for scores falling between 3.4 and 4.2, and, finally, 'ready to go' for scores falling between 4.2 and 5. Therefore, 0.8 serves as the critical level (4 intervals/ 5 categories). A 3.41 weighted mean was adopted on assessed factors as the 'expected level of readiness'.

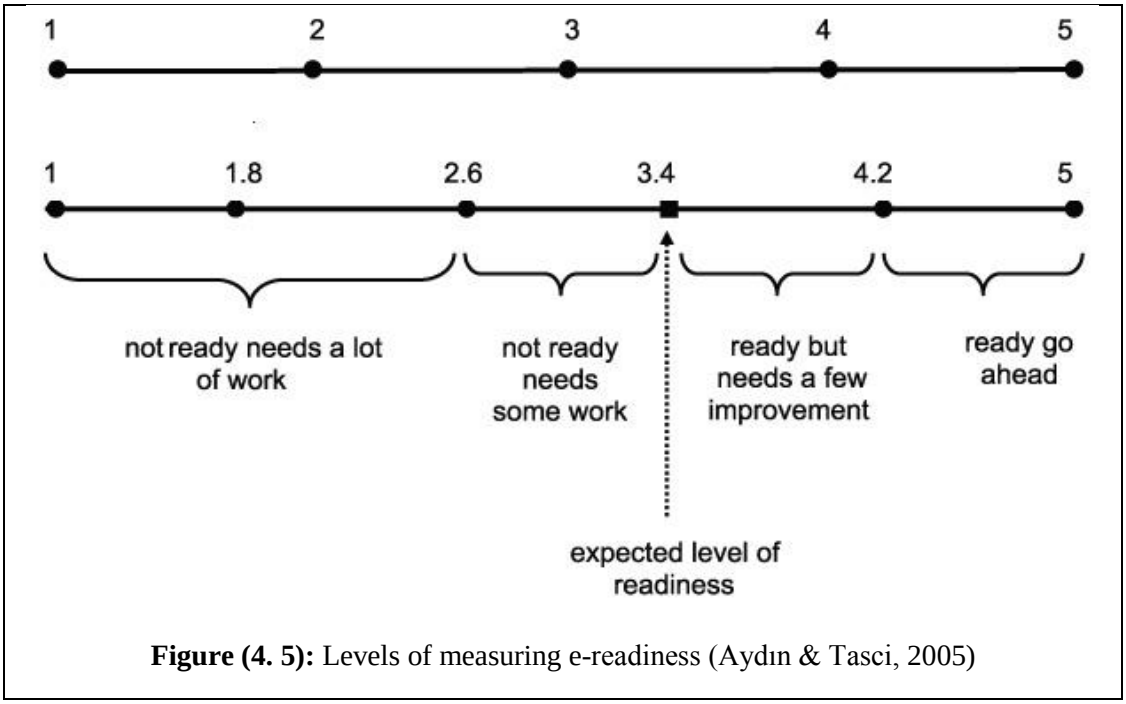

Figure (4. 5): Levels of measuring e-readiness (Aydın & Tasci, 2005)

Table (4. 11): Interval Classification (Levels of Readiness)

Level of Readiness	Mean Score
Not ready, needs a lot of work	1.00-2.60
Not ready, needs some work	2.61-3.40

Ready, but needs a few improvement	3.41-4.20
Ready, go ahead	4.21-5.00

4.3.3.1 Readiness

4.3.3.1.1 Technology (Stability, Hardware, Software)

The findings show that the grand mean of the Technology category was nearly (3.65) which means that technology's level of readiness is "Ready but needs a few improvement" with (0.73) standard deviation indicating that the answers were homogeneous. The highest response was associated with question number (1) (I am satisfied with the speed of the Internet connection at the school I work at) with a (3.98) mean. The following table shows these findings; note here that speed of internet does not indicate it is accessible to all.

Table (4. 12): Means, Standard Deviations and the Rank of Technology Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
1-	I am satisfied with the speed of the Internet connection at the school I work at	644	3.98	1.05	1	Ready but needs a few improvement
2-	I have a fast (DSL) internet in my home	644	3.94	1.14	2	Ready but needs a few improvement
3-	Computers are repaired and software are updated at the school I work at regularly	644	3.89	0.89	3	Ready but needs a few improvement
4-	There are a plenty of computer devices in the school that I work in for both the students and teachers	644	3.37	1.13	4	Not ready, needs some work
5-	The facilities in the school are not sufficient to support e-learning	644	3.06	1.32	5	Not ready, needs some work

Grand Mean	644	3.65	0.73		Ready but needs a few improvement

4.3.3.1.2 People

The findings show that grand mean of the People (teachers) category was nearly (3.79) which means People level is Ready but needs a few improvement, with (0.69) standard deviation indicating homogeneous answers. The highest response was associated with question number (2) (I believe E-Learning can assist teacher-learner interaction) with a (3.99) mean. The following table shows these findings.

Table (4. 13): Means, Standard Deviations and the Rank of People Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
1-	E-learning concept is obvious to me	644	3.87	0.89	2	Ready but needs a few improvement
2-	I believe E-Learning can assist teacher-learner interaction	644	3.99	0.86	1	Ready but needs a few improvement
3-	I have prior general experience with e-learning.	644	3.64	0.95	8	Ready but needs a few improvement
4-	I exchange ideas and experiences with my colleagues on the best ways to incorporate e-learning in teaching.	644	3.69	0.89	7	Ready but needs a few improvement
5-	I use social media like Facebook and twitter	644	3.75	1.15	6	Ready but needs a few improvement
6-	I use computers confidently	644	3.79	0.99	4	Ready but needs a few improvement
7-	I use office software (ex. Microsoft Office, Open Office, etc.) for content delivery and demonstration	644	3.76	1.05	5	Ready but needs a few improvement
8-	I am able to search for teaching material on the internet, modify it and use it in the classroom.	644	3.81	0.98	3	Ready but needs a few improvement

Grand Mean	644	3.79	0.69		Ready but needs a few improvement

4.3.3.1.3 Content Availability

The findings show that the grand mean of the category of Content Availability was nearly (3.09) which shows that content availability level is Not ready and needs some work, with (0.97) standard deviation indicating homogenous answers. The highest response was associated with question (1) (e-learning materials are designed from professionals in content creation) with a (3.17) mean. The following table shows these findings.

Table (4. 14): Means, Standard Deviations and the Rank of Content Availability Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
1-	e-learning materials are designed from professionals in content creation	644	3.17	1.08	1	Not ready, needs some work
2-	Schools share the same e-learning materials, a centralized content is distributed to all schools	644	3.01	1.04	2	Not ready, needs some work
Grand Mean		644	3.09	0.97		Not ready, needs some work

4.3.3.1.4 Educational Institution

The findings show that grand mean of Educational Institution category were nearly (3.92) which means the educational institute aspect is Ready but needs

a few improvement, with (0.66) standard deviation, indicating homogeneous answers. The highest response was associated with question number (4) (I feel the administration at my school supports e-learning) with a (4.00) mean. The following table shows these findings.

Table (4. 15): Means, Standard Deviations and the Rank of Educational Institution Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
1-	I feel the administration at my school understands what e-learning is about	644	3.86	0.83	3	Ready but needs a few improvement
2-	I feel the administration at my school understands the importance of e-learning	644	4	0.79	1	Ready but needs a few improvement
3-	I feel the administration at my school encourages me to provide an e-learning materials for the students	644	3.99	0.84	2	Ready but needs a few improvement
4-	I feel the administration at my school supports e-learning	644	3.83	0.89	4	Ready but needs a few improvement
Grand Mean		644	3.92	0.66		Ready but needs a few improvement

4.3.3.2 Acceptance

4.3.3.2.1 Perceived Usefulness

The findings show that the grand mean of Perceived Usefulness was nearly (3.94) which means perceived usefulness is Ready but needs a few improvement, with (0.69) standard deviation indicating homogenous answers. The highest response was associated with question number (1) (I believe e-Learning is a useful learning tool) with a (4.12) mean. The following table shows these findings.

Table (4. 16): Means, Standard Deviations and the Rank of Perceived Usefulness Questions

No	Statement	N	Mean	StD	Rank	Readiness Level
1-	I believe E-Learning is a useful learning tool	644	4.12	0.72	1	Ready but needs a few improvement
2-	I am confident my students will find e-learning useful	644	4.01	0.78	2	Ready but needs a few improvement
3-	E-learning is more effective to communicate learning concepts than a traditional classroom-based approach	644	3.83	0.89	3	Ready but needs a few improvement
4-	I believe students will achieve better education as a result of e-learning being used in classrooms	644	3.79	0.89	4	Ready but needs a few improvement
Grand Mean		644	3.94	0.69		Ready but needs a few improvement

4.3.3.2.2 Perceived Ease of Use

The findings show that grand mean of Perceived Ease of Use was nearly (3.30) which indicates that perceived ease of use is Not ready and needs some work, with (0.75) standard deviation indicating homogenous answers. The highest response was associated with question number (1) (My students find it easy to use e-learning) with a (3.57) mean. The following table shows these findings.

Table (4. 17): Means, Standard Deviations and the Rank of Perceived Ease of Use Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
1-	My students find it easy to use e-learning	644	3.57	0.89	1	Ready but needs a few improvement
2-	I feel I have sufficient time to prepare e-learning materials	644	2.9	1.07	3	Not ready, needs some work
3-	I find E-Learning tools easy to use	644	3.43	0.97	2	Ready but needs a few improvement
Grand Mean		644	3.3	0.75		Not ready, needs some work

4.3.3.3 Training

The findings show that the grand mean of Training was nearly (3.39) which indicates that Training is Not ready and needs some work, with (0.69) standard deviation indicating homogenous answers. The highest response was associated with question number (3) (I would attend a training on how

to integrate e-learning into my teaching style) with a (3.55) mean. The following table shows these findings.

Table (4. 18); Means, Standard Deviations and the Rank of Training Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
1-	I can use e-learning tools without attending training	644	3.26	1.09	3	Not ready, needs some work
2-	I need training on e-learning	644	3.38	1.09	2	Not ready, needs some work
3-	I would attend a training on how to integrate e-learning into my teaching practices	644	3.55	1.06	1	Ready but needs a few improvement
Grand Mean		644	3.39	0.69		Not ready, needs some work

4.3.3.3.1 Attending a Training Course

Below are the characteristics of section four of the survey, the findings show that percentage of attending a training course was nearly (70.3) for (Yes) answers and (29.7) for (No) answers which means that two-thirds of the respondents attended at least one training course specialized in e-learning while one third did not attend a training course. The following table shows these findings.

Table (4. 19): Frequencies and Percentages of Attending a Training Course question

No.	Statement	Frequency	Percentage %
1-	Yes	453	70.3
2-	No	191	29.7
Total		**644**	**100%**

4.3.3.3.2 If Attended Training

The findings show that grand mean of teachers who attended training courses (If Yes) was nearly (3.18) which shows that those who attended training found the given training's readiness as Not ready and needs some work, with was an (intermediate) level response with (0.91) standard deviation indicating that the answers were homogeneous. The highest response was associated to question number (7) (The trainers were knowledgeable and aided me in my understanding of e-Learning system) with a (3.27) mean. The following table shows these findings.

