

**Rethinking E-learning Strategy 2.0 in the  
Digital Age: Case Study of The Future  
School Project in The Kingdom of  
Bahrain**

By

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## **DECLARATION**

This is to certify that I am responsible for the work submitted in this thesis, that the original work is my own except as specified in acknowledgments or in footnotes, and that neither the thesis nor the original work contained therein has been submitted to this or any other institution for a degree.

Ahmed Mohamed

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## **ABSTRACT**

This research aims to rethink e-learning strategy in the digital age by taking The Future School Project in The Kingdom of Bahrain as a case study and by investigating and evaluating e-learning strategies. In the Digital Age, the new technologies of web 2.0 (such as Facebook, blog, YouTube, etc.) have changed the learning landscape, where learners are becoming active participants and creators of knowledge. Many claims and suggestion have made about learning potential of Web 2.0 tools and technologies, however, these claims and suggestions have not been based on research evidence. New research is critical because many learning institutions and schools are making significant investments in e-learning; however, changes in the learning process have been incremental rather than transformational, mainly due to the lack of strategic direction. The research approach adopted in this dissertation includes (1) Observations and Document Analysis, (2) Interviews Stakeholders and (3) Questionnaires (Staffs, Teachers and Students).

The findings show how teachers and students are using ICTs in learning. Moreover, they explain another factor which has an impact on the successful integration of technology in e-learning: this factor is the gaps between e-learning policy, the actual practice of teachers, and students' practice; these three worlds are very far apart. Also the findings show that Web 2.0 could bridge the gap between digital natives and the educational system leading to successful integration of technology in learning. Furthermore, it explains the role of Web 2.0 in learning and provides an e-learning strategic framework for evaluating e-learning. The research recommends (1) Using social network sites Facebook and video sharing site YouTube in learning, (2) Triangulation of e-learning policy, teacher practice and students practice, (4) Rethinking using current ICTs, and (5) Encouraging and monitoring teachers using ICTs.

### **Keywords:**

- E-learning Strategy
- Facebook
- Communal Constructivism
- Web 2.0
- YouTube
- Social Network Sites

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Rethinking E-learning Strategy 2.0 in The Digital Age

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# Chapter 1: Introduction

*“If we teach today’s students as we taught yesterday’s, we rob them of tomorrow” (John Dewey, 1916)*

This chapter provides an introduction to the research and presents the aims and objectives of this research. A case study of E-learning in schools in the Kingdom of Bahrain will provide the empirical evidence required to address the objectives.

## CHAPTER 1: INTRODUCTION

### 1.1 Introduction

Recently, e-learning in schools has grown in popularity (DiPietro, Ferdig, Black and Preston, 2008a) and this rapid increase has led some to suggest that e-learning is one of the most important new approaches for schools (DiPietro et al., 2008a; Blomeyer, 2002). Using e-learning in education, both formally and informally, is increasing rapidly; students in schools and universities now use technologies to support their studies, even if this is not an official requirement (Kirkwood, 2009). Many researchers believe that using e-learning through Information and Communication Technologies (ICTs) is making a significant, if not indispensable, impact on learning (de Koster, Kuiper and Volman, 2012; Hew and Brush, 2007). E-learning is contributing to making education more effective (Webb and Cox, 2004; Li and Ma, 2010) and learning activities more engaging (Bransford, Brown and Cocking, 1999; Deaney, Ruthven and Hennessy, 2006). Furthermore, e-learning is considered as an innovative approach and tool (Rossiter, 2007; Garrison and Anderson, 2003; Garrison, 2011) for schools, universities and governments as part of the knowledge-based economy which requires the acquisition of new knowledge and skills using methods that are timely and effective. Rapidly advancing technologies are providing this. Furthermore, supporting learning by using Information and Communication Technology (ICT) allows learning to become more personalised, flexible, portable; it is also available on-demand (Zhang, Zhao, Zhou and Nunamaker, 2004). Thus, governments are reshaping educational provision and practices in order to meet the demands of this knowledge-based economy and the needs of the Information Society. Schools are also reshaping educational provision and practices to include e-learning and by using ICTs to meet this demand.

Using ICT in learning is making a significant contribution to education (de Koster et al., 2012; Hew and Brush, 2007; Holmes and Gardner, 2006) and there is general agreement on the importance of technology in education (Borokhovski, Bernard, Mills, Abrami, Wade, Tamim, Bethel, Lowerison, Pickup and Surkes, 2001). Many research studies in education show that e-learning can help student learning (Hew and Brush, 2007; Borokhovski et al., 2001). These research studies emphasise that using technology in learning can help students to become more knowledgeable and suggest it could reduce the amount of direct instruction given to students, giving instructors an opportunity to help students with particular needs (Romeo, 2006; Shamatha, Peressini

and Meymaris, 2004). Moreover, using ICTs in learning is raising students' scores on standardised tests (Bain and Ross, 1999), as well as improving students' motivation (Sivin-Kachala and Bialo, 2000).

### **The Potential of E-learning**

Realising the importance of e-learning and the positive impact using ICTs has on education, has led many governments to adopt e-learning in schools (Hew and Brush, 2007). Most developed countries are using the Information and Communication Technology in education and this has become an important part of education policy, resulting in substantial expenditure (Mulkeen, 2003). An enormous amount of money has been spent on adopting technologies into learning systems in schools but this has resulted in little change in the way students learn (Christensen, Johnson and Horn, 2010). Many research studies have suggested that while ICTs are used in learning, there is often a failure to integrate them into education and, as result, they fail to achieve the expected effects on learning (Smeets, 2005; Voogt, 2008). Thus, while significant investments have been made in e-learning, there is, however, little real benefit or fundamental change as a result because of the lack of a strategic direction and a coherent approach (Garrison and Anderson, 2003; Garrison, 2011). Christensen et al. (2010) mention that schools need the correct tools and strategies to understand how to introduce e-learning as an innovation in order to have a significant impact because, although a large amount of money has been spent on adopting e-learning into learning systems, it has resulted in little change to how students learn.

Increased the availability of ICT technology in schools does not necessarily lead to improvements in learning (Lim and Chai, 2008; Lowther, Inan, Strahl and Ross, 2008; Ross, Smith, Alberg and Lowther, 2004; Smeets, 2005; Rutherford, 2004). In e-learning, the most significant effect is the real value added; it is not simply a question of course content, the focus should be the quality of the learning experience (Garrison and Anderson, 2003; Garrison, 2011). In other words, it is about how ICTs can be used for learning by students and teachers, not simply about the availability of course content online or having a Virtual Learning Environment (VLE). E-learning policies for learning institutions, as some research and evaluative studies show, are often ill-conceived because strategies have been employed to use ICT without prior reflection (Kirkwood and Price, 2006). Tondeur, van Keer, van Braak and Valcke (2008) point out

that previous research studies largely ignore the complex nature of ICT integration and e-learning policies. In a research study concerning ICT and e-learning policy in Flanders (the Flemish-speaking region of Belgium), Tondeur, Van Braak and Valcke (2007) mention that there is a gap between the ICT proposed at the macro-level of e-learning policy and the actual use of ICT in the classroom, placing these two worlds apart. Therefore, schools need appropriate tools and strategic direction with regard to technology usage to understand how to introduce e-learning as an innovation if it is to have real impact and result in significant changes to how students learn. There is a need to rethink current e-learning strategies and to look again at how students learn by using these ICTs. The information age and a networked world are making many educators think again about educational understanding (Garrison, 2011). However, in the digital age, there is more need to rethink e-learning strategies since the new generation of web tools, known as Web 2.0, has changed the nature of learning and learners.

### **Emerging Impact of Web 2.0 on E-Learning**

In this digital age, technology has changed dramatically over the last few years as the Internet has changed from consisting of static Hypertext Markup Language (HTML) pages to offering interactive services where visitors create and post information (Mathiasen, Schrum and Holzinger, 2008). This advance in technology in the next generation of the web is known as Web 2.0 and this has generated new technologies and tools. The original web, dubbed Web 1.0, which was originally conceived and invented by Berners-Lee in 1991, is different from the current web, Web 2.0 (Conceived by Tim O'Reilly). The new technologies and tools of Web 2.0 in the digital age have generated web-based applications that allow learners to collaborate and build communities to connect with and share a variety of resources, such as videos, images and documents, with users in an online learning environment (Sadik, 2009). Web 2.0 and its associated applications and tools have made significant shifts in the way people connect, communicate, create and share information; these connectivity and communication services have created new forms of relationships and patterns of communicating and learning (McLoughlin and Lee, 2008).

Today's students grow up in an information society where they are using many types of technology such as Web 2.0 tools like blogs and social networking sites; these have created new modes of interaction and expression (Brummelhuis and Kuiper, 2008).

However, IC Technologies, such as Learning Management Systems (LMS) or Virtual Learning Environments (VLE), are not necessarily addressing the requirements of the present generation of students (Portimojärvi and Donnell, 2010, p. 239). This is because there is a mismatch between how students generally communicate and how they must communicate in formal education (Portimojärvi and Donnell, 2010, p. 239). Pernsky (2001b) describes the new generation as "digital natives", noting that current education systems were not designed for today's students. Thus, Pernsky asserts that teachers and lecturers, who he describes as "digital immigrant instructors" still, in essence, speak the language of the pre-digital age while attempting to teach students who speak a very different new language. This generation, as learners, have high expectations concerning the use of technologies in learning environments (Conole and Creanor, 2007); they consider technology to be a fact of life (Frاند, 2000) and so there is a need to rethink the current e-learning strategy in order to meet the needs of today's learners. "If we teach today's students as we taught yesterday's, we rob them of tomorrow" (John Dewey, 1916). It can clearly be seen, however, that there is a gap between student learning and the modes of learning in educational systems (McLoughlin and Lee, 2008).

Portimojärvi and Donnell (2010) argue that research on education technology does not often converge with the research into the new media cultures of young people. In current education systems, these changes in technologies are creating a gap between schools and the needs of the new generation (the net-generation or digital natives) who have thus become disengaged from traditional instruction (Prensky, 2006). Today's young generation not only use digital tools and devices such as the Internet and iPods, but are also using Web 2.0 tools and technologies (such as Facebook, Twitter, blogs, YouTube, etc.) in both their personal lives and in their educational work (Lemke, Coughlin, Garcia, Reifsneider and Baas, 2009; Project.Tomorrow, 2009).

There is a huge gap between teachers and their students in the use of technology for both personal and educational reasons (Pan, 2010). This gap must be bridged by investigating e-learning technologies in order to understand what the gap is and how students and teachers are using technologies in learning; it is also necessary to understand what the role is of Web 2.0 in learning. There is a gap between students and the current e-learning strategies in learning. An intensive use of Web 2.0 tools and applications is fully integrated in students' daily lives and this generation poses serious

problems concerning how to use ICT in education in order to stay connected with students (Brummelhuis and Kuiper, 2008). Many schools and teachers are struggling with the question of how to use ICT for instructional purposes (Brummelhuis and Kuiper, 2008) and therefore it is important to know how to use these Web 2.0 tools and technologies in education in order to help teachers. Students have grown up in an information society where they are using many types of ICTs and Web 2.0 tools, such as blogs and social networking sites; these have created new modes of interaction and expression (Brummelhuis and Kuiper, 2008). Tools like wikis, blogs, podcasts and social bookmarking are changing the nature of tools from having a single function to offering multiple ones, and these new tools are redefining teaching methods and the ways students learn; thus, there is a demand for new teaching and learning practices (Baylen and Zhu, 2009). Findings from a national survey from U.S. Department of Education point out that most teachers are still using traditional lecture-based instruction instead of new technologies (Chen and Bryer, 2012). In a recent research study, Chen and Bryer (2012) mention that there is a lack of empirical research in terms of what strategies teachers use for teaching with Web 2.0 as a social medium.

Web 2.0 technologies and tools are becoming very common to learners in the digital age and educators are seeing the powerful advantages of using these technologies for academic goals (Hughes, 2009). However, there is limited research on how the use of such tools impacts on students or, in other words, how they influence students' learning experiences (Mix, 2010; Hew, 2011). Web 2.0 use in learning has attracted very limited research (Kitsantas and Dabbagh, 2011; Mix, 2010; Hew, 2011). Kitsantas and Dabbagh (2011), while noting that Web 2.0 tools have significant potential to support students learning processes, admit that empirical research in this area is very limited. Furthermore, most of these research studies offer suggestions and recommendations which are not based on research evidence. Hew and Cheung (2011) assert that, with the recent explosion in the number of Web 2.0 tools and technologies, many claims and suggestion have been made about their learning potential; however, these claims and suggestions are not based on research evidence.

Furthermore, rapid changes in technological infrastructures with Web 2.0 (such as wikis, blogs, social networking, podcasts and virtual worlds) has generated the term "e-learning 2.0" while e-learning 1.0 is likely to be related to the delivery of content to

students which is assessed by teachers. It is also usually related to software known as virtual learning environments (VLEs), managed learning environments (MLEs) or learning management systems (LMSs); these provide a portal for learners' online communication activities (Pachler and Daly, 2011). There is a need to rethink the current e-learning strategy as e-learning strategy 2.0 which will reflect the new Web 2.0 tools and e-learning 2.0. Three main points should be considered which are: (1) there is a gap between student learning and the current modes of learning in the educational system (McLoughlin and Lee, 2008); (2) the younger generation is a net-generation or digital natives who have become disengaged from traditional instruction (Prensky, 2006); and (3) research into educational technology does not often converge with research on the new media cultures of youth (Portimojärvi and Donnell, 2010).

The result of designing and implementing an e-learning strategy 2.0 will be an increased awareness of using Web 2.0 tools and a better understanding of how students are using technology in learning as e-learning by using the new ICTs of Web 2.0 tools. Also, a result of using the new technologies of Web 2.0 would be to help in engaging young people with technology and connecting them to social worlds in a participatory and collaborative method since, as previously mentioned, there is a gap between student learning and the modes of learning in the educational system (McLoughlin and Lee, 2008). To build a bridge between the educational system and the digital generation, there is a need to investigate the role of Web 2.0 and develop a new research framework which should seek to achieve a deeper understanding of how students learn "as the new generation" and how new tools support and assess learning gains. Therefore, there is a need to do research that aims to rethink the e-learning strategy by investigating and evaluating the current strategy in order to understand more deeply the learning of the Web 2.0 generation based on empirical work which should lead to the development of an e-learning strategy 2.0.

### **1.2 Research Aims**

This research aims to investigate and evaluate the e-learning strategy for high schools in the future project organised by the Ministry of Education in the Kingdom of Bahrain as a case study. The overall research question driving this research is: 'is e-learning contributing to improved learning outcomes in schools'. Specific objectives of the research are as follows:

- (1) Comprehending how teachers and students are using ICTs in learning.
- (2) Evaluating the current e-learning strategy from the perspective of students, teachers and the e-learning policy.
- (3) Investigating the role of the Web 2.0 tools in e-learning in terms of e-learning policy, staff, teachers and students.
- (4) Understanding e-learning, learning theories and redefining the notion of e-learning.
- (5) Developing a theoretical framework for an e-learning strategy for the Kingdom of Bahrain.

### **1.3 Significance of the Study**

The significance of the research is summarised in the following:

- 1- This is the first comprehensive research on e-learning strategy in the Kingdom of Bahrain.
- 2- This research explores the role of Web 2.0 in learning for students. Web 2.0 could bridge the gap between digital natives and the educational system, leading to successful integration of technology in learning.
- 3- The work will contribute to e-learning theory, e-learning practices and e-learning policy in the Kingdom of Bahrain.
- 4- Communal constructivism theory is expanded and exemplified in this study.
- 5- The research seeks to comprehend how students are using Facebook as a social network site and video sharing sites such as YouTube in learning.
- 6- The Kingdom of Bahrain is in the process of developing e-learning and this project needs information and guidelines to help this development. This research provides the e-learning project with guidelines after investigating and evaluating the current e-learning strategy. It also recommends e-learning strategies that can be used in the e-learning project. The research's results may benefit other research into e-learning strategy.
- 7- This research study is important in allowing students' voices to be heard with regard to their needs in terms of technology in education. This means their needs can be responded to and their characteristics as the net-generation or digital natives can be understood.

- 8- This research study is also important for policy makers and teachers, enabling them to understand the new generation and then plan and make effective decisions regarding the use of ICT and Web 2.0 tools in education in the digital age.

The next chapter is reviewing relevant literature for this research.



Rethinking E-learning Strategy 2.0 in The Digital Age

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## **Chapter 2: Literature Review**

*“It is the theory which decides what we can observe”* Albert  
Einstein (1879-1955)

This chapter reviews and analyses relevant literature related to this thesis with regard to e-learning. It reviews literature on e-learning and its benefits in order for the term and its definition to be understood. It then reviews learning theories to determine the learning strategy of e-learning. After this, it synthesises, analyses and discusses the literature related to e-learning strategies and Web 2.0. This is followed by an analysis and review of current Web 2.0 tools (such as Blogs, Twitter, Wikis, YouTube, and social network sites such as Facebook) and technologies and how these are starting to be used in learning. In current education, these changes in technology are creating a gap between school and the new generation who have become disengaged from traditional instruction.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

Recently, e-learning in schools has grown in popularity (DiPietro et al., 2008a) and this rapid increase has led some to suggest that e-learning is one of the most important new approaches for schools (DiPietro et al., 2008a; Blomeyer, 2002). The advances in technologies in the next generation of the web, known as Web 2.0, has generated web-based applications that allow learners to collaborate and build communities to connect and share a variety of resources such as videos, images and documents among users in an online learning environment (Sadik, 2009). Consequently, today's generation not only uses digital tools and devices such as the Internet and iPods, they are using Web 2.0 tools and technologies (such as Facebook, Twitter, Blog, YouTube, etc.) in their personal lives and in their educational work. Students grow up in an information society where they are using many types of these Web 2.0 tools and technologies such as Blogs, social networking sites which have created new modes of interaction and expression (Brummelhuis and Kuiper, 2008). In current education, these changes in technology are creating a gap between school and the needs of the new generation who have become disengaged from traditional instruction (Prensky, 2006).

Intensive use of Web 2.0 tools and applications is fully integrated into students' daily lives and the rise of this generation poses serious problems regarding how to use ICT in education in order to find ways to stay connected with students (Brummelhuis and Kuiper, 2008). Most developed countries are using ICTs in education and this is now an important part of education policy, resulting in substantial expenditure (Mulkeen, 2003). However, researches studies have determined that while using technologies in learning, there has been a failure to integrate ICTs in education and therefore also a failure to achieve the expected effects on learning (Smeets, 2005; Voogt, 2008). Therefore, schools need the correct tools and strategies to understand how to introduce e-learning as an innovation in order to make an impact because, although large amounts of money have been spent on adopting e-learning into learning systems, this has resulted in little change in how students learn (Christensen et al., 2010). Schools need strategic direction in the use of technology to determine what type of ICTs can be used and how they can be effectively employed in learning. In many schools, teachers are struggling with the question of how to use ICT in learning (Brummelhuis and Kuiper, 2008). There is a

need to change learning strategies to meet the needs of learning nowadays. “If we teach today’s students as we taught yesterday’s, we rob them of tomorrow” (John Dewey, 1916). This chapter reviews, analyses and builds on relevant literature in e-learning related to this thesis in order to understand literature relevant to this topic. Firstly, it reviews e-learning and its benefits in order to understand the term and define it. Then it reviews learning theories to determine the learning strategies associated with e-learning. After this, it synthesises, analyses and discusses the literature related to e-learning strategy and then Web 2.0. This is followed by an analysis and review of current Web 2.0 tools and technologies and how these are used in learning. Finally, it provides a summary of the entire chapter.

### **2.2 E-Learning: Definition and Exploration of Potential Benefits**

E-learning has become a widely accepted learning method in recent years (Shih, Feng and Tsai, 2007; Cloete, 2001; Hodgson, 2002). With the rapid growth of the Internet and digital technologies, the web has become a powerful, global, interactive and dynamic tool for learning and teaching (Khan, 1997). E-learning can be seen as the fastest-growing and most promising market in the education industry (Hall, 2001). Many researchers believe that using e-learning makes a significant, if not indispensable, impact on learning (de Koster et al., 2012; Hew and Brush, 2007). E-learning is contributing by making education more effective (Webb and Cox, 2004; Li and Ma, 2010) and learning activities more engaging (Bransford et al., 1999; Deaney et al., 2006). In the U.S., there were about 3.2 million students taking at least one online course in 2005 (Allen and Seaman, 2006). The history of using technology for learning began, as Rosenberg (2001) stated, in 1922, when Thomas Edison predicted that the motion picture would replace textbooks and perhaps teachers in the classroom. In the second half of the century, new technologies began to be used in learning. For example, in 1951 in Australia, radio was used for teaching students and, in the 1960s, telephone conferencing was used by the University of Wisconsin (Duggleby, 2000). There was no facility, however, for two-way communication between televised instructors and students, making TV and radio mere supplements to existing conventional education. Once universities and organisations began to offer access to a worldwide web portal, the use of learning technology for distance learning initiatives exploded across Europe,

Canada, the US and Australia as the e-learning revolution started (Sloman, 2001). The term “e-learning” was coined in the early 1990s as the Internet allowed distance-learning systems to integrate curricula and the existing online technology enabled a true two-way communication that could replace the conventional interaction between instructors and students (Williams, 2004).

### **2.2.1 Definition of E-learning**

The term “e-learning” consists of two parts: ‘e’ and ‘learning’. The ‘e’, with regard to e-learning, clearly stands for electronic and so mean “electronic learning” (Lain and Aston, 2004; Liaw, Huang and Chen, 2007). It is also necessary, however, to define ‘learning’ before defining ‘e-learning’. Learning in general is defined as the process in which people acquire new skills or knowledge for the purpose of enhancing their performance (Rosenberg, 2001). The Oxford English Dictionary (2007) defines learning as the knowledge or skills acquired through study or by being taught. Although many researchers have defined learning, there is not one sole definition since the definition of learning varies in wording and detail from source to source (Mowrer and Klein, 2000). Garrison and Archer (2000) defined learning as “a process of constructing meaning from raw information and confirming knowledge”. However, Child (2004) argued that “learning occurs whenever one adopts new, or modifies existing, behaviour patterns in a way which has some influence on future performance or attitudes”. In more detail, Klein (1987 P.2) defined learning as a relatively permanent change in the ability to exhibit a behaviour; this change occurs as the result of successful or unsuccessful experience.

In general, e-learning is formally defined as “electronically mediated communication for the purpose of constructing and confirming knowledge” (Garrison, 2011). Duggleby (2000) defined e-learning as an approach to learning using devices based on computers or communications technology, such as personal computers, CDs, digital television and mobile phones. E-learning can be defined as using Information and Communication Technologies (ICTs) in learning. Shurville and Brown (2006) defined e-learning as an approach to education through independent, resource-based learning which is mediated and supported via ICT while the Department for Education and Skills in the UK (DfES) defined e-learning as learning in a way that uses Information and Communication Technologies (ICTs) (DfES, 2003). ICTs may be defined as a collection of technologies

and applications which allow the processing, storing and transfer of information to a wide variety of users or clients (Cohen-Blankshtain, Nijkamp and van Montfort, 2004). The United States Agency for International Development (USAID) defined Information and Communication Technologies as the combination of hardware and software which enables the exchange, processing and management of information and knowledge (Akpabio, Okon and Inyang, 2007). The Agency added that ICTs included technologies and methods for storing, managing and processing information (e.g. computers software, books, digital and non-digital libraries) and for communicating information (e.g. mail and email, radio and television, cell phones, pagers, the web, etc.) (Akpabio et al., 2007).

In this research, e-learning is defined as using Information and Communication Technologies (ICTs) in learning. The aim of using this definition is to keep the focus on learning and to avoid bringing in additional terms such as 'knowledge' which complicate the definition and might restrict the scope of the research at too early a stage. Different perspectives on learning are then explored in the literature review. The 'using ICTs' element of the definition keeps the scope broad as it encompasses all types of use including face to face and at a distance as well as personal and collaborative use of technology.

The advances in research and development in ICT have given rise to new methods of teaching and learning, moving from traditional learning to learning systems based on ICTs (Barroso and Cabranes, 2006). The centre of educational research and innovation at the Organisation for Economic Co-operation and Development (OECD) (2005) determined five types of learning based on the scale of the online presence. These are: (1) None or trivial online presence; (2) Web supplemented (e.g. course outline and lecture notes online, use of email, links to external online resources); (3) Web dependent: students are required to use the internet for key "active" elements of the programme (e.g. online discussions, assessment online, project/collaborative work) but without significant reductions in classroom time; (4) Mixed mode: students are required to participate in online activities (e.g. online discussion, assessment, online project/collaborative work, or as part of course work) which replace part of the face-to-face teaching/learning although significant campus attendance remains; and (5) Fully

online. These attempts to explain the learning type based on time spent in the physical classroom.

### **E-learning as a Disruptive Technology**

The adoption of technology in learning is changing the learning itself and therefore, many research studies have applied the concept of disruptive technologies or innovations to education (Cinque and Martini, 2010; Meyer, 2010; Garrison and Anderson, 2003; Laurillard, 2006; Christensen et al., 2010; Garrison, 2011). The original idea of disruptive technologies or innovations sees them as a threat to institutions and are the reason for their destruction in the long term (Christensen, 1997). The term disruptive technology or innovation was coined by Clayton Christensen, a Harvard Business School professor, and the disruptive innovation theory explains why organisations struggle with certain types of innovation; the theory also determines ways in which organisations can succeed with innovation (Christensen, 1997). Christensen (1997) discusses the innovator's dilemma when new technologies cause great firms to fail and, in disruptive innovation theory, he coins two terms which are: (1) Disruptive Technology and (2) Sustaining Technology. Sustaining Technology covers most new technologies or innovations that foster improved product performance while Disruptive Technology refers to innovations that result in worse product performance in the short term; it may even contribute to the failure of leading firms. Christensen (1997) argues that in disruptive innovation, good organisations fail because these organisations have often either ignored innovations or have chosen to fight them. Usually, disruptive technologies are cheaper, simpler, smaller, and frequently, more convenient to use (Christensen, 1997).

Christensen et al. (2010) discussed disruptive technology in e-learning from a different perspective. They argue that the disruptive transition from teacher-led to software-delivered instruction proceeds in two stages. The first stage is the computer-based or e-learning stage and second stage is termed “student-centric technology”, in which software is developed that can help students to learn about each subject in a manner that is consistent with their learning needs; student-centric technology is disruptive to personal tutors (Christensen et al., 2010). In terms of e-learning, Laurillard (2006) mentions that e-learning can be a highly disruptive technology in education while Garrison and Anderson (2003) consider e-learning as a disruptive technology or

innovation because it threatens the sustaining technology. Therefore, schools should adopt a strategy that understands and encourages technology; if this adoption fails, the results will show up in the early stages, which is less expensive. Christensen (1997) asserts that disruptive technologies can destroy some firms; they lead to failure because such firms have refused to adapt. Thus, the task is to ensure that an innovation is taken seriously without putting present needs at risk.

### **2.2.2 Challenges of E-learning**

There are many challenges that facing using e-learning in schools and many researchers has discussed it. These research studies have proposed that while technologies are used in learning, there is often a failure to integrate them into education and, as result, they fail to achieve the expected effects on learning (Smeets, 2005; Voogt, 2008). Cuban (2001) study the this issue in schools in the computer-rich ‘Silicon Valley’ in California and the result show that less than five percent of teachers integrated computer technology into their curriculum and instructional routines. Cuban (2001 P.134) point out that “the overwhelming majority of teachers employed the technology to sustain existing patterns of teaching rather than to innovate”. Moreover, Christensen et al. (2010) mention that an enormous amount of money has been spent on adopting technologies into learning systems in schools but this has resulted in little change in the way students learn. Furthermore, using e-learning in school significantly increasing burdens on teaching staff in terms of the time commitment needed to develop materials or time needed to deal with increased communications (email, discussion forum inputs and monitoring, and so on) and greater demands for learning support (Holmes and Gardner, 2006).

### **2.2.3 The Benefits of E-learning**

E-learning has the power or potential to impact positively on education (Holmes and Gardner, 2006; de Koster et al., 2012; Webb and Cox, 2004; Li and Ma, 2010; Deaney et al., 2006) and there is general agreement on the importance of e-learning in education (Borokhovski et al., 2001). Many research studies in education show that e-learning can help students’ learning (Hew and Brush, 2007; Borokhovski et al., 2001). These research studies emphasise that using technology in learning can help students to become knowledgeable and can reduce the amount of direct instruction given to

students, giving instructors an opportunity to help students with particular needs (Romeo, 2006; Shamatha et al., 2004). Moreover, these research studies suggest that using e-learning improves students' scores in standardised tests (Bain and Ross, 1999); it can also improve students' self-esteem and motivation (Sivin-Kachala and Bialo, 2000). Kirkwood (2009) points out that, according to the stated policies and strategies of governments and learning institutions, an increased use of e-learning helps to: (1) provide more flexible approaches to teaching; (2) facilitate the involvement of learners; and (3) prepare learners for living and working within technology-rich environments and societies.

Realising the importance of e-learning and the positive impact of ICTs on learning has led many governments to adopt e-learning in schools (Hew and Brush, 2007). The USA government spent \$7.87 billion on technology equipment in 2004 (Quality Education Data, 2004) while, in Singapore in 1997, a program was launched to use information technology in education; this cost approximately \$1.2 billion (Hew and Brush, 2007). In the U.S. there are roughly 3.2 million students taking at least one online course in 2005 (Allen and Seaman, 2006). One of the key characteristics of the contribution of e-learning to such a high growth rate is that it provides more flexibility to teachers and learners in terms of participating in educational activities when compared to face-to-face instruction (Siritongthaworn and Krairit, 2006). Furthermore, a major benefit of e-learning includes lower costs. E-learning is often the most cost effective way to deliver information; also, the content is more timely and dependable (Rosenberg, 2001). Duggleby (2000) stresses that e-learning helps people who have disabilities that prevent or deter them from accessing face-to-face education. It can aid them in participating and distance learning materials, such as text books, videos and audios, usually have a high standard of content and presentation. Dwyer et al. (1995) refers to educational advantages that arise when supplementing a course with web-based tools. These include student-to-student and faculty-to-student communication, enabling student-centred teaching approaches, providing 24 hours-a-day access to course materials, and providing just-in-time methods to assess and evaluate student progress. In addition, effectiveness is increased by the ability to replay or skip through courses as the students set their own pace. Shih et al. (2007) claims that, in an e-learning environment, the learning process is more self-paced and self-motivated. Learners, on

the one hand, have more control and flexibility in their learning; on the other hand, they need to take more responsibility for their own learning.

### **2.3 Learning Theories**

There is no doubt that the main goal of using e-learning is to promote learning by using ICTs (Ally, 2003). However, these technologies are simply vehicles that deliver instruction; they do not themselves influence learner achievement so it is important to understand learning in order to understand e-learning technologies because technologies are only delivery methods (Clark, 1983). It is important to address learning theories in order to understand the principles of learning and how students learn by using technologies (Ally, 2003). Also, in order to gain a deeper understanding of how people learn and how new tools provide support, and also to assess learning gains from using an e-learning strategy, it is important to understand learning theories to understand how learners learn with e-learning since learning theories help to explain the learning process (Klein and Mowrer, 1989). Theories are a very important because there is ‘nothing as practical as a good theory’ (Lewin, 1943) and, as Albert Einstein (1879-1955) pointed out, “it is the theory which decides what we can observe” (Anderson and Elloumi, 2003). Moreover, learning theory allows researchers to see the “big picture”, making it possible to view practice and research from a broader perspective (Anderson, 2003). Considering learning theories is necessary because it help researchers in the planning process to evaluate e-learning (Jordan, Carlile and Stack, 2008).

The main goal of e-learning is to support learning; however, good e-learning depends on the effectiveness of the learning (Rovai, 2002). Ally (2003) claims that effective e-learning is based on learning theories which have been devised to explain the learning process (Klein and Mowrer, 1989). Furthermore, Jordan et al. (2008) point out that a knowledge of learning theory allows: (1) Access to the considered experience of others; (2) Validation and affirmation of existing practice; (3) Mind-tools for recognising, analysing and evaluating issues; (4) Power to manipulate and develop concepts in a reflective manner; and (5) Terminology to explore epistemological and pedagogical topics. There are many schools of thought regarding learning in terms of learning theories. However, there are three main learning theories; these are based on behaviourism, cognitivism and constructivism (Cooper, 1993; Duffy and Jonassen,

1991; Ertmer and Newby, 1993; Anderson and Elloumi, 2003; Buzzetto-More, 2007). Many educational technology researchers (Cooper, 1993; Duffy and Jonassen, 1991; Ertmer and Newby, 1993) believe that learning occurs by moving through these forms of learning; it starts with the behaviourist approach, then shifts to a cognitive one and finally moves to constructivism. Buzzetto-More (2007) argues that, parallel to the evolution of educational technology, learning theories have shifted through behaviourism, cognitivism and constructivism. However, these theories were developed at a time when learning was not impacted by computer technology. The next section discusses the learning theories of: (1) Behaviourism, (2) Cognitivism, and (3) Constructivism.

### **2.3.1 Behaviourism**

Behaviourism is perhaps the oldest and most widely understood learning theory (Holmes and Gardner, 2006). It is also the most influential and generalisable theory of learning because it is universal and underpinned by only a few principles (Jordan et al., 2008). As its name suggests, behaviourism concentrates on behavioural changes in organisms. The early computer learning systems were designed based on a behaviourist approach to learning.

The behaviourist school of thought started in the first half of the twentieth century and was influenced by Thorndike (1913) and Pavlov (1927). The most famous behaviourist psychologists are Ivan Pavlov, Burrhus Frederic Skinner, Edward Lee Thorndike and John Broadus Watson (Holmes and Gardner, 2006). Behaviourists believe that learning always involves a change in behaviour and they focus on observable learning events as demonstrated by stimulus and response relationships (Jordan et al., 2008). Buzzetto-More (2007) argues that behaviourism is related to objectivism as it explains and describes how to achieve defined objectives.

Behaviourists define learning as a relatively permanent change in behaviour and such changes in behaviour are always observable. Thus, if no observable change happens, no learning has occurred (Jordan et al., 2008). Behaviourists see the mind as a “black box” (Hung, 2001; Ally, 2003). Skinner, who was a leader of the behaviourist school, argued

that since it is not possible to prove the inner processes of learning using any available scientific procedures, researchers should concentrate on the observation of behaviour.

Behaviourists place importance on measurable, observable, performance-based outcomes (Buzzetto-More, 2007). They claim that cognitive processes cannot be validated, while observable actions and learning behaviours may be measured and confirmed through experiments (Garrison and Archer, 2000). Behaviourists believe that learning is a change in observable behaviour caused by the external environment (Skinner, 1974). Gredler (2001) argues that behaviourism consists of several theories that make three assumptions about learning. These are: (1) Observable behaviour is more important than understanding internal activities; (2) Behaviour should be focused on simple elements: specific stimuli and responses; and (3) Learning is about behaviour change. Based on observing and experimenting with animals and humans, Skinner determined basic rules for learning in the behaviourist school (Child, 2004). These are: (1) Each step in the learning process should be short and should grow out of previously learned behaviour; (2) In the early stages, learning should be regularly rewarded and all stages carefully controlled by a schedule of continuous and/or intermittent reinforcement; (3) Reward (e.g. feedback) should follow quickly when the correct response appears; (4) The learner should be given an opportunity to discover stimulus discriminations for the most likely path to success.

Behaviourism is sometimes criticised as this approach cannot adequately explain the acquisition of higher-level skills or those that require a greater depth of processing, such as problem solving, critical thinking or speech behaviour (Salah, 2007). Some researchers claim that there is more to learning than a change in behaviour and that not all learning is observable (Ally, 2003). Ally (2003) mentions four points that can be recommended for e-learning from the behaviourist point of view: (1) The expected objective should be clear and specific for the student in order to determine the achievement of the outcome of the online lesson; (2) Students must be tested regularly with online lessons to determine whether or not they have achieved the learning outcome to elicit appropriate feedback; (3) Learning materials must be sequenced appropriately to promote learning, moving from simple to complex; (4) Students must be provided with feedback in order to monitor and develop themselves.

### 2.3.2 Cognitivism

Cognitivism is an antithesis to behaviourism because it focuses on the mind and on the learning processes of the brain (Holmes and Gardner, 2006). Cognitivism involves the study of mental processes (sensation, perception, attention, encoding and memory) which behaviourists were reluctant to study because cognition occurs inside the ‘black box’ of the brain (Jordan et al., 2008). Cognitive theories are based on a multidisciplinary viewpoint covering anthropology, linguistics, philosophy, developmental psychology, computer science, neuroscience, and several branches of psychology (Bransford et al., 1999). The most famous cognitive theorists are Jean Piaget, Jerome Bruner and Lev Vygotsky (Holmes and Gardner, 2006). There are four factors that influence the development of cognitivism as a separate discipline in psychology (Jordan et al., 2008). These are: (1) The development of experimental psychology; (2) The move from an interest in external behaviours to internal brain processes; (3) The inadequacy of behaviourism to explain language acquisition; and (4) The development of computers and an interest in artificial intelligence.

Cognitivists have argued that learning results from organising and processing information effectively in the mind (Jordan et al., 2008). The cognitivist school believes that learning is an internal process that involves memory, thinking, reflection, abstraction, motivation and meta-cognition (Ally, 2003). Cognitive theories focus on learning processes and address issues concerning how information can be received, stored, organised and retrieved by the mind. Cognitive psychology is concerned with the internal processes involved in making sense of the environment; these processes include attention, perception, learning, memory, problem solving, and thinking (Eysenck and Keane, 2005). Cognitive psychology views learning as an internal process and believes that the amount learned depends on the processing capacity of the learner ( Craik and Lockhart, 1972; Craik and Tulving, 1975). Educators in the cognitive school encourage learners to develop critical thinking skills and to reflect on their learning (Buzetto-More, 2007). However, Papert (1980) claims that the cognitive view treats learning less systematically, as the system presents phenomena that learners investigate by interaction. Cognitive psychology argues that learning depends on using memory, motivation and thinking, which play an important part in learning, and that learners use different types of memory during learning (Ally, 2003). Memory could be defined as “our ability to retain and recall information” (Jordan et al., 2008 , p. 43)

Information processing is a recent approach that has been used in cognitive learning theory; in this approach, the computer is used as an analogy for the information processing capabilities of humans. According to Lachman and Butterfield (1979), cognitive psychology concerns how people take in information, how they recode and remember it, how they transform their internal knowledge states, and how they translate these states into behavioural outputs. Although this view has advantages in explaining the importance of memory structure, necessary in order to recall information efficiently, there are some disadvantages regarding this view. These are: (1) Humans cannot be treated like computers in terms of storing and recalling a vast amount of information (Ausubel, 1968), and (2) The computer does not suffer developmental changes such as aging as people do (Ausubel, 1968);

### **2.3.3 Constructivism**

Constructivism is a learning theory which consists of a broad group of theories that explain knowledge acquisition and learning (Jordan et al., 2008). The basic theory of constructivism is that knowledge does not exist independently from the learner: knowledge is constructed (Vrasidas, 2004). It is difficult to make a clear distinction between constructivism and cognitivism because constructivism is a natural progression of cognitivism since both are interested in cognitive processes. However, cognitivism focuses on how information is processed, whereas constructivism focuses on what people do with information to develop knowledge (Jordan et al., 2008). Constructivism is not, unlike many other learning theories, a very new theory; it has multiple roots in numerous philosophical works (Perkins, 1991; Slavin, 2003). The most prominent adherents include Piaget (1970), Blumer (1969), Kuhn (1996), von Glasersfeld (1989), and Vygotsky (1978). Many educational technology researchers (Cooper, 1993; Duffy and Jonassen, 1991; Ertmer and Newby, 1993) believe that learning moves through behaviourism to a cognitivist approach and then to a constructivist approach. This movement represents a shift from an external view to an internal one.

Constructivism relates to personal knowledge construction and interpretation (Buzetto-More, 2007). The key principle of it is that people learn best by actively constructing their own learning (Cole, 2009); therefore, constructivists see learners as active rather than passive (Ally, 2003; Jordan et al., 2008; Buzetto-More, 2007). Constructivists argue that learners' understanding of the information in the world is

based on their personal reality which stems from learning by observation, processing and interpretation; they then personalise the information into personal knowledge (Cooper, 1993; Wilson, 1997). Constructivists argue that knowledge is not transferred to learners from the external world. Instead, they claim that knowledge transfers to learners based on the learners' personal interpretations of the world. Constructivists do not refute the existence of the real world but argue that knowledge never represents the real world because what we know of the world depends on our own understanding of our experience of it (Salah, 2005). Bodomo (2009) suggests that the main tenets of constructivism are based on the views of Bruner, Piaget, Dewey and Vygotsky. These can be summarised as follows: (1) The learner plays an active role in the learning process (Bruner); (2) Learners build their own knowledge through experience, but not through "given" information. (Piaget, Bruner); (3) Instructors should only serve as facilitators and encourage students to discover new knowledge by themselves (Bruner); and (4) Learning is a social activity that takes place in an environment that stresses the role of the cultural context (Dewey, Vygotsky).

Constructivism has significantly improved the efficiency and effectiveness of e-learning (Payne and Stoddard, 1994). Constructivists assume that learners learn better by discovering things for themselves, rather than being told by an instructor or machine (Lin and Hsieh, 2001). This helps learners take more responsibility for their own learning and communicate with their peers to find information beyond textbooks (Barker and Dickson, 1996). O'Loughlin (1992) points out that, in constructivism, students are encouraged to explore possibilities, invent alternative solutions, collaborate with other students, experiment with ideas and hypotheses, change and improve their thinking, and finally present the best results they can derive. However, constructivism is criticised since it suggests that all knowledge is constructed through a process of reflective abstraction and the cognitive structures in individuals are in a process of constant development (Cole, 2009).

In constructivism, learning moves away from one-way instruction to construction and the discovery of knowledge (Tapscott, 1998). Duffy and Cunningham (1996) argue that learners should be allowed to construct knowledge rather than being given knowledge through instruction. In terms of constructivist learning, Jordan et al. (2008)

pointed out links between community-based learning and formal education. Based on the constructivist learning theory, these points could be recommended for e-learning:

1. Educational materials need to be provided in a way that helps students to discover things for themselves rather than being told by an instructor or machine (Lin and Hsieh, 2001). This can help learners to take more responsibility for their own learning and communicate with their peers to find information beyond textbooks (Barker and Dickson, 1996).
2. In e-learning, the learners should construct their own knowledge rather than simply accepting instruction from the instructor (Ally, 2003). Good interactive online instruction facilitates knowledge construction because it allows students to take the initiative to learn and interact with other students and the instructor; it allows the student to control the learning agenda (Murphy and Cifuentes, 2001).
3. E-learning should be provided with discussion areas which are designated as a non-compulsory part of the course (non-compulsory Coffee Bar type discussions). This is an important source of serendipitous informal support among course members; it allows learners to learn much more than the content of a formal curriculum (Clarke, 2009).
4. Collaborative and cooperative learning should be encouraged to facilitate constructivist learning (Hooper & Hannafin, 1991; Johnson & Johnson, 1996; Palloff & Pratt, 1999) by using purposeful learning activities such as small-group discussions, simulation games, project-based work, and collaborative problem-solving activities. Working in a team or group helps learners to accomplish shared goals (Murphy and Cifuentes, 2001) and to develop critical thinking skills by working collaboratively (Romiszowski, 1997).
5. Learning should be interactive to support higher-level learning and social skills, as well as to help develop personal meaning (Ally, 2003). This helps learners to develop new knowledge, skills and attitudes as they interact with information and the environment (Heinich, Molenda, Russell and Smaldino, 2002). In addition, interaction helps to create a sense of presence and a sense of community for online learners, as well as to promote transformational learning (Murphy and Cifuentes, 2001). Learners interact with the content, with other learners, and with the instructors, and the relationship between instructor, learners and content is significant to the learning experience (Garrison, 1999).

There are different types of interaction (Berge, 1999; Gilbert and Moore, 1998) and Figure 1 shows these interactions and their levels.

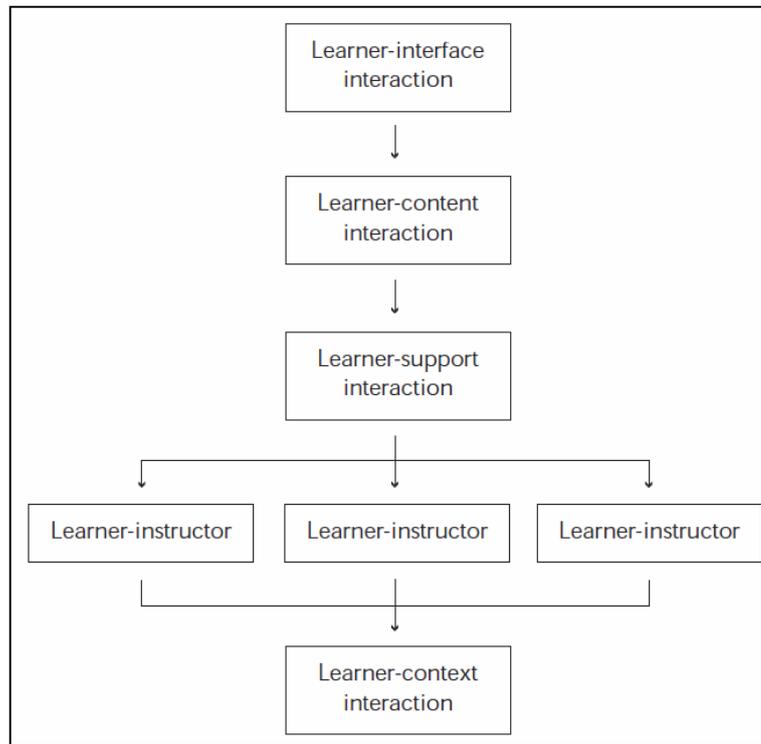


Figure 1: Levels of Interaction in Online Learning  
(Source: Anderson, 2003, p.21)

There are several schools of thought within the constructivist approach (Cobb, 1994; Prawat and Floden, 1994) in terms of thinking about knowledge construction and the different types of constructivist thinking are generally classified according to their main emphases (Jordan et al., 2008). Next section presents two learning theories that have been developed from the constructivist learning theory. These theories are: (1) the Socio Constructivism learning theory and (2) the Communal Constructivism learning theory which is the main theory used in this research.

### **Socio Constructivism**

One of the most prominent of the constructivist paradigms is social or socio-cultural constructivism. The major difference of this approach concerns knowledge construction, as social constructivists believe that knowledge is the result of social interaction. Although Cobb (1994) argues that social constructivism cannot be viewed as separate from constructivism as a whole. Social constructivism emphasises the role

played by society and culture in learning because people participate in the construction of a shared world (Jordan et al., 2008). Socio constructivism suggests a third dimension to the interaction between learners and their environment; this may be other people such as other learners or tutors (Holmes and Gardner, 2006). Social constructivism is derived from the work of Lev Vygotsky and Albert Bandura (Jordan et al., 2008). Lev Vygotsky focuses on environmental, social and cultural influences in learning. The theory of social constructivism is based on the idea that a human's learning is based on his/her interaction with the social and culture environment. Social constructivists claim that knowledge is constructed in communities of practice through social interaction (Lave and Wenger, 1991). The basic principle is that students learn most effectively by engaging in carefully selected, collaborative, problem-solving activities, under the close supervision of instructors (Vygotsky, 1978).

The social dimension in socio constructivism has led to the creation of new concepts such as 'learning organizations', 'learning schools' and 'learning communities', which has changed the concept of learning from residing in formal settings such as schools and universities to learning in the wider social community (Holmes, 1999). This helps learners to share their learning through collaboration and co-operation. Salomon and Perkins (1998) call this shared learning 'distributed cognition' and point out that learning involves learning to learn from others, learning to learn with others and learning to contribute to the learning of a collective. They argue that contributing to the learning of the collective is likely to benefit the individual as well.

### **Communal Constructivism**

The communal constructivism learning theory is based on socio constructivism. The original concept, based on socio constructivism, was restricted to local learning environments and the social support of a class group (Holmes and Gardner, 2006). Just as it has been argued that socio constructivism cannot be separated from constructivism, it has also been said that communal constructivism cannot be separated from socio constructivism either. Holmes and Gardner (2006) mention that communal constructivism may appear to be an extension of socio constructivism. Salomon and Perkins (1998) state that, in learning, contributing to the learning of the communal group is likely to benefit the individual as well. Holmes and Gardner (2006) argue that there is a need to expand the definition of socio constructivism as it should consider the

synergy regarding new information technology in communication and learning. Communal constructivism is a term that is used to represent the expansion in e-learning in providing learners with the tools to create new learning for themselves and to contribute and store their new knowledge in communal knowledge-bases for the benefit of the community's existing and new learners (Holmes, Tangney, FitzGibbon, Savage and Mehan, 2001). The definition of communal constructivism used here, developed from the original work of Holmes et al. (2001), is:

*“Communal constructivism is an approach to learning in which students construct their own knowledge as a result of their experiences and interactions with others, and are afforded the opportunity to contribute this knowledge to a communal knowledge base for the benefit of existing and new learners.”*

Communal constructivism is an approach to learning where “students not only construct their own knowledge (constructivism) as a result of interacting with their environment (social constructivism) but also actively engage in the process of constructing knowledge for their learning community” (Holmes et al., 2001). Holmes & Gardner (2006) note two main benefits in creating a communal constructivist environment in e-learning. These are: (1) as students leave their imprint on the course as an integral part of their learning, this obviously benefits learners in their classes and learner will come after; and (2) more importantly, it creates “a self-sustaining group of existing and future students who appreciate the contribution of their previous peers, and who renew the cycle of communal constructivism by their own engagement and contributions” (Holmes and Gardner, 2006, p. 86). Clarke (2009) compares the benefits of the traditional learning model with the communal constructivist environment thus:

*“In a traditional learning model, students pass through a pipe leaving no trace of their passing (so there is no year-on-year transfer of knowledge between student cohorts), whilst a communal constructivist environment is analogous to a river which enriches its flood plain with silt each time it floods. Each cohort of students contributes to the communal knowledge in a permanent form, leaving their own imprint on the course by producing communally generated resources which are shared with all future cohorts” (Clarke, 2009).*

In communal constructivism, students are becoming publishers and not just consumers (Holmes et al., 2001); communal constructivism emphasises that “learners should be listened to and be important to others. They must be included and their work

should be valued by others. Their learning tasks should be useful and should be valued as such” (Holmes et al., 2001, p. 6). Clarke (2009) has argued that communal constructivist environments help the learner to learn from others; when every learner contributes to communal knowledge, it is shared among all learners. Salomon and Perkins (1998) distinguish between *learning with others* and *learning from others*. *Learning with others* means that the individual learns with and for the team, while *learning from others* indicates learning as a result of the learning process. In communal constructivism, learners are learning in both dimensions: the individual and the collective (Holmes and Gardner, 2006).

Jonassen (1993) mentions that education has been undergoing a paradigm shift, moving away from teaching-as-instruction towards student-centred learning; communal constructivism supports student-centred learning. Holmes et al. (2001) claim that in communal constructivism, students cooperate rather than compete while Clarke (2009) points out that such cooperation is evident in the non-compulsory Coffee Bar discussions which form the ‘Hidden Curriculum’. The ‘Hidden Curriculum’ refers to the set of rules or guiding principles that are often not directly taught but are assumed to be known (Myles, Trautman and Schelva, 2004; Jackson, 1990). The basic concept of the ‘Hidden Curriculum’ is that learners learn much more than the content of the formal curriculum (Clarke, 2009; Jackson, 1990). The originator of the term ‘Hidden Curriculum’ was Phillip Jackson (1968) in his book ‘Life in Classrooms’ He made observations in public school classrooms and these observations allowed him to recognise features of classroom life that were inherent in the social relations of schooling (Margolis, Soldatenko, Acker and Gair, 2001). The hidden curriculum consists “of some of the outcomes or by-products of schools or of non-school settings, particularly those states which are learned yet are not openly intended” (Martin, 1976 P.137). Clarke (2009) argues that some non-compulsory Coffee Bar type discussions, which are informal, can be conceptualised as forming part of the hidden curriculum of online learning. He notes that:

*“The basic premise of the hidden curriculum, that learners learn much more than the content of the formal curriculum has, perhaps, some application to the online classroom too. Might the informal (non-compulsory Coffee Bar type discussions) be conceptualised as forming part (the conversational part) of the ‘hidden curriculum’ of online learning”*(Clarke, 2009).

When e-learning began, it breached the one-to-one (student–tutor) environment of basic constructivism. Then, when learners had the opportunity to form communities, e-learning displayed qualities of socio constructivism. However, e-learning currently allows learners to communicate and learn from each other, promoting one-to-one, one-to-many and many-to-many interactions; this offers huge opportunities for the communal support for learning. Most importantly, e-learning provides a medium for storing and making available the knowledge created by learners (Holmes and Gardner, 2006). These characteristics of e-learning lead to the formation of a community of learners; this constitutes the basic theory of communal constructivism.

Based on an e-learning user context and the underlying learning theory, Holmes and Gardner (2006) developed an e-learning type framework that presents the e-learning types as an analogy of a river. Figure 2 illustrates this framework which represents the growing complexity of user engagement in e-learning: from single user, to multi-users, to a community of learners. Underlying this are learning theories which move from behaviourism to cognitivism and constructivism, to socio constructivism, and then to communal constructivism. User engagement is associated with in-depth learning outcomes within a learning community (Garrison, 2011; Akyol and Garrison, 2011; Chapman, Ramondt and Smiley, 2005).

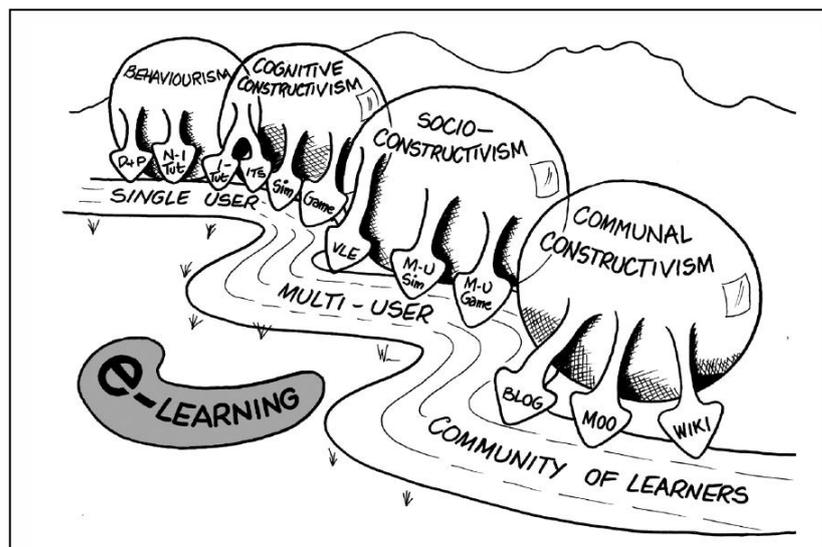


Figure 2: Progressive Developments in e-Learning

(Source: Holmes and Gardner, 2006)

**Single user:** As Figure 2 (Figure 2: Progressive Developments in e-Learning) illustrates, drill and practice (D&P) refers to the structured, repetitive review of previously learned concepts, while simple non-interactive tutorials (N-I Tut) are a form of behaviourism: in other words, e-learning as single-user modes. There is an overlap between behaviourism and cognitive constructivism in single-user modes in interactive tutorials (I-Tut) and in intelligent tutoring systems (ITS); these allow learners to work within an expert system model.

**Multi user:** Simulations (Sim) and games (Game) represent cognitive and constructivist e-learning. However, virtual learning environments (VLE), multi-user variants of simulations (MuSim) and games (MuGame) represent socio constructivist e-learning based on multi user modes.

**Community of learners:** Holmes and Gardner (2006) represent communal constructivism e-learning as being exemplified by weblogs (blog), multi-user object oriented systems (MOO) and multi-editor wiki systems (wiki); these are based on communities of users/learners in a communal constructivist context. Many research studies have shown the importance of online communities of learners (Rovai and Jordan, 2004; Palloff and Pratt, 2007; Wenger, 1999). Moreover, much work has discussed the concept of social presence in the online environment, defining it as the “ability to portray oneself as a “real” person in the online environment” (Palloff and Pratt, 2007). Forming a community of learners is the key to successful e-learning and effective learning (Palloff and Pratt, 2007; Gunawardena and Zittle, 1997). In e-learning, a learning community permits the mutual exploration of ideas, offers a safe place to reflect on and develop such ideas, as well as a collaborative, supportive approach to learning (Palloff and Pratt, 2007). Palloff and Pratt (2007) suggest that a community of learners occurs when: (1) there is active interaction involving both course content and personal communication; (2) collaborative learning is evidenced by comments directed primarily from student to student rather than from student to instructor; (3) socially constructed meaning is evidenced by agreement or questioning, with the intent to achieve agreement on issues of meaning; (4) there is a sharing of resources among students; and (5) expressions of support and encouragement are exchanged among students, as well as a willingness to evaluate critically the work of others.

## 2.4 E-learning Strategy

Before discussing e-learning strategy, it is important to explain the term ‘strategy’ in this research. In general, strategies are regularly formed at work, at university and in life, where people make long-term decision. Thus, strategy may be defined as the future direction and actions of an organisation; strategy may also be a set of goals and/or major policies (Tilles, 1963). The term ‘strategy’ comes originally from the Greek word ‘strategos’ which means general (Davies, 2000; Oxford-Dictionary, 2008). The word ‘strategy’ was used in a military context in Greek city-states where military generals were responsible for making plans for implementing and bringing the legislature’s policy decisions to fruition (Davies, 2000). According to the Oxford English Dictionary (2008), strategy is: (1) a plan designed to achieve a particular long-term aim or (2) the art of planning and directing military activity in a war or battle. An old definition is that “strategy is the determination of the long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals” (Chandler, 1962). Lynch (2003) describes strategy as an organisation’s sense of purpose which needs plans and actions while Daniel (2000) suggests that a real strategy is a plan for getting from a point in the present to some point in the future in the face of uncertainty and resistance. On the other hand, many researchers have argued that there is no single definition of strategy (Mintzberg, Lampel and Ahlstrand, 1998; Chaffee, 1985; Biggadike, 1981). There are strongly differing opinions on most key issues within the field and the disagreements run so deep that even a common definition of the term ‘strategy’ is elusive (DeWit and Meyer, 1998). Many different definitions of strategy already exist and the more there are, the more they tend to confuse rather than clarify (Norton and Irving, 1999). The lack of a clear definition of strategy is because strategy is multidimensional (Hambrick, 1983). For this reason, Mintzberg et al. (1998; 1987) argue that strategy requires five particular definitions instead of one and propose the following: a plan, ploy, pattern, position or perspective. In this research, strategy is the direction of the use and integration of Information and Communication Technologies (ICTs) in education. The aim of using this definition is to keep the focus strategy as direction and plan in order to study the use and integration of ICTs in education.

E-learning is considered as innovation approach and tool (Rossiter, 2007; Garrison and Anderson, 2003; Garrison, 2011) and so governments are reshaping educational

provision and practice in order to meet the demands of the knowledge-based economy and the Information Society by using ICTs in schools. Consequently, most developed countries are using Information and Communication Technology (ICT) in education and this has become an important part of education policy, resulting in substantial expenditure (Mulkeen, 2003). Using technology in learning is making a significant contribution to education (de Koster et al., 2012; Hew and Brush, 2007; Holmes and Gardner, 2006), however, research studies show that there is sometimes a failure to integrate these ICTs into the educational system and therefore the expected beneficial effects on learning fail to be delivered (Smeets, 2005; Voogt, 2008). These research studies mention that, although huge amounts of money have been spent, no real difference in learning has been seen because of the ways in which technology has been integrated into the classroom (Cuban, 2001; Laffey, 2004; Norris, Sullivan, Poirot and Soloway, 2003; Christensen et al., 2010). So, although significant investment into e-learning has been made, there is little benefit or fundamental change because of the lack of strategic direction (Garrison and Anderson, 2003; Garrison, 2011; Christensen et al., 2010). Schools need strategic direction in using technology in order to determine what type of ICTs can be used and how they can be used in learning because today's generation are using many technologies such as Web 2.0 in their personal lives and in their educational work. Students are asking schools to provide more computer technology tools and to reduce limitations on internet access in order to improve their learning (Farris-Berg, 2005; Project.Tomorrow, 2009). There is also a huge gap between teachers and their students in terms of the use of technology for both personal and educational reasons (Pan, 2010). This gap must be bridged by investigating e-learning technologies in order to understand this divide and how students and teachers are using technologies in learning.

Moreover, although significant investment has been made in e-learning, few benefits and no fundamental changes have been achieved because of the lack of a strategic direction and a coherent approach (Garrison and Anderson, 2003; Garrison, 2011). Christensen et al. (2010) mention that schools need the correct tools and strategy to understand how to introduce e-learning as an innovation in order to have an impact. This is because, although a very large amount of money has been spent on adopting e-learning into learning systems, this has resulted in little change to how students learn. E-learning policy (i.e. the vision, mission, strategic plan, goals, and policy documents) is

determining direction regarding the use and integration of Information and Communication Technologies (ICTs) in education and so the e-learning strategy is a very important area for schools. The most significant effect of e-learning is not simply the course content, it is the actual value-added to the quality of the learning experience (Garrison and Anderson, 2003; Garrison, 2011). Clearly, although research into using ICTs in education shows that it can help students' learning, there are factors which are leading to failure in the use of technology for this purpose; these factors represent obstacles which prevent the effective use of technologies in education (Hew and Brush, 2007). Such obstacles are widespread, even in the exemplary use of technology in schools (Becker, 2000a) and therefore, schools need appropriate tools and strategies because the present situation has resulted in little change to how students learn (Christensen et al., 2010).

Any e-learning strategy should provide direction and should utilise sufficient resources to facilitate the transformation to e-learning; this is a long and difficult process. Many schools, as learning institutions, are making significant investments in e-learning but little benefit or fundamental change results because of the lack of a strategic direction and a coherent approach (Garrison and Anderson, 2003; Garrison, 2011). E-learning policies for learning institutions, as research and evaluative studies have shown, are often ill-conceived because strategies for the use of ICT have been employed without prior reflection (Kirkwood and Price, 2006). Learning institutions are experiencing a lack of a strategic direction with regard to e-learning (Garrison, 2011) and therefore schools need direction in the following areas:

- (1) Resources and Support;
- (2) Technology usage (what types of technology to use and how to use them).

### **2.4.1 Resources and Support**

There are factors that are affecting the use of e-learning in schools and these factors are barriers which are widespread, even when the environments in schools are exemplary (Becker, 2000b). Previous research studies have discussed the barriers affecting the use of ICTs in schools and strategies to overcome these barriers; these studies have mentioned that the most frequent factor preventing success in e-learning is teachers' lack technology skills (Baylor and Ritchie, 2002; Bebell, Russell and O'Dwyer, 2004; Eteokleous, 2008). A study carried out in 2000 by the National Centre

for Education Statistics shows that only 23% of the 1,674 teachers surveyed felt well prepared to use technology in learning (Inan and Lowther, 2010). Many research studies have also determined that using technology for learning in schools is influenced by many other factors (Ertmer, Gopalakrishnan and Ross, 2001; Levin and Wadmany, 2008; Valcke, Rots, Verbeke and van Braak, 2007). These factors are: (1) teachers' beliefs and attitudes which play an important role in successful e-learning (Chen, 2008; Lim and Chai, 2008; Vannatta and Fordham, 2004); (2) resources (Hohlfeld, Ritzhaupt, Barron and Kemker, 2008; Norris et al., 2003; Karagiorgi, 2005); (3) support (Lai, Trewern and Pratt, 2002; Davis, Preston and Sahin, 2009; Rogers, 2000). Hew and Brush (2007) reviewed a total of 123 barriers that were found from a review of past empirical studies in using technology in schools. They determined that the most frequent barrier mentioned in these past studies was resources (as in resources and support). Without good technical support and resources, schools cannot be expected to overcome the obstacles that are preventing them using ICT (Lewis, 2003). Many research studies, as mentioned above, show that using technology in learning in school is influenced by resources (Hohlfeld et al., 2008; Norris et al., 2003; Karagiorgi, 2005). In fact a lack of resources is considered an important factor that affects the successful integration of technology in schools (Hew and Brush, 2007). Without resources being available in the schools, they cannot be expected to overcome the obstacles that prevent them from using ICTs (Lewis, 2003). This lack of technology could include both software and hardware, such as having insufficient computers (Karagiorgi, 2005). Hew and Brush (2007) determine that the lack of resources may include one or more of the following: (a) technology, (b) access to available technology, (c) time, and (d) technical support. Having access to technology is rather more than having the technology available in a school; instead, this means that a sufficient amount of technology of an appropriate kind is available in a location where teachers and students can use it (Fabry and Higgs, 1997).

Many research studies have determined that using technology for learning in schools is influenced by support (Lai et al., 2002; Davis et al., 2009; Rogers, 2000) and a lack of technical support is considered an important factor that affects the successful integration of technology in schools (Hew and Brush, 2007). Without good technical support, schools cannot be expected to overcome the obstacles preventing them from using ICTs (Lewis, 2003). Technical problems were found to be a most important barrier for using

ICTs in schools (Lewis, 2003; Hew and Brush, 2007; Pelgrum, 2001). The support needed in the schools could include: Internet connection, printers, lack of computers, lack of quality software, lack of time, technical problems, teachers' attitudes towards computers, resistance to change, poor administrative support, lack of computer skills, poor training opportunities, and lack of skills in how to integrate ICT into education (Bingimlas, 2009). Resources and support are very important factors that affect the successful integration of technology into schools (Hew and Brush, 2007). Fabry and Higgs (1997) point out that having access to technology is rather more than having the technology available in a school; instead, this means that a sufficient amount of technology of an appropriate kind is available in a location where teachers and students can use it. Therefore, in addition to providing the resources and support for students, teachers and staff in schools, schools should provide the right types of technology where teachers and students can use them. Therefore, the next section discusses *Technology Usage* to explain the types of ICT used in learning.

### **2.4.2 Technology Usage**

One area in which schools need direction is that of technology usage in terms of what types of technology to use and how to use these in learning. As mentioned before, using technologies can lead to a failure to integrate effectively ICTs into education and, in this regard, many research studies have pointed out certain factors that affect the success of the integration of ICTs into education. These include computer attitudes (Van Braak, Tondeur and Valcke, 2004; Albirini, 2006), computer experience (Williams, Coles, Wilson, Richardson and Tuson, 2000) and gender differences (Volman, Van Eck, Heemskerk and Kuiper, 2005). Tondeur et al. (2008) argue that these factors exist at a micro level while Tang and Ang (2002) suggest that focusing on individual factors regarding ICT integration has tended to push research towards allocating 'individual blame' rather than 'system blame'. Tondeur et al. (2008) point out that previous research studies have largely ignored the complex nature of ICT integration and e-learning policies (i.e. the macro-level). In a research study on ICT and e-learning policy in Flanders (the Flemish-speaking region of Belgium) Tondeur et al. (2007) noted a gap between the ICT proposed at the e-learning policy macro-level and the actual use of ICT in the classroom, placing these two worlds apart. Their study showed that, while national educational authorities were keen to encourage and develop the integration of ICT in schools, this often did not result in any real changes to teaching practices in the

classroom. Visscher and Coe (2003) also point out that policies and reforms do not automatically lead to educational change in schools. So, schools need appropriate tools and strategic direction with regard to technology usage in order to understand how to introduce e-learning as an innovation which will have a significant impact and result in dramatic changes to how students learn.

Educational technologies are increasingly acquiring strategic importance (Shurville, Brown and Whitaker, 2009) and it is important for schools to choose appropriate types of ICTs in learning. However, this issue has become more challenging and complicated as new technologies, known as Web 2.0, are being devised as the next generation of the web. In an educational environment, technology provides a context which is shaping learning as teachers and students use these new technological tools (Cinque and Martini, 2010). Computer-based communication constitutes the most fundamental change in communications technology in the last 150 years (de la Sola Pool, 1984) and this technology has a dramatic impact on learning and teaching (Chou and Liu, 2005). Therefore, most schools are using, in learning and teaching, a range of different technologies, such as (1) MS PowerPoint presentations and word processing, (2) Interactive Whiteboards (Smart Boards), (3) Data projectors, (4) eBooks (5) Computers (6) Internet (7) TV/VCR/DVD/ CD-ROM (8) Forums, and (9) Virtual Learning Environments (VLEs).

Most schools now have some form of Virtual Learning Environment (VLE) (Weller, 2007) or Learning Management System (LMS). These environments are computer based, allowing interaction and knowledge sharing between participants and teachers and providing access to a wide range of resources (Wilson, 1996). These types of software are useful applications that help students to 'Learn Any Where' and 'Learn Any Time' (Chou and Liu, 2005). Virtual Learning Environments (VLEs) are rapidly becoming an integral part of the teaching and learning process (Pituch and Lee, 2006). A VLE is an e-learning system that enhances the learning process, has the potential to improve face-to-face learning and improves the efficiency of communications, both student-to-student and teacher-to-student (Martins and Kellermanns, 2004). It is a web-based communication platform that allows students to access different learning tools such as teacher assistance, course content, program information, discussion boards, document sharing systems, and learning resources (Martins and Kellermanns, 2004). A

VLE can be defined as “a collection of integrated tools enabling the management of online learning, providing a delivery mechanism, student tracking, assessment and access to resources” (JISC, 2005).

Moreover, many students are using internet forums for learning. A forum is an online discussion site where users can post messages in an archived system on a website; it is a common ICT tool in education (Thomas, 2002) and is considered important for students’ knowledge construction. Forums have been explored by many researchers (Cobos and Pifarre, 2008). Online discussion forums allow participants to: (1) share understanding and experiences, (2) collaborate in their work, (3) offer suggestions, and (4) express their emotions in communications with others (Zhao and Jiang, 2010). Such forums are used as a tool for promoting conversational modes of learning and many researchers suggest that they improve students’ learning outcomes (Thomas, 2002). Conversational modes of learning improve learning outcomes by: (1) promoting deeper levels of understanding, (2) increasing motivation and engagement in the learning task, and (3) increasing metacognition, the development of higher-order thinking skills and divergent thinking (Blumenfeld, Marx, Soloway and Krajcik, 1996; Flynn and La Faso, 1972). Online discussion forums are valuable because they allow learners to express themselves in a less formal way than in assignments (Jolliffe, Ritter and Stevens, 2001).