Table (4. 20): Means, Standard Deviations and the Rank of If Attended Training Questions

No.	Statement	N	Mean	StD	Rank	Readiness Level
4-	The training provided to me on e-learning was sufficient	453	3.19	0.07	3	Not ready, needs some work
5-	The training gave me confidence in using an e-Learning	453	3.22	1.01	2	Not ready, needs some work
6-	The training was adequate length and detailed	453	3.07	1.04	4	Not ready, needs some work

7-	The trainers were knowledgeable and aided me in my understanding of e-Learning	453	3.27	1.01	1	Not ready, needs some work
Grand Mean		453	3.18	0.91		Not ready, needs some work

4.4 Testing Hypotheses

4.4.1 Hypotheses

Relying both on the main items which were assessed as well as external items that may influence them, the researcher developed the following model from which to draw hypotheses:

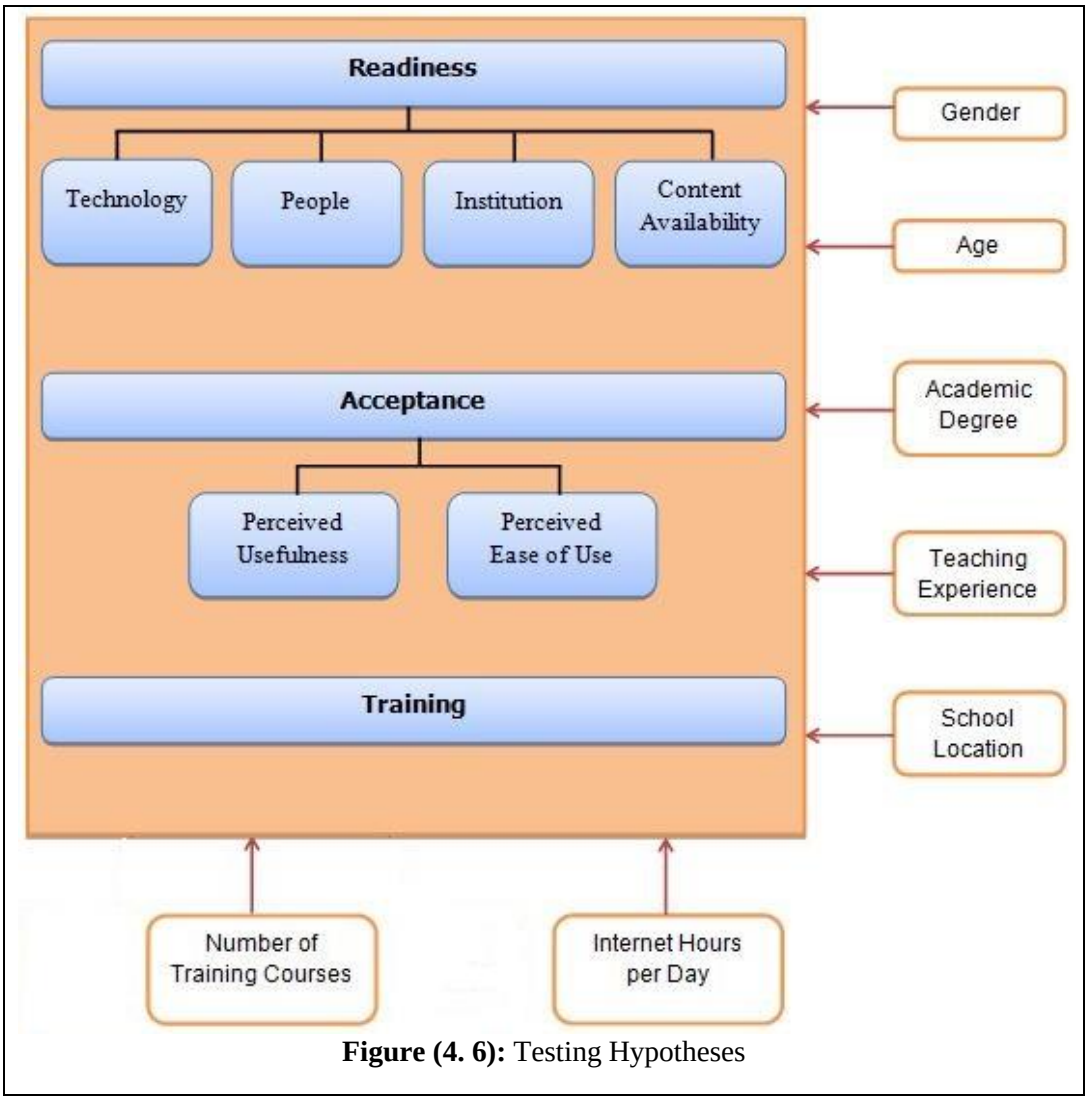

Figure (4. 6): Testing Hypotheses

Each hypothesis tested external sociodemographic and technological variables against Akaslan e-readiness model (2011) items. Therefore, a total of 7 hypotheses were formed.

Research hypotheses were formed to test for significant differences (where α=0.05) among teachers and assessed level of readiness which can be attributed to socio-demographic characteristics, (here being gender, age, academic degree earned, teaching experience, school location, internet use, and number of training courses attended). For each socio-demographic variable, two hypotheses can be drawn: (1) the null hypothesis: no

statistically significant (α=0.05) differences exist between respondents' and assessed levels of readiness which can be attributed to the characteristic in question, or (2) the alternative hypothesis: statistically significant (α=0.05) differences do exist between respondents' and assessed levels of readiness which can be attributed to the characteristic being evaluated. If the value is greater than 0.05, the null hypothesis cannot be rejected, and differences cannot be assumed to be influenced by the characteristic being assessed. If the value is less than 0.05, the null hypothesis cannot be accepted, and statistically significant differences do exist between the respondents' and their levels of readiness that can be attributed to the characteristic being tested.

The main hypotheses are outlined and analyzed according to the collected data below:

4.4.1.1 First Hypothesis: Gender

$H1_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where (α= 0.05) can be attributed to gender.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) is higher than 0.05 for the total of the items on the third section of the survey and thus the null hypothesis is rejected and the alternate hypothesis is supported: Statistically significant differences do exist between respondents and assessed levels of readiness which can be attributed to gender.

Table (4. 21): First Hypothesis (Sig.) values

#	Item	Sig.	Male	Female
1	Technology	0.176	3.6096	3.6873
2	People	0.013	3.7205	3.8564
3	Content Availability	0.083	3.0191	3.1515
4	Institution	0.000	3.8129	4.0295
5	Usefulness	0.569	3.9522	3.9212
6	Ease of Use	0.432	3.2771	3.3232
7	Training	0.008	3.4692	3.3242
All Variables		**0.124**	**3.5515**	**3.6134**

4.4.1.2 Second Hypothesis: Age

$H2_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where (α= 0.05) can be attributed to age.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) for the total of the items in section three of the questionnaire is less than 0.05, thus the null hypothesis is rejected and the alternate hypothesis is supported: Statistically significant differences do exist between the respondents and assessed levels of readiness which can be attributed to age. The differences are associated with the 22-30 year age bracket.

Table (4. 22): Second Hypothesis (Sig.) values

#	Item	Sig.	22-30	31-40	41-50	51 or more
1	Technology	0.341	3.6467	3.6487	3.5988	3.7968
2	People	0.000	4.0150	3.8403	3.6169	3.5060
3	Content Availability	0.429	3.1933	3.0760	3.0444	2.9919
4	Institution	0.375	3.9767	3.9449	3.8728	3.8468
5	Usefulness	0.173	4.0283	3.9306	3.9098	3.8105

6	Ease of Use	0.113	3.4178	3.2978	3.2209	3.2473
7	Training	0.203	3.4933	3.3460	3.4004	3.3495
All Variables		**0.025**	**3.6816**	**3.5834**	**3.5235**	**3.5069**

4.4.1.3 Third Hypothesis: Academic Degree

$H3_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where (α= 0.05) can be attributed to the highest level of academic degree earned.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) for the total of items on section three of the survey is greater than 0.05, the null hypothesis cannot be rejected nor the alternate hypothesis supported: Statistically significant differences do not exist between respondents and assessed levels of e-readiness which can be attributed to level of academic degree earned.

Table (4. 23): Third Hypothesis (Sig.) values

#	Item	Sig.	Diploma	Bachelor's	Master's	Doctorate
1	Technology	0.305	3.7298	3.6253	3.7581	4.0667
2	People	0.727	3.7741	3.7811	3.869	4.0417
3	Content Availability	0.995	3.0789	3.0910	3.0645	3.0000
4	Institution	0.077	3.7982	3.9497	3.7984	4.4167
5	Usefulness	0.312	4.0746	3.9205	3.9234	4.3333
6	Ease of Use	0.513	3.3918	3.2982	3.2204	3.6667
7	Training	0.676	3.4737	3.3787	3.4570	3.4444
All Variables		**0.760**	**3.6182**	**3.5776**	**3.5847**	**3.8533**

4.4.1.4 Fourth Hypothesis: Teaching Experience

$H4_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where (α= 0.05) can be attributed to teaching experience.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) for the total of items on section three of the survey is less than 0.05 and thus the null hypothesis is rejected: Statistically significant differences do exist between respondents and assessed levels of readiness which can be attributed to teaching experience. These differences are associated with the 1 to 5 year bracket.

Table (4. 24): Fourth Hypothesis (Sig.) values

#	Item	Sig.	1-5	6-10	11-15	16 or more
1	Technology	0.849	3.6373	3.6149	3.6544	3.6827
2	People	0.000	3.9534	3.9495	3.7231	3.5969
3	Content Availability	0.724	3.1716	3.0683	3.0538	3.0707
4	Institution	0.425	3.9440	3.9829	3.9130	3.8691
5	Usefulness	0.029	3.9496	4.0668	3.8592	3.8809
6	Ease of Use	0.132	3.3731	3.3768	3.2194	3.2531
7	Training	0.028	3.5423	3.4099	3.3249	3.3368
All Variables		**0.044**	**3.6531**	**3.6383**	**3.5353**	**3.5274**

4.4.1.5 Fifth Hypothesis: School Location

$H5_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where (α= 0.05) can be attributed to school location.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) for the total of items on section three of the

survey is greater than 0.05, the null hypothesis cannot be rejected nor the alternate hypothesis supported: Statistically significant differences do not exist between respondents and assessed levels of e-readiness which can be attributed to school location.

Table (4. 25): Fifth Hypothesis (Sig.) values

#	Item	Sig.	City	Village	Refugee Camp
1	Technology	0.589	3.6438	3.6556	3.3714
2	People	0.125	3.7130	3.8221	3.5179
3	Content Availability	0.931	3.0947	3.0823	3.2143
4	Institution	0.068	3.8240	3.9605	3.8929
5	Usefulness	0.017	3.8107	3.9840	3.7857
6	Ease of Use	0.400	3.3649	3.2764	3.3810
7	Training	0.168	3.3156	3.4202	3.6190
All Variables		**0.393**	**3.5383**	**3.6000**	**3.5414**

4.4.1.6 Sixth Hypothesis: Hours of Internet per Day

$H6_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where at (α= 0.05) can be attributed to hours of internet used per day.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) for the total of section three of the survey is less than 0.05, thus the null hypothesis is rejected and the alternate hypothesis is supported: Statistically significant differences do exist between respondents and assessed levels of readiness which can be attributed to their daily use of the internet. These differences are associated with using the internet 8 hours or more per day.

Table (4. 26): Sixth Hypothesis (Sig.) values

#	Item	Sig.	Never	Less than 1 hour	2-4 hours	5-7 hours	8 hours or more
1	Technology	0.000	3.3097	3.5956	3.8152	3.7333	4.200
2	People	0.000	3.1102	3.6856	4.1155	4.1083	4.1875
3	Content Availability	0.212	2.9570	3.0611	3.1477	3.1333	4.2500
4	Institution	0.000	3.6640	3.9343	4.0199	3.6667	3.8750
5	Usefulness	0.000	3.6532	3.8778	4.0928	3.9667	4.1250
6	Ease of Use	0.000	2.9140	3.2654	3.4697	3.3333	3.5000
7	Training	0.001	3.2007	3.3395	3.5265	3.2667	3.5000
All Variables		**0.000**	**3.2582**	**3.5372**	**3.7409**	**3.6013**	**3.9500**

4.4.1.7 Seventh Hypothesis: Number of Training Courses

$H7_0$: No statistically significant differences exist between teachers and assessed levels of e-readiness where (α= 0.05) can be attributed to the number of training courses attended.