The contexts of technology tools are changing as a result of both innovation and a deliberate effort to expand access to technology in schools and universities (Cinque and Martini, 2010). In the digital age, technology has changed dramatically as the Internet has changed from offering static HTML pages to interactive services where users create and post information (Mathiasen et al., 2008). This advancement in technology in the form of the next generation of the web (known as Web 2.0) has generated web-based applications that allow learners to collaborate and build communities to connect with and share a variety of resources, such as videos, images and documents, among users in an online learning environment (Sadik, 2009). Web 2.0 has made significant shifts in the way people connect, communicate, create and share information, and these connectivity and communication services have created new relationships and patterns of communicating and learning (McLoughlin and Lee, 2008). Technological developments are changing views about knowledge and learners (Pachler and Daly, 2011). Pachler and Daly (2011) mention that, as a response to the rapid changes in technological

infrastructures as a result of Web 2.0 (such as wikis, blogs, social networking, podcasts and virtual worlds), the term e-learning 2.0 has now been generated to describe e-learning. This is because e-learning 1.0 is likely to be related to the delivery to students of content which is assessed by teachers; this is also usually related to software such as Virtual Learning Environments (VLEs), Managed Learning Environments (MLEs) or Learning Management Systems (LMSs), which provide a portal for online learner activities and communication.

There is a gap regarding the use of technology in learning as, currently, e-learning does not effectively integrate technology into student learning (Farris-Berg, 2005; Tondeur et al., 2008; Voogt, 2008). Nowadays, students grow up in an information society where they are using many types of ICT technology such as Web 2.0 tools (e.g. blogs and social networking sites) which have created new modes of interaction and expression (Brummelhuis and Kuiper, 2008). Although de Koster et al. (2012) do not mention Web 2.0 tools, they argue that there is another type of factor impacting on the successful integration of technology in e-learning. This gap is found in the distance between the ICT innovation on the one hand, and the school's culture (i.e. teachers') current practice on the other. Web 2.0 tools and applications are fully integrated in the daily lives of students and the rise of this generation poses serious problems regarding how to use ICTs in education, as well as how to stay connected with students (Brummelhuis and Kuiper, 2008). The new technologies' generation has been described as "digital natives" (variously referred to as "Net-Geners," "Gen-Xers," and "millennials"). These terms refer to the characteristics of the generation of learners that are using these new technologies (Prensky, 2001a). Portimojärvi and Donnell (2010, p. 239) assert that technology such as Learning Management Systems (LMS) or Virtual Learning Environments (VLE) do not meet the needs of this "digital native" generation. As a result, a gap exists between how this generation generally communicates and how are expected to communicate on formally accredited courses. Prensky (2001b), in discussing the terms "digital native" and "digital immigrant", argues that students have changed dramatically since they are no longer the type of people most education systems were designed to teach. As a result, teachers or instructors seem to speak another outdated language which came from the pre-digital age. It is therefore hardly surprising that they are struggling to teach students who speak a very different new language. Opposing the concept of digital natives, Rajab and Baqain (2005) note that

the main use of computers among students is still word processing. However, Portimojärvi and Donnell (2010) argue that most research into educational technology does not focus on the new media cultures of youth. However, this generation of learners have high expectations regarding the use of technologies in learning environments (Conole and Creanor, 2007) and they consider the technology a fact of life (Frاند, 2000). Therefore, there is a need to change learning strategies to meet the needs of learning nowadays.

Web 2.0 has made significant shifts in the way people connect, communicate, create and share information (McLoughlin and Lee, 2008). This generation of learners has grown up with electronic devices and have learned how to use information and how to communicate as professionals (Veen and Vrakking, 2006). In current education systems, these changes in technology are creating a gap between schools and the needs of the new net-generation or digital natives who have become disengaged from traditional instruction (Prensky, 2006). Farris-Berg (2005), in the report “Listening To Student Voices On Technology: Today’s Tech-Savvy Students Are Stuck In Text-Dominated Schools”, reviews literature that focuses on technologies in schools to determine what students want from educational policy decisions, to learn about how they use technology and to enquire how schools could better meet their needs. The main points of Farris-Berg’s study are: (1) Computer and internet use is growing; (2) Technology is important to students’ education; (3) Technology is not an ‘extra’; (4) In-school access to technology is limited; (5) Home use dominates; (6) In-school use is not integrated; (7) Computers and the Internet are communication tools, first; (8) Metaphors describe how students use the Internet for school (a- The Internet as a virtual guidance counsellor; b- The Internet as a virtual textbook and reference library; c- The Internet as a virtual tutor, study short-cut, study group; (9) The Internet as virtual locker, backpack and notebook; (10) Technology has caused students to approach life differently but adults act as though nothing has changed: “Students (are) frustrated by high schools still dominated by text”; (11) Students desire increased in-school access to technology; (12) Students want to use technology to learn, and in a variety of ways; (13) Students want challenging, technologically-oriented instructional activities; and (14) Students want adults to move beyond using the ‘Internet for Internet’s sake’.

Oblinger and Oblinger (2005) argue that, currently, many learners need several sources of information and they want frequent and fast interactions with content. Solomon and Schrum (2007) findings about the net-generation or digital natives in terms of learning are indicated in the following: (1) Students are innovative in their use of technology. They set trends, adopt new technologies in both their learning and their personal lives, and both in and out of school. (2) Communication is the key reason why students use technology for learning and in their personal lives. As a result, the use of communications tools has proliferated and students demand that communication obstacles are overcome. (3) Students believe strongly in the power of technology to enhance their learning. They include the use of technology in ideas about their future and in preparing them to compete in the job market. Research studies show that, in general, ICT technologies support a variety of educational concepts (Hew and Brush, 2007; Inan and Lowther, 2010; Higgins and Spitulnik, 2008), such as in helping to support individual or collaborative learning (Brummelhuis and Kuiper, 2008) and facilitating the individualisation of learning processes, as well as supporting learning within a learning community (Volman, 2005). de Koster et al. (2012) point out that the main element to the successful integration of ICT into educational practices is making sure a good fit exists between the ICT innovation and the educational concepts underpinning practices. However, Hew and Cheung (2011) note that, with the recent explosion in the number of Web 2.0 tools and technologies, many claims and suggestions have been made about the learning potential of Web 2.0 tools and technologies. However, these claims and suggestions are not always based on research evidence. Therefore, there is a need to provide research evidence concerning what types of ICT are currently used by students in learning and how these are used, while comparing this teacher's use and e-learning policies. The next section discusses Web 2.0 tools and their uses in learning.

### **2.5 Web 2.0**

With the rapid growth of the Internet and digital technologies, the web has become a powerful, global, interactive and dynamic form of learning and teaching (Khan, 1997). The internet has undergone massive changes in the last few years, moving from military use to more general applications for public users. Then, with the availability of browser software and a text-based format, the Internet became the visual World Wide Web (Solomon and Schrum, 2007). Then, in the digital age, technology has dramatically

changed again in the last few years as the Internet (the World Wide Web) has changed from using static Hypertext Markup Language (HTML) pages to interactive services, where visitors create and post information (Mathiasen et al., 2008). This revolution in the technologies of the next generation of the web is known as Web 2.0 and it has generated new technologies and tools. The original web, or Web 1.0 as it is dubbed, was originally conceived and invented by Berners-Lee in 1991. This is different from the current web which is Web 2.0 (Luo, 2010). Web 1.0 required users to have professional computer skills, such as knowing the web programming language, Hypertext Markup Language (HTML), in order to create web pages. Web 1.0 was application-based so it isolated users from creators. Web 2.0, on the other hand, provides an interactive space for creating and sharing by clicking and linking with web-based applications that are online. This allows collaboration between users and creators (Solomon and Schrum, 2007). Solomon and Schrum (2007) compared the previous versions of the web (i.e. Web 1.0 and Web 2.0.). Table 1 shows this comparison and offers several distinctions between Web 1.0 and Web 2.0.

Table 1: Comparison of Web 1.0 and Web 2.0

Web 1.0	Web 2.0
Application based	Web based
Isolated	Collaborative
Offline	Online
Licensed or purchased	Free
Single creator	Multiple collaborators
Proprietary code	Open source
Copyrighted content	Shared content

The term ‘Web 2.0’ was coined in 1999 by Tim O’Reilly at the O’Reilly Media Web 2.0 conference, held late in 2004 (O’Reilly, 2005). The term Web 2.0 describes web sites that use technology beyond the static pages of earlier web sites. It defines and describes the shifting trends in the use of World Wide Web technology and web design that aims to enhance the creativity, communication, secure information sharing, collaboration and functionality of the web (O’Reilly, 2005; Luo, 2010). The main advantage of Web 2.0 is that it allows participation in creating information whereas the

previous phase (Web 1.0) was read-only and focused on presenting information statically. This allows Web 2.0 to offer two main advantages: multi-way communication and collaborative information creation/retrieval, such as social networking sites (e.g. Facebook), video sharing sites (e.g. YouTube), wikis, blogs, and social bookmarking sites (e.g. delicious). These new Web 2.0 technologies and tools in the digital age have generated web-based applications that allow learners to collaborate and build communities to connect and share a variety of resources, such as videos, images and documents in an online learning environment (Sadik, 2009). Web 2.0 and its associated applications and tools have made significant shifts in the way people connect, communicate, create and share information; and these connectivity and communication services have created new relationships and patterns of communicating and learning (McLoughlin and Lee, 2008).

The contexts of technological tools are changing as a result of both innovation and a deliberate effort to expand access to technology in schools and universities (Cinque and Martini, 2010). Therefore, many research studies have applied the concept of disruptive technology or innovation to education (Cinque and Martini, 2010; Meyer, 2010; Garrison and Anderson, 2003; Laurillard, 2006; Christensen et al., 2010). These new technologies and tools of Web 2.0 are disruptive with regard to traditional technologies (Cinque and Martini, 2010). In e-learning, disruptive technology interrupts the usual policies, practices and assumptions while truly disruptive tools will force new thinking and new approaches if students' learning in e-learning is to be assured (Meyer, 2010). This therefore challenges learning institutions, especially in developing a vision and strategic direction that will position them to move forward in order to adopt new these technologies.

### **2.5.1 Web 2.0 and Learning**

Web 2.0 applications (such as podcasts, blog, wikis, etc.) have changed the learning landscape and learners are now becoming active participants, creators of knowledge, and seekers of engaging, personal experiences; in short, learners are described as actively creating and sharing content and ideas (McLoughlin and Lee, 2008). Nowadays, students consider technology to be a fact of life (Frاند, 2000) and therefore this generation of learners have high expectations of using technologies in learning environments that best meet their needs because they have a sophisticated

understanding of how to manipulate them to their advantage (Conole and Creanor, 2007). Web 2.0 reinforces engagement and interactivity between people, bringing new opportunities to education (Luo, 2010). The shift to Web 2.0 tools can have a profound effect on schools and learning because these tools promote creativity, collaboration and communication (Solomon and Schrum, 2007). As a result of using these new technologies, Web 2.0 can further help in engaging young people with technologies, connecting them to social worlds in a participatory and collaborative way although there is a gap between student learning and the modes of learning currently used in the educational system (McLoughlin and Lee, 2008). The result of using Web 2.0 for learning has been expressed in new terms, such as e-learning 2.0, pedagogy 2.0 or Education 2.0. McLoughlin and Lee created the term 'pedagogy 2.0' which means pedagogy that is: (1) personalised (learner choice, learner agency, customisation, self-regulation and management); (2) participatory (communication, collaboration, connectivity, community); (3) productive (learner created content, contribution to knowledge, generativity, creativity and innovation). According to Cinque and Martini (2010), Education 2.0 can be defined as educational and technological approaches designed to offer new educational models. Education 2.0 is based on collaboration and knowledge sharing, the open involvement of learners, and the development and use of internal and external social networks.

The advent of Web 2.0 technologies has allowed the development of social tools offering learning with the opportunity to go beyond traditional delivery formats and developing personalised learning environments for students (Sigala, 2007). Such tools enable the web to become a social place, moving from people merely existing on the web to participating in it (Bojars, Breslin, Finn and Decker, 2008). The differentiating factor with regard to these tools is that people have now become publishers rather than merely consumers of information (Cole, 2009). They have had a deep effect on schools and learning, and have caused a revolution in thinking, because they have promoted creativity, collaboration and communication; they have also dovetailed with learning methods (Solomon and Schrum, 2007). Solomon and Schrum (2007) assert that Web 2.0 tools could be significant for: (1) Administrative Staff, (2) Teachers, (3) Students and (4) Parents. (1) For administrative staff, Web tools can help with their work; (2) For teachers, they offer help with both teaching and monitoring performance at any time; (3) For students, they help with learning and collaborative work and today's young people

are already using many Web 2.0 tools; (4) For parents, they help them to know what their children are doing and to monitor their progress which is an important feature for them (Solomon and Schrum, 2007).

In addition, some Web 2.0 tools have been shown to have an impact on teaching and learning, as Russell and McCarron (2009) mentioned. Several trends that they identified have already begun to affect teaching and learning in terms of both face-to-face and e-learning methods. "User created content" has included videos, photos, music and text; these are often shared through collaborative tools such as YouTube, Flickr, blogs, delicious and social bookmarking. Baylen and Zhu (2009) argue that these tools, such as those mentioned above, have changed the nature of tools from offering single to multiple functions. They are now capable of facilitating teaching and learning in a variety of social and cultural contexts. They may change teaching and learning processes dramatically as they demand new practice. Introducing a social dimension to learning allows learners to achieve a higher level of learning as studies have shown that those who perceive a social connection to other students and faculty are more likely to complete coursework and achieve higher levels of learning than students who feel disengaged and disconnected (McDonald, 2002; Rovai, 2002; Tinto, 1987; Wegerif, 1998) (Woods and Baker, 2009, p. 1620).

Web 2.0 technologies and tools allow learners to collaborate and build communities to connect and share a variety of resources in an online learning environment (Sadik, 2009). These technologies and tools create a new environment that helps to build a sense of community in an e-learning environment, as mentioned earlier. Communal constructivism theory can be used to represent an expansion in e-learning which provides learners with the tools to create new learning for themselves, and to contribute and store their new knowledge in a communal knowledge base; this benefits both the community's existing and new learners. Holmes and Gardner (2006) exemplify communal constructivist e-learning as weblogs (blogs) and multi-editor wiki systems (wikis); these are tools that allow the building of a communal constructivist environment. However, there are many other new Web 2.0 technologies that could be considered as examples of communal constructivist e-learning. Web 2.0 tools are encouraging collaboration between learners and many researchers, such as Slavin (1995), have noted that collaborative learning is more effective than individual learning

because it motivates students to learn and improves their achievement. In this new digital age, Siemens (2005) offers a connectivism theory where learning is not an internal, individualistic activity where “technology is altering (rewiring) our brains” while Solomon and Schrum (2007) mention that connectivism theory is an approach to learning which considers technology as a key factor in learning by connection. Siemens (2005) believes that:

*“Connectivism presents a model of learning that acknowledges the tectonic shifts in society where learning is no longer an internal, individualistic activity. How people work and function is altered when new tools are utilised. The field of education has been slow to recognise both the impact of new learning tools and the environmental changes in what it means to learn. Connectivism provides insight into learning skills and tasks needed for learners to flourish in a digital era” (Siemens, 2005).*

Connectivism theory considers technology as key factor that includes “technology and connection making as learning activities begin to move learning theories into a digital age” (Siemens, 2005). Chen and Bryer (2012) comment, regarding connectivism, that, in the world of Web 2.0 as social media proliferate, learning is not an internal, individualistic activity; instead, learners collect information by connecting to others’ knowledge using Wikipedia, Twitter, RSS and other similar platforms. Therefore, teachers should help students build learning paths and make connections with existing and new knowledge resources, not just teach them (Anderson and Dron, 2011). Baylen and Zhu (2009) argue that Web 2.0 tools, such as wikis, blogs, podcasts and social bookmarking, have changed the nature of tools from single to multiple functions; they are redefining approaches to teaching and students’ learning and thus demand new teaching and learning practices. The social dimension of these Web 2.0 tools is known as social web applications (Arenas, 2007) and Web 2.0 gives users the power to interact with other users and to participate in the creating and sharing of images, videos, bookmarks, documents and other information. Web 2.0 tools, such as blogs, wikis and social networking sites, are referred to as social software (Jonassen, Howland, Maraa and Crismond, 2008). The central value of social software is that it helps users to network and encourages them to communicate and collaborate with each other. Therefore, Web 2.0 tools are technologies which play an important role in fostering knowledge building in communities and networks (Jonassen et al., 2008). The fast-growing array of social networking applications and resources are viewed as a significant opportunity for collaboration and development in education (Sadik, 2009).

These tools are used to build a learning network for users; these are self-organised online communities designed to facilitate lifelong learning (Berlanga, Sloep, Brouns, Rosmalen, Bitter-Rijkema and Koper, 2007). Learners can participate actively in these communities where they can create and share activities, learning plans, resources and experiences. These tools, as an online social dimension, provide many benefits for learners (Butler, 2001) as they may also support and develop interpersonal relationships between users (Hiltz, 1984; Rheingold, 1993), allow users to share knowledge, and encourage discussion (Kraut, Scherlis, Mukhopadhyay, Manning and Kiesler, 1996; Abbot, 1988). In addition, they enable users to participate in collective activities (Butler, 2001); allow them to access resources and distribute their ideas quickly (Walther, 1996; Constant, Sproull and Kiesler, 1996); and provide social and emotional support (Walther, 1996; Constant et al., 1996).

However, although there are “many handbooks addressing teaching online, there is little research on successful online teaching in the K-12 arena” (DiPietro, Ferdig, Black and Preston, 2008b). Clearly, after the creation of Web 2.0, it is more important to develop handbooks addressing successful e-learning and to understand how students are using these new technologies. Portimojärvi and Donnell (2010) assert that technologies such as Learning Management Systems (LMSs) or Virtual Learning Environments (VLEs), are not meeting the needs of the current generation of students who are “digital natives”; there is also a gap between how students choose to communicate and how they are encouraged or required to communicate in school. There is a need to change learning strategies to meet the needs of learning nowadays. Therefore, schools need strategic direction in with regard to learning strategies for online learning. Students’ obvious engagement with Web 2.0 tools and technologies in their everyday lives has generated interest in educational fields because these tools and technologies have very powerful ways of engaging students in individual and collaborative learning activities (Bennett, Bishop, Dalgarno, Waycott and Kennedy, 2012). Dohn (2009) points out that students who are already using Web 2.0 tools in their daily lives will use them for academic purposes. Web 2.0 tools such as weblogs (blogs), wikis and social network sites (SNSs) are supporting and helping students to create personal and social learning experiences that support knowledge building (Alexander, 2006). These tools also have a significant potential to support student processes. However, empirical research in this area is very limited (Kitsantas and Dabbagh, 2011).

These tools, as an educational dimension, have proved their ability to promote and encourage learners' participation in sharing resources and creating learning communities based on these resources (Berlanga et al., 2007). By using resource-sharing tools in Web 2.0 (such as sharing videos on a "YouTube" site or sharing pictures on a site such as "Flickr" or a social network site such as "Facebook"), students have opportunities to work and share in groups. Many researchers, such as Beckman (1990), Collier (1980) and Slavin (1983), have mentioned that students who work in groups learn more of what is taught and, in addition, they can retain what they have learned longer compared to when the same content is presented in other formats. Furthermore, sharing learning can be even more effective when learners can communicate with each other (Ryu and Parsons, 2009). Both the capabilities of these tools and their wide context of use contribute to their propensity to foster collaborative learning activities. Web 2.0 tools can be used to build libraries of resources, such as lesson plans, worksheets, websites, experiences, assignments, etc., for learners, teachers and other staff in the learning environment. It offers the opportunity to interact and share specific and knowledge among learners, making them feel a part of the learning community and, as Bernard et al. (2000) suggest, learners must feel part of a learning community for collaborative online learning to take place successfully.

On the other hand, as a social dimension, these tools, as a community or social network, depend on having a certain number of members and resources; this is known as critical mass theory. The theory of critical mass states that a community or social network is sustainable only when it reaches a critical mass of members or resources (Markus, 1987; Butler, 2001; Marwell, Oliver and Pahl, 1988). In other words, if only few individuals or resources are available, they may not be sufficient to make enough resources available to the community. According to Berlanga et al. (2007), the integration of these tools into educational practice is considered a major benefit for the next generation of e-learning communities (Downes, 2006; Keats & Schmidt, 2007; Owen et al., 2006; Wilson et al., 2006). These resources could be images, videos and documents, such MS Word, PowerPoint and Portable Document Format (PDF).

### **2.5.2 Disadvantages of Web 2.0**

On the other hand, there are certain disadvantages to using Web 2.0 in learning. One such disadvantage, as Foulger, Ewbank, Kay, Popp and Carter (2009) mention, is that

the advent of Web 2.0 and online social networking tools, while it has enhanced communication capabilities, it has, at the same time, challenged traditional ideas about privacy and ethical conduct. There are some concerns about using Web 2.0 as a teaching and learning tool as discussions exist in the literature around the ethical issues of using social network sites in academic environments when students' privacy and security issues are a primary concern (Foulger et al., 2009). Students need more definitive guidelines about their participation in social networking spaces and some educational organisations have warned teachers not to use social networking sites while others have provided guidelines for responsible use (Foulger et al., 2009). The Family Educational Rights & Privacy (FERPA) in the USA protects the privacy of students' education records as federal law. However, as mentioned by Chen and Bryer (2012), this protection is limited as a class discussion on social media might be in public and some students are not conscious of privacy issues; also, information posted on social media sites can become publicly available which might lead to issues of identity theft or prevent them from future career opportunities.

Moreover, the ability of Web 2.0 tools to allow learners to share a variety of resources, such as videos, images and documents in an online learning environment, has also been criticised because these may be illegal and include materials without copyright. For example, video sharing sites such as YouTube have been criticised as they may contain illegal resources that are without copyright (Hunt, 2007). Also, such sites may contain inappropriate content (Educause, 2006). Snelson (2008a) argues that educators are facing serious problems with YouTube as video content on some video-sharing sites may be inappropriate, inaccurate, of poor quality and not suitable for educational needs. As a result, many schools have blocked access to certain video-sharing sites such as YouTube due to the presence of inappropriate content.

### **2.5.3 Web 2.0 Previous Research in Learning**

Current research studies emphasise that Web 2.0 tools are not only changing how students connect to the world and others students, but are also affecting students' learning and performance (Smith, Salaway, Caruso and Katz, 2009; Solomon and Schrum, 2007). Baylen and Zhu (2009) mention that Web 2.0 tools and technologies are redefining teaching methods and the way students learn; they also demand the creation of new teaching and learning practices. Web 2.0 technologies and tools offer innovation

in schools' teaching and learning contexts (Kitsantas and Dabbagh, 2011). Chen and Bryer (2012) mention that there is a lack of empirical research in terms of what strategies teachers use for teaching with Web 2.0. Notwithstanding the limited research studies with regard to the use of Web 2.0 in education, some research supports the use of social media in learning (Mazer, Murphy and Simonds, 2007a; 2009). Chen and Bryer (2012) emphasise that more research needs to be conducted on teaching processes and Web 2.0 strategies. Web 2.0 technologies and tools are becoming a very strong presence for learners in the digital age and educators are seeing the advantages of using these technologies to achieve academic goals (Hughes, 2009). However, there is limited research on how their use impacts on students or, in other words, how they influence students' learning experiences (Mix, 2010; Hew, 2011). Most previous research mentions that students are using Web 2.0 as social software for personal reasons and rarely for educational or learning purposes (Hew, 2011). The EDUCAUSE Centre for Applied Research (ECAR) mentions that student are learning using Web 2.0 tools; at the same time, however, they are not intentionally using them for academic purposes (Smith et al., 2009). Chen and Bryer (2012) mention that some teachers are using Web 2.0 as social media in learning and teaching while Kitsantas and Dabbagh (2011) emphasise that there is a need to inform teachers of the benefits of Web 2.0 tools, together with how to integrate them effectively into their teaching. The Faculty Survey of Student Engagement surveyed 4,600 teachers at universities in 2009 and the results show that over 80% of teachers did not know about or had never used Web 2.0 social media technologies such as blogs, wikis or virtual worlds (FSS, 2010). The national survey's findings show that most teachers are still using traditional lecture-based instruction instead of new technologies (Chen and Bryer, 2012).

The EDUCAUSE centre for Applied Research studied undergraduate students and their use of information technology in 2009. The results show that 90% of the students who responded said that they used social networking services (such as Facebook, MySpace). However, less than 30% of the students reported using these as a part of their course at the time of this survey (February 23 to April 13, 2009) (Smith et al., 2009). Moreover, the results show that only about 30% of students used video sharing, blogs and wikis for their classes (Smith et al., 2009). These findings show that only a few students said they used technologies such as video/photo-sharing sites, calendars, blogs and social bookmarking tools for classes. In the research of Project Tomorrow®,

“a national educational non-profit organisation”, school administrators noted seven benefits regarding social learning, some of them based on using social learning as a tool for increasing student engagement and community connectivity. These benefits are: (1) School information is shared more effectively and efficiently with parents; (2) Learning is extended beyond school hours; (3) Parental engagement in the learning process and in student achievement increases; (4) Opportunities are provided for more interactive and personalised learning in classes; (5) Opportunities are provided for innovative student to student collaborations; (6) Educator productivity increases; and (7) Stronger connectivity is achieved across the entire school community. Table 2 explains the social learning benefits as proposed by school administrators.

Table 2: Benefits of Social Learning According to Administrators

Benefits Of Social Learning	Administrator's Perspective
1. School information is shared more effectively and efficiently with parents	“Our parents would enjoy following Twitter-like real time news regarding events on the campus such as road closures, special on-campus events, etc.” District Administrator (GA)
2. Helps to extend the learning beyond the school day/ hours	“Site-based social networking would be very useful with teacher-parent communications as well as student-teacher after school communications. Students that have questions about homework could send their teacher a quick note asking for help right when they need it.” High School Principal (OH)
3. Increases parental engagement in the learning process and student achievement	“I think the greatest potential use would be to get parents more involved as teachers for their kids. The teacher could post a list of skills being covered in class with corresponding links that the parents could use at home.” Elementary School Principal (KS)
4. Provides opportunities for more interactive and personalised learning in classes	“This would provide more freedom to explore the possibility of providing true individualized instruction to our students through a variety of modalities to tap into each student’s potential. School should not be one size fits all.” Instructional Technology Coordinator (DC)
5. Provides opportunities for innovative student to student collaborations	“Students need to have engaging opportunities to respond to each other’s work, writing and ideas using teacher-facilitated blogs and websites. This would give our students an audience for publishing their work and the social interactions they need.” Elementary School Principal (CA)

Benefits Of Social Learning	Administrator's Perspective
6. Increases educator productivity	“It could really help teachers and administrators get a view of the whole student, from attendance to problem areas. All types of data could be sent from one teacher to another if there are issues regarding a particular student.” High School Principal (Guam)
7. Enables stronger connectivity across the entire school community	“The number one benefit that I can see is the enhanced communications between students, teachers and parents. I would use it to connect our stakeholders and build support for our school in the community.” Elementary School Principal (WI)

## 2.6 Web 2.0 Tools

This section reviews the Web 2.0 tools and technologies that can be used to help and support learning. These tools and technologies are: (1) Weblogs (blogs); (2) Microblogging (Twitter); (3) Wikis; (4) Video Sharing Sites (YouTube); (5) Picture Sharing (Flickr); (6) Document-Sharing (Scribd); (7) Social bookmarking (delicious); and (8) Social Network Sites (Facebook).

### 2.6.1 Weblogs (blogs)

Weblog (a web log) is one of the social phenomena of Web 2.0 (Solomon and Schrum, 2007). It is a frequently updated webpage comprising brief posts presented and archived in reverse chronological order (Schiano, Nardi, Gumbrecht and Swartz, 2004). Weblogs, also known as blogs, are a social network system tool that is used collaboratively to share information with colleagues, friends and family (Kim, 2008). Through these social activities, the blogger (the blog’s author) can organise communities in a forum of blogs (Jung, 2009). Blogs are the latest form of online communication (Schiano et al., 2004) which have recently gained widespread popularity (Jung, 2009). According to Business Week magazine, it is estimated that there are some 10 million blogs in existence (Holmes and Gardner, 2006). Ebner and Schiefner (2008) refer to the amazing growth and success of blogs, arguing that this is due to three factors: (1) Usability, (2) Collaboration and (3) Personality. (1) It is easy to blog (Usability) and no special skills are necessary to create a new contribution; (2) It is fun (Collaboration). People connect with each other and discuss topics they are interested

in; and (3) It belongs to the individual (Personality). Contributions are written from a subjective perspective and reflect the bloggers' own thoughts and feelings.

Blogs are different from e-mail and messaging because they offer a more open medium for communication and enable authors (bloggers) to reach out beyond their social networks in order to make a new connections and form communities (Kolari, Finin, Lyons, Yesha, Yesha, Perelgut and Hawkins, 2007). In general, many people believe that the term "blog" refers to a "personal web site" (Blood, 2004). However, a blog is defined as a web application that is "presented as a web page consisting of periodic posts, normally in reverse chronological order" (Jung, 2009). Blogs were developed by Jorn Barger in 1997 and then so named. Many studies have focused on blogs in educational settings (Huffaker, 2005; Maag, 2005; Schuyler, 2007; Lin, Yueh, Lu, Murakami, Kakusho and Minoh, 2006; Divitini, Haugalokken and Morken, 2005). However, little has been done to compare blogs with traditional computer communication applications (Kim, 2008). Blogs are more likely to support both social and individual learning (Lin et al., 2006) and they help students by engaging them in online learning (Lin et al., 2006). Nardi et al. (2004) explored the social nature of blogging and argue that "blogs create the audience, but the audience also create the blog". The study of Nardi et al. (2004) suggests that it is the social dimension of blogs that motivates students to continue their blogging activities. In short, a blog: (1) Updates others on the person's activities and whereabouts; (2) Allows opinions to be expressed to influence others; (3) Seeks others' opinions and feedback; (4) Consists of 'Thinking by writing'; and (5) Allows the release of emotional tension.

Blogs can be an effective tool to support learning; they can be used as a teacher blog, student blog or/and as a class shared blog (Richardson, 2008). Moreover, they do not only encourage students to express their thoughts, they also generate student interest in their communities and cultures (Downes, 2004). Furthermore, Jung (2009) points out that the blog system helps e-learning to solve two main problems with regard to context-based content dissemination in e-learning systems: (1) context mismatching between learning contents and students, and (2) semantic heterogeneities between students for sharing learning content. Moreover, blogs are used by educators to overcome the weakness of current computer communication technology applications (Divitini et al., 2005) and Kim (2008) recommends that blogs could overcome

limitations in the current Computer-Mediated Communication (CMC) application systems. Blogs have many important features that can help students in e-learning. These include:

1. Blogs are easy-to-publish and easy-to-access for students; in general, students are not satisfied with a system that requires too many steps to obtain online information (Maag, 2006).
2. Blogs motivate students to increase their participation in e-learning and online discussion (Kim, 2008). It is difficult for students to visit e-learning frequently in order to obtain updated information for communication or for posting comments (Ocker and Yaverbaum, 2001). However, blogs help students by showing if information has been updated; this achieved using Really Simple Syndication (RSS) technology. Thus, there is no need to visit any other blogs regularly to check for updates because Really Simple Syndication (RSS) technology automatically delivers all the updated information to other bloggers who subscribe (Brooks and Montanez, 2006). Also, blogs help students to check the list of information at their convenience (Kim, Kavanaugh and Smith-Jackson, 2007).
3. Blogs give students flexibility and a broad space to reflect and discuss topics in an easy manner rather than on discussion forums in websites; they motivate students to express their opinions more profoundly and to build shared knowledge (Lin et al., 2006).
4. Jung (2009) has pointed out that blogs are a personal content management system that allows students to create and manage various types of content, including personal information such as their personal history, commentaries, photos and the hyperlinks of their classmates; they also allow the blogger to create and manage various types of learning material such as presentation files, examples and web pages.
5. Blogs enrich students' studies by allowing them to share their learning experiences and express their thoughts to the instructor and peers through course blogs (Kim, 2008). In particular, students post examples of course assignments and discuss their reflections on course materials (Maag, 2005). Furthermore, blogs facilitate and support extended discussions beyond class meetings (Betts and Glogoff, 2004).

6. Students can spread information through social activities. For example, students can have access to the blogs of other classmates by using a social link hyperlink (Jung, 2009) which allows students to take certain actions within these blogs; this is not like simple browsing through a number of hypertext documents (Higgins, Reeves and Byrd, 2004). The permitted actions include leaving comments as questions or replying (Xu et al., 2006).
7. Teachers can use blogs for the course announcements, news and feedback to students; they can also be used with syndication technologies to enable groups of learners and teachers to keep track easily of new posts (Franklin and Van Harmelen, 2007).
8. In education, blogs enable students to publish learning tasks and receive feedback, prompting revision through self-reflection (Jarvela, Naykki, Laru and Luokkanen, 2007).
9. Blogs can be used to “enhance understanding of learning content by capturing students’ chronological reflections on readings and course topics, which enables self-monitoring and self-evaluation” (Kitsantas and Dabbagh, 2011, p. 103).

On the other hand, some researchers have criticised blog technology. For example, Divitini et al. (2005) argue that blog technology has failed to motivate students to become involved in online activities. Moreover, Kim (2008) claims there are inconsistent results in terms of the effectiveness of blogs when employed in educational contexts. According to Richardson (2008), the blogs used in school are of three types: (1) Class portal: here blogs are used to build a class portal to communicate information about the class and to archive course materials; (2) Knowledge management articulation: blogs also are used as a tool to manage and communicate knowledge; students can use blogs to archive meetings, share links to relevant information, and store documents and presentations for easy access in the future; and (3) School websites: blogs are used to build school websites. This allows the blog to move from static (a wait-for-the-webmaster-to-update type of site) to dynamic (an every-day-updated site). Developments in mobile technology have established a new wave of blogs. These are mobile blogs or moblogs and they allow the blogger to update his/her blog by using a mobile device (Laine, 2007). Mobile blogs offer unrestricted location and time, unlike conventional blogs; consequently leading to building mobile learning (m-learning).

### 2.6.2 Microblogging (Twitter)

Microblogging is one of the most recent social phenomena of Web 2.0; it fills a gap between blogging and instant messaging (Passant, Hastrup, Bojars and Breslin, 2008). It



Figure 3: Twitter Logo

allows people to post short messages quickly on the web for others to access and is defined as a form of blogging that allows users to write brief texts to share with friends and interested observers on the internet by text messaging, instant messaging, email or the web (Java, Song, Finin and Tseng, 2007). Costa et al.(2008) argue that microblogging is becoming a serious form of informal learning and networking. It allows status messages to be shared easily, either publicly or within a social network. However, Ebner and Schiefner (2008) also consider microblogging as a form of mobile learning (m-learning ). There has been some argument when comparing microblogging and blogs. Java et al. (2007) claim that microblogging is superior to regular blogging as a result of two important factors: (1) Faster Mode: microblogging is a faster mode of communication as it encourages shorter posts; and (2) Frequency of Updating: in general, a blog may be updated once every few days; however, microblogging can be updated several times in a single day.

There are many examples of microblogging services. These include: Twitter, Jaiku, Plurk and, more recently, Pownce (Java et al., 2007; Costa et al., 2008). However, Twitter is the most popular microblogging platform (Pontin, 2004; Costa et al., 2008). Sankar et al. (2009) claim that Twitter is the microblogging leader and other companies, such as Pownce, Jaiku, Kwippy, Ient.ca and Plurk, offer different levels of microblogging. They argue that Pownce might be more suited to business while Plurk might better suit interactive and more interpersonal conversations; Twitter, on the other hand, deals more with collective conversation. Twitter is a real-time, short messaging service that works over multiple networks and devices such as computers and mobile phones (Twitter Website, 2009). The basic concept of Twitter is that it is an online microblogging tool that allows users to answer a simple question, such as “What are you doing?”, in a short message of 140 characters. According to Twitter’s website (2009), Twitter was created by Jack Dorsey in August 2006 and was funded by the creative environment in San Francisco. Recently, the numbers of people using Twitter has increased massively in different areas, including the education and research sectors

(Costa et al., 2008). Twitter constitutes a revolution in efficient communication (Weberg, 2009); it is considered as an easy form of communication that enables users to broadcast and share information, activities, opinions and status (Java et al., 2007). Figure 4: Example of a Twitter Homepage. This is updated with talk about daily experiences and personal interests. The main advantage of using Twitter is the ability to share information instantly which is a powerful tool for communication in social networks. For example, the President of the United States, Barack Obama, has recently won the presidential election and, arguably, he may have won due to the power of Twitter and other social tools in gathering votes and inspiring a sense of community among voters (Fraser and Dutta, 2008).



Figure 4: Example of a Twitter Homepage

Twitter is a successful way of connecting a remote network to a given event. In addition, it creates a collaborative resource based on spontaneous reflection and unpremeditated story-telling (Costa et al., 2008). Twitter allows users to “follow” (the term that is used in Twitter) updates from other members who are added as “friends”; it also allows them to decide what information they want to follow and what information is relevant to them. Tweeples (Twitter people) can share any information such as a website links, breaking news, ideas, events and others (Weberg, 2009). In a recent study concerning “Why We Twitter”, Java et al. (2007) discuss reasons for using Twitter and determined three types of user intentions. These are: (1) for conversations, (2) sharing information and (3) reporting news. With the high number of people using Twitter, it is possible that a large percentage of adult learners are involved (Corbeil and Corbeil, 2011). Costa et al. (2008) observed that the number of Twitter users has increased

massively and that it has also made its way across different sectors, among which are education and research. Few current research studies have been undertaken about microblogging and there is very little research concerning Twitter in general or Twitter's role in education because these are new topics. Weberg (2009) studied Twitter in lap simulations and argues that Twitter is the way to achieving better simulations. He points out that Twitter could be used in education in the following ways:

1. Twitter can be used in live blog conferences. Furthermore, it can help a user to follow the major points of presentations without having to be there.
2. Twitter provides a place to connect research with a community and to create an early dialogue to brainstorm and discuss implementations.
3. Twitter can be a useful tool for communication between teachers and students. Students can be encouraged to become engaged by using the same types of communication channels they use for social networking.
4. Students and teachers can instantly connect with each other to form networks for troubleshooting, information sharing, student communication, and even faculty meetings.

From another point of view, Grosseck and Holotescu (2008) discuss the possibility of using Twitter in educational activities. They conclude that Twitter has proved to be an effective and professional tool in the development of and collaboration with students. It can change the rules of courses and models, and offer effective pedagogy that is responsive to students' learning needs. They show how Twitter could be used in educational activities:

1. Twitter could link to a course or class blog and could offer opportunities for students to discuss different kinds of asynchronous online discourse (considering voice, purpose, audience, etc.). It could also be used to organise ideas, reflect, send notes, manage meetings, etc.
2. Twitter could help in project management: for instance, making contacts between group members.
3. Twitter could be used as a tool for assessing opinions, examining consensus and looking for outlying ideas. Twitter could also be used in academic settings to foster interaction about a given topic.
4. Twitter can be employed in creating a learning experience; thus, it could be used to impact on students' learning.

5. Twitter could be used to facilitate a Personal Learning Network (PLN). Students could then address their questions to those they only know online, thus engaging in education and sharing the best practices that teachers use in classrooms.
6. Teachers could send Twitter via SMS; this is an advantage as the mobile phone number is not shown. This is considered ideal in an educational environment where teachers do not want to disclose their contact details in order to preserve their privacy.

Furthermore, Costa et al. (2008, p. 8) discuss Twitter as microblogging technology that enhances learning by using the case of a summer school. They argue that Twitter, as a microblog, could be used as for interesting discussions and as a shared back-channel in learning events. In addition, Twitter could be used as a communication tool for school to school, student to student and student to school communications, as well as to share information about schools, and class events and news, thus encouraging students to become involved in activities and encouraging competition between schools. On the other hand, Twitter can be criticised as being trivial because it only allows 140 characters. Moreover, students have criticised Twitter because of certain technical limitations (Costa et al., 2008). Grosseck and Holotescu (2008) claim that Twitter has some shortcomings: (1) Twitter spam: “followers” that have nothing to do with classroom activities cannot be blocked; (2) Twitter privacy: in classroom situations is better to have a private account; and (3) For teachers who twitter, a disadvantage is that they could be called for virtually 24 hours a day. Costa et al. (2008) add that some students do not like the Twitter concept and feel quite overwhelmed by its rather chaotic structure. This is because Twitter does not allow threaded discussions and the organisation of content into topical areas which is not suited to everyone's learning styles. In addition, they point out that, until now, Twitter, as a microblogging technology, does not offer a ubiquitous learning strategy.

It has been recommended that students need to include individual participation in shared online spaces and online discussions when using Twitter in school (Costa et al., 2008). Grosseck and Holotescu (2008) recommend the following when using Twitter in educational activities: (1) A user should be flexible and prepared for the directions that tweets can take him/her; (2) Before using Twitter, the language of Twitter and what it

all means must be shared with the user; (3) Users (students) should learn self-discipline with regard to logging and re-tweeting a request; and (4) It is preferable to consider implementing this approach on a pilot or trial basis with a selected group.

### 2.6.3 Wiki

Wiki is a social application of a Web 2.0<sup>TM</sup> component that enables people to write, edit and share content collaboratively with ease (Ebersbach, Glaser and Heigl, 2006). It is web-based software that allows all users of a page to change content online in the browser (Cole, 2009). This makes it a simple and easy-to-use platform for cooperative work on texts and hypertexts (Ebersbach et al., 2006). Recently, wikis have become more popular because they simplify the publication processes regarding contents on the web (Blood, 2004) and many educators are using wikis in educational systems. Wiki technology was developed in 1994 by Ward Cunningham as the open source software program WikiWikiWeb (Leuf and Cunningham, 2001). “Wiki” is a Hawaiian word which means “quick” or “hurry” and the name stands for the characteristic of the wiki by which content can be become available in a quick and uncomplicated manner (Ebersbach et al., 2006). The most famous example of a wiki is the online encyclopaedia, Wikipedia (Cole, 2009). At first, wiki was used in the community of computer programmers and system designers but is now used in education as universities and schools have started using wikis in the classroom to address educational needs (Farabaugh, 2007).

Wiki is defined as a tool “that allows one or more people to build up a corpus of knowledge in a set of interlinked web pages, using a process of creating and editing pages” (Franklin and Van Harmelen, 2007, p. 5). However, Leuf and Cunningham (2001, p. 14) defined the original concept thus: “a wiki is a freely expandable collection of interlinked web pages, a hypertext system for storing and modifying information in a database, where each page is easily edited by any user with a forms-capable Web browser client”. Usually wikis are compared with blogs but blogs are more structured and wikis are more flexible (Schwartz, Clark, Cossarin and Rudolph, 2004). However, a wiki can be a blog but a blog cannot be a wiki (Mattison, 2003). Schwartz et al. (2004) outlined the main differences between wikis and blogs which are: (1) Notification of new content: a blog uses RSS (Really Simple Syndication) feeds to notify new users’ content while a wiki uses email notification; (2) Editing format: blogs use ‘What You

See Is What You Get’ editing while a wiki usually employs simplified mark-up formatting; and (3) Structure: a blog is ordered chronologically while the structure of a wiki can be based on hierarchical subject divisions. Wikis have the potential to increase and enhance knowledge creation, management and multiuser participation (see Table 3: Characteristics of Wikis, adopted from (Wagner and Bolloju, 2005)). Wikis are an easy tool to use; they allow people to use HTML language to add and edit content via any web browser without having programming knowledge (Cole, 2009). The content is added in order to improve and extend others’ contributions; this makes the wiki a collaboratively expandable collection of interlinked web pages for storing and modifying information (Sigala, 2007).

Table 3: Characteristics of Wikis, adopted from (Wagner and Bolloju, 2005)

<b>Wiki Characteristics</b>	<b>Description</b>
<b>Speed of Publication</b>	Results reflected instantaneously on the Web server/ wiki site.
<b>Ease of Publication</b>	Single click publication with indexing and formatting handled by the software.
<b>Knowledge Representation &amp; Organisation</b>	Topical organisation plus bidirectional indexing and chronology of changes.
<b>Team Support</b>	Inherently open but editable access rights can be restricted to a particular group of users although others can still view it.
<b>Version Management</b>	Versions and history of changes are provided with facilities for rollback.

The structure of wikis provides students with the opportunity to create a series of web pages in order to revise their own work and the work of others; they are able to comment, reconnect different pages and delete pages (Farabaugh, 2007). This flexible and easy-to-use structure makes wikis the most innovative software that has emerged for online writing (MacFadyen, 2006). Constructing texts is a powerful learning experience (Forte and Bruckman, 2007) and wikis can be used as a network tool between learning and writing. As Emig (1977) points out, writing is a mode of learning: “Writing to Learn”. Wiki is used in online education for different students, from the level of school to university (Ebersbach et al., 2006), in order to enhance the learning process. Wikis offer the potential for students to communicate and collaborate in an e-learning environment (Parker and Chao, 2007). They not only encourage students to express their thoughts, they also generates students’ interest in their communities and

cultures (Engstrom and Jewett, 2005) and improve students' learning through social interaction with other students (Sigala, 2007), as well as offering a structured framework that students can shape into knowledge through their written postings (Farabaugh, 2007). Ebersbach et al. (2006) claim that wikis may be used as knowledge management tools in planning and documentation and can, at an international level, become an accessible notepad or discussion forums for both general and specialised discussions. However, Schwartz et al. (2004) argues that using wikis is rare for administrative scheduling, faculty use, learning support materials, and course management.

The earliest use of a wiki in education was in 1997 at college level in the Georgia Institute of Technology where researchers built the CoWeb system based on Ward Cunningham's original WikiWikiWeb (Forte and Bruckman, 2007). Many studies have discussed the utilisation of wikis in terms of their educational, technological and pedagogical aspects: for example, (O'Neill, 2005; Wagner and Bolloju, 2005; De Pedro Puente, 2007). O'Neill (2005) developed a wiki system tool, called sides2wiki, to support collaborative note-taking and to share lecture notes collaboratively among students in a class. This tool allowed students to add their own notes and comment; students were happy and showed positive levels of acceptance of this tool, feeling that it helped them in the learning process. Likewise, Wang and Turner (2004) developed a wiki platform which has several new features to help with students' collaborative writing, offering features such as improved page editing and a more efficient locking mechanism. De Pedro Puente (2007) used wikis and forums in blended learning strategies to evaluate the contributions of individual students within a group and then to process an evaluation while Raitman et al. (2005) investigated the use of wiki platforms in online learning collaborations in educational environments. Their results show that students accept wiki technology for future activities. In the same way, Forte and Bruckman (2007) investigated the links between wiki publishing experiences and writing-to-learn in an undergraduate course; this proved the power of wikis in terms of writing-to-learn. The results showed that wikis played an important tool in helping students to monitor the quality of their writing. Wikis could be used in an educational setting in the following ways:

- 1) Wikis can create interactive activities between teachers and students to present course information such as resources, external links and project information.

They also allow teachers to use wiki discussion to determine problem areas that face students (Schwartz et al., 2004).

- 2) Wiki technology can be used as academic textbooks on information systems. While the development, production and distribution of traditional textbooks are influenced by commercial interests, the wiki-textbook is collaboratively developed by faculty and by students; it could be made available online free of charge (Ravid, Kalman and Rafaeli, 2008).
- 3) Wiki can be utilised as an open, web-based content management system (CMS) for the editing and management of a web presence or to supplement an existing web-based content management system (CMS) (Ebersbach et al., 2006).
- 4) Wikis can build communities of practice (communities of learners) by creating a communal repository of expertise in a subject area. This can be improved over time by the contributions and problem-solving of interested individuals (Godwin-Jones, 2003).
- 5) Teachers can use wikis to supply scaffolding for writing activities. This would help the teacher in a group project to supply page structure, hints as to desirable content, and then provide feedback on student-generated content (Franklin and Van Harmelen, 2007).

On other hand, Raitman et al. (2005) criticises wikis and claims that there are two main areas in which wikis fail to build confidence among students. These are: (1) Students can easily edit other people's work without any real consequence. Wikis give a person the freedom to delete someone else's work; and (2) Lack of real time as students are not able to edit a wiki page simultaneously. For example, in group work, Student-A starts to edit at 2:00 pm while Student-B starts at 2:01 pm and finishes at 2:03 pm. Then, when Student-A completes his editing at 2:06 pm, this results in the new edition not containing any of Student-B's modifications. Moreover, Al-Khalifa (2008) claims that the wiki system used in this experiment was not capable of monitoring students' participation effectively and accurately.

#### 2.6.4 Video Sharing Site: (YouTube)

The media are regularly used by educators to engage and enhance the learning experience of students (Duffy, 2008). Using media such as graphics, audio, video and animation is considered an effective method in learning as they create a more interactive learning environment (Liu, Liao and Pratt, 2009). Video-based material is improving content in learning and is creating an interactive learning environment (Arguel and Jamet, 2009; Wong, Marcus, Ayres, Smith, Cooper, Paas and Sweller, 2009; Ayres, Marcus, Chan and Qian, 2009). Bruhl et al. (2008) argue that, in general, watching videos is a method that improves learning. The advent of technology has generated web-based applications that allow people to collaborate and build communities to connect and share a variety of resources (Sadik, 2009); this includes videos. In recent years, people have witnessed an explosion of web-based video sharing sites (Cheng, Dale and Liu, 2007). Web-based video is defined as video that can be accessed through the Internet and may be downloaded to a user's computer or viewed through a web browser (Snelson, 2008a). These websites are known as web applications or Web 2.0 social network tools; they allow users to upload, view and share videos. The power of these tools lies not in themselves but in the ways they are used. In other words, video is not an end in itself; it is a tool to help in achieving learning goals and objectives (Duffy, 2008).



Figure 5: YouTube Logo

There are many video sharing web applications such as YouTube, EduTube, TeacherTube etc.; some of them, such as kultura and plumi, are open-source. According to the Centre for Learning and Performance Technologies (2007), there are more than 50 video-hosting webpages; however, the most popular and frequently visited is YouTube (Burton, 2008; BBC, 2006). According to BBC News (2006), YouTube is considered to be one of the most popular websites on the internet and, everyday, hundreds of millions of videos are watched via this facility. Many videos and clips are available to watch on YouTube: at the beginning of 2010 there were about 100 million, with roughly 150,000 new clips being posted daily (Prensky, 2010). The concept of online video or video-sharing existed before YouTube in the form of “website sharing videos” where people used a traditional media server and peer-to-peer file downloads like BitTorrent to share videos. However, it was then very difficult to upload, manage, share and watch videos online because of the lack of a suitable platform. The new

generation of video-sharing sites, such as YouTube and its competitors, have overcome these problems (Cheng et al., 2007). The most important factors that have led to the success of video-sharing platforms such as YouTube are (Cheng et al., 2007):

- 1) They allow users to upload videos effortlessly and automatically converting them from many different formats.
- 2) They allow users to tag uploaded videos with keywords which helps in the search field.
- 3) They are easy to watch and share as users can easily share videos by mailing a link or by embedding them on weblogs or in web pages.
- 4) They bring new social aspects to the viewing of videos as users are allowed to rate and comment on videos; this further enables the formation of communities and groups.

YouTube™ is an enormously popular form of web 2.0™ application (Duffy, 2008). It is a video-sharing web application that allows users to upload and watch videos in order for them to be available online. These videos can also be embedded in users' websites, blogs and mobile devices (Berlanga et al., 2007). YouTube™ was launched in 2005 and then Google acquired it in 2006. Each day, 100 million videos are viewed and 72 million users have registered (BBC, 2006). However, young adults between the ages of 18 and 29 are the most frequent visitors (Madden, 2007). YouTube has become, in the words of Mark Anderson, "the new text" (Prensky, 2010). As a social application, YouTube allows users to (Educause, 2006): (1) Post and tag videos; (2) Post comments in a discussion format; (3) Search for content by keyword or category; (4) Create topical groups and participate in them; and (5) View the profiles of other members who have posted or commented on videos and see their favourite videos in order to contact them. Although YouTube may have begun as an online repository for amateur videos made at home, it has expanded rapidly into a professional media platform and now could be said to have completely transformed the way in which broadcasters across the world regard both content and audiences (Waters, 2007). People are using YouTube to share personal and professional videos; furthermore, news and entertainment channels have started a channel in YouTube. Nowadays, YouTube has become the leading entertainment destination on the Internet which has made many companies, governments and universities (for example, Stanford University and Auburn University) create a channel on it (Berlanga et al., 2007).

YouTube's co-founder, Chad Hurley, claims that: "YouTube is about more than entertainment, it is about education, inspiring people and taking action" (BBC, 2007). Duffy (2008) asserts that YouTube is a powerful tool for education and motivation in the learning environment while Skiba (2007) shows that YouTube has a potential impact on nursing education. Snelson (2008b; 2008a) believes that online video and free video-sharing are valuable for learning; like any other form of educational technology, the value depends on how it is used. YouTube is used as a medium to broadcast and distribute both formal and informal learning materials such as lessons, videos and course information. It can also be used as a virtual library by allowing students to access videos to support classroom lectures (Duffy, 2008) and is helping learners as an archival resource for learning content. Moreover, YouTube constitutes a valuable learning exercise as many educators believe that the act of creating content in a virtual form helps learners to understand a subject more deeply (Educause, 2006). Furthermore, YouTube, as a social networking tool, engages users in an environment that encourages meeting, reading and the sharing of opinions, as well as being part of a community (Educause, 2006). YouTube is not just one-way communication, it is two-way communication, as Prensky (2010) mentions:

*"Perhaps the thing about YouTube that is least understood by people who do not use it regularly is that it is not just one way, or one-to-many, communication; it is designed to be, and very much is, two-way. There are easy-to-use communication and feedback channels built in, including view counts, ratings, text posts to any clip, and in the ability to make and post "response" video clips, which often happens. Many users post ideas and opinions, looking for feedback, and many get large numbers of responses to their clips. Language students, for example, often post clips and get feedback from native speakers."*

Karppinen (2005) points out that online video can be integrated to promote meaningful learning that is described as: (1) active, (2) constructive and individual, (3) collaborative and conversational, (4) contextual, (5) guided, and (6) emotionally involving and motivating. YouTube can improve the learning process by:

1. Making learners engage with content as commentators and creators; in addition, it encourages experimentation with new media (Educause, 2006).
2. Encouraging collaboration in discussions between students as students watch video and the post comments on it. This makes it an

easy way to discuss issues related to the course content (Snelson, 2008a).

3. As a social-software application, YouTube is moving students from passive learning to active participation, where every learner can contribute and communicate with other learners (Educause, 2006).

On the other hand, YouTube has been criticised because it contains some videos that are illegally produced without copyright (Hunt, 2007). For example, Viacom, which owns MTV and Nickelodeon, took YouTube to court because it used Viacom shows illegally (BBC, 2007). As a result, in February 2007, YouTube deleted around 100,000 Viacom videos. Moreover, YouTube has been criticised for containing inappropriate content as most of the content on YouTube lacks an educational goal (Educause, 2006). Snelson (2008a) argues that educators are facing serious problem with YouTube and other video-sharing sites as some video content may be inappropriate, of poor quality, inaccurate and not suitable for educational needs. As a result, many schools have blocked access to some video-sharing sites such as YouTube due to the presence of inappropriate content. In March 2009, YouTube launched YouTube EDU (<http://www.youtube.com/edu>) which contains only educational videos (Arrington, 2009). This could solve the problem of inappropriate content and offer opportunities to use YouTube EDU in learning environments such as schools. Furthermore, in December 2011, YouTube launched a school-friendly version of its site for schools (<http://www.youtube.com/schools>), aimed at educating, engaging and inspiring students via video in schools. YouTube-for-school allows pupils to access educational videos in classrooms without the risk of being "distracted by the latest music video or cute cat" (BBC, 2011). Also, the playlists are organised according to subject matter and intended age level which removes any inappropriate content on the site (BBC, 2011).

### 2.6.5 Picture Sharing Site: (Flickr)

Using media such as graphics, audio and video, is considered effective in learning as this creates a more interactive learning environment (Liu et al., 2009); also, using photos and images as visual information helps learners to explore learning meanings more clearly, directly and easily, yielding positive results (Chanlin, 1998). Visual information has many different forms but usually comes in the



Figure 6: Flickr Logo

form of line drawings, photographs, maps, diagrams, flowcharts, graphs, time lines, geometrical shapes and figures (Sadik, 2009). Visual is defined as “the ability to read, interpret, and understand information presented in pictorial or graphic images” (Wileman, 1993, p. 114). As mentioned earlier, the advent of technology has generated web-based applications that allow people to collaborate and build communities in order to connect with and share a variety of resources (Sadik, 2009). Photo sharing is one of the best examples of web-based applications (Duffy, 2008) which are known collectively as Web 2.0™ social network applications (Sadik, 2009).

Although there are many photo hosting applications on the web, Flickr is the most popular and innovative picture or photo-sharing service on the internet (Sadik, 2009; Skågeby, 2008; Duffy, 2008). In 2006, 100 million photos and images were posted on Flickr and 2 million registered users were reported (Graham, 2006). It is popular because it has improved its storage and uploading capabilities (Skågeby, 2008), as well as providing innovative online community tools that allow photos to be tagged and browsed by folksonomic means. Flickr is a photo management and sharing application in the web that allows users to share and connect with users with similar interests. In this application, users can upload, download, tag, rate and comment on photos (Sadik, 2009). It was launched in 2004 and then bought by Yahoo! in 2005 (Berlanga et al., 2007). Flickr allows users to manage and organise images by creating private or public groups to cultivate a sense of community. Recently, Flickr has added video-sharing options. In general, people use Flickr in personal, professional, business and educational fields. In the educational field, it is used as a showcase platform which libraries, universities, schools and students use to show and store their photos; it is also used as an educational tool in the form of a learning resources’ repository (Berlanga et al., 2007). In addition, Flickr can be used in learning as a tool to share, critique and analyse photos and images as visual information (such as maps, diagrams, flowcharts, graphs). These can be used by teachers and students as teaching and learning resources (Sadik, 2009). Moreover, Flickr allows the building of a community of learners where users can be engaged in conversations about photos; these photos can then be updated in the light of comments (Sadik, 2009; Richardson, 2008). Furthermore, Flickr integrates with most of the major services such as blogging (Blogger.com), thus helping students to use and manage the photos in these services easily (Duffy, 2008).

### **2.6.6 Document Sharing Sites: (Scribd)**

As a document sharing tool, Scribd gives users the opportunity to interact and share specific and significant knowledge among learners, thus making them feel they are part of a learning community. As Bernard et al. (2000) suggested, learners must feel they are part of a learning community for collaborative online learning to take place successfully. Although it is possible to share these documents in conventional ways, such as by attachment, a more up-to-date way is to build a community that encourages learners to collaborate in this learning community. Recently, some websites, such as Scribd.com, Slideshare.net and Docstoc.com, have allowed learners to share documents. However, Scribd is the leader in online document sharing and publishing, and has the largest document-sharing community on the Internet (News.Blaze, 2008). Scribd, based in San Francisco, is a document-sharing service on the internet that allows users to view, embed and share documents. According to social media rankings, in 2008, Scribd was in the top 20 of social media websites (Schonfeld, 2008). It started as the idea of students when Trip Adler, Jared Friedman and Tikhon Bernstam could not find a way to publish documents on the internet (News.Blaze, 2008). It was launched in March 2007 and claims that there are more than 50 million readers every month, that more than 50,000 documents are uploaded every day and that there are more than 5 million iPaper embeds (Scribd.Website, 2009a). Scribd believes that “there's a writer in all of us”.

Scribd was started as the “YouTube of Documents” in order to build a community of documents and developed iPaper viewer similar to the YouTube video player (Malik, 2008). iPaper is a document format, built for the web with Adobe Flash Technology, which displays documents in web browsers instead of downloading them; extra software is needed to view them (Scribd.Website, 2009b). Other websites have started to use iPaper, such as Lulu.com (News.Blaze, 2008) and the Drop.io website (PRWeb, 2008). Scribd allows users to share most popular document formats which are: (1) Microsoft Office documents, (2) Portable Document Format (PDF), (3) Open office documents, and (4) Text documents. Scribd also allows users to embed the documents, share them, carry out full text searches, and view them easily and quickly (Malik, 2008).

Scribd can be used most effectively in education as it can help in building a learning community, encouraging collaborative learning among learners so they can work in groups by sharing documents. In addition, teachers can use Scribd to see learners’

assignments, as well as allowing all learners to see each other's assignments. Furthermore, Scribd has opened a new chapter by adding hundreds of books as sharing documents (The.Washington.Times, 2009). With these advantages in mind, it could be used to build a community of learners. On the other hand, Scribd has been criticised because it contains some books that are without copyright (Times.News, 2009). According to Times of London, various authors are fighting Scribd over copyrighted material on its site (Times.News, 2009).

### **2.6.7 Social Bookmarking: “delicious”**

Clearly, there has been a significant expansion of social bookmarking applications (Millen, Feinberg and Kerr, 2006) and sharing knowledge in this way has become very popular (Kruk, Gzella, Dobrzański, McDaniel and Woroniecki, 2007). Social bookmarking is also a form of Web 2.0™ technology that allows users to store, organise, search for and manage webpage bookmarks. Social bookmarking is a web application that “provides users with the ability to record (bookmark) web pages, and tag those records with significant words (tags) that describe the pages being recorded” (Franklin and Van Harmelen, 2007). Arakji et al. (2009) define social bookmarking as online applications that allow users to catalogue and index different webpage URLs by using individually selected keywords known as tags. These make the bookmarks searchable, based on users' classifications, and these bookmarks are stored online for easy access from any computer. The aggregation of publicly available bookmarked resources generates a social network effect by allowing users to search common public bookmarks; in this way, positive externalities and public value are created (Golder and Huberman, 2006).

As mentioned above, social bookmarking systems allow users to describe and organise content using individually selected keywords known as tags; some authors use the term “folksonomy” (a combination of “folk” and “taxonomy”) to describe this (Morrison, 2008). Social bookmarking is similar to the natural human process of categorisation because it does not have the restriction of formal structures for bookmarking and tagging these resources (Jacob, 2004). Therefore, it takes much less time (Arakji et al., 2009) and effort than traditional methods (Chuang and Chien, 2003). Additionally, some social bookmarking (such as Diigo.com) allows users to highlight

any part of a webpage and attach sticky notes to highlight specific parts or all of the webpage in order to bookmark this page.

Social bookmarking can be more effective than internet search engines for finding resources (Mason and Rennie, 2008; Franklin and Van Harmelen, 2007; Arakji et al., 2009). However, Arakji et al. (2009) claim that social bookmarking provides unique benefits over traditional search engines as users can search and see other users' tags and bookmarks. These can be used as a guide to mark users' awareness or potential interest in a given resource. This is the important communal benefit of a bookmarking community as users collocate resources sharing the same tag (Riddle, 2005). Another communal benefit of a bookmarking community is in discovering new resources from the bookmarks of other users. They may also discover the other users themselves as users can be connected to or be a part of group interested in the same topic. Arakji et al. (2009) notes that users' contributions to social bookmarks are either circumstantial or motivational. A circumstantial contribution is when a user bookmarks resources for his/her personal use but unintentionally makes these bookmarks public while a motivational contribution is when a user intentionally bookmarks a resource, which may not be of interest to another particular user, but for the benefit of the bookmarking community.

There are many social bookmarking applications, such as delicious, Furl, Spurl, Simpy and Magnolia. However, delicious is the most popular since, in 2007, two million users were registered on the delicious website (delicious.Website, 2007). delicious.com (previously known as del.icio.us) was one of the first social bookmarking web applications and has a large base of committed users (Millen et al., 2006). Launched in 2003 but acquired by Yahoo! in 2005, delicious is a bookmark management and sharing web application (Berlanga et al., 2007). Based on the power of the community, delicious aids how users discover, remember and share bookmarks online by allowing them to define tags (for private or public reference) in order to classify and organise their bookmarks to help users retrieve bookmarks and share them amongst community members (Berlanga et al., 2007). These tags allow users to organise and display their collection with labels that are meaningful to them; delicious also allows users to use multiple tags that can belong to more than one category for each bookmark, thus avoiding one of the limitations of the hierarchically organised folders

found in most web browsers (Millen et al., 2006). On an individual level, delicious is highly useful for personal recall as it employs user-assigned tags, needed because managing the mass of information on the internet is extremely difficult since information is abundant and it is not easy to find important resources in the future; this clearly has a low cost in terms of both time and effort bookmarking (Arakji et al., 2009; Mason and Rennie, 2008). Moreover, delicious allows learners to save bookmarks to an online service with a tag that makes these bookmarks viewable by other learners who can then easily copy the bookmarks (Moallem, 2009). Furthermore, for people using different computers and/or for people who have a large amount of saved bookmarks, delicious allows them to access their bookmarks from any web-accessible machine and for any amount of saved bookmarks (Arakji et al., 2009; Millen et al., 2006; Mason and Rennie, 2008).

Social bookmarking is used for personal reasons, and by companies, communities and projects, as well as for educational purposes (Berlanga et al., 2007). In educational contexts, social bookmarking offers new and effective ways of sharing and archiving information for later retrieval (Baylen and Zhu, 2009). It helps learners by allowing them to share resources with team members while experts can share their bookmarks with novices (Mason and Rennie, 2008). It enables learners to add extensive comments and therefore offers potentially more annotation and content (Moallem, 2009) which makes it a perfect tool for research since it allows users to save all resources found online. Furthermore, social bookmarking tools allow learners to go beyond developing a personal hierarchy of links since it enables learners to build a shared taxonomy (Moallem, 2009) which could be used to collect references collaboratively (Mejias, 2006). Franklin and Van Harmelen (2007) note three examples of using social bookmarking in education: (1) Teachers and learners can build up collections of resources that can also be used in creative ways to bookmark resources that are not available on the web; (2) Such applications can be used to build reading lists and resource lists easily for learners by using multiple tags for different subjects; and (3) They are helpful tools for team-work as users with a common interest can team together to use the same bookmarking service to bookmark items of common interest. Miller (2009) suggests that social bookmarking at an individual level can help students to organise web-based resources and references; it also helps students as a collaborative research tool for multi-institution (i.e. multi-school) teams to develop taxonomies and to

define new inter-disciplinary research areas. Social bookmarking is an important tool for learning; however, many e-learning systems do not include it. Moallem (2009) argues that social bookmarking tools are still under development and are not yet available in e-learning courseware packages.

On the other hand, the uncontrolled nature of this grassroots bookmarking of online resources can pose significant challenges for such systems (Arakji et al., 2009). Social bookmarking for a community or as a social network depends on the number of members and resources; this is known as critical mass theory. The theory of critical mass states that a community or social network is sustainable only when it reaches a critical mass of members or resources (Butler, 2001; Markus, 1987; Marwell et al., 1988). Arakji et al. (2009) argue that this is true for social bookmarking. Mason and Rennie (2008) claim that social bookmarking, as a tag-based system, also has certain disadvantages which are: (1) There is no standard set of keywords (also known as a controlled vocabulary) and no standards for the structure of such tags (e.g. singular vs. plural, capitalisation, etc.); (2) Mistagging is a critical disadvantage which occurs because of spelling errors and because some tags have more than one meaning; and (3) Some users provide highly unorthodox and “personalised” tag schema.

### 2.6.8 Social Network Sites (SNSs): (Facebook)

The desire to create and share information among users has contributed to the emergence of Social Network Sites (SNSs). Such sites (SNSs) are online communities where



Figure 7: Facebook Logo

people share similar interests with each other based on the social relationships between them (Li and Kao, 2009). Social network sites have revolutionised the way people connect, interact and share information (Towner and Muñoz, 2011) and these have been developing at an increasing rate over the past 30 years (Mazer, Murphy and Simonds, 2007b); they are now one of the most prominent genres of social software used by hundreds of millions of people (Selwyn, 2009). Social networking sites are personal and personalisable spaces for online conversations and the sharing of content which is typically based on maintaining and sharing ‘profiles’ where individual users can represent themselves to others through the display of personal information, interests, photographs and social networks (Selwyn, 2009). These social network applications permit users to share many of the most desirable qualities of good educational

technologies, allow peer feedback and match the social contexts of learning in schools, universities or local communities (Mason, 2006). Many students now spend a significant amount of time using social network sites to connect with other students for messaging, sharing information and keeping in touch (Golder, Wilkinson and Huberman, 2007). Luo (2010) mentions that a recent questionnaire found that 75% of people at the age of 18 to 24 are using social networking technologies, and more than 80% of students spend at least some time on social networking sites each week.

The social dimension in learning suggests that: “Students who feel socially connected to other students and faculty are more likely to persist in coursework and report higher levels of learning than those who report being less connected” (McDonald, 2002; Rovai, 2002; Tinto, 1987; Wegerif, 1998) (Woods and Baker, 2009, p. 1620). Selwyn (2009) argues that social network sites help users to learn by allowing them to enter new networks of collaborative learning based around interests and affinities that are often not catered for in their immediate educational environment. Social networks sites are web-based programs such as Friendster, MySpace and Facebook; they allow users a medium in which to create a virtual identity and network with friends and family (Mazer et al., 2007b).

Facebook is one of the best known social networks sites and, since its beginning in 2004, it has become immensely popular. In October 2010, according to Facebook reports, it had over 500 million active users (Towner and Muñoz, 2011) and, by July 2011, this had reportedly risen to more than 800 million active users (Times, 2011). Beyond posting status updates, users share a massive amount of information in the form of more than 5 billion web links, news stories, blog posts, notes, photo albums, etc. each week (Towner and Muñoz, 2011). Facebook was originally designed for college students (Golder et al., 2007) and, for many students now, Facebook is becoming an essential part of student life, helping students as a primary tool of communication and electronic socialisation (Golder et al., 2007). Facebook allows users to (1) present themselves in an online profile, (2) accumulate “friends” who can comment on each other’s pages, (3) view each other’s profiles, (4) join virtual groups based on common interests, and (5) learn about each other’s hobbies and interests through the profiles (Ellison, Steinfield and Lampe, 2007).