Error! Reference source not found. Error! Reference source not found. shows that the p-value (Sig.) for the total of section three of survey is less than 0.05, thus we reject the null hypothesis and the alternative hypothesis gains support: Statistically significant differences do exist between respondents and assessed levels of readiness which can be attributed to attending training. These differences are associated with attending two or more training courses.

Table (4. 27): Seventh Hypothesis (Sig.) values

#	Item	Sig.	None	One training course	Two or more

1	Technology	0.001	3.4785	3.7226	3.7203
2	People	0.000	3.6119	3.799	3.9264
3	Content Availability	0.018	2.9215	3.1659	3.1483
4	Institution	0.000	3.7618	3.9965	3.9883
5	Usefulness	0.004	3.8508	3.8836	4.0540
6	Ease of Use	0.000	3.1449	3.2919	3.4350
7	Training	0.101	3.3089	3.4531	3.4110
All Variables		**0.000**	**3.4396**	**3.6162**	**3.6691**

Chapter Five
Discussion

Chapter Five

Discussion

5.1 Overview

The first part of the chapter discusses the overall e-readiness of Palestinian secondary schools according to the findings. This is followed by a detailed discussion of the readiness level of each individual aspect applying Akaslan and Law's (2011) model for measuring e-learning readiness where *Low Readiness* encompasses *Level 1 Not ready, needs a lot of work* and *Level 2 Not ready needs some work* and *High Readiness* encompasses *Level 3 Ready, but needs a few improvements* and *Level 4 Ready, go ahead.* Next, the findings within the context of developing countries are discussed. Finally, the chapter ends by proposing a conceptual model outlining the components integral to assessing and implementing e-learning in public secondary schools in Palestine and comparing it to the Akaslan and Law's (2011) model.

5.2 Overall Level of E-Readiness in Palestinian Secondary Schools

According to the analysis of data collected from the surveys and supported by the thematic analysis of the interviews, the overall level of e-readiness in Palestinian public secondary schools was at a Level 3, or *Ready, but needs a few improvements*, answering Research Question #1 presented in the introductory chapter of this thesis. As indicated in **Error! Reference source**

not found. Error! Reference source not found. of the seven aspects studied, all of Perceived Usefulness, Educational Institution, People, and Technology were at Level 3 *Ready, but needs a few improvements* and Training, Perceived Ease of Use, and Content Availability were at Level 2 *Not ready, needs some work.*

The next few sections provide a detailed discussion on each of the seven aspects of e-readiness studied, a breakdown of the readiness of each of their components, and the existing relationships, if any, with demographic factors (i.e. gender, age, teaching experience, academic degree, school location and directorate, and prior training received) and technology factors (i.e. access and use of internet at home and at school, school e-learning requirements, presence of e-learning system at school) answering Research Questions #2, 3, 4 and 5.

Table (5. 1): Overall Level of E-Readiness in Palestinian Secondary Schools

Aspect	Mean	StD	Rank	Readiness Level	Readiness Level
Perceived Usefulness	3.94	0.7	1	Ready but needs a few improvements	3
Educational Institution	3.92	0.7	2	Ready but needs a few improvements	3
People	3.79	0.7	3	Ready but needs a few improvements	3
Technology	3.65	0.7	4	Ready but needs a few improvements	3
Training	3.39	0.7	5	Not ready, needs some work	2
Perceived Ease of Use	3.3	0.8	6	Not ready, needs some work	2
Content Availability	3.09	1	7	Not ready, needs some work	2
E-Learning Total Readiness (All Aspects)	3.66	0.5	---	Ready but needs a few improvements	3

5.3 Aspects at Low Readiness, Level 2

5.3.1 Content Availability

Content is arguably the driving engine of any system. Thus, evaluating content serves as an integral component of assessing the overall readiness of an organization or system. An evaluation of the level of e-readiness in content availability in secondary schools in the West Bank, where the construct of Content Availability was defined as learning materials being designed by professionals in content creation and learning materials being disseminated across schools systematically, was found to be at Level 2 *Not ready, needs some work* answering Research Question #2. It is important to note that the construct of Content Availability scored the lowest as compared to all other aspects measured as can be seen in **Error! Reference source not found. Error! Reference source not found.**. Several conclusions can be drawn from these results, mainly, with regards to the presence and absence of the content itself and individuals, organizations, and entities involved in managing it.

Secondary schools in the West Bank do not currently possess standardized e-curricula across subject areas. In addition, existing e-curricula is not made available to school administrators, teachers and learners despite efforts of several public and private entities to implement a main goal outlined in the EDSP, Education Development Strategic Plan of 2008-2012 and EDSP of 2014-2019 published by the MoEHE (2014). The goal states, “a thorough

and comprehensive reform of the general education curricula and assessment and evaluation system to equip students with 21st century skills".

From the results gained in the research, it is evident that the MoEHE lacks the funds needed to provide schools with a system to organize, analyze, design, implement and evaluate e-curricula despite intentions to do so outlined in the goals of the past and current EDSP, a crucial component of e-readiness according to previous studies (Chapnick 2000; Broadbent, 2002). The creation of e-learning content currently rests upon the shoulders of small, short-lived initiatives or individual teachers, many of whom were described in the interviews as lacking specialization in curriculum writing and the necessary skills for designing and delivering e-learning content. Most teachers in Palestine do not yet appear to understand student-centered education. Although results suggest that teachers who received training exhibited higher levels of e-readiness and had an easier time making content, they are not the majority.

Due to the fact that Public schools are under a rigid and fully centralized system, Palestinian school administrations generally lack the funds to support e-learning content creation and are unable to provide teachers with the time, software, ICT tools, and sufficient training experiences necessary for designing and delivering e-learning content. Like many government workers, teachers tend to be underpaid and overworked, a central theme drawn from the interviews. Since they are rarely compensated for time, effort, and resources spent on creating content, most teachers remain unmotivated to do so. Exceptions to this finding are teachers who work

within the few schools chosen by international or small initiatives to adopt an e-learning platform. This is problematic because according to previous studies an organization that is willing to adopt e-learning should take measures to promote the creation and exchange of e-learning content and offer time and incentives for those involved (Rosenberg, 2000).

5.3.2 Perceived Ease of Use

In this study, the construct of Perceived Ease of Use was defined as teachers' perception 'students would find it easy to use e-learning', 'having sufficient time available to prepare e-learning materials', and the degree to which teachers found 'e-learning easy to use'. The results of the study found e-readiness to be at Level 2 *Not ready, needs some work* for this aspect influenced by individual characteristics answering Research Question #3. The results also indicate that the environmental culture of e-learning represented by the item 'having sufficient time available to prepare e-learning materials' exhibited the lowest level of readiness among the 3 items tested. This answers both Research Questions #4 and #5.

The low level of readiness found in measuring this aspect might be explained by the lack of hands-on experiences provided to teachers in Palestine. This is supported by previous research studies which emphasized the widespread lack of availability of ICT tools in Palestinian schools (UNESCO, 2013). The low level of e-readiness found for the item surveyed, 'sufficient time available to prepare e-learning materials' also correlates with the findings of this research on Content Availability. An analysis of the interviews further

supports the discouraged attitudes and beliefs of teachers about whether their organization will provide them with resources such as sufficient time and ICT tools.

The findings also suggest that teachers who attended more trainings exhibited higher levels of readiness in the Perceived Ease of Use aspect as compared to teachers who attended less trainings or no trainings at all. This corroborates previous research that found exposure to e-learning in training decreases the anxiety related to its use and transforms previous notions about the effort and time required to use it (Venkatesh & Davis, 2000). Similarly, the results indicate that teachers who applied e-learning within their classrooms and used the internet for more hours per day expressed higher levels of readiness than those who did not.

The results further indicate that older teachers are especially resistant to the use of ICT technology in education. This supports the findings of previous studies that suggest that older teachers are more comfortable than younger teachers in expressing their computer anxiety and their general lack of experiences using computers (Pamuk & Peker, 2009). The findings of the surveys and interviews also show a disparity between the readiness of learners and young teachers versus older teachers. Young teachers and learners might be more exposed to internet use via mobile phones and other new technologies increasing their sense of self-motivation and perceived enjoyment and decreasing their relative anxiety. This explains the higher Level 3 *Ready but needs few improvements* found for each of the items ‘I

find e-learning system easy to use' and 'My students find it easy to use e-learning'.

5.3.3 Training

The results of the study found an overall readiness level of 2 for the Training aspect in Palestinian public secondary schools. In general, the analysis of the surveys and expert interviews point to a deficiency in knowledge, skills, and hands-on experiences related to e-learning gained by teachers in their schooling and professional careers answering Research Questions #2 and #3. In fact, the majority of teachers surveyed expressed both a need and an interest for more training on e-learning. One-time trainings attended did not sufficiently prepare teachers to design and deliver e-learning content, which supports the previous findings of Shraim (2012). Trainings were also found to be crowded and teachers often had to share a computer with several colleagues.

As the Palestinian public schools follow centralized and rigid system, Palestinian school administrators lack funds for providing continuous and effective trainings. Similarly, they are unable to reward individual efforts and initiatives. Interviewees explained that trainers often lack expertise and fail to differentiate content to meet the needs of multiple levels of learners. The findings also suggest that teachers prefer to attend trainings during work hours since they are not paid for their efforts. The dependent relationship found between Perceived Ease of Use and both the number of trainings received and confidence in using e-learning emphasizes the importance of

training in the adoption of e-learning by staff as found in previous studies (Sadik, 2007). This also helps to explain the low level of Perceived Usefulness expressed by teachers who have not attended trainings or perceive them to be inadequate as compared to teachers who attended trainings, used the internet more, or were generally younger.

Establishing policies to implement and fund a system that specializes in providing continuous training to teachers continues to serve as a practical challenge to the adoption of e-learning for secondary schools in the West Bank.

5.4 Aspects at Higher Readiness, Level 3

5.4.1 Technology

The overall readiness of the construct of Technology was found to be at Level 3 answering Research Question #2. The findings of the research revealed that 74.2% of respondents did not have access to wireless internet at their schools though 83.7% indicated that they did. In addition, the availability of computers and facilities that support e-learning were found to be at Level 2. The interviews help explain these findings indicating that, administrators often have access to a computer and internet at school, most staff members do not. This finding supports previous studies that highlight the digital divide as a challenge to the implementation of e-learning in secondary schools in the West Bank (Shraim & Khlaif, 2010).

In addition, the results of the surveys indicate that the majority of respondents, 74.7%, had a computer connected to internet at home and 41%

used the internet 2-4 hours daily, 41.9% used the internet less than an hour, and only 14.4% never used the internet. In 2013, 96% of Palestinian households in the West Bank had mobile phones, 54.1% of Palestinian households owned a computer, and 39.5% had internet according to the Palestinian Central Bureau of Statistics (2014). Internet speeds in the West Bank are decent as compared to other countries in the region (ex. 2 MB, 4 MB and up to 30 MB for residential users). Schools, however, continue to lag behind in providing teachers and students with access to Internet. Interviewees shared that many school administrators are not sold on the idea of having internet connections in their schools and others limit access to their offices, neglecting classrooms and computer labs. The majority of respondents, 61.3%, reported that the use of e-learning components was not mandatory at their school.