As a social network, Facebook is unique in helping to connect students and faculty both within and across academic communities (Mazer et al., 2007b). The main goal of students using Facebook is to connect with their friends (Joinson, 2008; Lampe, Ellison and Steinfield, 2006; Clark, Logan, Luckin, Mee and Oliver, 2009) and most students are using Facebook to maintain their offline relationships with their friends rather than make new ones (Lampe et al., 2006). Moreover, students are using Facebook to socialise in new academic environments (Madge, Meek, Wellens and Hooley, 2009), as well as with their classmates as well. A study has shown that 95% of surveyed students use Facebook to connect and communicate with students on their courses (Towner and Muñoz, 2011). Social network sites are relatively new and little researches has been carried out concerning such sites in educational areas. However, educators have started to integrate Facebook into academic fields because of “students’ level of personal involvement and time spent within Facebook, coupled with Facebook’s ability to foster community development” (Towner and Muñoz, 2011).

Social network sites are very popular and educators are seeing the advantages of using these technologies to achieve academic goals (Hughes, 2009). However, there is limited research on how Facebook, as a social network site, impacts on students or, in other words, how it influences students’ learning experience (Mix, 2010; Hew, 2011). Based on a current review of published research studies focusing on the use of Facebook, Hew (2011) mentions that previous research studies have shown that students use Facebook for personal reasons, but rarely for educational or learning purposes. Towner and Muñoz (2011) argue that there is little empirical research that has explored the role of social network sites in education. Research studies into using social network sites for “educational purposes are mixed and empirical research is limited, issues relating to privacy and safety and an erosion of professional boundaries are the primary reasons cited not to employ social network sites in a classroom” (Towner and Muñoz, 2011). Furthermore, most research into Facebook focuses on users from the North Americas, particularly in the USA (Hew, 2011).

Nevertheless, many researchers support the use of social network sites in education (Greenhow and Robelia, 2009b; 2009a; Tynes, 2007). So, while Selwyn (2009) argues that the use of social networking in education is a controversial element of the digital education landscape, Towner and Muñoz (2011) claim that Facebook can help students

in their learning. Mazer et al. (2007a) mention that Facebook can help teachers and students by offering them a unique method to foster student-teacher relationships, which can ultimately create a positive learning experience for both parties. Moreover, Bugeja (2006) mentions that social network provides opportunities to re-engage individuals with learning and education, as well as helping to promote ‘critical thinking in learners’, considered as a traditional objective of education. Furthermore, Ziegler (2007) argues that social networks motivate students as engaged learners rather than learners who are mainly passive observers of the educational process. This gives social networks the capacity to change radically educational systems. The EDUCAUSE Centre for Applied Research studied undergraduate students and their use of information technology. Their results show that 90% of students said that they used social networking services (such as Facebook, MySpace); however, less than 30% of the students reported using such services as a part of their courses at the time of the survey (i.e. February 23 to April 13, 2009) (Smith et al., 2009).

On the other hand, Brabazon (2007) discusses the disadvantages of social networks and asserts that such networks leading to disengagement, alienation and disconnection from education. Also, there are concerns that social networking may have a detrimental effect on ‘traditional’ skills and literacies (Brabazon, 2007). Foulger et al. (2009) mention that there are debates about the ethical issues associated with using social network sites such as Facebook in academic environments: students’ privacy and security issues are the primary concerns. Foulger et al. (2009) argue that students need more definitive guidelines about their participation in social networking spaces and some educational organisations have warned teachers not to use social networking sites while others have provided guidelines for responsible use. The Family Educational Rights & Privacy Association (FERPA) in the USA protects the privacy of student education records as federal law. However, as mentioned by Chen and Bryer (2012), this protection cannot be all-encompassing as, for example, a class discussion on social media might appear in the public domain as some students are not aware of privacy issues and that information posted on social media can become publicly available.

### **2.6.9 Social Media Factors and Communal Constructivism**

The exploration of Web 2.0 Tools in section 2.6 has identified a number of different ‘services’ that are provided by the tools that can be adopted by users in support of their

learning. Table 4 provides a summary of the main services provided by each tool and links to relevant literature. Previous research has provided some insight into how these services are being used and the challenges of using them to contribute to learning. In this section the researcher is discussing the main social media services factors in Web 2.0 and discusses their relationship to communal constructivist learning.

### **Accessibility**

The first factor is accessibility as these tools are accessible all the time and this is main benefit because it is providing learners with the tools to create new learning for themselves and to contribute and store their new knowledge in communal knowledge-bases for the benefit of the community's existing and new learners and this is making communal constructivism happen by creating a communal constructivist environment in e-learning. Therefore, students are using these tools in finding learning resources from current and previous students. Furthermore, these tools by being accessible are making learning environment to become closer to the individual learner. In answering the question on how can communal learning be made more accessible in communal constructivist environment?, Holmes and Gardner (2006 P.159) have mention that "what is actually implied is that the tools of the community's e-Learning environment should be more accessible to the individual".

### **Sharing**

The second factor is sharing which help learner to share information they found it useful in their learning process and by sharing it to their friends which could help those more effective learning elements propagate through the network making communal constructivism happen. For this reason Holmes and Gardner (2006) have represented communal constructivism e-learning exemplified by weblogs (blog), and multi-editor wiki systems (wiki) which are based on communities of users/learners in a communal constructivist context. Because these tools are allowing learners to share their own participation to communal (Holmes and Gardner, 2006 P.159).

### **Co-creating Value**

These Web 2.0 tools do not just help learner to bring them together to share learning sources or what they learnt, they are helping learner to work together and this is making

student learn from other students which making communal constructivism happen. This factor is making learning space a communal learning where learners by working together create new learning for themselves and to contribute and store their new knowledge in communal knowledge-bases for the benefit of the community's existing and new learners. Therefore, Rennie and Morrison (2013) have discussed that the most important factors in e-learning in Web 2.0 are co-creating value and sharing.

### **Communicating**

Through the use of communicating by web 2.0 e-learning communities emerge. This factor is helping student to learn by communicating with other students and teachers which support an effective interaction between learners. Learner could use these tools to communicate with other learner by creating, exchanging, and perceiving information using these tools therefore students not only construct their own knowledge (constructivism) as a result of interacting with their environment (social constructivism) but also actively engage in the process of constructing knowledge by communicating together for their learning community, and this is making communal constructivism happen. These tools allow learners to communicate and learn from each other, promoting one-to-one, one-to-many and many-to-many interactions; this offers huge opportunities for the communal support for learning. Under this factor communication could also be Discussion or Asking Questions.

### **Collaborative Work**

Another factor that underpinning on Web 2.0 tools is collaboration and this is leading to have collaborative learning community which is a communal constructivism theory. These tools are allowing student to work together for common goals, partnership and collaborative learning. The collaboration factor is helping students to learn knowledge and skills which advantage all in the community and students are being facilitating the learning process. Therefore, students construct their own knowledge as a result of their experiences and interactions with others by using Collaborative Work which is communal constructivism e-learning theory.

## Social Networking

The final factor is social networking which is allowing students to connect with other students for messaging, sharing information and keeping in touch. Social network is helping student to learn by allowing them to enter new networks of collaborative learning based around interests and affinities that are often not catered for in their immediate educational environment. This factor is combining many previous factors such as Accessibility, Sharing, Communicating and Collaborative Work. Therefore, this could be the main Factor where Web 2.0 could be used to build communal constructivism learning as it helping student to create new learning such as uploading learning resources for themselves in this tool as communal knowledge-bases for the benefit of the community's existing students and could benefit also future students.

Table 4: Factors That Underpinning the Social Media Services of Web 2.0

Web 2.0	Factors
<b>Blog</b>	Usability, collaboration and personality (Ebner and Schiefner, 2008).
	Social learning and individual learning (Lin and Yuan, 2006) (Kolari, Finin, Lyons, Yesha, Yesha, Perelgut and Hawkins, 2007).
	Sharing learning contents (Jung, 2009) (Richardson, 2008)
	Discussion (Kim, 2008) (Betts and Glogoff, 2004)
	Content management (Jung, 2009; Richardson, 2008).
	Collaboration (Franklin and Van Harmelen, 2007)
	Share (Fraser and Dutta, 2008; Java et al., 2007)
<b>Microblogging Twitter</b>	Communication (Java et al., 2007)
	Social networking (Weberg, 2009)
	Personal Learning Network (PLN) (Grosbeck and Holotescu, 2008)

Web 2.0	Factors
<b>Wiki</b>	Knowledge management (Ebersbach, Glaser and Heigl, 2006)
	Collaborative (O'Neill, 2005)
	Sharing (O'Neill, 2005)
	Content management system (CMS) (Ebersbach et al., 2006)
<b>Video Sharing Site "YouTube"</b>	Share (Duffy, 2008) (Cheng et al., 2007)
	Social (Cheng et al., 2007)
	Communication (Cheng et al., 2007) (Snelson, 2008)
	Collaboration (Snelson, 2008)
<b>Social Network Sites Facebook</b>	Communication (Snelson, 2008)
	Sharing (Li and Kao, 2009)
	Personalisable spaces (Selwyn, 2009)
	Social Network (Selwyn, 2009)
	Communication (Li and Kao, 2009)

## 2.7 Summary

This summary seeks to crystallise the literature review. Schools need appropriate tools and strategies because, so far, little change to how students learn has resulted from the implementation of ICTs. E-learning strategy should provide direction regarding the utilisation of sufficient resources to facilitate the transformation to e-learning which is a long and difficult process. Many schools, as learning institutions, are making significant investments in e-learning yet there seems to be little benefit or fundamental change because of the lack of a strategic direction and a coherent approach. E-learning policies for learning institutions, as research and evaluation studies show, are often ill-conceived

because strategies for the use of ICT have been employed without reflection and most learning institutions lack strategic direction in terms of e-learning. Therefore, schools need strategic direction regarding the use of technology for learning to introduce e-learning as an innovation because, although large amounts of money have been spent on adopting e-learning into learning systems, it has resulted in little change to how students learn.

Based on this literature the researcher has developed an e-learning strategy framework (Figure 8) as a theoretical framework derived from the literature review under three main dimensions which are: Strategy Dimension, Learning Strategy Dimension and Structure Dimension. **Strategy Dimension:** strategy dimension refers to the strategic issues in e-learning created by policy-makers; these include the vision, mission, strategic plan and e-learning goals. **Learning Strategy Dimension:** this dimension is showing learning strategy that happen between teacher and student and it could involve students' parents. Learning strategies for ICTs and Web 2.0 can be illustrated using Holmes and Gardner's (2006) framework (Based on communal constructivism learning theory) which represents the growing complexity of users' engagement in e-learning from single users, to multi-users, to communities of learners. Holmes and Gardner's (2006) framework is underpinned by learning theory from behaviourism, to cognitivism and constructivism, to socio constructivism, to communal constructivism. Engagement is associated with deep learning outcomes in learning communities and such communities are the key to successful and effective learning (Palloff and Pratt, 2007; Gunawardena and Zittle, 1997).

Palloff and Pratt (2007) assert that a community of learners occurs when there is: (1) Active interaction involving both course content and personal communication; (2) Collaborative learning evidenced by comments that are directed primarily student-to-student rather than student-to-instructor; (3) Socially constructed meaning evidenced by agreement or questioning, with the intent to achieve agreement on issues of meaning; (4) Sharing of resources among students; and (5) Expressions of support and encouragement exchanged among students, as well as a willingness to evaluate critically the work of others. Most schools are used different technologies in learning and teaching such as MS PowerPoint presentations Virtual Learning Environments (VLEs). However, Web 2.0 applications (such as podcasts, blogs, wikis, etc.) have changed the

learning landscape, with learners becoming active participants, creators of knowledge, and seekers of engaging personal experiences; in short, learners are described as actively creating and sharing content and ideas. These new tools may redefine the way teachers teach and students learn. Such tools have a profound effect on schools and learning, and have caused a revolution in thinking because they have promoted creativity, collaboration and communication, as well as dovetailing with learning methods. These tools will also demand new teaching and learning practices. Table 5 summarises the services for students provided by the Web 2.0 tools.

Table 5: Services Provided by Web 2.0 Tools

Service	Web 2.0 Tools
<b>Sharing</b>	Blogs; Microblogging (Twitter); Wikis; Video Sharing Sites (YouTube); Picture Sharing (Flickr); Document-Sharing (Scribd); Social bookmarking (delicious); and Social Network Sites (Facebook).
<b>Co-creating Value</b>	Wikis, Blog
<b>Collaborative work</b>	Facebook
<b>Communicating</b>	All
<b>Social Networking</b>	YouTube, Facebook,
<b>Discussion</b>	Facebook, Blog
<b>Asking Questions</b>	Facebook
<b>Archival Function</b>	YouTube, Facebook
<b>Searching</b>	YouTube, Blog
<b>Personal Content Management</b>	Facebook, YouTube, Blog

**Structure Dimension:** this dimension is about other factors that affect the successful integration of ICTs into learning, which are Virtual Learning Environments (VLEs), resources and support. Without good technical support and available resources, schools cannot be expected to overcome the obstacles that prevent them from using ICTs. The lack of technology could include software and hardware, such as insufficient computers. The lack of resources may include one or more of the following: (a) technology, (b)

access to available technology, (c) time, and (d) technical support. Having access to technology is more than just the availability of technology in a school; it includes giving the proper amount and right types of technology in places where teachers and students can use them. The support needed in the school could include: Internet connection, printers, lack of computers, lack of quality software, lack of time, technical problems, teachers' attitudes towards computers, resistance to change, poor administrative support, lack of computer skills, poor training opportunities, and lack of skills in how to integrate ICT in education. Figure 8 is showing the Framework for the E-learning Strategy.

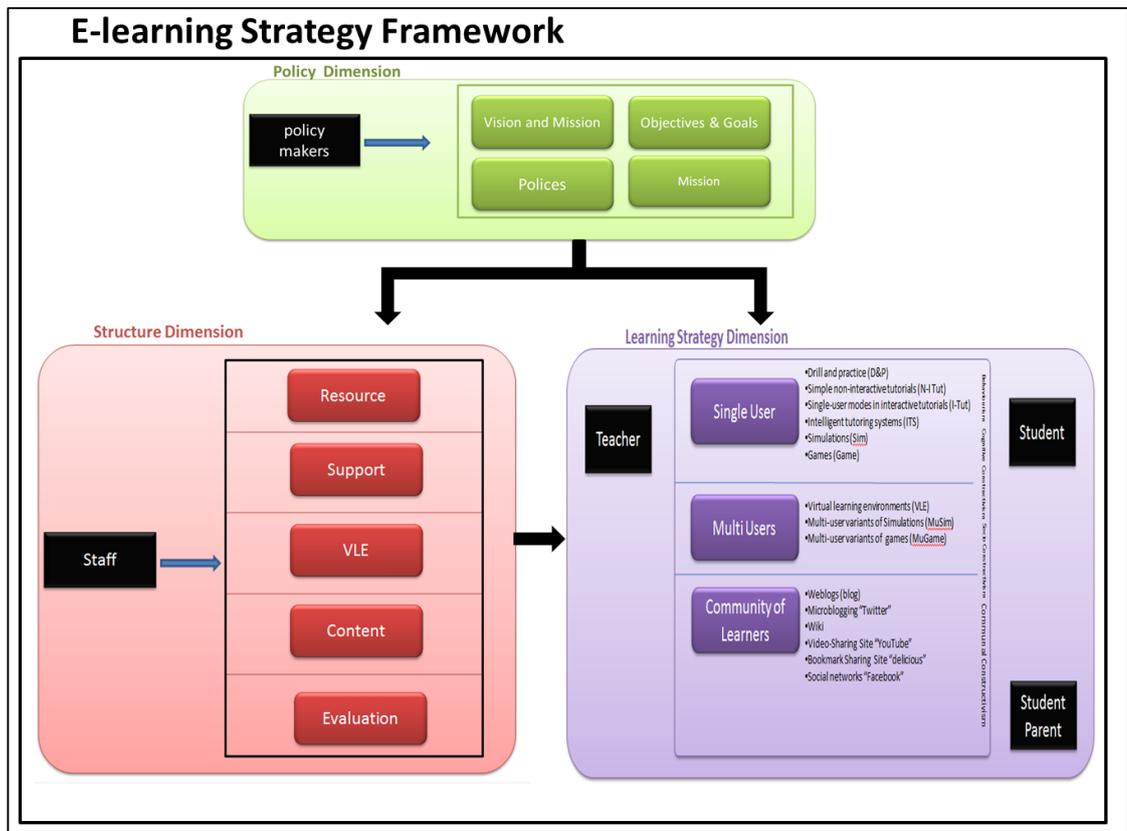
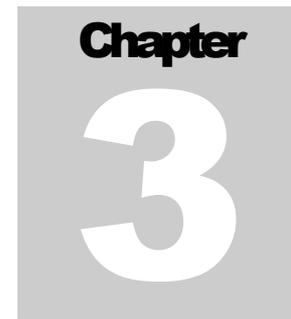


Figure 8: Framework for the E-learning Strategy

In conclusion, Web 2.0 tools have made significant shifts in the way people connect, communicate, create and share information; these connectivity and communication services have created new forms of relationships and patterns of communicating and learning and today's students grow up in an information society where they are using many types of technology. There is a gap between student learning and the modes of learning in educational systems or in another words there is a gap between how students are using technology in learning with current using technology in school. This is

because there is a mismatch between how students generally communicate and how they must communicate in formal education so there is a need to rethink the current e-learning strategy in order to meet the needs of today's learners. Research on education technology does not often converge with the research into the new media cultures of young people. In current education systems, these changes in technologies are creating a gap between schools and the needs of the new generation. This gap must be bridged by investigating e-learning technologies in order to understand what the gap is and how students and teachers are using technologies in learning; it is also necessary to understand what the role is of Web 2.0 in learning. However, empirical research in this area is very limited and most of these research studies offer suggestions and recommendations which are not based on research evidence. To build a bridge between the educational system and the digital generation, there a need to investigate the role of Web 2.0 and develop a new research framework which should seek to achieve a deeper understanding of how students learn "as the new generation" and how new tools support and assess learning gains.



Rethinking E-learning Strategy 2.0 in The Digital Age

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## Chapter 4: Methodology

*“Now individuals not only find and read information but also create and share their own in real time. It is a new Web, known as Web 2.0” (Solomon and Schrum, 2007)*

This chapter discusses the methods and framework related to a particular set of paradigmatic assumptions that the researcher used in conducting the research and achieving the research’s aims and objectives. Moreover, it presents and discusses the strategy that is adopted in this research, together with the data collection method. It also discusses the reliability and validity of the study; finally, it describes the pilot study.

## CHAPTER 3: METHODOLOGY

### 3.1 Introduction

Methodology refers to more than a simple set of methods; it is the framework related to a particular set of paradigmatic assumptions that the researcher uses to conduct the research (Zina, 2004) and to achieve the research's aims and objectives. The main aim of this research is to investigate and evaluate the e-learning strategy for high schools participating in the Schools of the Future Project developed by the Ministry of Education in the Kingdom of Bahrain. This chapter presents and discusses the methodology adopted in this research to achieve the research's aims and objectives. Moreover, it offers the research strategy and the data collection methods used, as well as discussing the reliability and validity of the study. Finally, the pilot study is described.

### 3.2 The Nature of this Research

It is important to discuss the nature and typology of the research in order to determine a clear purpose (Walliman, 2001). The nature of this research concerns investigation and evaluation. Evaluation research is a study which has a distinctive purpose; it is not a new or different research strategy (Robson, 2002b). The most important objective of evaluation research is not to discover or contribute to new knowledge, but rather the study of the effectiveness with which existing knowledge is used to inform and guide practical action (Clarke and Dawson, 1999). According to Patton (2002) and his work into the categorisation of research typologies, this research could be a combination of basic research and formative evaluation research as it aims to evaluate and contribute knowledge to the development of an e-learning strategy in the Kingdom of Bahrain. (See Table 6: Typology of Research Purposes (Patton, 2002)) The challenge in evaluation is to provide the best possible information for the people who need it and then to persuade those people actually to use the information in decision making (Patton, 1987). This research firstly attempts to carry out the best possible investigation and evaluation of current e-learning strategy in the Kingdom of Bahrain. Secondly, it attempts to recommend the resulting strategy to policy makers and then to develop a framework for this e-learning strategy.

Table 6: Typology of Research Purposes (Patton, 2002)

Types of research	Purpose	Focus of research	Desired result	Desired level of generalisation
<b>Basic research</b>	Knowledge as an end in itself; discover truth	Questions deemed important by one's discipline and personal intellectual interest	Contribution to theory	Across time and space (ideal)
<b>Applied research</b>	Understand the nature and sources of human and societal problems	Questions deemed important by society	Contributions to theories that can be used to formulate problem-solving programmes and interventions	Within as general a time and space as possible, but clearly limited to application and context
<b>Summative evaluation</b>	Determine effectiveness of human interventions and actions (programmes, policies, personnel, products)	Goals of intervention	Judgments and generalisations about effective types of intervention and the conditions under which those efforts are effective	All interventions with similar goals
<b>Formative evaluation</b>	Improve an intervention: a programme, policy, organisation or product	Strengths and weaknesses of the specific programme, policy, product or personnel being studied	Recommendation for improvement	Limited to the specific setting studied
<b>Action research</b>	Solve problems in a program, organisation, or community	Organisation and community problems	Immediate action; solving problems as quickly as possible	Here and now

### 3.3 Evaluation

The study of current e-learning policies and comparing these with how teachers and students use e-learning is leading research to evaluate e-learning strategies. The term "evaluation" can be defined as assessing the value of something, according to the Oxford English Dictionary (2008) while the Latin origins of the word "evaluate" mean "to strengthen" or "to empower" (Briedenhann and Butts, 2005). In general, evaluation is used to monitor product or service quality (Oliver, 1993) and, in practical terms, evaluation refers to measurements of worth or value (Gitlin and Smyth, 1989). Glass and Ellett (1980) claim that evaluation "is what people say it is; and people currently

are saying it is many different things”. Before exploring definitions of evaluation, however, it is important to differentiate between monitoring and evaluation (Briedenhann and Butts, 2005; Patton, 1997). Monitoring is the function of an internal evaluator who is a member of the project or organisation and monitoring helps as an early warning system, alerting project managers and developers to potential problems, as well as providing indications of success (Briedenhann and Butts, 2005; Patton, 1997). On the other hand, evaluation assesses the appropriateness and effectiveness of either on-going or completed projects; it provides a summation of success or failure. An evaluation may be undertaken either by internal or external evaluators (Briedenhann and Butts, 2005; Patton, 1997).

Evaluation can be defined as the “collection, analysis and interpretation of information about any aspect of a programme of education or training as part of a recognised process of judging its effectiveness, its efficiency and any other outcomes it may have” (Thorpe, 1998). Also, evaluation may be defined as the method of ascertaining areas of concern, and selecting, collecting and analysing suitable information in order to report summary data useful to decision-makers (Alkin, 1969). Scriven (1991) defines evaluation as the process of determining the merit, worth or value of thing (a product, project, program or process) while Glass and Ellett (1980) argue that seven different conceptions of evaluation can be distinguished. These are evaluation: (1) as applied science; (2) as systems management; (3) as decision theory; (4) as an assessment of progress towards goals; (5) as jurisprudence; (6) as description or portrayal; and (7) as rational empiricism. Evaluation simply consists of the gathering and combining of performance data with a weighted set of criteria scales to yield either comparative or numerical ratings, and in the justification of: (a) the data-gathering instruments, (b) the weightings, and (c) the selection of criteria (Scriven, 1967). An evaluation should be a clear, well thought out undertaking as the more effort that goes into the pre-planning of an evaluation, the better the outcomes (Aitken and Tabakov, 2005). In evaluation it is important to define what is to be investigated and how this will be achieved (Aitken and Tabakov, 2005). Crompton (1996) provides an evaluation checklist which helps the evaluator in an evaluation process.

Table 7: Crompton’s Evaluation Checklist Table

Evaluation Checklist	
<b>Who? (Know your target audience)</b>	Who is the evaluation for?
<b>What? (Understand what is to be evaluated)</b>	Process (efficiency) Outcome (effectiveness) Combination of both (relevance) Purpose (validate, improve or condemn)
<b>Why? (Rationale for evaluation)</b>	To improve quality To determine if aims fulfilled To prove accountability
<b>When? (Timing—being ready to start)</b>	Have you defined a question? Will the findings have any effect? Will benefits outweigh costs?
<b>How? (Choosing an appropriate technique)</b>	Questionnaires Interviews Confidence logs Observations Student profiles Pre-tests and post-tests Inventory learning checklists

The American Evaluation Association (AEA) (Shih et al., 2007) outlines ethical practice in evaluations (programs, products, personnel and policy) and has developed five principles to guide evaluators in their professional practice. These principles are: (1) Systematic Inquiry, (2) Competence, (3) Integrity/Honesty, (4) Respect for People and (5) Responsibilities for General and Public Welfare. Evaluation is an important component of program improvement, renewal and long-term success (Rovai, 2003) and a good evaluation helps to indicate what is effective and what is not (Verduin and Clark, 1991). Furthermore, evaluation is the method for ascertaining areas of concern; this is useful to decision-makers in selecting from among alternatives (Alkin, 1969; Wottawa and Thierau, 1998). Scriven (1981) points out that program evaluation should be regular for reasons of responsibility; he also identified other uses such as: (a) determining programme effectiveness, (b) identifying programme weaknesses to enable administrators to improve effectiveness, (c) providing evidence of effectiveness to doubters, and (d) providing information that can be used for programme renewal.

Evaluation research is considered to be a type of applied research which aims to generate information about the implementation, operation and ultimate effectiveness of policies and programmes designed to bring about change (Clarke and Dawson, 1999). Originally, evaluation focused on measuring the attainment of goals and objectives: that is, finding out if a program “worked”, which determined the effectiveness of a programme. This came to be called summative evaluation (Patton, 2002). More recently, programme improvement (or formative evaluation) has become at least as important as summative evaluation (Patton, 1997).

Formative evaluation is more detailed than summative evaluation, and so formative evaluation is considered as the best tool for improvement purposes (Laverie, 2002). Formative evaluation is a process that is carried out in order to provide information that will aid the development of particular change or intervention programmes (Zina, 2004: p.135). Zina (2004: p.135) asserts that such studies investigate programme delivery; they ask how, and how well, a programme is being implemented; they can also assess strengths, weaknesses, opportunities and threats, often assessing barriers to and facilitators of implementation. Evaluation results are expected to inform decision-making related to programme improvement, modification and management (Zina, 2004: p.135).

Summative evaluation is the evaluation of outcomes and the goal here is to provide information that can assess the effectiveness, efficiency and ethicality of the change strategy in question (Zina, 2004: p.135). Such studies investigate whether a programme has met its aims and objectives; they might also assess the overall effects, both intended and unintended, of a programme (Zina, 2004: p.135). Summative evaluations generate evaluation results for administrators that could be used with regard to personnel decisions such as tenure and promotion (Spencer and Schmelkin, 2002) and, as Khan mentions, “summative evaluations are normally quite standardized, whereas formative evaluations are more individualized” (Laverie, 2002).

Table 8: Comparison of Formative and Summative Evaluations

	Formative	Summative
<b>Target audience</b>	Programme managers, practitioners	Policy-makers, funders, the public
<b>Focus of data</b>	Clarification of goals, nature of	Implementation issues,

	Formative	Summative
<b>collection</b>	implementation, identifying outcomes	outcome measures
<b>Role of evaluator</b>	Interactive	Independent
<b>Methodology</b>	Quantitative and qualitative	Qualitative
<b>Frequency of data collection</b>	Continuous monitoring	Limited
<b>Reporting procedures</b>	Informal via discussion groups and meetings	Formal reports
<b>Frequency of reporting</b>	Throughout period of observation /study	On completion of evaluation

(Source: adapted from (Herman, Morris and T., 1987: p.27)

These two types of evaluation (i.e. formative and summative) depend on the aim of the evaluation. However, an evaluation can consist of both types although one will most likely become predominant, as (Patton, 1997) notes:

*“Formative and summative evaluations involve significantly different research foci. The same data seldom serves both purposes well. Nor will either a specific formative or summative evaluation necessarily yield generic knowledge (lessons learned) that can be applied to effective programming more generally. It is thus important to identify the primary purpose of the evaluation at the outset: overall judgment of merit or worth, on-going improvement, or knowledge generation? (Patton, 1997 p. 78)*

Recommendations, which are ways to improve after an evaluation process has taken place, go beyond plain evaluative conclusions (Scriven, 1991). Recommendations mean suggestions for appropriate action (Scriven, 1991) and the field of evaluation often, but certainly not always, suggests that an evaluator may provide recommendations (Iriti, Bickel and Nelson, 2005). On the issue of whether evaluators and evaluations should suggest recommendations, Iriti et al. (2005) suggest nine key variables to consider when deciding whether or not to provide recommendations. These are: (1) the role of the evaluator; (2) the user context; (3) the evaluation’s design characteristics; (4) the quality, strength and clarity of the evaluation’s findings; (5) the evaluator’s experience and expertise; (6) ethical considerations; (7) knowledge of costs and trade-offs; (8) the internal capacity of the programme; and (9) literature in the field of study.

### 3.4 Case Study

Research strategy should enable the researcher to answer particular research questions to achieve the research's aims and objectives. This research aims to evaluate e-learning strategy and to develop e-learning strategy framework. Evaluation research is a research which has a distinctive purpose; it is not a new or different research strategy (Robson, 2002b) and it is categorized by the objective of evaluation rather than any particular methodological approach (Zina, 2004). Clearly, what make different between evaluations research from basic research is the purpose for which data collected. Therefore, evaluation research has no methodology of its own "it differs from none-evaluations research more in objective or purpose that design or execution" (Suchman, 1967:82). In evaluation, research is generally in the form of a 'case study' and this might involve interviews with stakeholders and stakeholder survey (Zina, 2004). A case study strategy has been adopted in this research to achieve the research's aims and objectives. A case study is selected because it serve a particular evaluation purpose (Patton, 1987), therefore, eleven secondary schools from first implementation stage in Kingdom of Bahrain have used as case study in this research.

The case study approach is used in many situations, including in organisational and management studies (Yin, 1994). Many researchers have used case study methodology within the field of e-learning and evaluation research. Bennett (2003) believes that the most common traditionally way in educational evaluation are experiment and case studies. However, case studies become particularly useful where needs to understand some particular problem or situation in great depth (Patton, 1987). The more complex the objects of research, the more valuable the case study approach is regarded to be. Therefore the use of case studies is becoming an increasingly respected research strategy in the following area: (1) Policy and public administration research, (2) Management studies and (3) Educational studies (Scholz and Tietje, 2002). Furthermore, stenhouse (1985) identifies four styles of case study which are: ethnographic, evaluative, educational, and action research.

Bergen and While (2002) point out that the case study has become an accepted vehicle for conducting research in a variety of disciplines. However, the meaning behind the term is not always made explicit by researchers and this has given rise to a number of assumptions which are open to challenge, and to questions about the

robustness of the method. Case study research is appropriate for many forms of social work practice. Although disparaged as uncontrolled and unintermittent, the case study has great potential for building social work knowledge for assessment, intervention and outcome (Jane, 1994). Case study define as a strategy for doing research which involves an empirical investigation of a particular current phenomenon within its real life context using multiple sources of evidence (Robson, 2002a:178). In such a situation, there is a true or “live” situation so the case study could be seen as the most appropriate method in this research’s aim and the objectives. Yin (2003) believes that the case study helps to define the unit of analysis, to identify the criteria for selecting and screening potential candidates for the cases to study, and suggests the relevant variables of interest. Moreover, the case study strategy is helping to gain a rich understanding of the context of the research and processes being enacted (Morris and Wood, 1991).

Furthermore, case studies allow a researcher to achieve high levels of conceptual validity, or to identify and measure the indicators that best represent the theoretical concepts the researcher intends to measure (George and Bennett, 2004). On the other hand, the case study strategy brings with it a number of limitations (Guba and Lincoln, 1981; Merriam, 1988) such as the problem of the excessive time needed, the possibility of oversimplifying or amplifying a situation, the ethical issues, and the generalisability question. In case study research; the research aims not to explore certain phenomena, but to understand them within a particular context and the research uses multiple methods for collecting data which may be both qualitative and quantitative (Yin, 1994). If the research are using a case study strategy, it will likely need to use and triangulate multiple sources of data (Saunders, Lewis and Thornhill, 2007). The important strength of case study approach is the ability to combine a variety of information sources including documentation, interviews, and questionnaire. A case study strategy relies on using multiple sources of evidence to add width and depth to data collection, to help in bringing a richness of data of understanding through triangulation, and to contribute to the validity of the research (Yin, 2003). Triangulation refers to the use of different data collection techniques and methods within one study in order to answer to research question.

### 3.5 Research Methods

In this case study, to gather the empirical data for this research, the researcher used qualitative and quantitative data collection methods. Combining research methods and using both qualitative and quantitative data can strengthen the reliability and validity of a study (Shih, 1998; Patton, 2002; Saunders et al., 2007). To achieve the research's aims and objectives, this research used triangulation by using three data collection tools in this case study, which are: (1) Observation and Document Analysis, (2) Interviews and (3) Questionnaires. Table 9 explains the reasons for using each of data collection method while Figure 9 shows the research plan and methodology. Two stages of fieldworks are done in order to achieve research's aims and objectives. The first fieldwork consists of Observation and Document Analysis method, and Interviews method. The second fieldwork consists of questionnaires for student, teachers and staffs. The first fieldwork is required to understand what is happening in the school and to inform the questionnaires in the second fieldwork, where the second fieldwork is helped to understand in more details.

Table 9: Reasons for Using each Data Collection Method

Method	Reason for using this method
<b>Document Analysis</b>	<ul style="list-style-type: none"> <li>• To gain information about e-learning project and e-learning strategy and policies</li> <li>• To understand current e-learning strategy</li> <li>• To cast light on many aspects of organisational life and structure</li> </ul>
<b>Observation</b>	<ul style="list-style-type: none"> <li>• To understand e-learning strategy in schools</li> <li>• To find out what is currently happening in schools</li> <li>• To understand students' and teachers' practices</li> <li>• To inform the interviews and questionnaires</li> </ul>
<b>Interviews</b>	<ul style="list-style-type: none"> <li>• To understand current e-learning strategy</li> <li>• To gather in-depth information regarding a relatively small number of people or subjects</li> <li>• To find out what is in and on a person's mind and to find out from them things that the researcher cannot directly observe</li> </ul>
<b>Questionnaires</b>	<ul style="list-style-type: none"> <li>• To obtain a larger number of people concerning a limited set of questions, measurements form which permit statistical analysis</li> </ul>

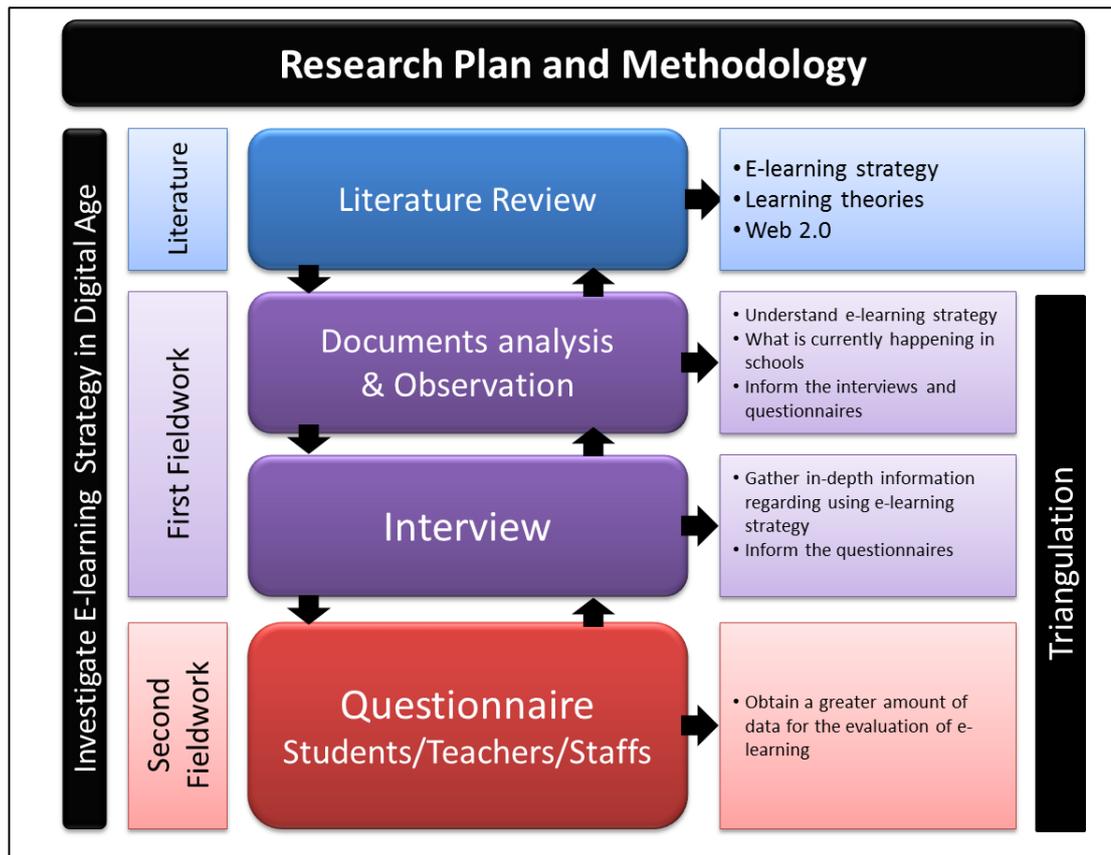


Figure 9: Research Plan and Methodology

### 3.5.1 Observation and Document Analysis

#### Document Analysis

The Centre of Educational Research and Innovation at the Organisation for Economic Co-operation and Development (OECD) (2005) mentions that viewing e-learning strategy documents is helpful in understanding an e-learning strategy. The analysis of documents, and administrative and archival sources has long been regarded as a valid method for use by historians (Casell and Symon, 1994b) and a number of European and American social scientists have continued to make use of official and administrative documents in research. These include studies of management (Dalton, 1959), studies of organisational doctrines and policies (Clark, 1958; Selznick, 1949) and research into organisational productivity (Haire, 1959; Katz, Macoby and Mores, 1950). Document analysis is “a collection, review, integration, and analysis of various forms of text as a primary source of research data” (Zina, 2004, P.177).

One method to understand how organisations view e-learning is to look at the documents that they have developed about their strategy (OECD, 2005). Bennett (2003)

discusses the key characteristics of document study as a research technique in educational evaluation. She states that document analysis useful for obtaining data on: (1) the national and local backgrounds to the introduction of a new programme; (2) the context into which a new programme is being introduced; and (3) existing data on student’ performance in tests and examinations. She also discusses the advantages and disadvantages of using document analysis techniques in educational evaluation research. Table 10 explains Bennett’s (2003) views.

Table 10: Advantages and Disadvantages of Document Analysis (Bennett, 2003)

Advantage	Disadvantage
<ul style="list-style-type: none"> <li>Provides a picture of the institution in terms of its culture, priorities, values, resources and performance</li> </ul>	<ul style="list-style-type: none"> <li>Time needed to read the documents</li> </ul>
<ul style="list-style-type: none"> <li>Materials are generally readily available</li> </ul>	<ul style="list-style-type: none"> <li>Possible difficulties with developing frameworks for the analysis of very diverse sources of data</li> </ul>

The analysis of documents can be viewed as a useful qualitative tool because it can cast light on many aspects of organisational life and structure (Casell and Symon, 1994a). Therefore, this method was chosen because, in general, it could help in understanding the e-learning project in the Kingdom of Bahrain, and in studying the e-learning strategy that is presently used. Moreover, this method of observation could be used to inform the interviews and questionnaires. Organisational documentation comes in many forms: company annual reports, public relations (PR) material and press releases, corporate mission statements, and policies on rules, procedures and strategies (Casell and Symon, 1994a).

It is important to be aware of these different kinds of documents and their various functions since they play an important part in organisational life (Casell and Symon, 1994a). Therefore, in this research, all official documents concerning the e-learning project in the Kingdom of Bahrain which had been published to date were examined.

These were analysed to collect data to help in achieving the research's aims and objectives.

### **Observation**

The observation method is commonly used in social science research (Kothari, 2004; Angrosino, 2007); it involves looking, recording and listening very carefully (Bernard, 2000). It is a very powerful method of finding what people do in particular contexts and the form of interactions in their everyday lives (Darlington and Scott, 2002). The significant role of observation in social research has long been acknowledged. Observation is considerably more systematic and formal a process than the observation that characterises everyday life (Angrosino, 2007). According to O'Leary (2004), observation is: "A systematic method of data collection that relies on a researcher's ability to gather data through his or her senses". Angrosino (2007) defines observation as a tool of research that "is the act of noting a phenomenon, often with instruments, and recoding it for scientific purposes".

Observation is a powerful research method because it provides an "understanding of what is happening in the encounter between a service provider and user, or within a family, a committee, a ward or residential unit, a large organisation or a community" (Darlington and Scott, 2002). The main advantage of this method is that subjective bias is reduced if the observation is carried out precisely (Kothari, 2004). Furthermore, Kothari (2004) states that this method helps researchers to obtain information about what is currently happening (Kothari, 2004; Darlington and Scott, 2002). Observations are used by researchers at different stages of a study and for different reasons (Darlington and Scott, 2002). In this research, it was used in the early stages of the study because, as Darlington and Scott (2002) mention, it is a useful way of understanding the context of the phenomenon under investigation and working out what the important questions are. Darlington and Scott note:

*"Observation can be used at different stages of a study and for different reasons. Used in the early stages of a study, it can be a useful way of understanding the context of the phenomenon under investigation and working out what the important questions to be asked are. This is particularly valuable where the researcher is unfamiliar with the phenomenon. This type of observation could precede a more structured*

*phase of observation or other data collection methods” (Darlington and Scott, 2002 P.76).*

Therefore, this method was suitable for use in understanding and investigating e-learning strategy in schools and the official e-learning policy in the first fieldwork before conducting the interviews and questionnaires. Observational techniques are suitable for research dealing with specific settings such as schools (Angrosino, 2007). In this research, observation was used to understand the e-learning project in the Kingdom of Bahrain and to understand the e-learning strategy in schools adopted by the school, teachers and students. This focus of “What is happening in the school” was considered in order to inform the interview and questionnaire questions. In the first fieldwork, the researcher carried out observations on the e-learning directorate in The Ministry of Education and in an e-learning environment in two schools in the Kingdom of Bahrain. These schools were: (1) Al-Hooraa Secondary Commercial School (a girls’ school), and (2) Ahmed Al-Omran Secondary School (a boys’ school). The structure of the research in this fieldwork is explained in Figure 10. Furthermore, the researcher conducted a pilot study using a questionnaire for students, teachers and staff.

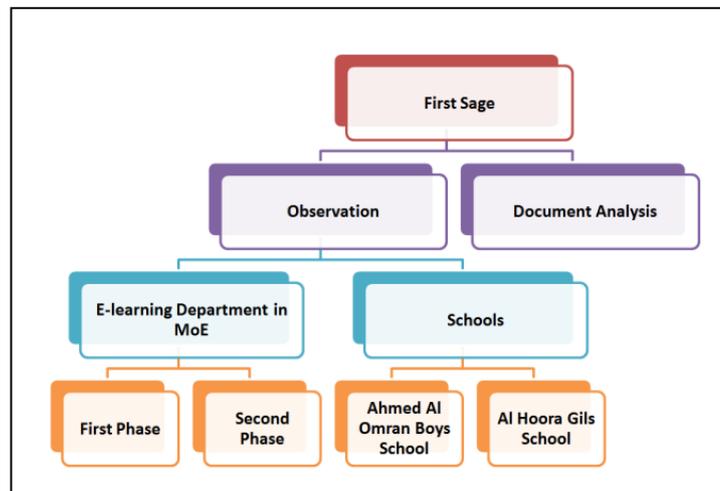


Figure 10: The Research Structure: First Stage

### 3.5.2 Interviews

An interview is an important discussion between two or more people (Kahn and Cannell, 1957). It is sometimes considered as a method that can be used in a qualitative methodology but is most widely employed in quantitative research (Bryman, 2008). The interview process demands a high level of engagement with others (Zina, 2004) as it

examines the context of thought, feeling and action; it can also be a way of exploring relationships (Arksey and Knight, 1999). The purpose of interviewing is to find out what is in and on a person's mind and to find out from them things that the researcher cannot directly observe (Patton, 1990). Interviewing is a method that is widely using in evaluation and e-learning research because it can yield in-depth and unique information about the perceptions of individuals over time that cannot be obtained through other methods (Mann and Stewart, 2000). Furthermore, interviews allow for understanding and meanings to be explored in depth (Arksey and Knight, 1999).

According to Pole and Lampard (2002), the interview is the most appropriate method to use when seeking participants' opinions, feelings and attitudes. Therefore, stakeholders concerned with the e-learning project were interviewed in this research to achieve the research's aims and objectives. These stakeholders include teachers and key personnel in the management team (i.e. policy makers) in the e-learning project. Interviews were therefore used as a tool to collect qualitative data and information from the interviewees to investigate the e-learning strategy, as well as to explore how students and teachers are using e-learning. Also, these data were intended to supplement those gained through the questionnaire. Hakim (1997) points out the importance of qualitative data to complement the quantitative data obtained in a research study.

*"The qualitative study is often carried out before the survey as an exploratory first step that paves the way as well as offering a greater depth of information to complement the quantitative survey results. Alternatively, the qualitative study may be carried out after the main survey, which can then provide a rich sampling frame for selecting particular types of respondent for depth interviews. This type of linkage greatly extends the survey results, and it may be possible to set the qualitative results in a statistical context by directly linking the two sets of data" (Hakim 1997, p.32).*

Bennett (2003) discusses the key characteristics of interview techniques in educational evaluation research and argues that interviews are useful for obtaining data on: (1) Participants' knowledge about a programme and their expectations of it; (2) The experiences, views and motives of participants in a programme; and (3) How teachers are coping with a new programme, as well as identifying areas where support is needed.

She also discusses the advantages and disadvantages of using interviews in educational evaluation research. Table 4 explains Bennett’s (2003) views.

Table 11: Advantages and Disadvantages of Interviews (Bennett, 2003)

Advantage	Disadvantage
Offer rich data and insights	Time requirements of conducting, transcribing and analysing data
Allow face-to-face contact with participants in programme	The large volume of data which may be gathered
Allow the evaluator to clarify and probe responses	
Permit flexibility if unexpected areas emerge	

### **Semi-Structured Interviews**

The interviews undertaken in this study were semi-structured because a set of questions needed to be answered in an explanatory way, since one of the main aims of the interview was to explore views or attitudes. In addition, there was a need for flexibility in order to follow up interesting threads of conversation if they happened to occur during the interviews, and/or to ask for clarification when necessary. These requirements can only be achieved with the use of the semi-structured method (Robson, 2004). The researcher carried out three types of interview: (1) With e-learning management staff, (2) A student interview and (3) A teacher interview.

### **Interview Procedure**

In interviews, a fair few things need to be attended to before the researcher even asks the first question (Zina, 2004). The interview preliminaries adopted in this research came from the interview preliminaries suggested by Zina (2004). These preliminaries are: (1) BE ON TIME, (2) Set up and check equipment (i.e. organise in advance), (3) Establish rapport (e.g. give an introduction or offer a handbook), (4) Introduce the study and say who you are, the purpose of the interview, etc., and (5) Explain ethics (i.e. mention confidentiality, and explain their right to decline to answer any particular question or to end the interview upon request).

### 3.5.3 Questionnaire

The questionnaire is a very popular and common tool used in business and management research to collect quantitative data (Saunders et al., 2007); however, it can be used to collect both qualitative and quantitative data (Wellington, 2000). Saunders et al. (2007) suggest that questionnaires can be used for descriptive or explanatory research and such use enables relationships between variables in particular cause and effect relationships to be examined and explained (Gill and Jonson, 1997). This research used a questionnaire in order to investigate and evaluate the e-learning strategy as it is the most appropriate method of dealing with the research questions and objectives. The evaluation of the Kingdom of Bahrain’s e-learning strategy depends mainly on this method because it generates data from people who are involved in e-learning.

A general advantage of all types of questionnaire is their suitability to measure, in a relatively simple way, participants’ attitudes, values, beliefs and motives (Robson, 2002a). Zina (2004) argues that a good questionnaire has the potential to: (1) Reach a large number of respondents; (2) Represent an even larger population; and (3) Generate standardised, quantifiable, empirical data. Bennett (2003) discusses the key characteristics of questionnaire techniques in educational evaluation research and argues that questionnaires are useful for obtaining data on: (1) teachers’ views of a programme, (2) teachers’ reported behaviours in relation to a programme, and (3) students’ views on particular aspects of their experience. Furthermore, Bennett (2003) offers certain advantages and disadvantages of using questionnaire techniques in educational evaluation research and so Table 12 below explains Bennett’s (2003) views.

Table 12: Advantages and Disadvantages of Questionnaires (Bennett, 2003)

Advantage	Disadvantage
An efficient use of time for both evaluator and respondents	Difficult to explore issues in depth
Questions can be standardised	Respondents can only answer the questions they are asked, therefore unanticipated issues will emerge
The possibility of respondent	‘Questionnaire overload’. Many

Advantage	Disadvantage
anonymity, which may lead to more candid and test responses	people receive a lot of questionnaires and may therefore be inclined to answer them quickly and superficially
Data analysis normally straightforward and not overly time-consuming	

Mason and Bramble (1997) argue that people are more willing to respond frankly in questionnaires than in interviews because questionnaires offer greater anonymity. On the other hand, the data collected by using questionnaires may not be as wide-ranging as those collected by other research strategies because of the limited number of questions (Saunders, Lewis and Thornhill, 2003). A further disadvantage is that the information tends to be superficial and often gives no clue as to why certain things might happen (Munn and Drever, 1990). In addition, it has been suggested that the time required to design and pilot questionnaires is often underestimated by new researchers (Munn and Drever, 1990). With questionnaires, the most important issue concerns who the researcher wants to target and what the researcher wants to ask (Zina, 2004). This research used three questionnaires, a student questionnaire, a teacher questionnaire and a staff questionnaire, in order to achieve the research’s aims. Table 13 offers information about these questionnaires.

Table 13: Questionnaire Information

Type of Questionnaire	Number of Questionnaires
Staff Questionnaire	66
Teacher Questionnaire	84
Student Questionnaire	599

### Structure of the Questionnaires

This research investigates an e-learning strategy and the users of this strategy are: (1) Students, (2) Teachers and (3) Staff so the research sought to obtain the views of these

groups regarding the e-learning issues by setting three separate questionnaires, a student questionnaire, a teacher questionnaire and a staff questionnaire.

### ***Student Questionnaire***

The student questionnaire was divided into the following seven parts:

- Part 1: Student Information
- Part 2: Technology Usage
- Part 3: Parents
- Part 4: Support
- Part 5: Resources
- Part 6: EduWave & Content
- Part 7: Impact and Learning Outcomes

### ***Teacher Questionnaire***

The teacher questionnaire was divided into the following seven parts:

- Part 1: Teacher Information
- Part 2: Technology Usage
- Part 3: Students' Parents
- Part 4: Support
- Part 5: Resources
- Part 6: EduWave & Content
- Part 7: Outcomes

### ***Staff Questionnaire***

The staff questionnaire was divided into four parts, as follows:

- Part 1: Staff Information
- Part 2: Technology Usage
- Part 3: Support
- Part 4: Social Administrator

### 3.6 Theoretical Framework

At the conclusion of the literature review a theoretical framework was set out to reflect key themes from the review and to provide a basis for the research design (Figure 8). The framework comprises three dimensions: **Strategy Dimension:** strategy dimension is helping to understand the strategic issues in e-learning created by policy-makers; these include the vision, mission, strategic plan and e-learning goals. **Learning Strategy Dimension:** learning strategy is helping to understand how teacher and student are using e-learning and learning strategy is based on Holmes and Gardner's (2006) e-learning user context, as well as underlying learning theory. **Structural Dimension:** structural dimension is helping to value the resources, support, the virtual learning environment, content and evaluation.

In the First fieldwork, Document Analysis method is used to gain information about the e-learning project, e-learning strategy and policies (**Strategy Dimension**), then the Observation method is used to find out what is currently happening in schools in order to understand the learning strategy and understand students' and teachers' practices (**Learning Strategy Dimension and Structural Dimension**). Finally, interviews are used to understand the strategic issues in e-learning created by policy-makers. Then in the Second fieldwork, questionnaire design is informed by the first fieldwork and they are used to obtain input from a larger number of individuals (Staff, Teachers and Students) about learning strategy and to understand how teacher and student are using e-learning (**Learning Strategy Dimension**) and how they value the resources, support, the virtual learning environment (**Structural Dimension**).

### 3.7 Reliability and Validity

Research methods must be valid and reliable in order to obtain useful data. The validity of a questionnaire indicates that it collects data that are accurate while reliability refers to the fact that these data must be collected consistently (Saunders et al., 2007). Foddy (1994) mentions the validity and reliability of survey questions and stresses that: "the question must be understood by the respondent in the way intended by the researcher and the answer given by the respondent must be understood by the researcher in the way intended by the respondent". The internal validity and reliability of data depend on: (1) the design of the questions, (2) the structure of the questionnaire,

and (3) the pilot testing (Saunders et al., 2007). The design of the research questions should prevent respondents from answering the questions in a manner that shows bias, and the structure of the questionnaire should not influence the responses to the questionnaire. The benefit of good question design and a careful questionnaire structure is that it allows the researcher to limit, or even remove respondent and researcher bias which increases the validity and reliability of the research. This research used a number of approaches to increase the work's validity and reliability. Firstly, to maximise the validity and reliability, the research adopted the suggestions of Saunders et al. (2007), which are: (1) careful design of individual questions; (2) clear and pleasing layout of the questionnaire; (3) lucid explanation of the purpose of the questionnaire; (4) pilot testing; and (5) carefully planned and executed administration. Also, the researcher carried out pilot tests (as explained in following section) in order to ensure that the questionnaire was effective as a tool for collecting data and to ensure that it worked as intended (Oppenheim, 1992). Carrying out a pilot test or study helps the researcher to discover any weaknesses in the design of questions and/or the structure of questionnaire which might encourage respondent or researcher bias. Denzin (1970) mentions that triangulation, achieved by using a combination of methodologies, leads to greater validity and reliability so this research used triangulation in an attempt to achieve this.

The use of different research approaches, methods and/or techniques in the same study is known as triangulation and it can overcome the potential bias of a single-method approach (Collis and Hussey, 2003). Triangulation, which strengthens a research by combining methods (Patton, 2002), refers to the use of different data collection techniques within one research (Saunders et al., 2007). Denzin (1970) defines triangulation as “the combination of methodologies in the study of the same phenomenon” and argues that triangulation leads to greater validity and reliability. Therefore, this research used three tools (questionnaires, interviews and document analysis) in order to ensure that the collected data were highly reliable. Furthermore, another benefit of a multi-method approach is that it involves more data which, in turn, improves the quality of the research (Denscombe, 2003).

Many researchers (Merriam, 1988; Yin, 2003; Arksey and Knight, 1999; Bryman, 2008; Williams, 2000) has discussed about generalisation issue of the case study. They argue about the finding result of the case study can be generalise. The issue of

generalisability in case studies different from experimental design and should not be viewed in the same way since “one selects a case study approach because one wishes to understand the particular in depth, not because one wants to know what is generally true of the many ”(Merriam, 1988: p.173). Merriam (1988) suggest that the generalisability of findings in case study could be improved through providing a rich, thick description, establishing the typicality or model category of the case and conducting a cross case analysis. However, not all researchers have accepted the view of generalisation problem in case study research strategy (Bryman, 2008). Williams (2000: p.215) has claimed that, in many cases the researcher are able to produce what he calls moderatum generalisation, that is, “ones in which aspects of the focus of enquiry; which can be seen to be instances of a broader set of recognisable features”. Furthermore, Arksey and Knight (1999) argue that in one case study research, the researcher may be difficult to suggest that it is wise to generalise to a population. However, this does not mean that no generalisation is possible, since the general is always present in the particular. In other words, the result in this research may or may not work in all organisations but which are likely to be work in many if not all of them.

### **3.8 Pilot Study**

Before using a questionnaire to collect data, it should be pilot tested (Oppenheim, 1992; Saunders et al., 2007; 2003; Moser and Kalton, 1985). It is important to carry out a pilot study before distributing a questionnaire as this needs to be tested to ensure it is effective as a data collection tool and that it works as intended (Oppenheim, 1992). Oppenheim (1992, p. 47) mentions that: “questionnaires do not emerge fully-fledged; they have to be created or adapted, fashioned and developed to maturity after many abortive test flights. In fact, every aspect of a survey has to be tried out beforehand to make sure that it works as intended”. The aim of the pilot test is to help the research to refine the questionnaire so that respondents will not face problems in answering the questions and so the researcher will not have difficulty in recording the data (Saunders et al., 2003; 2007); so, this helps to establish the suitability of the questions and to discover any hidden problems that might face the respondents (Moser and Kalton, 1985). Therefore, two pilot studies were undertaken during the first fieldwork before the questionnaire was utilised in the second.

There are certain recommendations that the researcher should take into account when applying these pilot studies. It is recommended that the pilot test of the study should be carried out with a group similar to the one that forms the population of the study (Bell, 2005). Furthermore, Bell (2005) proposes seven points that researchers attempt to discover in the pilot study. These are: (1) how long the questionnaire took to complete; (2) how clear the instructions are; (3) which questions, if any, are unclear or ambiguous; (4) which questions, if any, the respondents felt uneasy about answering; (5) whether, in respondents' opinions, there were any major topic omissions; (6) whether the layout was clear and attractive; and (7) any other comments. The first pilot study, in the first fieldwork, was testing initially by one person, not a group, and this was used as an interviewer-administered questionnaire. Then, the second pilot study was carried out for students in a class.

### **3.9 Research Ethics**

Research ethics are a very important issue to consider before undertaking research. Wells (1994:284) defines research ethics "in terms of a code of behaviours appropriate to academics and the conduct of research". There is a number of key ethical issues and the first is the privacy of possible and actual participants; the second is the consent of possible participants while the third is the behaviour and objectivity of the researcher (Saunders et al., 2003). These key ethical issues were addressed in this research. The British Educational Research Association's ethical guidelines for educational research (BERA, 2004) were used as the standard for this research. These guidelines can be summed up as follows: (1) The researcher must make sure that the participants understand the process of the research; (2) They must understand that the data will be treated confidentially and that the researcher will protect their anonymity; (3) They have the right to withdraw from the research at any time and for any reason; (4) They need to understand why their participation is necessary; (5) They must know how the data will be used; and (6) They need to be informed how and to whom the data will be reported.

In the First fieldwork, these guidelines were covered verbally with the interviewees during the ethical considerations part of the interviews and were informed of the following: The times of the interviews; The aims of the study; They were told they could withdraw from the interview at any time without explaining why; They were asked to give their permission for voice recording to be used; They were informed that

the data were to be used for the research purpose only. Where in the Second fieldwork at the beginning of the questionnaire these guidelines were covered as ethical considerations part of the questionnaire and were informed of the following: (1) explanation of the proposed research project, (2) given an information sheet to the participant in the questionnaire, (3 ) Explain the aim of this research, (4) The expected benefits to the participant, and (5) Explain the information will be treated as strictly confidential.



Rethinking E-learning Strategy 2.0 in The Digital Age

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## Chapter 4: Case Study

*“Schools of the Future Project will empower future generations with the basic skills necessary to transform the Kingdom into a knowledge-based economy” E-learning Vice-Manager*

This chapter present the case study of this research, which is the e-learning project developed by the Ministry of Education in the Kingdom of Bahrain. Firstly, it offers a general background and information about the Kingdom of Bahrain. After this, it considers education in the Kingdom by giving a history of education and the educational system. It then presents information concerning the future school e-learning project and the characteristics of this project.

## CHAPTER 4: CASE STUDY

### 4.1 Introduction

This chapter presents the case study of this research which is the e-learning project developed by the Ministry of Education in the Kingdom of Bahrain. Firstly, it offers a general background and information about the Kingdom of Bahrain. After this, it describes education in the Kingdom and gives a history of education and the educational system. Then, it examines the future school e-learning project and the characteristics of this project.

### 4.2 The Kingdom of Bahrain

The Kingdom of Bahrain is often called "the Pearl of the Persian Gulf" (Gillespie, 2002). Bahrain is a small Arab county located in a bay on the south-western coast of the Persian (or Arabian) Gulf. It is an archipelago (a group of islands) consisting of Bahrain Island and other smaller islands numbering 40 in all; its name comes from the Arabic term al-bahrayn (Crystal and Smith, 2010). Bahrain as an Arabic word means "two seas" due to the existence of a sea of salt water over a sea of sweet water (Ghnaim, 1996 p.7). The country was named simply Bahrain before it became a kingdom because the main island is so called. The main islands in this archipelago are connected by causeways (Gillespie, 2002). The Kingdom of Bahrain is connected to the Kingdom of Saudi Arabic (KSA) by a causeway called The King Fahd Causeway.

The Kingdom of Bahrain is the smallest country in the Gulf compared to the other Gulf countries which are Iran, the Kingdom of Saudi Arabia (KSA), Qatar, Oman, Kuwait, the United Arabic Emirates (UAE), and Iraq. Bahrain holds a central location among the Gulf countries and thus plays an important role in the region. As mentioned above, often called the Pearl of the Arabian Gulf, the Kingdom of Bahrain has a history of more than 5,000 years of civilization (Gillespie, 2002). Manama City is the capital of Bahrain and this consists of the port of Salman, oil fields, companies, government offices and ministries (Ghnaim, 1996). The Kingdom of Bahrain is located in one of the world's chief oil-producing regions; however, it has only small stores of petroleum while its economy has long relied on processing crude oil from neighbouring countries such as the Kingdom of Saudi Arabia (Crystal and Smith, 2010). While its population, land area and resources are relatively small, Bahrain has achieved a high level of social

and economic development in a short period. Figure 11 **Error! Reference source not found.** shows a map of the position of the Kingdom of Bahrain in the Gulf while Figure 12 illustrates the Kingdom of Bahrain itself.



Figure 11: Map of the Kingdom of Bahrain and its position in the Gulf

Source: World Map Website, 2010



Figure 12: Map of the Kingdom of Bahrain

Source: Info-please Website, 1997

Arabic is the official language of the nation but English is widely spoken. The climate has only two seasons, summer and winter. Winter, which lasts from December to March, is mild with temperatures between 10°C to 20°C, while the summer is very hot, especially in July, August and September, when temperatures average 36°C. **Error! eference source not found.** offers some information about the Kingdom of Bahrain.

Table 14: Information on the Kingdom of Bahrain

<i>Field</i>	<i>Information</i>
<i>Official name</i>	Kingdom of Bahrain
<i>Head of state</i>	King

<i>Field</i>	<i>Information</i>
<i>Head of government</i>	Prime Minister
<i>Capital</i>	Manama
<i>Official language</i>	Arabic
<i>Official religion</i>	Islam
<i>Monetary unit</i>	Bahraini dinar (BD)
<i>Population</i>	(2010 estimate) 1,216,000
<i>Total area (sq. m.)</i>	292
<i>Total area (sq. km.)</i>	757

### **4.3 Education**

Education in the Kingdom of Bahrain is compulsory and the Ministry of Education in Bahrain provides free education for all citizen students in the schools. The Kingdom considers the education sector as most important for human development.

#### **4.3.1 History of Education**

According to the Ministry of Education (2010), the history of education in Bahrain started with Quranic schools (Kuttab) which were the only form of education in the country at the beginning of this century. These were traditional schools aimed at teaching children and young people the Holy Quran. However, many Bahraini people felt that this type of education did not meet the need for academic efficiency to match the spirit of the twentieth century and, because of this, demand grew for modern educational institutions different from the Kuttab in terms of the educational system, curricula and objectives. The year 1919 marked the beginning of the modern public school system in Bahrain when the Al-Hidaya Al-Khalifia school for boys was opened at the northern tip of Muharraq and, in 1928, the first public school for girls was opened in Muharraq. Due to certain financial and administrative difficulties faced by the Education Committee, the schools came under the direct control of the government in 1930 (Ministry of Education, 2010).

### 4.3.2 The Education System

The system of education in the Kingdom of Bahrain is divided into three levels: Primary, Intermediate and Secondary (See Table 15: Educational Ladder in the Kingdom of Bahrain). The Primary level, which lasts for six years, represents the first rung of the formal educational ladder and covers the age group of children from six to eleven. The Intermediate level represents the second rung of the ladder and caters for the 12-14 year old age group. The Secondary level is considered to be the last three years of formal education and is divided into six semesters of three levels. The credit-hours system is applied at this level in order to provide a broad choice of subjects and courses. It permits students to tailor programmes to suit their future goals. In this system, students have a choice to pursue a science curriculum, a literary curriculum, a commercial curriculum, a technical curriculum, or a textile and clothing programme; the latter is for girls only.

Table 15: Educational Ladder in the Kingdom of Bahrain

<b>Grades</b>	Age							Religious Education Primary, Intermediate, Secondary	
<b>12</b>	<b>17</b>	Secondary Education							
<b>11</b>	<b>16</b>	General			Commercial	Technical	Applied		
<b>10</b>	<b>15</b>	Sciences	Literary	Textile			Advertisement		
<b>9</b>	<b>14</b>	<b>Basic Education</b>							
<b>8</b>	<b>13</b>	<b>Third Cycle (Intermediate)</b>							
<b>7</b>	<b>12</b>	Second Cycle (Primary)							
<b>6</b>	<b>11</b>								
<b>5</b>	<b>10</b>								
<b>4</b>	<b>9</b>	First Cycle (Primary)							<u>Primary</u>
<b>3</b>	<b>8</b>								
<b>2</b>	<b>7</b>								
<b>1</b>	<b>6</b>								

### 4.3.3 Students, Schools and Staff

According to the Ministry of Education (2006), there were 199 government schools at the end of 2004 and the total number of students was 120,404 students in 2003. There were 8995 teachers and 17354 staff. Table 2 offers statistics regarding the students, schools and staff.

Table 16: Number of Staff, Students and Schools

Type of School	Number of Schools	Number of Students	Staff number			
			Management	Technical	Teacher	Total
Male	99	59343	451	362	4510	5323
Female	96	61061	461	461	4485	5407
Total	195	120404	912	823	8995	10730

*Source: Ministry of Education, 2006*

## 4.4 King Hamad's Schools of the Future Project

In 2004, the Kingdom of Bahrain, through the Ministry of Education, started a new project in e-learning in all government schools and this project was named "King Hamad's Schools of the Future Project". The e-learning project has transformed the traditional classroom into an open, interactive learning environment based on a wide range of technology. This project has developed an e-learning portal and transformed textbooks into interactive e-books.

### 4.4.1 What is King Hamad's Schools of the Future Project?

According to the Ministry of Education (2005), King Hamad's Schools of the Future Project can be viewed as a new initiative taken by the government of the Kingdom of Bahrain in the field of education. The project began in 2004/2005 and is expected to be completed by 2009/2010. The goals of the project include the following objectives: (1) establishing an information society; (2) developing the educational system and evaluating its products in the country; and (3) building a knowledge-based economy. The project will be executed according to the following three phases: the first stage involves connecting eleven secondary schools (five boys' and six girls' schools) with a speedy communication network via a central educational portal. With the project in place, 11,000 students and 1,000 administrative and teaching staff will be expected to



processes to a future based on the employment of technology (see Figure 14: E-learning Class) (Ministry of Education, 2005). It provides a learning environment for students, teachers, administrative staff and society, that enhances interaction at any given point. It is an ideal solution to the demands of e-learning which can cover a large number of users at any one time. Furthermore, it is an educational model which contains teaching and learning tools, as well as tools of assessment (Ministry of Education, 2005).



Figure 14: E-learning Class

*Source: Ministry of Education, 2006*

The vision of this project is as follows: “The Ministry of Education in the Kingdom of Bahrain has sought to employ ICT in the educational process. This move in the field of education could be established after a thorough study undertaken to empower future generations by considering the basic skills necessary to transform the Kingdom into a knowledge-based economy” (Ministry of Education, 2005). The Ministry of Education adopted five strategic strands for the project which are: (1) Continuing economic and social development; (2) Investing in knowledge and encouraging technical competition; (3) Developing a knowledge-based society; and (4) Establishing an educational system based on employing educational Information and Communication Technology.

### **4.4.3 The Project’s Characteristics**

The e-learning project consists of a complete educational organisation that includes an educational portal; this portal allows all students, teachers, administrative staff and parents to access it according to their needs and levels (Ministry of Education, 2005).

**The School Administration:** The portal provides the school administration with a

complete system that contains information about the following: (1) Staff, (2) Educational Subjects, (3) Teachers, (4) Schedules, (5) Students, (6) Administrative Systems, and (7) Parents. **The Teacher:** It provides teachers with a program where any given subject, after its transformation into an e-book, can be taught at a click of a button; teachers can convey any piece of knowledge they see fit via this program. It also enables teachers to give live lectures to all schools within the network, as well as enabling teachers to access educational sites so that they can benefit from a wide range of resources. **The Student:** The educational organisation allows students to interact with other students and teachers, and ask questions and give opinions. Moreover, it allows the exchange of opinions, information and thoughts with others in their school, with those in other schools, and with schools all over the world. As a result, they can learn as individuals. **The Parent:** Parents can interact with the organisation to access: (1) Their offspring's academic performance record, (2) Behaviour reports, (3) Attendance reports, and (4) Aids that oversee their offspring and help to keep the school-home tie active. **Curricula:** The organisation enables curricula specialists to prepare electronic education materials and to keep in contact with students and instructors.