While interviewees discussed several international initiatives that helped connect a handful of schools to the internet and provided them with ICT tools, they emphasized the scarcity and lack of sustainability of these efforts. Interviewees further explained that providing ICT (i.e. computer, internet, software, and social media use) to schools does not guarantee the presence of knowledge or skills necessary for its use. Similarly, the availability of ICT tools does not necessitate adequate access and availability of technical support required for sustaining it. In addition, the Israeli ban on internet data usage platforms such as 3G to Palestinians has limited the functionality of tablets and phones enjoyed by other world users. Internet connection in the West Bank requires signing up for a service with the Palestinian

Telecommunications Company (Paltel) which provides access to internet through Bit Stream Access (BSA) and then to a second party, the Internet Service Provider (ISP). Therefore, for a school to connect to the internet, the Ministry of Education and Higher Education would be required to pay fees to these parties. A Paltel initiative connected hundreds of schools in the West Bank to the internet free of a charge for an entire year, but lack of funds prevented most schools from renewing the service. A few schools attempted to resolve this issue by collecting donations from parents and families, but the vast majority did not.

The findings of the study also suggest that internet access and computer availability remain scarce in public secondary schools though most schools possess the basic electrical infrastructure to integrate e-learning into their classrooms supporting the findings of the UNESCO study (2013). In addition, the ratio of teachers and students to computers continues to be high. In fact, interviews explained that most teachers interested in implementing components of e-learning must move their students to a computer lab which is accompanied by disruption in learning and a net loss of instruction time.

The need for ICT infrastructure improvement in secondary schools in the West Bank points to insufficient buy-in from policy makers and parties responsible for distributing funding. In addition, the focus of international initiatives on providing ICT tools to schools attempts to resolve challenges to implementation on merely a superficial level (Shraim, 2012).

5.4.2 People

Results from studying the readiness of components related to individual attitudes and beliefs about e-learning and the extent to which individuals are ready for e-learning points to a Level 3, *Ready but needs a few improvements* answering Research Question #2. Respondents were found to be at a Level 3 of readiness in their understanding of the definition of e-learning, prior experience in e-learning, and their belief that e-learning could assist in computer teacher-learner interaction.

The highest level of readiness of the 7 components studied in the People construct was found for the belief that e-learning could assist with teacher-learner interaction. This correlates with the Level 3 of e-readiness found for the construct Perceived Usefulness. In addition, the interview findings emphasized a generally held belief that e-learning could play a significant role in overcoming mobility restrictions to education.

The findings in this category indicate that the degree to which users believe they possess the ability to perform tasks using ICT (i.e. computer, internet, software, and social media use) varies amongst age groups. Specifically, the 22-30 years age group was found to possess the highest level of computer self-efficacy. In addition, teachers who attended more training were found to have higher levels of readiness in all components of the People construct measured, supporting previous research which found that hands-on experience is closely related to Perceived Ease of Use (Venkatesh & Davis, 2000). The interviewees explained students also display high levels of playfulness and perceived enjoyment resulting from their daily interactions

with mobile phones and computers outside of school. Older teachers, in contrast, displayed higher levels of anxiety when using ICT tools including social media platforms and, consequently, lower levels of Perceived Ease of Use.

Interviewees explained that a high level of resistance to change expressed by older teachers was due to their approaching retirement, already experiencing a heavy workload, and lack of experience with ICT. On the other hand, less experienced teachers, may not have worked long enough in the education system to have fully experienced a lack of organizational support and burnout.

Although a gap between e-learning attitudes and beliefs of young teachers versus older teachers remains a challenge, the increasing hands-on experiences young Palestinians are exposed to provide promise. E-learning initiatives in the West Bank are likely to gain success from developing organizational structures which draw on the existing awareness educators possess about the benefits of e-learning and cultivating the peer teaching culture. These efforts coupled with well-developed hands-on experiences would potentially decrease computer anxiety and increase self-efficacy.

5.4.3 Educational Institution (Ministry of Education, Directorate of Education, & School Administration)

According to the analysis of the interviews and surveys, improvements need to be made on all levels of the educational institution if e-learning is to be adopted as an educational paradigm. This is supported by the Level 3 *Ready*

but needs a few improvements found for the construct Educational Institution and answers Research Question #2. The majority of survey respondents indicated that their school administrations needed to improve their definition of e-learning and their understanding of its potential benefits. In fact, according to the interviews, administrators were found to vary in their definition of e-learning which ranges from the mere use of ICT tools to implementing a complete curriculum. Respondents also believe their administrations need to improve in providing them with support and encouragement for applying e-learning within their classrooms. Some administrators interviewed, however, voiced their disagreement with providing access to internet across classrooms claiming potential misuse by students. In addition, as mentioned previously, a system for rewarding and recognizing the work of teachers who implement e-learning is also missing in the majority of public secondary schools.

Inadequate policies and practices within schools that foster e-learning are also evident in the lack of resources and time dedicated to the development and implementation of e-learning. For instance, the school schedule as it currently stands does not support the implementation of an e-learning paradigm that would rely on the use of a limited number of computers and computer labs. Interviewees suggested that changes would need to be made to the current workload of teachers to afford them time to work on the design and delivery of e-learning content.

Although the MoEHE and educational directorates encourage schools to adopt e-learning, they have failed to provide administrations with specific

guidelines and funding. In addition, teachers do not have action plans for applying e-learning to practice. The knowledge and skills of e-learning experts, departments, or units are missing in schools. Interviewees suggest that expectations placed on teachers to merge components of e-learning within a paradigm that does not fit well as it stands are unreasonable.

In general, the results of the interviews point to a poor level of e-learning policy and strategy provided by the MoEHE to school administrators. As mentioned earlier in the section on Content Availability, the MoEHE fails to provide school administrators with a standard for developing and using e-learning content for each subject. Although specific administrators were designated by the Ministry to implement e-learning projects within their schools, appropriate coordination of vehicles for follow-up and evaluation continue to be largely absent. The findings also suggest that schools chosen for e-learning initiatives are not representative because they already possess a high level of infrastructure and technological readiness. The unequal allocation of resources points to mismanagement.

Lack of clear national policies and funding suggest that e-learning is not seen as a priority on a national level. The government can play a pivotal role in supporting the MoEHE through funding and the development of clear policies for the adoption of e-curricula and e-learning across schools. This finding is supported by previous research which suggests that political influence is significant in the transformation of an education system (Andersson & Grönlund, 2009; Shraim, 2012). In addition, the creation of functioning bodies and systems for disseminating, managing, and evaluating

the integration of e-learning is important for ensuring follow-through and development (Shraim, 2012).

The findings suggest that successful implementation of e-learning will require change at every level of the educational institution including cultural awareness, resource allocation, and national policy and practice (Shraim, 2012).

5.4.4 Perceived Usefulness

The findings point to an overall Level 3 *Ready but needs few improvements* for the construct of Perceived Usefulness answering Research Question #2. The highest response was associated with the item 'I believe e-learning is a useful tool' corroborating with the finding in the People construct for the item 'I believe e-learning can assist teacher-learner interaction'. The belief held by teachers that using e-learning will be far from effort was not ready, at Level 2. In contrast, their belief that e-learning would enhance their work was at Level 3. These contrasting results suggest that teachers lack the knowledge, skills, and experiences associated with e-learning while maintaining the belief that e-learning could enhance their teaching.

According to the interviews, teachers are aware that the Ministry and their administrations speak highly of e-learning though it often does not translate into practice. Teachers are also aware of the unique challenges to learning experienced by Palestinian students and believe education can serve as a tool to resist the incursions of occupational forces, by allowing access to learning without the need for their physical presence. This helps explain why teachers

in villages perceived e-learning to be more useful than teachers in cities since they experience the negative effects of Israeli incursions more regularly. This finding is consistent with piror study (Khitam & Khlaif, 2010).

E-learning is not mandated in Palestinian secondary schools. This explains the finding that schools which mandated e-learning had teachers who showed a higher readiness for the aspect of Perceived Usefulness answering Research Question #4. This finding is supported by previous research which found that Perceived usefulness was influenced by whether or not a technological innovation is mandatory to use (Venkatesh & Davis, 2000 ; Shraim & Khlaif, 2010).

In addition, the findings relate to previous studies which demonstrate the influence of Perceived Ease of Use on Perceived Usefulness (Venkatesh & Davis, 2000). Teachers who attended more trainings, used the internet for more hours daily, and had an e-learning system mandated in their schools arguably possessing more hands-on experiences displayed higher levels of readiness in the domains of Perceived Ease of Use and Perceived Usefulness. Also, teachers with 6-10 years of teaching experience demonstrated higher levels of readiness in the Perceived Usefulness domain possibly explained by the relationships they were able to forge with peers who had previous knowledge and experience in e-learning.

The results point to the general sense of awareness possessed by Palestinian public secondary school teachers with the usefulness of e-learning. However, teachers continue to voice the lack of support and structures in place that

recognize and reward their efforts. In addition, a clear mechanism for using e-learning within the classroom has failed to be provided to teachers.

5.5 Comparison of Findings to E-Readiness in Developing Countries

The findings of this study distinguish the aspects of e-readiness in Palestinian public secondary schools that lag behind, parallel, or advance aspects studied in comparable developing countries. In addition, the overall Level 3 of readiness found in this study aligns well with the results of a UNESCO (2013) report that found that the level of ICT integration and e-readiness in Palestinian schools lies between a low level experienced by Egypt's educational sector and a higher level experienced by the educational sectors in Jordan, Qatar and Oman. This finding further supports the presence of advantages to e-learning in Palestinian public secondary schools as well as challenges.

A research study on teacher ICT readiness in Ghanaian schools (Boakye & Banini, 2008) found that despite the limited use of computers, the majority of teachers surveyed agreed computers provided new learning opportunities for students. In addition, the study found that most teachers were not trained in the pedagogical integration of ICT and were not prepared to integrate ICT into their teaching practices. These results are comparable to the overall positive view held by Palestinian teachers in this research towards the usefulness of e-learning and the lack of training they possess for integrating e-learning into their teaching.

Another research studying the challenges of implementing e-learning in a Pakistani university (Qureshi et al., 2012) identified computer availability as a prevailing challenge faced by both teachers and students. In addition, to computer availability, technical staff and technical assistance were largely absent. An English language barrier was also identified in the study as a key challenge. Palestinian secondary schools experience similar challenges with computer availability and technical support. However, like the Pakistani teachers surveyed in the Qureshi et al. (2012) study, Palestinian teachers in this study also displayed a high level of awareness with regards to e-learning and the potential it carries.

A research studying the level of e-readiness in several Kenyan public secondary schools found that although teachers and students were ready to embrace e-learning technology, a need to enhance technical capacity through training served as a main challenge to adopting e-learning (Ouma, Awuor & Kyambo, 2013). Similarly, the findings of this research highlight lack of training as a main obstacle to e-learning integration in secondary public schools in Palestine. Ouma et al. (2013) also found a correlation between computer literacy and e-learning acceptance, which mirrors the finding of this research.

Similarly, a study on e-learning readiness among teachers in intermediate public schools in Saudi Arabia found a positive correlation between computer literacy and positive attitudes towards e-learning (Al-Furaydi, 2013). In addition, the findings of the research revealed that teachers believed their administrations did not support e-learning. The Saudi study

also pointed to a gap which exists between the Ministry of Education's goals and the goals and actions of school administrations, mirroring another finding in our present study. Lack of time and software were highlighted as key obstacles to the adoption of e-learning in Saudi secondary schools (Al-Furaydi, 2013) echoing the responses of Palestinian teachers in this study.

A study on the e-readiness of a Malaysian university found that learners and teachers were moderately ready for e-learning but some individuals still needed to be acculturated into the e-learning paradigm, specifically, older teachers (Kaur & Abas, 2004). This was similar to the findings of the present research suggesting a correlation between age and computer efficacy. In addition, the Malaysian study emphasized the need for regulatory bodies to play a more effective role in promoting e-learning programs, which was also echoed in the interviews of the present study.