### 4.5 Schools

As mentioned above, two schools were selected from the eleven schools that took part in the first stage of the e-learning project in Kingdom of Bahrain. These two schools were: (1) Al-Hoorah Secondary Commercial School (a girls' school), and (2) Ahmed Al-Omran Secondary School (a boys' school). These schools are located in Manama city, the capital of the Kingdom of Bahrain; they are shown in Figure 15. High schools in the Kingdom work from 7:10 am to 1:30 pm and the school timetable is explained appendix 1.

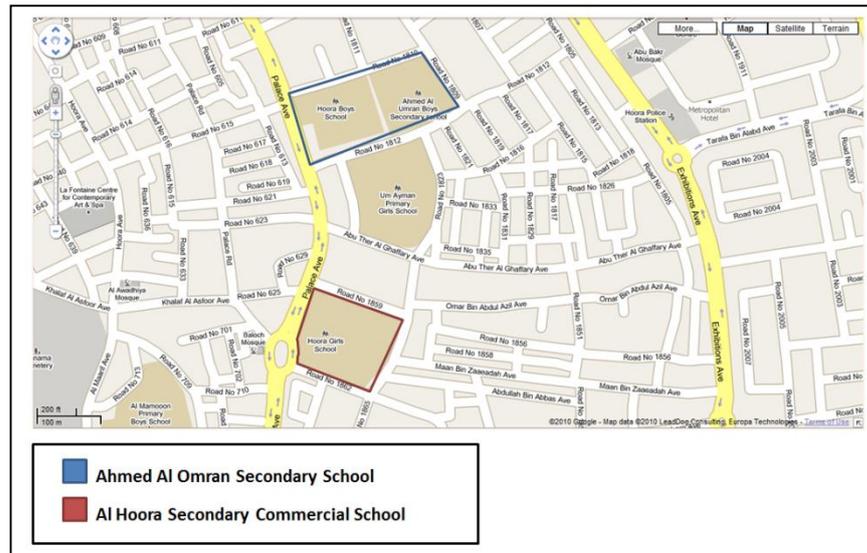


Figure 15: Location of Schools

## 1. Al-Hoora Secondary Commercial School for Girls

Al-Hoora is a girls’ secondary school in Manama city; it was built in 1964-1965. The school consists of 11 classes and has 74 students. The number of teachers and staff total 57. This school was selected for the first stage of the e-learning project.

## 2. Ahmed Al-Omran Secondary School for Boys

Ahmed Al-Omran is a boys’ secondary school, built in 1962, also in Manama city. This school consists of 26 classes and has 732 students. The number of teachers and staff total 115. 58 students in this school have been classified as talented and creative by the Quality Assurance Authority for Education and Training. This school was selected for the first stage of the e-learning project (Quality Assurance Authority for Education and Training, 2010).

## 4.6 The Arab Spring

The number of people using social networks and social media in Arab countries (even in the Kingdom of Bahrain) changed after the protests and demonstrations that occurred across Arab countries in the Middle East and North; these have become known as the "Arab Spring" (Biles, 2011; Dadush and Dunne, 2011). The protests of the Arab Spring started in Tunisia and moved to many countries such as Egypt, Libya, Syria, Yemen and Bahrain (Biles, 2011). According to Aljazeera TV, this “revolution” was also called the Twitter or Facebook revolution, or the social media and social network

revolution. This is because social media and social networks were an important element in these protests and demonstrations. A recent research study carried out by the University of Washington called the Project on Information Technology and Political Islam (PETPI) argued, after analysing over 3 million tweets, gigabytes of YouTube content and thousands of blog posts, that social media played a “central role” leading up to the revolutionary protests (Howard, Duffy, Freelon, Hussain, Mari and Mazaid, 2011).

Moreover, a new research report concerning the impact of social media in the Arab region provides empirical evidence suggesting that “the growth of social media in the region and the shift in usage trends have played a critical role in mobilisation, empowerment, shaping opinions, and influencing change. A critical mass of young and active social media users in the Arab world exists today” (Salem and Mourtada, 2011). Also, this research discovered that 70% of young people between the ages of 15 and 29 in the Arab region are Facebook users (Salem and Mourtada, 2011). After the Arab Spring, the number of people using social media increased significantly in the first quarter of 2011. For example, in April 2011, Facebook had over 677 million users with the Middle East constituting one of the regions that contributed the largest amount of new users (Salem and Mourtada, 2011). From January to April 2011, the Kingdom of Bahrain was found to be within the top ten of new Facebook and Twitter users in the Arab region and globally, if calculated per percentage of population (Salem and Mourtada, 2011).

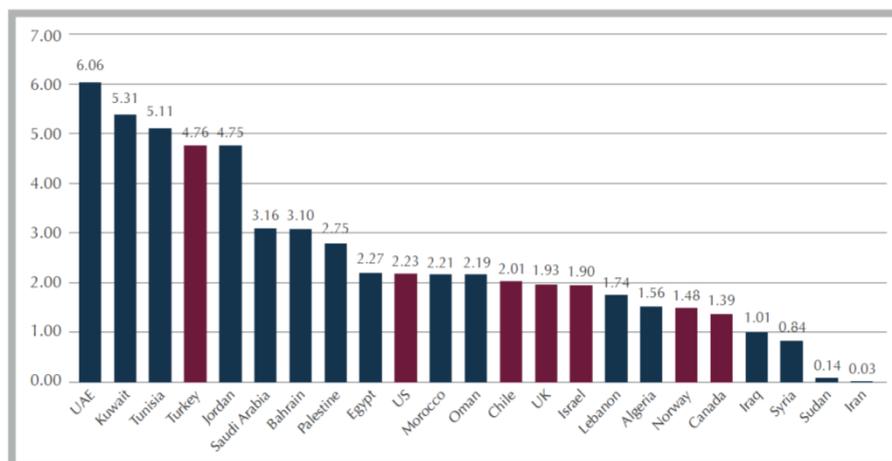


Figure 16 : New Facebook Users in the Arab Region and Globally

(Jan. 5 -Apr. 5, 2011), as Percentage of Population Sources: (Salem and Mourtada, 2011)



## Rethinking E-learning Strategy 2.0 in The Digital Age

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### **Chapter 5: Finding From First Fieldwork**

*"The future belongs to young people who know where the knowledge is, how to get it, how to think about it, and how to turn it into better work, better products, better lives." Rexford Brown*

This chapter offers the findings from the first fieldwork elicited from observations, document analysis and interviews. The findings from the observations and document analysis are presented in three parts: E-learning Department Findings, Schools' Findings, and Facebook Analysis Findings. The first part covers findings from observations of the e-learning department while the second part covers findings from observations from two schools; the third part presents findings from an analysis of a Facebook group that was created and used by students in the schools. Furthermore, the interview findings are presented in three sections: policy dimension, learning strategy, and structure dimension.

## **CHAPTER 5: FINDINGS FROM FIRST FIELDWORK**

### **5.1 Introduction**

The first fieldwork is required to understand what is happening in the school and to inform the questionnaires in the second fieldwork. This section presents the findings from the first fieldwork which consisted of observation and document analysis, and interviews. The findings from the observation and document analysis are divided into three parts: 1) Findings regarding the E-learning Department, (2) Findings from the two schools, and (3) Findings from an analysis of the Facebook group that was created and used by students in the schools. The interview findings are presented in three main sections: (1) the policy dimension, (2) learning strategy, and (3) the structural dimension.

### **5.2 Findings from Observation and Document Analysis**

These findings are divided into the following three areas. The first part covers findings with regard to the e-learning department, the second part covers findings from the two schools, and the third part presents an analysis of the Facebook group that was created and used by students in the schools.

#### **5.2.1 Findings from the E-learning Department**

##### **Official E-learning Policy**

The vision of the e-learning project is as follows: “The Ministry of Education in the Kingdom of Bahrain is endeavouring to employ ICT Technology in the educational process. This move in the field of education will be established after a thorough study has been undertaken that aims to empower future generations with the basic skills necessary to transform the Kingdom into a knowledge-based economy” (E-learning Document, 2005). The strategic outlook of this project encompasses the following: (1) Continuing economic and social development; (2) Investment in knowledge to encourage technical competition; (3) The development of a knowledge society; (4) Creating an educational system based on employing educational Information and Communication Technology (E-learning Document, 2005). The objectives of the e-learning project in the Kingdom of Bahrain are to: (1) Develop the educational system in the Kingdom and elevate its products; (2) Accelerate the pace of human development; (3) Establish an Information Society; and (4) Build a knowledge-based

economy which will ultimately lead to achieving economic development and societal elevation (E-learning Document, 2005).

### **Learning Strategy**

The main goal of e-learning is to improve and develop the learning system by using ICTs in order to achieve economic development. These ICTs are: (1) Virtual Learning Environments (VLEs), (2) smart boards, (3) PowerPoint presentations and (5) projectors. The Virtual Learning Environment (VLE) used in this project is EduWave (see Figure 18: Virtual Learning Environment: EduWave). EduWave, a comprehensive e-learning platform for the Virtual Learning Environment (VLE), was developed by the Integrated Technology Group. It is a multilingual solution that caters for virtually every aspect of the educational cycle. It includes a Learning Management System (LMS), a Content Management System (CMS), an Instructional Management System (IMS) and a Student Information System (SIS). EduWave allows all students, teachers, administrative staff, and parents access to an e-learning portal according to their needs and levels of restriction (ITG, 2010). Each school has an e-learning class which consists of a smart board and data projector, with a computer for every student (1-to-1).



Figure 17: E-learning Class

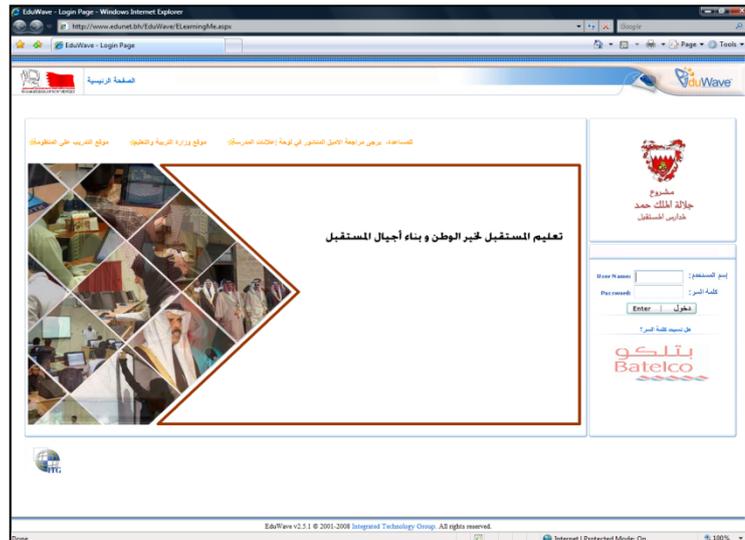


Figure 18: Virtual Learning Environment: EduWave

## Structure of the E-learning Department

The finding of the structure of the e-learning department is needed for developing a framework for an e-learning strategy for the Kingdom of Bahrain. The e-learning directorate consist of four groups: (1) Applying E-Learning Systems Group; (2) E-Learning Resources Group for Support and Development; (3) E-Content Research Group; and (4) Evaluation and Quality Control Group.

1. **Applying E-Learning Systems Group**: The aim of this group is to generate appropriate policies for the employment of e-learning within the educational system for students, teachers, parents and staff at all levels of education: that is, in schools and for the staff of various directorates in the ministry concerned in this project. This group also aims to examine ways in which to develop a philosophy of education and e-learning with regard to modern technological developments.
2. **E-Learning Resources Support and Development Group**: The aim of this group is to provide technical and educational support to schools for the optimal use of e-learning resources; it also supervises the electronic knowledge resources of provided for schools by the Ministry.
3. **E-Content Research Group**: The aim of this group is to analyse the needs of specific subjects and to develop the electronic e-content required for different stages of study. This group also aims to build models of e-content and mechanisms for use in different educational situations to meet international standards, to develop ways of evaluating the content of the resources used in

schools, as well as to provide broad technical solutions for the development and supervision of e-content.

4. **Evaluation and Quality Control Group:** The aim of this group is to supervise the various administrative and financial affairs of this directorate, as well as to supervise the conduct of studies and evaluation research regarding the implementation of projects and tasks in various sections.

### **5.2.2 Findings from the Schools**

This finding is showing learning strategy in e-learning in the schools (In reality) and what is happening inside strategy to see what different stakeholders are doing as influenced (or not) by policy. The results of the observations undertaken show that the practices of teachers and those of students are totally different from those outlined in the official e-learning policy. Using technology in learning has made no real difference to the way teachers are teaching and students are not using the official Virtual Learning Environment (EduWave); however, they are using Web 2.0 tools such as the social network site, Facebook, together with blogs, Twitter and the video-sharing site, YouTube. The observations were limited to the two schools mentioned and these classes were observed before. Therefore, the main aim of carrying out the observations in this fieldwork was to understand the situation more clearly and to inform the questionnaire which covered many schools and therefore a large number of teachers and students. In order to avoid unnecessary repetition, this section shows only the main results as the findings as a whole informed in the questionnaire and are therefore analysed in the next chapter.

#### ***Teachers***

The official e-learning policy covers the adoption of the following ICTs: (1) Virtual Learning Environments (VLEs), (2) smart boards, (3) PowerPoint presentations and (4) projectors. However, what actually takes place in classes is different as teachers' practice was often very different from the advice paid out in the e-learning policy. Based on observations in the schools, the results suggest that all the teachers are not using the Virtual Learning Environment (EduWave) which is an important e-element of the learning strategy put forward by the Ministry of Education. Teachers were using e-learning in the learning process in terms of using PowerPoint presentations and data projectors in general classes or in the e-learning classes. The findings show that teachers

were only using e-learning for presentations with a data projector; they did not use the Virtual Learning Environment, EduWave. Thus, the observations suggested there was no real difference in the way teachers were teaching even when using technology in learning. Although the Ministry of Education has spent a large amount of money on technology, a real difference in the ways technology has been integrated into the classroom has not been seen. Educational authorities wish to encourage the integration of ICTs in schools but this does not necessarily result in any real change in teaching and learning practices in the classroom. There is a gap between the ICT proposed in the e-learning policy and the actual use of ICT in the classroom, placing these two worlds apart. E-learning policies do not automatically lead to educational change in schools.

### *Students*

It was a different story for students. The students tended not to use the EduWave system or any other Virtual Learning Environment mentioned in the e-learning project. However, students did use YouTube, Facebook, Forum, Twitter and blogs in their learning. The students used EduWave only to view their final exam results. Students, as part of the new generation of the digital age, like to be connected to and share learning resources. However, the Virtual Learning Environment (EduWave) is not meeting the needs of the current generation of students and there is a disparity between how students generally choose to communicate and how they are encouraged or required to communicate in the Virtual Learning Environment, EduWave. Students have grown up in an information society where they use many types of ICT and Web 2.0 tools. Students are using these Web 2.0 tools (such as blogs, Twitter, Facebook and YouTube) for education and this is redefining teaching methods and the ways students learn; thus, there is a demand for new teaching and learning practices. The next section analyses a Facebook group in order to understand how students are using it in their learning practices.

### **5.2.3 Findings from an Analysis of Facebook**

Based on observing the students in the schools, it was seen that many students use Facebook in learning either as a Facebook user or as part of a Facebook group created for the class. After analysing the Facebook group, it was found that students were organising and creating a page for the school and their classes on Facebook; some had created a group for the class as a whole without the teacher's knowledge; thus, the

teacher had no role in this regard. The students, with their advanced IT skills, were using the Facebook group as a Virtual Learning Environment and were using the Facebook groups as a learning community for the class. The majority of students, about 26 members, had joined the group (see Figure 19: Class Facebook Group). Those students who had created the group were playing a major role in creating and sharing resources, and in communicating with other students in order to access the group. The Facebook groups encouraged students to create and share materials that were useful, such as the exam timetable, (see Figure 20: Exam Timetable on Facebook). The findings showed that students were using the Facebook group as a learning community for: (1) Communication between students, (2) Sharing resources, (3) Using calendars, (4) Social networking, (5) Commenting on friends' posts, (6) Asking questions, (7) Evaluating the work of others, (8) Discussions, and (9) Expressions of support and encouragement exchanged among students.



Figure 19: Class Facebook Group

### *Communication between Students*

Findings from the Facebook analysis show that students were using the Facebook group as a tool for communication among classmates for different purposes. For example, students supported their classmates prior to their exams by saying good luck: “GOOD luck guys in mid term exams :D study Well”. Facebook was also used to make announcements. For example, another student announced: “Guys tomorrow there is no

test for Geography”. The students were using the group as a communication channel among students in the group.

### *Sharing Resources among Students*

Findings from the Facebook analysis show that students were using the Facebook group to share resources among their classmates. Students can share resources by posting many types of resource, such as text, photos, videos and web links. The resources they used included: (1) school documents, such as the exam timetable, which was created by students. (Figure 20 explains the exam timetable that was shared by students.); (2) whiteboard lecture notes; these were shared by taking photos from a mobile or camera. (Figure 21 explains the lecture notes on a whiteboard photo in the Facebook group). (3) Moreover, students were sharing videos, such as a video record of an experimental chemistry subject. (See Figure 22: Experimental Chemistry Video, Shared in the Facebook Group.) Figure 23 depicts a picture of a video that was shared on Facebook and this figure shows that many students were recording videos of the experiment instead of writing about it, thus taking advantage of advances in technology, mobiles and smart phones. These videos were shared by being directly uploaded onto Facebook or by being imported from video-sharing sites such as YouTube. (4) Furthermore, students were sharing solutions and answers to homework. Figure 24 offers an example of how students shared homework answers via Facebook. Also, students were sharing previous exam solutions with friends via the Facebook Group.

الفترة	التاريخ	اليوم	المادة
الأولى	2010-5-31	الاثنين	رياض 222
الأولى	2010-6-1	الثلاثاء	أجا 104
الثانية	2010-6-3	الخميس	حيا 315
الثانية	2010-6-6	الأحد	فيز 316
الثالثة	2010-6-10	الخميس	عرب 301
الأولى	2010-6-13	الأحد	كيم 314
الأولى	2010-6-15	الثلاثاء	رياض 317
الثانية	2010-6-17	الخميس	دين 104

DONE BY: HASSAN ALI ...

Figure 20: Exam Timetable on Facebook



Figure 21: Lecture Notes on a Whiteboard Photo in the Facebook Group



Figure 22: Experimental Chemistry Video, Shared in the Facebook Group



Figure 23: Students Recording a Chemistry Experiment



Figure 24: Sharing Homework via Facebook

### *Using the Calendar*

In addition, findings from analysing the Facebook group show that students were using this group as an online class calendar for organising, scheduling and sharing events with friends because the online calendar is easy for keeping track of class events such exam days or homework submission days. Figure 25 shows how students were using Facebook as a calendar for sharing Maths and Physics exam dates. The shared exam dates are indicated by: “*Physics exam on Sunday 21-3-2010 – all the first section*”.

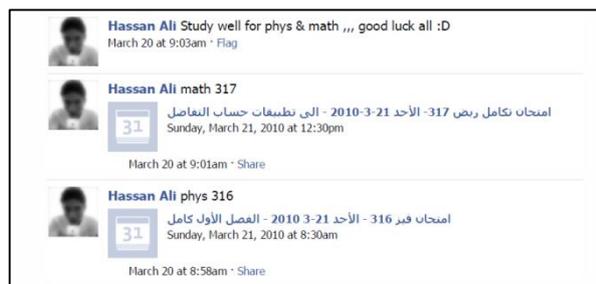


Figure 25: Using a Facebook Calendar in Learning

### *Social Networking*

Findings from analysing the Facebook group show that students were also socialising, as the original concept of Facebook as a social networking service focuses on building and reflecting the social networks and social relations among people by the sharing of their interests and activities, such as news and pictures about celebrities, as well as asking questions or discussing topics. So, for example, many of the students in this study shared photos and discussed private trips with each other.

### *Comments on friends' posts*

Moreover, students used Facebook groups to comment on friends' posts, to ask questions or add points or thanks, and sometimes to discuss certain topics. For example, one student shared a photo of a Math teacher's questions from a whiteboard: "*Math 222 for who did not write the today and were in the university*". His friend commented on the previous post, saying that the second question was one they had written before. He said: "*the second question is written before in class book (drill)*".



Figure 26: Student Comments on Friends' Posts

### *Asking Questions*

The findings also show that students in the Facebook group asked general questions or asked questions about the posts of other students. For example, in order to understand some points in a shared photo of lecture notes from a whiteboard, one student asked: "*Where does the number 6 come from in this solution?*" Recently, Facebook has offered a new type of posting where users can post a question with multiple choices for sharing.

### *Evaluating the Work of Others*

The findings show that students were evaluating the work of others by commenting on friends' posts. As an example, one student commented that his classmate's solution was not right: "*You did not use the teacher's way of solving the mathematical equations*".

**Discussion**

Furthermore, the findings show that students were using the Facebook group as an online discussion board to discuss venues. Here, students held conversations in the form of posted messages and were involved in direct discussions by posting on the group wall. Facebook, by introducing a discussion board option, also allows users to discuss issues and students in this study were using the “discussion board” option to converse about homework and social activities. Figure 27 shows a students’ discussion board where they ask their friends about details of social activities, such as the time, how much it costs and type of food available. One student said says:

*“Guys, how are you? Thanks to the God I'm fine.  
I start this topic a little bit early. I would like your opinion on the date, amount, period (morning or evening), the type of food and everything for the development of the swimming pool activity, and I want everyone to contribute suggestions and opinions.  
My opinion answer:-  
Time: 1/5/2010 Saturday  
4 - 4.5 DB “Bahrain Dinar”  
Period: evening (overnight)  
Type of food: everything and we want grills  
I am awaiting your good and interesting opinions  
Regards  
Khalil”*



Figure 27: Discussion Board Option in Facebook

### *Expressions of Support and Encouragement*

Finally, the findings show that students were also posting many expressions of support and encouragement which were then exchanged between students. For example, when a student created an exam timetable which was shared with the Facebook group, his classmates made comments on his post to express their support and encouragement by offering thanks. For example, students said, “*thank you*”, or “*this is beautiful*” or “*thank you so much for this table*”. Facebook has a “like” button which shows how many people like the post; students were clicking on the “like” button in order to express their support and encouragement.



Figure 28: Expressions of Support and Encouragement

## 5.3 Interview Findings

Findings from the policy makers' interviews are presented under three main headings: (1) E-learning policy, (2) Learning strategy, (3) Structure.

### 5.3.1 E-learning Policy

Findings from the s policy makers' interviews show that the goal of using e-learning in the Kingdom of Bahrain is to develop the educational and learning system by using e-learning and Information and Communication Technology (ICT) in the information society in order to building a knowledge-based economy.

*“The main goal of e-learning is improving the educational system in the Kingdom of Bahrain by using educational information and communication technology (ICTs).”*

*“The Ministry of Education is aiming to employ information and communication technologies (ICTs) in teaching and learning processes which are geared towards provide generations of emerging talents, with the values and basic skills necessary for the Kingdom of Bahrain to become an information society and a knowledge-based economy.”*

*“The goal of the e-learning project in the Kingdom of Bahrain is to improve the learning system, moving it from traditional learning to an e-learning system that will allow students to be ready for the knowledge-based economy.”*

Moreover, in the interviews, the researcher was provided with an official e-learning document that includes the objectives of e-learning. These are:

*“(1) Developing the educational system in the Kingdom and elevating its products; (2) Accelerating the pace of human development; (3) Establishing an Information Society; and (4) Building a Knowledge-Based Economy which will ultimately lead to Achieving Economic Development and Societal Elevation.”*

Furthermore, in detail, the Ministry of Education, as the main goal of e-learning, wishes to take advantage of the large capacity offered by Information and Communication Technology (ICT) to develop education in order to for students to attain better grades and for students obtain work at end their studies. The Ministry intends to:

*“Invest in Information and Communication Technology (ICT) to achieve efficiencies in learning at all stages of education.”*

*“Take advantage of the large capacity offered by Information and Communication Technology (ICT) to develop education.”*

*“Improve students’ chances of getting a job.”*

*“Prepare students for the labour market.”*

*“Contribute to increasing the grades of students.”*

The vision of the e-learning project is as follows:

*“The Ministry of Education in the Kingdom of Bahrain is endeavouring to employ ICT Technology in the educational process. This move in the field of education will be established after a thorough study has been undertaken that aims to empower future generations with the basic skills necessary to transform the Kingdom into a knowledge-based economy” (E-learning documents).*

### **5.3.2 Learning Strategy**

Findings with regard to the learning strategy for e-learning show the Ministry of Education planned to use the e-learning portal, EduWave, as a Virtual Learning Environment and to use presentations with data projectors in schools as part of the e-learning system. The e-learning portal, EduWave, is a virtual learning environment and e-learning platform that consists of a learning management system, content management system, an instructional management system and a student information system. EduWave allows all students, teachers, administrative staff and parents to access the e-learning portal according to their needs and restriction levels.

*“E-learning in the Ministry of Education is using EduWave and e-content, PowerPoint presentations and data projectors in learning so teachers are teaching by using the e-learning portal and carrying out presentations in classes using data projectors.”*

*“The Ministry of Education is focusing on using EduWave, e-content and data projectors in classes. Each school has an e-learning classroom which contains a computer and smart-board.”*

*“EduWave is a learning management system, content management system, an instructional management system and a student information system.”*

Furthermore, EduWave, as a learning portal, allows students to access exam results, attendance, e-learning content by subject, emails, school information, student information, and student timetables. The Ministry of Education plans to use the e-

learning system for both teachers and students by using EduWave (the e-learning portal) as a virtual learning environment.

*“EduWave is offering students many services such as exam results, student attendance, e-learning content by subject, email, school information, student information, and student timetables.”*

*“Students are learning by using the e-learning portal where teachers post e-learning content; students can access the portal and then contact teachers.”*

*“The MoE is using the e-learning system in such a way that teachers are using PowerPoint presentations and e-content in learning by using Text, Graphics, Audio, Video, Animation and Flash.”*

To support the learning strategy, the Ministry of Education provides many ICTs, such as email for every student, teacher and staff. Moreover, the Ministry also encourages the use of the virtual learning environment (EduWave), smart-boards, PowerPoint presentations, MS Office and e-learning content. In terms of using Web 2.0 tools such as Facebook for education, one interviewee said: *“How Facebook could be used for education?”* The Ministry of Education has developed a good deal of e-learning content and has encouraged teachers to develop this.

*“We are using many Information and Communication Technologies (ICTs) to support the e-learning system: mainly the e-learning portal, EduWave, email, e-books, PowerPoint presentations, MS Office and e-learning content.”*

*“The e-learning directorate has developed a lot of e-content for schools and it is encouraging teachers to produce e-content. Furthermore, the e-learning directorate is organising a competition with regard to e-content in learning, which encourages teachers to create creative e-content.”*

*“The MoE has built an e-learning classroom in each school; the e-learning classroom is a computer lab with a smart-board which allows interactive learning to take place between teachers and students.”*

### 5.3.3 Structure

In terms of hardware, the Ministry of Education has a good infrastructure in all its schools; it has built internal networks between classes and external ones to the Ministry of Education. Every school is equipped with the necessary equipment, projectors and interactive smart boards.

*“The MoE has created a network of infrastructure by cooperating with the Batelco [Bahrain Telecommunication Company] to connect schools to the e-learning portals. Every classroom has a network point and every school has been provided with the necessary equipment, laptops, projectors, and interactive smart boards.”*

*“The e-learning project has a very good and strong infrastructure. The Ministry of Education has had a big budget to provide all the requirements of this e-learning project in terms of computers, labs and software.”*

In terms of software, the Ministry of Education has provided schools with all the software they need, including equipment for MS PowerPoint presentations, email, MS Office (Word, Excel, Access) applications, interactive whiteboards, CDs, DVDs, internet sites and video conferencing. The Ministry of Education has offered e-learning services with tutorials for teachers and students; training courses that help teachers to use the e-learning portal have also been made available.

*“The schools were provided with all the software needed for this project.”*

*“The school are using a lot of technological applications and the e-learning directorate has encouraged teachers to use them as part of the learning system. These applications are MS PowerPoint presentations, email, MS Office (Word, Excel, Access) applications, interactive whiteboards, CDs, DVDs, internet sites and video conferencing, etc.”*

The e-learning portal (EduWave) has very good interface design. It is easy to navigate the e-learning portal and users can move from page to page, and link to link with ease without getting lost or confused because the e-learning portal designed in such a way that makes learners reach specific content easily in an average of no more than four clicks. Moreover, a large number of usability tests have been applied to this e-

learning portal. The navigation language of the portal is clear and understandable. EduWave also has powerful layout, colours, content/features, images, and is easy to use.

*“EduWave has very good interface design.”*

*“The navigation language of EduWave is clear and understandable.”*

*“Many usability tests have been applied to this e-learning portal.”*

*“EduWave was designed by the ITG Company, which is a specialist company in education technology, so students can move from page to page, and link to link with ease without getting lost or confused because EduWave is designed in such a way that students can easily get to specific content.”*

*“The navigation language of EduWave is clear and understandable. This e-learning portal, EduWave, has a powerful layout, colours, content/features, images, and is easy to use. EduWave is used by many schools and universities in the world.”*

The Ministry of Education has converted many books to e-books and allows students to download them from the e-learning portal, EduWave. (An e-book is an electronic copy of a book.) Moreover, the Ministry of Education has developed a good deal of e-content for schools and has also encouraged teachers to produce e-content. Furthermore, the Ministry has organised a competition for e-content in learning which will encourage teachers to create e-learning contents. Furthermore, much e-content is interactive, allowing learners to be engaged with the content.

*“The Ministry of Education has converted many books to e-books; this allows students to download them from the e-learning portal.”*

*“The e-learning directorate is organising a competition with regard to e-content in learning. This will encourage teachers to create creative e-content.”*

*“Much e-content has been developed for schools and this is encouraging teachers to produce e-content.”*

*“Much e-content is interactive which allows the learner to be engaged with this content.”*

The support system in schools with regard to the e-learning project is very powerful for both teachers and staff. The e-learning directorate has employed technical and educational technology staff in each school to support teachers and other staff with the e-learning project. The support system in schools is represented by a helpdesk in each e-learning classroom. Also, the e-learning directorate has developed support systems in cooperation with the Information Technology (IT) Directorate; this support system is accessed by telephone and email. Moreover, there is a support system for students in school.

*“The Ministry of Education is providing a very good support system”*

*“We have a very powerful support system in the school for teachers and staff; we have employed a technical and educational technology person in every school to support the teachers and staff.”*

The Ministry of Education provides all the resources, such as learning documents, training course CDs, and online resources, for teachers and other staff. Moreover, it provides an online tutorial for EduWave. This covers the following topics: (1) How to use the smart board (for teachers); (2) How to teach with technology; (3) How to use the computer and projector, (4) How to use MS PowerPoint presentations; and (5) How to use the e-learning portal.

*“All resources are available for teachers and staff.”*

*“The e-learning portal, EduWave, provides teachers and staff with a lot of training courses in ICT in general and in learning online, such as how to use the smart board for teachers; how to teach with technology; how to use the computer and projector, how to use MS PowerPoint presentations; and how to use the e-learning portal.”*

The Ministry of Education provides training courses on CD such as the International Computer Driving Licence (ICDL) and many staff members and teachers have been trained on how to use such technology by applying to study and then obtaining the

International Computer Driving Licence. The MoE has encouraged all teachers and staff to seek ICDL certification.

*“We are providing training courses on CD for the International Computer Driving Licence (ICDL) and are encouraging staff to gain ICDL certification.”*

Moreover, the e-learning directorate has trained both teachers and staff in schools and personnel in the training directorate in the Ministry of Education. The Ministry of Education has further cooperated with Microsoft (as part of a Partner in Learning (PiL) agreement) to train teachers and staff in how to use advanced software programming in order to develop professional e-content.

*“We are training teachers and staff in the schools and in the training directorate in the Ministry of Education.”*

*“The Ministry of Education has signed an agreement with Microsoft to train the teachers and staff.”*

In terms of the evaluation, the e-learning project has been monitored and evaluated by the Measurement and Evaluation Centre in the Ministry of Education; the schools are also evaluated by the Quality Assurance Authority for Education and Training. This is a separate body that does not come under the control of the Ministry of Education; it is an independent organisation which is associated to the government of the Kingdom of Bahrain. Furthermore, the project is evaluated and monitored by United Nations Educational, Scientific and Cultural Organization (UNESCO).

*“The e-learning project is monitored and evaluated by the Measurement and Evaluation Centre in the Ministry of Education and the schools are evaluated by the Quality Assurance Authority for Education and Training.”*

*“The United Nations Educational, Scientific and Cultural Organization (UNESCO) supports and evaluates our e-learning project.”*

The Ministry of Education has offered access to the e-learning portal, EduWave, to students' parents so that they can gain access to students' exam results and attendance.

*“EduWave is offering students' parents access to their sons'/daughters' exam results and attendance.”*

The interviews allowed the researcher to gain an in-depth understanding of the e-learning project in the Kingdom of Bahrain. The results of the interviews illustrate the official e-learning policy and show the Ministry of Education plans for students' and teachers' use of ICT in learning. The learning strategy adopted by the Ministry of Education involves providing ICTs, such as email, for every student, teacher and staff member, as well as encouraging the use of Virtual Learning Environment (EduWave), smart-boards, PowerPoint presentations, MS Office and e-learning content in learning processes. Furthermore, the results show that policy makers pay no attention to Web 2.0 tools which means that such tools play no role in e-learning policy.



Rethinking E-learning Strategy 2.0 in The Digital Age

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## **Chapter 6: Finding From Second Fieldwork**

*"The most dangerous experiment we can conduct with our children is to keep schooling the same at a time when every other aspect of our society is dramatically changing." Chris Dede*

This chapter present the findings from the second fieldwork, which involved the questionnaires. In this research, there are three types of questionnaires: (1) Student Questionnaire, (2) Teacher Questionnaire, and (3) Staff Questionnaire.

## CHAPTER 6: FINDINGS FROM SECOND FIELDWORK

### 6.1 Introduction

This chapter presents the findings from the second fieldwork trip which involved the questionnaire. The questionnaire is informed from first fieldwork and it used to obtain a larger number of individuals (Staffs, Teachers and Students) for collecting information about learning strategy to understand how teacher and student are using e-learning and value the resources, support, the virtual learning environment. Therefore, the following three questionnaires were used: (1) Student questionnaires, (2) Teacher questionnaires, and (3) Staff questionnaires.

### 6.2 Student Questionnaire

The first questionnaire is student questionnaire which consisted of seven parts: (1) Student Information, (2) Technology, (3) Parents, (4) Support, (5) Resources, (6) EduWave and its content, and (7) Learning Outcomes.

#### Part 1: Student Information

The total population for the questionnaire comprised 11,000 students from schools in the first stage of the project and the total number of responses was 599. This section presents the demographic characteristics of the respondents. **Respondents by School:** Table 17 explains the distribution of the participants from eight schools. This shows that 12.5% (75) were from the Al Hidaiya Al Khalifia Secondary School, 20.7% (124) were from Ahmed Al Omran Secondary School, and 10.0% (60) were from Hamad Town Secondary School, 15.0% (90) were from the Al Istiqlal Secondary Commercial School, 17.7% (106) were from the Al Hooraa Secondary Commercial School, 13.2% (79) were from the West Rifa Secondary School and 9.2% (55) were from the Sar Secondary School. Table 17 shows respondents by school.