A study on challenges facing school leadership in promoting ICT integration in Bahraini public schools also yielded similar results to the present study (Abdul Razzak, 2013). The researcher highlighted heavy teacher workload, lack of knowledge and skills on e-learning integration, insufficient computer labs, frequent technical problems, lack of technical support, and insufficient budgeting and leadership for ICT-related activities as main obstacles to the implementation of e-learning in Bahraini public schools. Interestingly, although the level of ICT tools in Bahraini schools, according to the study, appeared to be superior to that found in Palestinian schools, awareness and leadership also served as key challenges to effective implementation mirroring the present findings.

5.6 E-Learning Readiness Assessment Model: Case of Palestine

Results drawn from the interviews and surveys were used to develop a Conceptual E-Learning Readiness Assessment Model for the Case of Palestine to help researchers understand the challenges and opportunities that should be considered for the implementation or assessment of e-learning in Palestinian secondary schools answering Research Question #6. The model is organized into three general domains, each incorporating factors found in this research to be integral to e-readiness assessment and implementation, and they are, Organizational Support (i.e. Institutional Support and Training), Infrastructure (i.e. Technology and Content Availability), and Individual Characteristics (i.e. People, Perceived Usefulness, and Perceived Ease of Use). The analysis of the results indicates positive correlation amongst the three domains and the factors they each incorporate. The model also incorporates the factors Policymaking, Funding and Resources, and Feedback and Evaluation, all of which act upon the interactions between the domains and their factors (Shraim, 2012).

The conceptual model presented below serves as an updated version of a draft reviewed by several arbitrators. All experts in the field of e-learning, the arbitrators provided suggestions for revisions, which were then incorporated into the model. The first of three professional arbitrators consulted holds a doctorate degree and has worked for more than 25 years with schools, universities, states, and governments on different initiatives promoting educational programs, training for teachers, and e-learning projects across the Middle East and North Africa. More recently, the

arbitrator has been involved in a program that aims to support the national strategy of the Palestinian MoEHE in enhancing policies, structures, and practices designed to support school-based reform and provide professional development for school administrators and staff. The second arbitrator also holds a doctorate degree and has several publications on the topic of education. This arbitrator was involved in coordinating the activities of e-learning projects in Palestinian schools and directed several funded projects related to e-learning, digital libraries, and user training. The final arbitrator serves as the chair of the e-learning unit at an accredited Palestinian university and leads e-learning programs and initiatives at the university.

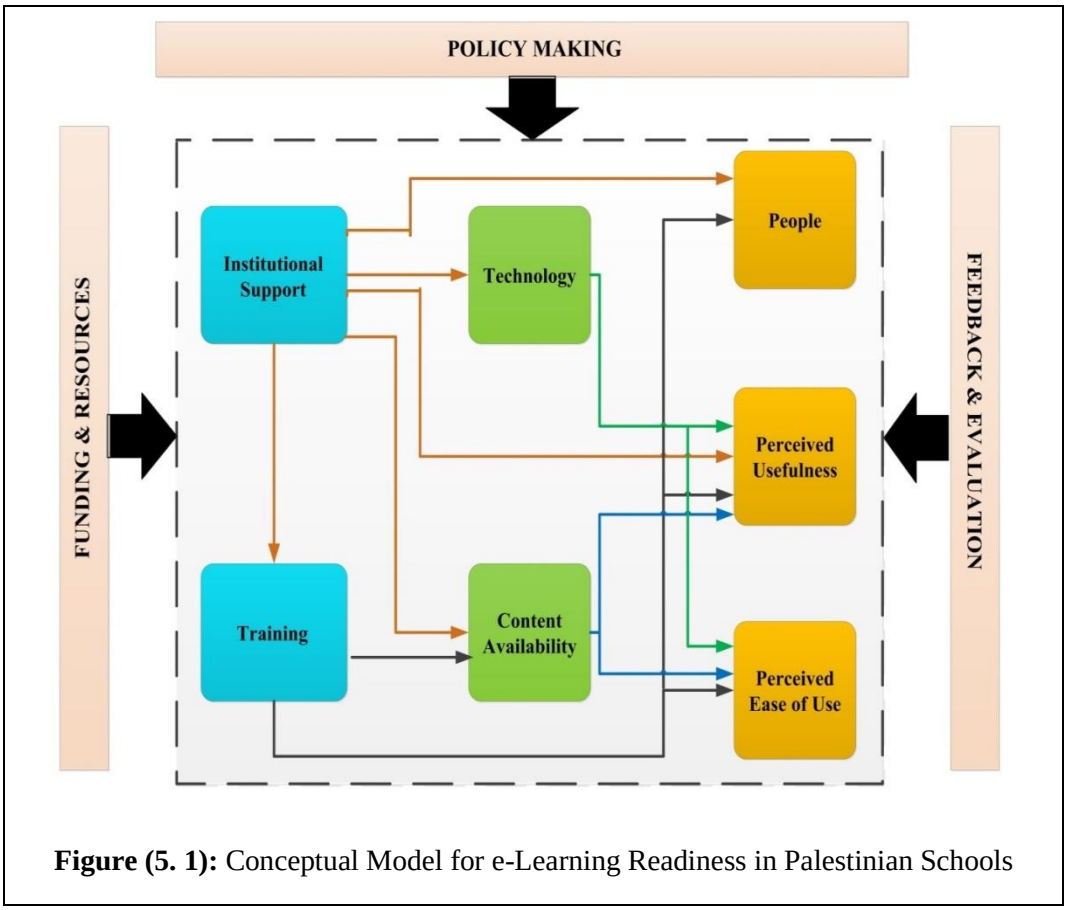

Figure (5. 1): Conceptual Model for e-Learning Readiness in Palestinian Schools

5.6.1 Institutional Support and Training

The analysis points to the key role possessed by the ministry, directorate, and school officials in fostering e-readiness. This task involves raising awareness to change culture and attitudes towards e-learning (Shraim, 2012), providing mechanisms to establish the management of programs associated with the integration of e-learning, and implementing a system of incentives (Shraim, 2012). The system of incentives should not merely recognize progress and development but also balance teacher workload and compensate them (Shraim, 2012).

In addition, the success of training depends on the leadership of the ministry and schools. Trainings can provide key information on user development, awareness and attitudes, and knowledge, experience, and skills in a continuous process. This information can, in turn, feed into the development of future trainings. This information can be used by the ministry and schools in assessing how much of what needs to be allocated and which policies and practices require updating.

5.6.2 Technology and Content Availability

The research findings suggest that Palestinian secondary schools currently do not possess the technological infrastructure for implementing e-learning. This includes internet availability, hardware and software, and school facilities which support these technologies. Therefore, teachers and students who use e-learning require the support of their schools to use ICT tools effectively and continuously. In addition, transforming classroom

environments to support student-centered learning requires more than just ICT tools. A student-centered paradigm demands that special attention be paid to the amount of space available and the way time is allotted in school settings as teachers and administrators indicated in the interviews.

Content availability had the lowest level of readiness according to the findings indicating the high demand for improvement in this aspect. Teachers expressed the importance of being able to access expertly designed content that meets their needs and the needs of their students. Both teachers and learners need to be provided curriculum-based materials such as instructional resources, books, and online tools. Teachers and students can provide feedback on the usefulness of these materials to further inform curriculum development. In addition, the standardization of school curriculums that integrate e-learning across grades and subjects is crucial for facilitating not only access and availability, but, also offering feedback for improvement.

5.6.3 Individual Characteristics: People, Perceived Usefulness and Ease of Use

Perceived Ease of Use, Perceived Usefulness, and People (i.e. Increasing Training, awareness and attitudes, knowledge /experience, and attitudes) are individual characteristics, which have been found to play key roles in influencing the implementation of e-learning, consistent with the findings of Shraim (2012). Teachers must possess a sufficient amount of knowledge, experience, and skills required for e-learning and students must also be able

to use e-learning tools. Deficiencies in any of these aspects could be assessed through trainings geared at increasing both perceived usefulness and ease of use. In addition, improving e-readiness requires continuous assessment of the needs of teachers in relation to changes in the paradigm and its practice. Therefore, increasing e-learning awareness and experiences of teachers can fuel the adoption of e-learning practices and, in turn, increase perceived ease of use and perceived usefulness.

5.6.4 Funding and Resources, Policymaking and Feedback and Evaluation

A recurring theme in the findings of this study was the need for policymaking. As mentioned in the previous discussion, policy making is integral to the development and implementation of an educational paradigm. The findings point to a need for policies and regulations developed by the government and disseminated across educational institutions. Appeals for funding and resources were also reiterated in the interviews. A handful of international initiatives, small Palestinian university, business, and individual efforts, while important, often only tackle superficial challenges. In addition, these initiatives cannot be sustained without political backing. A portion of the national budget dedicated to funding and sustaining this paradigm shift yearly requires organizational support. This will indeed be a substantial expenditure in the first years of implementation but will be returned in capital influencing political will to collaborate on several fronts

with international and national organizations and bodies to promote change (Shraim, 2012).

Aside from policymaking, funding and resources, feedback and evaluation was also mentioned many times in the data collected as playing key roles in all levels of the implementation process (Shraim, 2012).

5.7 Comparison of Models

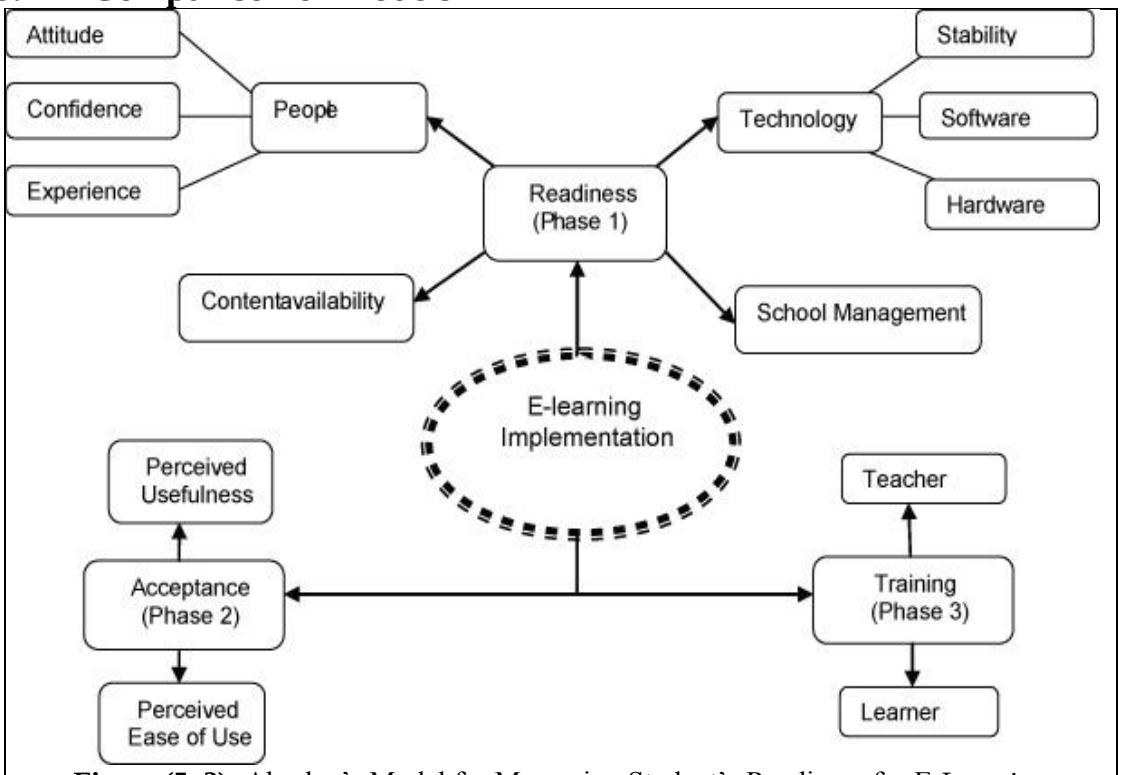

Figure (5. 2): Akaslan's Model for Measuring Student's Readiness for E-Learning

The proposed model for the case of e-readiness in Palestinian public secondary schools incorporates many of the same components of Akaslan and Law's (2011) model shown in the above figure such as Technology, Facility, People, Educational Institution, Content Availability, Training, and Acceptance. Akaslan and Law's model was relied upon in this research to study the e-readiness in Palestinian schools lending to the incorporation of

their proposed components to this suggested model. The proposed model also relied upon Shraim's (2012) findings in her paper on e-learning of students in Palestinian secondary schools.

Akaslan and Law (2011) suggest that e-readiness models for developing countries might differ in components as compared to developed nations and that fine-tuning is required even amongst developing countries to reflect for particular attributes influencing their level of readiness. For the unique case of Palestine, the findings of the study point to Policymaking, Funding and Resources, and Feedback and Evaluation as integral components to the implementation and sustainability of an e-learning paradigm. In fact, in every aspect of readiness studied, these key components were mentioned as exerting influence.

Aside from the fine-tuning required to reflect the unique socioeconomic case of Palestine, it is important to note that the component of People is emphasized in both models. Most studies conducted in developing countries do not take into account the people factor in influencing e-readiness (Andersson & Grönlund, 2009). In fact, one study compared the number of papers addressing different challenges to e-learning and found that of the 68 research articles on developing countries, only 6 focused on individual characteristics as compared to 26 out of 52 research articles on developed countries (Andersson & Grönlund, 2009). The researchers suggest that such assessments are not comprehensive since the people factor is equally valid in the study of e-readiness in both developing and developed contexts (Andersson & Grönlund, 2009).

The key component which distinguishes our proposed model from Akaslan and Law's (2011) model is the notion of 3 phases, where Phase 1 represents Readiness (Technology, People, Content Availability, and Educational Institution), Phase 2 represents Acceptance (Perceived Ease of Use and Perceived Usefulness) and Phase 3 represents Training. According to Akaslan and Law, readiness in technology, people, content, and educational institution is required before moving into the acceptance phase which focuses on the perceptions of users to e-learning. Acceptance must be ready to foster the third and final phase of training. However, the findings of our study point to a more holistic and dynamic view of how these factors exert influence on each other. For example, training was found in our study to increase perceived ease of use and perceived usefulness which, in turn, influences and informs future training. This attests to another key component of our model which emphasizes the cyclic rather than sequential nature of the interactions between these factors.

Our proposed model is not a top-down model, rather aspects of each domain interact with each other informing and adapting practice accordingly. The model recognizes the two main players of the educational process, the organization and the people. The third domain, infrastructure, offers the interface for facilitating interactions between the two. In addition, feedback and evaluation permeate every aspect of the model and are integral to coordinating efforts for effective implementation and enhancement of the process. For example, the MoEHE must gain feedback of students and teachers and not just administrators on the implementation of policies and

evaluation of curriculum in order to inform high level policies, funding, and practice. The model highlights the importance of the coherence of the domains in supporting and informing each other rather than competing with each other.

5.8 Conclusion

The findings of our study align well with the growing research on the e-readiness of developing countries in addition to the few studies that explore the unique case of education in Palestine. Palestinian public secondary schools continue to face challenges to the implementation of e-learning as an educational paradigm requiring improvements as evidenced by the overall e-readiness of Level 3 *Ready but needs improvements* for the 7 aspects of e-readiness studied. Training, Perceived Ease of Use, and Content Availability maintained an overall Level 2 *Not ready, needs some work*, with Content Availability ranking the lowest. However, e-learning initiatives could benefit from considering mechanisms to build upon the strengths found in the majority of aspects studied that maintained a higher level of readiness including Perceived Usefulness, Educational Institution, People and Technology. The model provided offers a conceptual framework for understanding the different domains of e-learning and the dynamic interactions between their components both affirming and deviating from aspects of the model suggested by Akaslan and Law (2011). The next chapter will further explain conclusions and limitations of this research as well as implications for future research.

Chapter Six
Conclusions and Recommendations

Chapter Six

Conclusions and Recommendations

6.1 Overview

This chapter summarizes the overall findings of the research and conclusions drawn from the results. The chapter also outlines recommendations based on research findings and the proposed model which addresses aspects of e-readiness found to be integral to studying and implementing an e-learning educational paradigm in public secondary schools in Palestine. The chapter closes with limitations of the present research and recommendations for future studies.

6.2 Conclusions

This study aimed to assess the overall level of e-learning readiness in Palestinian public secondary schools. The researcher relied upon a close examination of the aspects of e-learning readiness that present as strengths and/or challenges to the implementation of e-learning and factors that exert influence on those aspects. In addition to shedding light upon studies which indicate the significance and potential the e-learning paradigm offers to the educational sector in Palestine, the study proposed a model for the assessment and implementation of e-learning unique to this country.

In order to address the purpose of the research, the researcher first conducted a thorough review of the growing literature on e-learning with a special focus

on the significance of e-learning and e-readiness assessments in developing countries. Next, the researcher relied upon both quantitative and qualitative research methods enhancing the reliability and validity of conclusions drawn from the analysis of findings. Qualitative data was collected through interviewing e-learning experts and analyzed using thematic analysis while SPSS was relied upon to analyze the data set collected from 644 teachers with varying demographic variables and from different schools in 11 directorates across the West Bank region.

The following conclusions were drawn from the data gathered from both types of methods in light of the literature review:

- The overall readiness of Palestinian public secondary schools is at a *Level 3, Ready but needing few improvements* indicating the presence of both strengths and challenges to implementation.
- Perceived Usefulness was found to have the highest level of readiness indicating that the majority of Palestinian teachers surveyed value e-learning as a viable educational alternative, but, are still unready to integrate e-learning in their teaching.
- Content Availability was found to have the lowest aspect of readiness suggesting the need expressed by experts and respondents for improvements in the individuals, organizations, and entities involved in designing, disseminating, implementing, and evaluating e-learning content.
- Schools do not have the funding or resources to support teachers with time, software, ICT tools, and sufficient training

experiences. The MoEHE lacks funding needed to provide schools with a system to design and deliver e-curricula. Goals in the Ministry of Education and Higher Education's EDSPs, Education Development Strategic Plans of 2008-2012 and 2014-2019 related to reforming the educational curricula to equip students with 21st century skills have yet to be fully realized.

- The low level of Perceived Ease of Use also indicates the lack of hands-on experiences provided to teachers. Older teachers display lower levels of computer self-efficacy and are found to be especially resistant to adopting e-learning practices while younger teachers and learners with more hands-on experiences display higher levels of readiness to adopt e-learning. Teachers who attended more trainings, used the internet for more hours daily, and had an e-learning system mandated in their schools, arguably possessing more hands-on experiences, displayed higher levels of readiness in both the domains of Perceived Ease of Use and Perceived Usefulness.
- Teachers and experts expressed the need for more professional development opportunities in the form of trainings. One-time, crowded trainings led by trainers who lacked expertise in e-learning and did not differentiate to account for various levels of e-learning are insufficient in preparing teachers to design and deliver e-learning content. In addition, schools do not possess

funding for continuous and effective trainings nor are they able to reward, recognize, and/ or assess individual efforts. The lack of institutional policies and practices that specialize in training and content development serve as a clear challenge to the adoption of e-learning according to the findings of this study.

- Aspects of technology, a focus of many international studies and initiatives, were found to be at Level 3 *Ready but needs few improvements*, indicating that Palestinian schools generally possessed the basic infrastructure to support technology. However, although the majority of respondents had Internet at their schools, computers and Internet were not made available to them. Schools lag behind Palestinian homes with regards to access to Internet and ICT tools indicating that e-learning is not a priority for policymakers and institutions. Experts and respondents also explained that the provision of ICT tools did not guarantee the presence of knowledge, skills, and training to use them effectively nor the institutional and technical support to fund and sustain them.

6.3 Recommendations

The findings of the research offer several important implications to the study and adoption of e-learning in public secondary Palestinian schools in the West Bank and they are:

- The national government and the MoEHE should develop policies and regulations for implementing e-learning across educational institutions that build on existing strengths. This includes raising awareness to change culture and attitudes of administrators towards e-learning, providing mechanisms for the management and evaluation of programs associated with the integration of e-learning, and implementing a system of incentives. This system should recognize progress and development and balance the workload and pay to compensate efforts.
- A portion of the national budget must be dedicated to funding and sustaining all aspects of this paradigm shift. This will indeed be a substantial expenditure in the first years of implementation but will be returned in capital. Such success should influence political will to collaborate on several fronts with international and national organizations and bodies to promote change. Fostering connections between MoEHE and the private sector such as ICT companies can also be relied upon as an avenue for growth.
- Teachers and students must possess a sufficient amount of knowledge, experience, and skills required for e-learning. Deficiencies in any of these aspects could be assessed through trainings geared at increasing professional development. In addition, professional development would require continuous assessment of the needs of teachers in relation to changes in the paradigm and its practice.

- Trainings should be designed to meet the needs of users offering more than one level such as an introductory level teaching basic ICT skills, an intermediate level teaching how to apply ICT skills within the classroom, and an advanced level that teaches best practices.
- Aside from making ICT tools available, technical guidance and support should be made available to teachers and students at their schools or through their schools for effective and continuous use.
- Transforming classroom environments to support student-centered learning requiring more facilitation from teachers than traditional instruction in addition to granting young learners more autonomy in learning is also an important element to improving the readiness of infrastructure. This includes reworking the school schedule to accommodate for time and space and increasing opportunities for hands-on experiences.
- In addition, to making expert designed content available, the national government should work with the MoEHE on the standardization of school curriculums which integrate e-learning across grades and subjects to facilitate accountability and evaluation, further informing organizational support on management, policy, and practice. Both teachers and learners should be provided curriculum-based materials such as instructional resources, books, online tools that accommodate for the language, preferences, and culture of the users. Teachers and learners can also critique and offer feedback on these materials to further inform curriculum development.

- The MoEHE should develop a body or a committee which functions as an umbrella for e-learning experts in Palestine and serves as a platform for discussing e-learning issues and planning strategies that are compatible with the reality of Palestinian schools.
- Implementing mechanisms for gathering feedback and evaluation from all levels including parents, students, teachers, and administrators is an integral piece to informing effective policy and practice.

6.4 Limitations

Results of this research study present several limitations. The first of these is a lack of substantial research on e-learning in Palestinian public secondary schools. Although a handful of researchers and initiatives investigated different aspects of e-learning readiness in the education sector of Palestine, most discussed universities, specific projects or platforms. Another limitation was due to restrictions set by Israeli occupational forces in accessing data from Gazan schools. In addition, students were not surveyed due to strict requirements imposed by school management and the MoEHE. On a similar note, most school administrators did not allow us to randomly select teachers to survey and instead some administrators self-selected IT teachers who are not necessarily representative of the teacher population.

Access to sensitive data was also limited since the MoEHE does not allow researchers to access files related to funding and financing. The surveys and interviews were also limited by subjectivity since they relied upon self-

reports, which carry their own set of biases. The model proposed in this study was limited to data gathered in the West Bank and thus may include factors that are unique to Palestine and irrelevant to other countries and/or regions.

6.5 Future Research

Future researchers should consider relying on a more representative sample of teachers from all grades, across subject areas, from cities and villages in both the West Bank and the Gaza Strip. In addition to surveying teachers, administrators, and experts, researchers could also rely on acceptable methods of surveying students such as focus groups. Topics requiring further attention from researchers in this field include an evaluation of mechanisms involved in allocating and distributing funds across ministries and schools; the development of a viable framework for adoption by the MoEHE; identification of aspects needed to change the current classroom environment to better support e-learning; a critique of the role of MoEHE in implementing different aspects of e-learning; the development of a framework for translating goals of the EDSP into practice; a study of the current and potential role of the Ministry of Telecommunication and Information Technology in supporting e-learning within schools; and, finally, a study of the effectiveness of a variety e-learning tools including those currently mandated by some Palestinian schools and those which are used in comparable schools in nearby developing countries.

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Appendices

Appendix A: Interview Questions (Arabic)

الجاهزية الإلكترونية والتعليم الإلكتروني في المدارس الثانوية الحكومية الفلسطينية

نموذج موافقة

القسم الأول: قسم المشارك

1. أوافق أن تتم مقابلتي لأهداف البحث المذكور أعلاه
2. تم شرح هدف وطبيعة البحث لي
3. أوافق على تسجيل المقابلة إلكترونياً لتسهيل تحليل البيانات من قبل الباحث
4. أعلمني الباحث أن الأسماء ستذكر في جدول منفصل في الملحقات لغرض التوثيق العلمي فقط

اسم المشارك: .....

العمل / المنصب : .....

توقيع المشارك: .....

القسم الثاني: قسم الباحث

قمت بشرح طبيعة البحث للمشارك وأكدت له أن المعلومات ستستخدم لأسباب البحث العلمي فقط

اسم الباحث: .....

توقيع الباحث: .....

التاريخ: .....

أسئلة المقابلة:

1. ما الفوائد والفرص المتوقعة التي يقدمها التعليم الإلكتروني للفلسطينيين؟

2. ما التحديات التي تواجه تطبيق برامج تعليم إلكتروني ناجحة في المدارس الفلسطينية؟

3. ما آراؤك حول أهمية التعليم الإلكتروني في تطوير قطاع التعليم في فلسطين؟
متابعة: كيف أثرت القيود على التنقل في أعقاب الانتفاضة الثانية على تغيير ديناميكية المؤسسات التعليمية؟

4. ما البنية التحتية لتكنولوجيا المعلومات والاتصالات الموجودة حالياً في المدارس الثانوية في فلسطين؟ كيف تغيرت؟ وهل تختلف من منطقة لمنطقة في فلسطين؟

5. من فضلك، أخبرني عن مستوى الجاهزية الإلكترونية الحالي للمعلمين في المدارس الثانوية في فلسطين وما هي احتياجاتهم العامة والتي قد تمنعهم من إدراج أطر التعليم الإلكتروني بنجاح؟ متابعة: ما الموارد والتدريبات والدعم المتوفر للمعلمين؟

6. أخبرني عن مستوى الجاهزية الإلكترونية الحالي للطلاب في المدارس الثانوية في فلسطين وما هي المكونات المتطلب وجودها لزيادة جاهزيتهم؟

7. ما المشاريع والمبادرات المتوفرة حالياً في المدارس الثانوية في فلسطين والتي تطبق التعليم الإلكتروني؟ ما معدل نجاحها؟

8. ما الخطوات التي تعتقد أنها ضرورية للتطبيق الأمثل للتعليم الإلكتروني في المدارس

الثانوية في فلسطين؟

Appendix B: Interview Questions (English)

E-Learning and E-Readiness in Palestinian Public Secondary Schools

Consent Form

Institution: ……

Interviewee (Title and Name): ……

Interviewer: ……

Part 1: Interviewee part

1. I agree to be interviewed for the purposes of the research named above.
2. The purpose and nature of the interview has been explained to me.
3. I agree that the interview may be electronically recorded to make it easier for researcher to analyze data.
4. The researcher has informed me that no names will be used or cited, and that identity of interviewees will not be disclosed under any case.

Name of interviewee: ……

Position/ Job title: ……

Signature of interviewee: ……

Part 2: Researcher Part.

I have explained the nature of research to the interviewee and I have confirmed to participant that names will be kept anonymous and that information will be used for the sake of academic research only.

Name of interviewer: ……

Signature of interviewer: ……

Date: ……

Interview Questions

1. What are the potential opportunities and advantages that e-learning presents for Palestinians?

2. What have been the challenges to implementing successful e-learning programs in Palestinian schools?

3. What are your thoughts on the significance of e-learning to the development of the education sector in Palestine?

   Follow-up: How has the dynamics of the educational institution changed in light of the different restrictions to mobility following the second intifada?

4. What is the current ICT infrastructure of secondary schools in Palestine? How has it changed and does it differ from region to region within Palestine?

5. Kindly, tell me about the current level of e-readiness of the average secondary school teacher in Palestine and their general needs that may prevent them from successfully integrating e-learning frameworks.

   Follow-up: What resources, trainings, and/or support are available for teachers?

6. Tell me about the current level of e-readiness of the average secondary school student in Palestine and components needed to increase their readiness.

7. What are some projects and/or initiatives currently available to secondary schools in Palestine which implement e-learning? What is their success rate?

8. What do you believe are necessary steps for improved implementation of e-learning in Palestinian secondary schools?

Appendix C: Survey Questions (Arabic)

جامعة النجاح الوطنية
كلية الدراسات العليا
ماجستير الإدارة الهندسية

استبيان

توظيف النموذج الوصفي لتقييم الجاهزية للتعليم الإلكتروني في المدارس الثانوية الحكومية في فلسطين

أخي المعلم، أختي المعلمة:
شكراً لإعطائنا من وقتك للمشاركة في هذه الدراسة وذلك استكمالاً لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية. هذا البحث يهدف لتقييم جاهزية التعليم الإلكتروني للمدارس الثانوية العامة في فلسطين. نأمل أن تساعدنا نتائج التقييم في وضع استراتيجيات لتحسين تطبيق أطر التعليم الإلكتروني في المدارس الفلسطينية. نثق أنك ستزودنا بمعلومات قيمة لنجاح هذا البحث. المعلومات التي تزودنا بها في هذا الاستبيان لن يتم الكشف عنها لطرف ثالث وستستخدم لأغراض البحث العلمي فقط.
لأغراض هذا البحث تم تعريف مصطلح التعليم الإلكتروني بأنه يضم على نطاق واسع جميع أشكال التعليم التي تستخدم شكلاً من أشكال تكنولوجيا المعلومات والاتصالات بدون قيود على كمية المواد الدراسية المقدمة من خلال هذه التكنولوجيا. هذا يشمل مجموعة واسعة من التطبيقات التي تعتمد على بيئة إلكترونية أو وسيط يستطيع نقل النصوص والصوت والرسوم المتحركة والفيديو والبث الفضائي والأقراص المضغوطة والهواتف .. إلخ
مع تحياتي
رامي عيسى (0599474493)

القسم الأول: معلومات عامة

الجنس: ☐ ذكر ☐ أنثى

العمر: ☐ 22-30 ☐ 31-40 ☐ 41-50 ☐ 51 فأكثر

الدرجة الأكاديمية (أعلى شهادة أكاديمية حصلت عليها): ☐ دبلوم ☐ بكالوريوس ☐ ماجستير ☐ دكتوراه

الخبرة في التدريس: (عدد سنوات الخبرة في التدريس): ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16 فأكثر

الموقع الجغرافي للمدرسة/المدارس التي تعمل فيها: ☐ مدينة ☐ قرية ☐ مخيم

تقع المدرسة/المدارس التي تعمل فيها ضمن محافظة:

☐جنين ☐طوباس ☐طولكرم ☐نابلس ☐قلقيلية ☐سلفيت
☐أريحا ☐القدس ☐بيت لحم ☐الخليل ☐رام الله والبيرة

عدد الدورات التدريبية التي حصلت عليها في مجال التعليم الإلكتروني:☐لا يوجد ☐واحدة ☐اثنتان فأكثر

القسم الثاني: استخدام التكنولوجيا

هل لديك حاسوب متصل بالانترنت في بيتك؟ ☐ نعم ☐ لا

هل تستخدم حاسوباً متصلاً بالانترنت في مدرستك؟ ☐ نعم ☐ لا

هل يوجد انترنت لاسلكي في المدرسة التي تعمل فيها؟ ☐ نعم ☐ لا

كم ساعة تستخدم الإنترنت في المتوسط يومياً؟ ☐ لا أستخدم ☐ أقل من ساعة ☐ 2-4 ☐ 5-7 ☐ 8 فأكثر

هل استخدام بعض مستويات التعليم الإلكتروني إلزامي في مدرستك؟ ☐ نعم ☐ لا

هل تستخدم المدرسة التي تعمل فيها نظام تعليم إلكتروني؟ ☐ نعم ☐ لا

إذا وجد الرجاء ذكره .....

الرجاء وضع إشارة (X) في مربع الخيار الذي يناسبك لإظهار إلى أي مدى توافق على العبارات التالية:					
	أوافق بشدة	أوافق	محايد	أعارض	أعارض بشدة
التكنولوجيا					
يتوفر خط انترنت سريع في المدرسة التي أعمل فيها					
يتوفر في بيتي خط انترنت سريع					
تتم صيانة الحواسيب وتحديث البرامج بانتظام في المدرسة التي أعمل فيها					
عدد الأجهزة في مختبر حاسوب المدرسة التي أعمل فيها كافٍ لاستخدام الطلاب والمعلمين					
البنية التحتية للمدرسة مهيئة لإيصال الانترنت إلى الغرف الصفية ومرافق المدرسة					
الأشخاص					
مفهوم التعليم الإلكتروني واضح بالنسبة لي					
أعتقد أن التعليم الإلكتروني يحسّن التفاعل بين المعلم والمتعلم					
عندي خبرة سابقة في استخدام أدوات التعليم الإلكتروني					
أتبادل الأفكار والخبرات مع زملائي حول كيفية دمج التعليم الإلكتروني في التدريس					
أستخدم شبكات التواصل الاجتماعي مثل فيسبوك وتويتر					
أتمتع بمهارات جيدة في استخدام الحاسوب					
أستخدم برامج *الأوفيس* (مثل *مايكروسوفت اوفس*) لإنشاء المحتوى التعليمي وعرضه					
أستطيع توظيف المواد التعليمية التي أحصل عليها من الانترنت في الغرفة الصفية					
توفر المحتوى					
توفر المدرسة مواد للتعليم الإلكتروني صمّمها خبراء في إنشاء المحتوى التفاعلي					
يقوم مصدر مركزي (وزارة التربية أو مديرية التربية أو غيرها) بإنشاء محتوى تفاعلي للمواد التعليمية المستخدمة في التعليم الإلكتروني ويتم توزيعها على المدارس					
المؤسسة التعليمية					
تعرفُ الإدارة في المدرسة التي أعمل فيها ما هو التعليم الإلكتروني					
تدرك الإدارة في المدرسة التي أعمل فيها أهمية التعليم الإلكتروني					

تشجعني المدرسة التي أعمل فيها لأقوم بإعطاء حصص في غرفة الحاسوب					
توفر المدرسة التي أعمل بها الحواسيب والتطبيقات اللازمة لتنفيذ حصص محوسبة					
الفائدة المتوقعة					
أعتقد أن أدوات التعليم الإلكتروني هي أدوات تعليم مفيدة					
أنا واثق أن طلابي سيجدون التعليم الإلكتروني مفيداً					
التعليم الإلكتروني أكثر فعالية من نظام الغرف الصفية التقليدية في توصيل المفاهيم التعليمية					
توظيف التعليم الإلكتروني في الغرف الصفية يزيد من التحصيل العلمي للطلبة					
سهولة الاستخدام المتوقعة					
يجد طلابي سهولة في استخدام أدوات التعليم الإلكتروني					
لديّ وقت كافٍ لتحضير مواد التعليم الإلكتروني					
أجد استخدام أدوات التعليم الإلكتروني سهلاً					
التدريب					
أستطيع استخدام أدوات التعليم الإلكتروني بدون الحاجة لحضور تدريب					
يلزمني تدريب حول التعليم الإلكتروني					
أرغب بحضور تدريب حول كيفية تطبيق التعليم الإلكتروني في أسلوبي التعليمي					
إذا كنت قد تلقيت تدريباً حول التعليم الإلكتروني الرجاء الإجابة عن الأسئلة التالية					
كان التدريب الذي تلقيته كافياً وشاملاً					
أكسبني التدريب المعرفة اللازمة لاستخدام نظام التعليم الإلكتروني					
كان طول مدة فترة التدريب كافياً					
كان المدربون أكفياء وخبراء وساعدوني في فهم أدوات التعليم الإلكتروني					

Appendix D : Survey Questions (English)

Najah National University
Faculty of Graduate Studies
Masters of Engineering Management

Survey

Employing a Descriptive Model to Assess E-learning Readiness of Palestinian Public Secondary Schools

Dear Sir or Madam:

Thank you for taking the time to participate in our study. Our research aims to assess the e-learning readiness of secondary schools in Palestine. It is our hopes that the results of the assessment will help us develop strategies for better implementation of e-learning frameworks in Palestinian schools. We are confident that you will provide us with valuable information necessary for the success of this research.

For the purposes of this study, e-learning is defined as term which broadly includes all forms of education that use some form of ICT, or information communication technology, with no limitations on the amount of coursework delivered through the technology. This includes a wide range of applications which rely on an electronic medium or environment that can deliver text, audio, animation, streaming video, satellite broadcasts, CD-ROM, phones etc.

We promise that information provided in the survey will not be disclosed to third parties and will only be used for the purposes of this scientific research.

With regards,
Rami Issa (0599474493)

Part I: Personal Information:

Gender: ☐ Male ☐ Female

Age: ☐ 22-30 ☐ 31-40 ☐ 41-50 ☐ over 51

Academic Degree: What is the highest degree of education you have obtained?

☐ Diploma ☐ Bachelors ☐ Masters ☐ PhD

Teaching Experience: How many years of teaching experience do you have?

☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ more than 16

Location: The school I teach at is located at: ☐ City ☐ Village ☐ Camp

Directorate: The school I teach at is located within the directorate of:
☐Jenin ☐Tubas ☐Tulkarm ☐Nablus ☐Qalqilia ☐Salfit
☐Jericho ☐Jerusalem ☐Bethlehem ☐Hebron ☐ Ramallah & Al-Bireh

N**umber of e-Learning Training Courses I attended:**

☐None ☐ One ☐ Two or More

Part II: Technology Usage:

Do you have a Computer connected to Internet at your home? ☐ Yes ☐ No

Do you use a computer connected to Internet at school? ☐ Yes ☐ No

Is there Wireless Internet connection available at school? ☐ Yes ☐ No

In average, how many hours do you use Internet daily?
☐None ☐Less than 1 hour ☐2-4 ☐5-7 ☐ 8 or more

Are e-Learning tools Mandatory at your school? ☐ Yes ☐ No

Is there of e-Learning Project at your School? ☐ Yes ☐ No

No.	Place an X in the column that best represents how much you agree with each of the following statements:					
		Strongly	Disagree	Normal	Agree	Strongly
	Technology					
1	I am satisfied with the speed of the Internet connection at the school I work at					
2	I have a fast (DSL) internet in my home					
3	Computers are repaired and software are updated at the school I work at regularly					
4	There are a plenty of computer devices in the school that I work in for both the students and teachers					
5	The facilities in the school are not sufficient to support e-learning					
	People					
1	E-learning concept is obvious to me					
2	I believe E-Learning can assist teacher-learner interaction					
3	I have prior general experience with e-learning.					
4	I exchange ideas and experiences with my colleagues on the best ways to incorporate e-learning in teaching.					
5	I use social media like Facebook and twitter					
6	I use computers confidently					
7	I use office software (ex. Microsoft Office, Open Office, etc.) for content delivery and demonstration					
8	I am able to search for teaching material on the internet, modify it and use it in the classroom.					
	Content Availability					
1	e-learning materials are designed from professionals in content creation					

2	Schools share the same e-learning materials, a centralized content is distributed to all schools					
	Educational Institution					
1	I feel the administration at my school understands what e-learning is about					
2	I feel the administration at my school understands the importance of e-learning					
3	I feel the administration at my school encourages me to provide an e-learning materials for the students					
4	I feel the administration at my school supports e-learning					
	Perceived Usefulness					
1	I believe E-Learning is a useful learning tool					
2	I am confident my students will find e-learning useful					
3	E-learning is more effective to communicate learning concepts than a traditional classroom-based approach					
4	I believe students will achieve better education as a result of e-learning being used in classrooms					
	Perceived Ease of Use					
1	My students find it easy to use e-learning					
2	I feel I have sufficient time to prepare e-learning materials					
3	I find E-Learning tools easy to use					
	Training					
1	I can use e-learning tools without attending training					
2	I need training on e-learning					
3	I would attend a training on how to integrate e-learning into my teaching practices					
If you have received training on e-learning please answer the following:						
4	The training provided to me on e-learning was sufficient					
5	The training gave me confidence in using an e-Learning					
6	The training was adequate length and detailed					
7	The trainers were knowledgeable and aided me in my understanding of e-Learning					

جامعة النجاح الوطنية
كلية الدراسات العليا

توظيف نموذج وصفي لتقييم الجاهزية للتعليم الإلكتروني في المدارس الثانوية الحكومية في فلسطين

إعداد
رامي وليد كامل عيسى

إشراف
د. أيهم جعرون

قدمت هذه الأطروحة استكمالا لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.
2016

توظيف نموذج وصفي لتقييم الجاهزية للتعليم الإلكتروني في المدارس الثانوية الحكومية في فلسطين

إعداد

رامي وليد كامل عيسى

إشراف

د. أيهم جعرون

الملخص

في العقود الأخيرة زاد الاهتمام بموضوع التعليم الإلكتروني، وذلك نتيجة للفرص التي يقدمها في تزويد طلاب القرن الحادي والعشرين بالمهارات اللازمة للنجاح في العالم الرقمي سريع الخطى الذي يعيشون فيه، وعلى الرغم من الفرص التي يقدمها التعليم الإلكتروني فإن العديد من التحديات في البلدان النامية تقف في طريق التطبيق الأمثل لهذا النموذج الجديد من التعليم.

تهدف هذه الدراسة إلى تقييم مستوى الجاهزية للتعليم الإلكتروني في المدارس الثانوية الحكومية في فلسطين، وتقوم بتسليط الضوء على جوانب الجاهزية الإلكترونية والتي تمثل نقاط قوة أو نقاط تحدي في سبيل التطبيق الأمثل للتعليم الإلكتروني. بعد استعراض شامل للدراسات السابقة تم اعتماد نموذج Akaslan and Law (2011) والذي يهتم بقياس الجاهزية الإلكترونية في الدول النامية، وذلك تبعاً لمتغيرات الدراسة المتمثلة في سبعة متغيرات وهي: التكنولوجيا، وتوفر المحتوى، والأشخاص، والمؤسسة التعليمية، وسهولة الاستخدام المتوقعة، والفائدة المتوقعة، والتدريب.

استخدمت منهجيات البحث الكمية والنوعية على حد سواء لإجراء هذا البحث. فقد تم جمع البيانات الكمية عن طريق تصميم استبيان وتحكيمه من مختصين في المجال وتوزيعه على عينة عشوائية من معلّمي المرحلة الثانوية في 11 مديرية من مديريات التربية والتعليم في الضفة الغربية، حيث أعيدت 644 استبانة مكتملة. ولغايات جمع البيانات النوعية تم عمل مقابلات مع خبراء ومهنيين في مجال التعليم الإلكتروني.

ويتضح من نتائج الدراسة أن المستوى الكلي الجاهزية للتعليم الإلكتروني في المدارس الثانوية الحكومية الفلسطينية هو في المستوى الثالث: "جاهز، لكن يحتاج بعض التحسينات" وذلك اعتماداً على نموذج Aydin and Tasci (2005) لقياس الجاهزية والذي يتضمن 4 مستويات جاهزية: الأول غير جاهز ويحتاج الكثير من العمل، الثاني غير جاهز ويحتاج بعضاً من العمل، الثالث جاهز لكن يحتاج بعض التحسينات، الرابع جاهز للبدء. حيث كانت المتغيرات : الفائدة المتوقعة، والمؤسسة التعليمية، والأشخاص، والتكنولوجيا ضمن مستوى الجاهزية الثالث: "جاهز لكن يحتاج بعض التحسينات"، أما المتغيرات: التدريب، وسهولة الاستخدام المتوقعة، وتوفر المحتوى ضمن مستوى الجاهزية الثاني: " غير جاهز ويحتاج بعضاً من العمل". حيث ظهر من النتائج أيضاً أن المتغير "الفائدة المتوقعة" هو أعلى المتغيرات من حيث مستوى الجاهزية بين العوامل المدروسة، بينما المتغير "توفر المحتوى" أظهر أقل مستوى جاهزية. وتبين من نتائج الدراسة أن المدارس لا تتلقى التمويل أو الموارد اللازمة لدعم المعلمين بالبرمجيات والمحتوى، وأدوات تكنولوجيا المعلومات والاتصالات، والخبرات التدريبية الكافية. كما يشير انخفاض مستوى "سهولة الاستخدام المتوقعة" إلى عدم وجود التدريب العملي الكافي للمعلمين، وأيضاً فإن المعلمين كبار السن كانت لديهم مستويات أدنى من جاهزية استخدام الحاسوب والرغبة في استخدام التكنولوجيا وأدواتها، وكانوا أكثر مقاومة للتغيير ولتبني ممارسات التعلم الإلكتروني.

وفي ضوء نتائج الدراسة خلص الباحث إلى مجوعة من التوصيات و المقترحات أهمها أنه على الحكومة الفلسطينية ووزارة التربية والتعليم العالي العمل على تطوير سياساتها اللازمة لتطبيق التعليم الإلكتروني وذلك باستغلال نقاط القوة الموجودة حالياً لدى المؤسسات التعليمية والإضافة عليها، وأيضاً أن يكون جزء من الموازنة العامة للحكومة الفلسطينية مخصصاً لتمويل ودعم جوانب هذه النقلة النوعية في التعليم، إلى جانب ذلك العمل على زيادة انتشار الحواسيب وسهولة الوصول الى الانترنت ونشر الوعي باهمية التعليم الالكتروني في الحياة العملية، تطوير ودعم التدريب بما يشمل عدة مستويات من التدريب (مبتدئ، متوسط ومتقدم) لتلائم احتياجات المعلّمين، والاهتمام بتزويد المدارس بالمحتوى التعليمي الملائم والقابل للتعديل وأيضاً توفير الدعم الفني والتوجيه اللازم علاوة على ذلك تطوير البيئة في الغرف الصفية بما في ذلك إعادة دراسة المناهج

لتتوافق مع دمج التعليم الإلكتروني، وحثّ الحكومة والوزارة على تشكيل هيئة وطنية تكون مظلة لخبراء التعليم الإلكتروني في فلسطين وبمثابة منصة لمناقشة قضايا التعلم الإلكتروني واستراتيجيات التخطيط التي تتوافق مع واقع المدارس الفلسطينية، وأيضاً تنفيذ آليات لجمع التغذية الراجعة والتقييم من جميع المستويات بما في ذلك الآباء والطلاب والمعلمين والإداريين.