Table 17: Respondents by School

School	Response %	Response N
Al Hidaiya Al Khalifia Secondary School	12.5%	75
Ahmed Al Omran Secondary School	20.7%	124
Hamad Town Secondary School	10.0%	60
Al Istiqlal Secondary Commercial School	15.0%	90

School	Response %	Response N
Al Hoorah Secondary Commercial School	17.7%	106
West Rifa Secondary School	13.2%	79
Sar Secondary School	9.2%	55
<b>Total</b>	<b>98.3%</b>	<b>589</b>

**Respondents by Track:** Table 18 explains the distribution of the participants in terms of five tracks. The distribution shows that 45.7% (274) were from a scientific track, 6.8% (41) were from a literary track, 35.6% (213) followed a commercial track, and 10.5% (63) were from the Touhid track (General). **Respondents by Level:** Table 19 explains the distribution of the participants in terms of three levels and illustrates that 15.9% (95) of respondents were from the first year level, 47.9% (287) were from the second year, and 36.2% (217) were from the third year level. **Respondents by Gender:** Table 20 and Table 21 explain the distribution of the participants by gender. This distribution shows that 44.1% (268) were male and 55.9% (330) were female. **Respondents by Nationality:** Table 22 presents the distribution of the participants by nationality, showing that 91.8% (550) were Bahraini and 8.2% (49) were other nationalities.

Table 18: Respondents by Track

Track	Response %	Response N
Scientific track	45.7%	274
Literary track	6.8%	41
Commercial track	35.6%	213
Touhid track (General)	10.5%	63
<b>Total</b>	<b>98.6%</b>	<b>591</b>

Table 19: Respondents by Level

Level	Response %	Response N
First year	15.9%	95
Second year	47.9%	287

Third year	36.2%	217
<b>Total</b>	<b>100%</b>	<b>599</b>

Table 20: Respondents by Gender

Gender	Response %	Response N
<b>Male</b>	43.2%	259
<b>Female</b>	55.9%	330
<b>Total</b>	<b>99.3%</b>	<b>598</b>

Table 21: Respondents by Gender Based on Schools

School	Response %	Response N
<b>Male Schools</b>		
Al Hidaiya Al Khalifia Secondary School	12.5%	75
Ahmed Al Omran Secondary School	20.7%	124
Hamad Town Secondary School	10.0%	60
<b>Total Male Schools</b>	<b>43.2%</b>	<b>259</b>
<b>Female Schools</b>		
Al Hooraa Secondary Commercial School	17.7%	106
West Rifa Secondary School	13.2%	79
Sar Secondary School	9.2%	55
Al Istiqlal Secondary Commercial School	15.0%	90
<b>Total Female Schools</b>	<b>55.1%</b>	<b>330</b>
<b>Total</b>	<b>98.3%</b>	<b>598</b>

Table 22: Respondents by Nationality

Nationality	Response %	Response N
<b>Bahraini</b>	91.8%	550
<b>Other</b>	8.2%	49
<b>Total</b>	100%	599

**Respondents by Grade (GPA):** Table 23 summarises the distribution of respondents by grade and shows that 28.0% (168) of the respondents had grades over 91%, 26.2% (157) had grades between 90% and 81%, 21.9% (131) had grades between 80% and 71%, 13.9% (83) of respondents had achieved grades between 70% and 61%, 9.2% (55) had grades between 60% and 51%, and 0.8% (5) of the respondents had grades of less than 50%.

Table 23: Respondents by Grade (GPA)

Grade (GPA)	Response %	Response N
<b>100%-91%</b>	28.0%	168
<b>90%-81%</b>	26.2%	157
<b>80%-71%</b>	21.9%	131
<b>70%-61%</b>	13.9%	83
<b>60%-51%</b>	9.2%	55
<b>less than 50%</b>	0.8%	5
<b>Total</b>	100%	599

## Part 2: Technology Usage

Table 24 presents the students' answers about the types of ICTs that teachers use as part of learning. It shows that, according to students, 46.6% (271) of teachers were using MS PowerPoint in some lessons, while 41.1% (232) said their teachers used a data projector. However, most teachers never used ICTs and technologies as part of learning.

Table 24: Types of ICTs that Teachers Use in Learning

	Every lesson	Most lessons	Some lessons	Never	D/k	N
1 MS PowerPoint	12.5% (73)	22.5% (131)	<b>46.6%</b> <b>(271)</b>	16.7% (97)	1.7% (10)	582
2 Interactive board “Smart Board”	3.4% (20)	8.1% (47)	37.4% (218)	<b>47.5%</b> <b>(277)</b>	3.6% (21)	583
3 Data projector	10.6% (60)	24.8% (140)	<b>41.1%</b> <b>(232)</b>	19.3% (109)	4.1% (23)	564
4 Class notes “online”	2.6% (15)	7.1% (40)	17.6% (100)	<b>57.3%</b> <b>(325)</b>	15.3% (87)	567
5 Book Zero “eBook”	1.7% (10)	3.3% (19)	7.5% (43)	<b>62.2%</b> <b>(356)</b>	25.2% (144)	572
6 Internet websites	6.2% (35)	9.0% (51)	22.5% (128)	<b>57.9%</b> <b>(329)</b>	4.4% (25)	568
7 EduWave website	5.2% (30)	7.0% (40)	16.8% (96)	<b>64.9%</b> <b>(371)</b>	6.1% (35)	572
8 Discussion boards	1.6% (9)	4.0% (23)	9.1% (52)	<b>74.0%</b> <b>(422)</b>	11.2% (64)	570
9 Video conferencing	2.4% (14)	3.6% (21)	8.0% (46)	<b>70.1%</b> <b>(404)</b>	15.8% (91)	576
10 TV/VCR/DVD	6.1% (35)	5.1% (29)	19.9% (114)	<b>65.4%</b> <b>(375)</b>	3.5% (20)	573
11 CD Roms	9.7% (55)	12.9% (73)	34.2% (194)	<b>40.6%</b> <b>(230)</b>	2.6% (15)	567
12 Email comments	5.8% (33)	8.0% (46)	24.1% (138)	<b>58.6%</b> <b>(335)</b>	3.5% (20)	572
13 Email for assessment feedback	3.7% (21)	5.8% (33)	14.6% (83)	<b>71.9%</b> <b>(409)</b>	4.0% (23)	569
14 Mobile devices (PDAs etc)	8.3% (48)	2.8% (16)	9.9% (57)	<b>75.3%</b> <b>(433)</b>	3.7% (21)	575
15 Weblogs (blog)	1.8% (10)	3.3% (19)	12.0% (68)	<b>66.5%</b> <b>(378)</b>	16.4% (93)	568
16 Microblogging “for example Twitter”	1.0% (6)	2.8% (16)	3.3% (19)	<b>60.7%</b> <b>(348)</b>	32.1% (184)	573
17 Video Sharing “for example YouTube”	4.0% (23)	5.3% (30)	14.0% (80)	<b>71.2%</b> <b>(406)</b>	5.4% (31)	570
18 Picture Sharing “for example Flickr”	2.8% (16)	2.8% (16)	6.0% (34)	<b>77.0%</b> <b>(439)</b>	11.4% (65)	570
19 Wikis	2.3% (13)	2.6% (15)	6.7% (38)	<b>62.5%</b> <b>(357)</b>	25.9% (148)	571
20 Document-sharing “for example Scribd”	1.2% (7)	1.7% (10)	5.7% (33)	<b>69.2%</b> <b>(397)</b>	22.1% (127)	574

	Every lesson	Most lessons	Some lessons	Never	D/k	N
21 Social bookmarking “for example delicious”	2.4% (14)	2.1% (12)	6.5% (37)	<b>69.4%</b> <b>(397)</b>	19.6% (112)	572
22 Forum	5.2% (30)	7.9% (45)	21.0% (120)	<b>61.9%</b> <b>(354)</b>	4.0% (23)	572
23 Social Network “Facebook”	7.5% (43)	3.0% (17)	10.5% (60)	<b>73.7%</b> <b>(423)</b>	5.4% (31)	574

Table 25 presents students’ answers with regard to how often students use these types of ICTs. Students were using computers, email, internet websites, SMS, Video Sharing (such as YouTube), Forums and Social Networks (such as Facebook) on a daily basis. However, most of students had never used Microblogging (e.g. Twitter), Picture sharing, Document sharing, Wikis, Podcasts, MySpace, blogs and social bookmarking.

Table 25: Students’ Time Spent Using ICTs

	Daily	Weekly	Monthly	Rarely used	Never	N
1 Computer	<b>79.3%</b> <b>(461)</b>	12.7% (74)	1.5% (9)	5.3% (31)	1.0% (6)	581
2 Email	<b>64.6%</b> <b>(374)</b>	14.0% (81)	3.8% (22)	9.7% (56)	7.9% (46)	579
3 Internet websites	<b>73.9%</b> <b>(421)</b>	10.5% (60)	3.9% (22)	7.2% (41)	4.6% (26)	570
4 Short Message Service (SMS)	<b>58.0%</b> <b>(335)</b>	13.0% (75)	6.1% (35)	12.3% (71)	10.7% (62)	578
5 Weblogs (blog)	11.1% (64)	14.6% (84)	7.5% (43)	25.4% (146)	<b>41.3%</b> <b>(237)</b>	574
6 Microblogging “for example Twitter”	8.3% (47)	6.2% (35)	4.8% (27)	16.7% (94)	<b>64.0%</b> <b>(361)</b>	564
7 Video Sharing “for example YouTube”	<b>33.0%</b> <b>(189)</b>	22.2% (127)	8.9% (51)	15.7% (90)	20.2% (116)	573
8 Picture Sharing “for example Flickr”	12.6% (72)	11.5% (66)	8.0% (46)	19.8% (113)	<b>48.1%</b> <b>(275)</b>	572
9 Wikis	9.3% (53)	9.7% (55)	7.6% (43)	14.2% (81)	<b>59.2%</b> <b>(337)</b>	569
10 Document-sharing “for example Scribd”	5.0% (28)	7.6% (43)	6.2% (35)	20.2% (114)	<b>61.1%</b> <b>(345)</b>	565
11 Social bookmarking “for example delicious”	9.6% (55)	9.3% (53)	6.0% (34)	18.4% (105)	<b>56.7%</b> <b>(324)</b>	571
12 Forum	<b>36.3%</b>	19.6%	10.7%	17.9%	15.4%	570

	Daily	Weekly	Monthly	Rarely used	Never	N
	<b>(207)</b>	(112)	(61)	(102)	(88)	
13 Social Network “Facebook”	<b>45.3%</b> <b>(258)</b>	12.5% (71)	4.2% (24)	11.8% (67)	26.3% (150)	570
14 Podcasts	8.7% (49)	6.7% (38)	5.3% (30)	12.3% (69)	<b>67.0%</b> <b>(377)</b>	563
15 Chatting software	28.9% (165)	8.8% (50)	7.2% (41)	15.9% (91)	<b>39.2%</b> <b>(224)</b>	571
16 MySpace	12.0% (68)	8.8% (50)	6.5% (37)	16.9% (96)	<b>55.7%</b> <b>(316)</b>	567

In terms of technology, Table 26 illustrates that 63.9% of respondents used Facebook as a social network, and 77.1% of respondents used YouTube as a video-sharing website while not many students used picture-sharing websites.

Table 26: Social Networks, Picture-sharing, and Video-sharing Websites Used

Type of Technology	Type	Response %	Response N
<b>Social Network</b>			
	Facebook	63.9%	361
	Other	15.2%	86
	Not using	25.7%	145
<b>Video Sharing Website</b>			
	YouTube	77.1%	434
	Other	3.0%	17
	Not using	21.5%	121
<b>Picture Sharing Website</b>			
	Flickr	33.6%	183
	Other	15.4%	84
	Not using	53.4%	291

Table 27 shows the number of respondents who had a personal blog. It illustrates that 27.8% (155) of respondents had a personal blog while 72.2% of respondents did not.

Table 27: Personal Blog

Have Blog	Response %	Response N
Yes	27.8%	155
No	72.2%	403

### **How Students are Using New Technologies in Learning**

This section explains how students are using the new technologies in learning. The findings reveal that these new technologies have become part of students' lives, as a student mentioned that "All these things are a part of my life". These technologies have helped students to learn and to increase their understanding, as one student commented: "These techniques are increasing my understanding of the materials that I study". This is because these technologies "facilitate the transfer and exchange of information" obtained from several places and "they offer different and multiple points of view," as students said.

Most students wrote about YouTube, Facebook and Forum, while few students wrote about blogs, Twitter and Flickr. In general, this summarises the use of new technologies for learning, as students mentioned "blogs of the lessons, Facebook for communication among students, YouTube for educational videos, and forums for communication. The next section shows findings concerning how each technology is used in learning. These technologies are: (1) YouTube, (2) Facebook, (3) Forum, (4) Blogs, (5) Twitter and (6) Flickr.

#### ***YouTube***

The findings show that students were using YouTube in learning to: (1) Learn by watching videos, (2) Share videos among students, (3) Use the archival function for learning content, (4) Search for content (i.e. videos), (5) Social networking, (6) Broadcasting and distributing learning materials.

### **1. Learning by Watching Videos**

Students were using YouTube for learning by watching learning and educational videos that were related to specific subjects. Students said:

*“I watch the YouTube clips on the composition of cells.”*

*“I am using it to watch a teaching lecture and explanation.”*

*“I’m using YouTube to see videos related to my subject.”*

*“I am learning, by using YouTube, how to cook for my subject (Family Education) and to upload my own cooking video for my friend.”*

*“YouTube is used in preparing lessons and strengthening students, enriching the subject and the contribution of the student.”*

*“Videos are useful for school projects.”*

*“For example, I used YouTube to get good videos for subjects such as biology, chemistry, physics and experiments.”*

Furthermore, a student mentioned that using YouTube helps to achieve in-depth learning.

*“I am using YouTube to understand the subject in more depth: for the configuration of cells in Biology.”*

*“I benefit from the videos on YouTube that offer courses of study to understand more and this helps a lot.”*

### **2. Sharing of Videos among Students**

Also, students were using YouTube in learning for sharing videos among themselves, as a student said:

*“I record the teacher’s explanation and share it with classmates on YouTube.”*

*“Some students upload the previous exam solution.”*

### **3. Archival Function for Learning Content**

Some students were using YouTube in learning as a tool for its archival function to keep learning content such as experiment videos.

*“I keep and save my experiment videos and share these with my friend.”*

### **4. Searching for Content**

Students were using YouTube to search for content relating to their studies.

*“I search for video materials relating to my studies.”*

*“I use YouTube to search for information related to the subject of my study.”*

### **5. Social Networking**

Students were using YouTube as a social network and for its social aspects. For example, students were checking their friends’ profiles for new videos or to share videos with their friends. Students said:

*“I use it to see my friends’ posts.”*

*“I am using YouTube to learn how to cook for my subject (Family Education) and to upload my own cooking video for my friend.”*

### **6. Broadcasting and Distributing Learning Materials**

Broadcasting and distributing learning materials (both formal and informal), such as lesson videos and course information, is different from sharing among friends and broadcasting for the public.

*“I use YouTube for educational videos and I publish my educational videos.”*

## ***Facebook***

The findings show that students were using Facebook in learning for: (1) Communicating between students and teachers, (2) Sharing resources among students, (3) Using the calendar, (4) Asking questions, (5) Carrying out discussions, (6) Social networking (7) Organising a Facebook Group for the Class, and (8) As a collaboration tool.

### **1 Communication between Students and Teachers**

Students were using Facebook in learning as a communication tool between students and teachers.

*“I benefit from the videos on YouTube that offer courses of study to understand more and this helps a lot. We use Facebook to communicate and ask questions. If you do not know something, you can ask for help from friends.”*

*“I use it to communicate with teachers and students,”*

### **2 Sharing Resources among Students**

Students were using Facebook in learning to share resources, such as photos and report videos, among themselves. These resources included photos of a classroom board, a lesson, subject videos, or scientific experiment videos.

*“In Facebook, I put pictures and reports of the school and share these with the students of the class and I work as a group and take the opinion of others to do research and school work.”*

*“By sharing with friends through communicating the study or knowledge of a missed lesson, I can learn the homework or the work required for examinations and research.”*

*“I use it to publish educational pictures, videos and documents.”*

*“We take photos of the lesson on the board to share them in Facebook so that all benefit from it.”*

*“We publish subject PowerPoint presentations on YouTube to share them on Facebook and to discuss them with friends.”*

*“In Facebook, videos can be used to capture some scientific experiments and the dates of exams can be displayed on Facebook.”*

### **3 Using the Calendar**

Also, students were using Facebook as an online calendar for organising, scheduling and sharing events with friends, such as exam days or homework submission days.

*“I put PowerPoint presentations on the wall, which benefits the people involved, or write our homework and exams, or put a reminder about study for the test.”*

*“Facebook videos capture some scientific experiments and the dates of exams can be displayed on Facebook.”*

### **4 Asking Questions**

Students were using Facebook in learning to ask questions, such as asking for help from classmates and friends.

*“We use Facebook to communicate and ask questions. If you do not know something, you can ask for help from friends.”*

### **2.5 Discussions**

Students were using Facebook in learning as a discussion channel.

*“I put pictures and reports of the school on Facebook and share these with other students in the class. I work as part of a group and take the opinions of others to do research and school work.”*

*“I publish subject PowerPoint presentations on YouTube to share and to discuss with friends.”*

### **6 Social Networking**

Students were using Facebook in learning as a social network to build and reflect their own social networks and social relations among students by sharing interests and activities, asking questions and discussing.

*“I use Facebook to connect with friends and teachers at the school and I have created a learning Facebook group for school.”*

### **7 Class Facebook Group**

Students have used Facebook for learning by creating a Facebook group for the class as an e-learning platform that they can all share and gain the benefit of Facebook features.

*“Yes, we use these technologies such as Facebook, as we have a Facebook group that we are using to upload images, for practical experience and the dates of the group’s tests. These features are contributing to enhancing our education.”*

*“We have, as students, a special group on Facebook to share the latest news about our studies. We also share some of the lessons that we have missed or we did not write up in our book; we also added pictures of the class’s students.”*

*“I use Facebook to connect with friends and teachers at the school and to create a learning Facebook group for the school.”*

*“I use Facebook to document pictures and use classroom groups in the school. I also use it to record school activities that bring happiness for the person and pride in his activities in the school.”*

### **8 As a Collaboration Tool**

Students were using Facebook in learning as an online collaboration tool to use in working as group in order to do research and homework.

*“I use Facebook to collaborate on work with my classmate friends, and to do homework and research.”*

### ***Forums***

The findings show that students were using forums in learning to: (1) Discuss, (2) Share resources among themselves, (3) Search for content, and (4) Ask questions.

### **1 Discussions**

Students were using forums as online discussion boards that allow students to discuss learning topics. The main function of a forum is the discussion site where people can hold conversations in the form of posted messages.

*“In the forums (i.e. student forums), we discuss educational issues in mathematics and other subjects.”*

*“I use the forums to carry out discussions with other students, as they offer some important explanations, as well as questions and answers from past exams.”*

### **2 Sharing Resources among Students**

Students were using forums to share resources, such as subject summaries and previous exam papers, among themselves.

*“Forums offer subject summaries that benefit students.”*

### **3 Searching for Content**

Students were using forums for searching and finding learning information such as reports, researches and school exams.

*“I use forums to find research studies and reports”*

*“I take information from the forums.”*

*“Forums are useful for searching for reports and final exam questions for subjects”*

*“I search the forums and other places to find out what is available for the educational process”*

### **4 Asking Questions**

Students were using forums as part of their learning to ask questions.

*“I do thorough research and ask questions in some forums.”*

## **Blogs**

The findings show that students were using blogs: (1) As a personal website, (2) For personal content management, (3) To share resources among students, and (4) As a class website.

### **1 Personal Website**

Students were using blogs as a personal website to share information and write about lessons.

*“I use blogs as a personal website to keep my files and documents of my subjects and share these with my friends.”*

*“I use blogs for the lessons, Facebook for communication between students, YouTube for educational videos, and forums to communicate also.”*

### **2 Personal Content Management**

Students were also using blogs for personal content management, that is, to manage various types of content, including personal information such as school lessons, commentaries, photos and hyperlinks. Students were using, managing and saving various types of learning materials and documents, such as presentation files and web pages.

*“I use a blog as a personal website to keep my files and documents for my subjects and share these with my friends.”*

*“I use blogs for the lessons.”*

### **3 Sharing of Resources among Students**

Students are using blogs to share resources, as they mentioned that they have used blogs to share files and documents with their classmates in the schools.

*“I use blogs as a personal website to keep my files and documents for my subjects and share these with my friends.”*

#### **4 Class Website**

Furthermore, students were using blogs as a class website, taking advantage of them for sharing information between students. The blogs were used to communicate information about the class and to archive course materials.

*“We created a blog for our class so the learning materials could be available to all students.”*

### ***Twitter***

The findings show that students were using Twitter to: (1) Share resources among students, and (2) Communicate with friends.

#### **1 Sharing of Resources among Students**

Students were using Twitter to share resources among students.

*“I use Twitter to publish pictures.”*

#### **2 Communicating with Friends**

Students were also using Twitter to communicate with friends.

*“I communicate with friends by using Facebook and Twitter.”*

### ***Flickr***

The findings show that students were using Flickr to: (1) Share images among students, and (2) Search for images.

#### **1 Sharing of Image among Students**

Students were using Flickr to share images among students, as Flickr is a picture- or photo-sharing service available online; it is considered to be the most popular photo-sharing community online.

*“I put photos of the school onto Flickr.”*

## 2 Searching for Images

Students were using Flickr to search for photos and images. “I take photos I need for my projects from Flickr.” “From Flickr, I have extracted many images.”

Table 28 summarises how students were using the new technologies including, among others, YouTube, Facebook and Forums for learning.

Table 28: How Students Are Using New Technologies in Learning

Technology	How student are using this technology
<b>YouTube</b>	<ul style="list-style-type: none"> <li>• Learning by Watching Videos.</li> <li>• Sharing of Videos among Students.</li> <li>• Archival Function for Learning Content.</li> <li>• Searching for Content: “Videos”.</li> <li>• Socialising.</li> <li>• Broadcasting and Distributing Learning Materials.</li> </ul>
<b>Facebook</b>	<ul style="list-style-type: none"> <li>• Communication between Students and Teachers.</li> <li>• Sharing of Resources among Students.</li> <li>• Using the Calendar.</li> <li>• Asking Questions.</li> <li>• For Discussions.</li> <li>• Social Networking.</li> <li>• Facebook Group for Class.</li> <li>• Collaboration Tool.</li> </ul>
<b>Forum</b>	<ul style="list-style-type: none"> <li>• For Discussions.</li> <li>• Sharing of Resources among Students.</li> <li>• Searching Content.</li> <li>• Asking Questions.</li> </ul>
<b>Blog</b>	<ul style="list-style-type: none"> <li>• Personal Website.</li> <li>• Personal Content Management.</li> <li>• Sharing of Resources among Students.</li> <li>• Class Website.</li> </ul>

Technology	How student are using this technology
<b>Twitter</b>	<ul style="list-style-type: none"> <li>• Sharing Resources among Students.</li> <li>• Communicating with friends.</li> </ul>
<b>Flickr</b>	<ul style="list-style-type: none"> <li>• Sharing of Images among Students.</li> <li>• Searching for Images.</li> </ul>

Table 29 explains students’ opinions about learning from new technologies such as Facebook and YouTube. The majority of respondents believed they could learn from using social networks, video-sharing (as in YouTube), websites and forums. Moreover, the table shows that the majority of respondents strongly agreed that these tools would enhance collaborative learning. Table 30 shows students’ use of the internet on mobiles. It demonstrates that 45.0% of respondents used the internet on their mobiles while 55.0% did not.

Table 29: Students’ Opinions about Learning from New Technologies

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	N/A	Response N
1 I can learn from using social networks such as Facebook	18.6% (106)	8.8% (50)	17.7% (101)	11.2% (64)	<b>27.4%</b> <b>(156)</b>	16.3% (93)	570
2 I can learn from video-sharing (YouTube)	13.0% (74)	10.4% (59)	14.1% (80)	18.1% (103)	<b>34.5%</b> <b>(196)</b>	9.9% (56)	568
3 I can learn from picture-sharing (Flickr)	21.5% (121)	13.3% (75)	15.6% (88)	11.3% (64)	13.1% (74)	<b>25.2%</b> <b>(142)</b>	564
4 I can learn from blogs	22.2% (124)	14.7% (82)	12.2% (68)	10.9% (61)	12.0% (67)	<b>28.1%</b> <b>(157)</b>	559
5 I can learn from document-sharing (e.g. Scribd)	21.5% (118)	13.6% (75)	13.6% (75)	10.0% (55)	12.4% (68)	<b>28.9%</b> <b>(159)</b>	550

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	N/A	Response N
6 I can learn from Twitter	25.0% (140)	12.5% (70)	11.1% (62)	8.4% (47)	9.1% (51)	<b>33.9%</b> <b>(190)</b>	560
7 I can learn from social bookmarking (e.g. delicious)	21.9% (123)	13.5% (76)	13.5% (76)	10.5% (59)	14.1% (79)	<b>26.5%</b> <b>(149)</b>	562
8 I can learn from forums	11.1% (62)	7.5% (42)	9.5% (53)	15.7% (88)	<b>49.5%</b> <b>(277)</b>	6.8% (38)	560
9 These tools (blogs, wikis, YouTube, Facebook) enhance collaborative learning	12.4% (70)	5.0% (28)	10.8% (61)	14.5% (82)	<b>46.9%</b> <b>(265)</b>	10.4% (59)	565

Table 30: Using the Internet on Mobiles

Using Internet on Mobile	Response %	Response N
<b>Yes</b>	45.0%	254
<b>No</b>	55.0%	311

Table 31 shows, in percentage terms, the ways respondents were using technologies such as forums, YouTube and Facebook. It shows that 80.5% of the participants used these tools to communicate with friends, 61.2% of them used these tools to comment on friends' posts, 49.7% of the responses showed that these tools were used to share resources among students, 60.6% of the respondents said they used these tools to ask questions, 40.3% were using these tools to evaluate the work of others, 34.0% said they were using such tools to enter into discussions, and 41.5% were using these tools to express support and encouragement among themselves.

Table 31: Ways of Using Technology

Ways of Using Technology	Response %	Response N
<b>Communicating with friends</b>	80.5%	429
<b>Commenting on friends' posts</b>	61.2%	326
<b>Sharing resources among students</b>	49.7%	265
<b>Asking questions</b>	60.6%	323
<b>Evaluating the work of others</b>	40.3%	215
<b>Discussions</b>	34.0%	181
<b>Expressions of support and encouragement exchanged between students</b>	41.5%	221
<b>Other</b>	10.5%	56

Table 32, which shows how often students were using technologies and ICTs in the learning process, illustrates that most students were using internet websites, forums, e-mail, mobile devices, Short Message Service (SMS) and social networks (Facebook) on a daily basis. Moreover, it shows that majority of students are using YouTube in learning. Also, it shows that most students were using EduWave websites every month.

Table 32: Student Times for Using Technologies and ICTs in Learning

	Daily	Weekly	Monthly	Never	D/K	Response N
1 MS PowerPoint	11.9% (66)	<b>32.7%</b> <b>(181)</b>	40.6% (225)	12.6% (70)	2.2% (12)	554
2 Book Zero (eBook)	4.2% (23)	7.7% (42)	16.5% (90)	<b>50.9%</b> <b>(277)</b>	20.6% (112)	544
3 Internet websites	<b>38.9%</b> <b>(206)</b>	24.6% (130)	18.1% (96)	16.3% (86)	2.1% (11)	529
4 EduWave websites	8.9% (48)	23.2% (125)	<b>41.7%</b> <b>(225)</b>	22.4% (121)	3.7% (20)	539
5 Forums	<b>32.6%</b> <b>(174)</b>	25.1% (134)	23.5% (125)	16.1% (86)	2.6% (14)	533
6 Video-conferencing	7.8% (42)	10.4% (56)	13.1% (71)	<b>58.0%</b> <b>(314)</b>	10.7% (58)	541
7 TV/VCR/DVD	<b>36.4%</b> <b>(198)</b>	12.9% (70)	20.2% (110)	27.9% (152)	2.6% (14)	544

	Daily	Weekly	Monthly	Never	D/K	Response N
8 CD Roms	<b>24.5%</b> <b>(135)</b>	23.5% (129)	25.6% (141)	24.2% (133)	2.2% (12)	550
9 Email	<b>47.8%</b> <b>(262)</b>	19.9% (109)	12.8% (70)	17.5% (96)	2.0% (11)	548
10 Mobile devices (PDAs etc.)	<b>52.2%</b> <b>(287)</b>	16.7% (92)	8.7% (48)	20.0% (110)	2.4% (13)	550
11 Short Message Service (SMS)	<b>44.8%</b> <b>(245)</b>	16.6% (91)	11.2% (61)	24.9% (136)	2.6% (14)	547
12 Weblogs (blog)	6.6% (36)	13.7% (74)	12.5% (68)	<b>49.1%</b> <b>(266)</b>	18.1% (98)	542
13 Microblogging (e.g. Twitter)	4.8% (26)	7.2% (39)	9.8% (53)	<b>52.5%</b> <b>(284)</b>	25.7% (139)	541
14 Video-sharing (e.g. YouTube)	21.0% (114)	19.3% (105)	20.8% (113)	<b>34.3%</b> <b>(186)</b>	4.6% (25)	543
15 Picture-sharing (e.g. Flickr)	8.9% (48)	10.2% (55)	13.5% (73)	<b>52.6%</b> <b>(284)</b>	14.8% (80)	540
16 Wikis	5.7% (31)	12.6% (69)	11.2% (61)	<b>43.9%</b> <b>(240)</b>	26.7% (146)	547
17 Document- sharing (e.g. Scribd)	3.2% (17)	7.1% (38)	10.7% (57)	<b>52.4%</b> <b>(279)</b>	26.5% (141)	532
18 Social bookmarking (e.g. delicious)	4.4% (24)	10.3% (56)	16.0% (87)	<b>47.7%</b> <b>(259)</b>	21.5% (117)	543
19 Social networks (e.g. Facebook)	<b>35.6%</b> <b>(196)</b>	15.3% (84)	12.2% (67)	32.7% (180)	4.2% (23)	550
20 Podcasts	6.0% (32)	6.9% (37)	7.5% (40)	37.9% (203)	<b>41.7%</b> <b>(223)</b>	535
21 Chatting software	24.9% (130)	12.4% (65)	11.9% (62)	<b>44.4%</b> <b>(232)</b>	6.5% (34)	523

Table 33 shows how useful the respondents found the following technology applications as part of the learning process. It was found that most of these technologies were very useful to students for learning.

Table 33: Level of Usefulness of Technology Applications for Learning

	(1) Totally Useless	(2) Useless	(3) Neutral	(4) Useful	(5) Very Useful	N/A	Respo nse N
1 PowerPoint presentations	7.5% (41)	6.0% (33)	15.3% (84)	18.9% (104)	<b>48.2%</b> <b>(265)</b>	4.2% (23)	550
2 MS Office (Word, Excel, Access etc.) applications	7.3% (40)	7.7% (42)	12.6% (69)	17.1% (94)	<b>50.1%</b> <b>(275)</b>	5.3% (29)	549
3 Using the Internet to find information	5.2% (28)	3.3% (18)	4.8% (26)	11.1% (60)	<b>72.1%</b> <b>(390)</b>	3.5% (19)	541
4 Accessing information from CD Roms	7.4% (40)	9.6% (52)	15.6% (84)	17.4% (94)	<b>43.0%</b> <b>(232)</b>	6.9% (37)	539
5 Accessing information from DVDs	10.3% (55)	11.8% (63)	16.3% (87)	17.8% (95)	<b>35.0%</b> <b>(187)</b>	9.0% (48)	535
6 Using email	6.9% (37)	6.9% (37)	10.8% (58)	17.1% (92)	<b>50.7%</b> <b>(272)</b>	7.6% (41)	537
7 Accessing EduWave	10.3% (55)	9.6% (51)	15.8% (84)	14.5% (77)	<b>42.3%</b> <b>(225)</b>	7.5% (40)	532
8 Downloading lecture notes and messages from the Intranet (EduWave)	14.2% (77)	8.7% (47)	14.2% (77)	14.4% (78)	<b>39.9%</b> <b>(216)</b>	8.5% (46)	541
9 Using self-assessment tests	11.3% (61)	11.9% (64)	15.8% (85)	16.9% (91)	<b>35.3%</b> <b>(190)</b>	8.9% (48)	539
10 Taking online tests and quizzes with instant electronic feedback	8.8% (47)	7.5% (40)	12.9% (69)	15.5% (83)	<b>47.8%</b> <b>(255)</b>	7.5% (40)	534
11 Submitting work via email	16.7% (90)	8.7% (47)	12.8% (69)	13.8% (74)	<b>34.2%</b> <b>(184)</b>	13.8% (74)	538
12 Following web links provided for extra information	6.8% (36)	6.2% (33)	10.5% (56)	11.8% (63)	<b>57.2%</b> <b>(305)</b>	7.5% (40)	533
13 Tracking your own progress on EduWave	11.9% (64)	10.6% (57)	13.0% (70)	13.0% (70)	<b>35.7%</b> <b>(192)</b>	15.8% (85)	538
14 Your parents tracking your progress on EduWave	18.6% (99)	10.9% (58)	11.7% (62)	11.9% (63)	<b>31.3%</b> <b>(166)</b>	15.6% (83)	531
15 Short Message Service (SMS)	15.4% (83)	10.0% (54)	11.0% (59)	11.2% (60)	<b>42.2%</b> <b>(227)</b>	10.2% (55)	538
16 Mobile devices	12.7% (66)	7.3% (39)	13.1% (70)	12.4% (65)	<b>45.7%</b> <b>(242)</b>	8.8% (46)	534

	(1) Totally Useless	(2) Useless	(3) Neutral	(4) Useful	(5) Very Useful	N/A	Respo nse N
(PDAs etc)	(68)	(39)	(70)	(66)	<b>(244)</b>	(47)	
17 Weblogs (blog)	19.8% (106)	10.1% (54)	13.2% (71)	8.0% (43)	18.3% (98)	<b>30.6%</b> <b>(164)</b>	536
18 Microblogging (e.g. Twitter)	26.7% (141)	11.5% (61)	11.3% (60)	6.0% (32)	9.3% (49)	<b>35.2%</b> <b>(186)</b>	529
19 Video-sharing (e.g. YouTube)	11.9% (62)	9.6% (50)	14.6% (76)	17.0% (88)	<b>34.1%</b> <b>(177)</b>	12.7% (66)	519
20 Picture-sharing (e.g. Flickr)	21.4% (111)	11.4% (59)	15.2% (79)	11.2% (58)	16.6% (86)	<b>24.3%</b> <b>(126)</b>	519
21 Wikis	19.1% (99)	8.9% (46)	9.4% (49)	9.8% (51)	22.5% (117)	<b>30.3%</b> <b>(157)</b>	519
22 Forums	8.5% (44)	7.1% (37)	12.1% (63)	19.5% (101)	<b>44.3%</b> <b>(230)</b>	8.5% (44)	519
23 Social bookmarking (e.g. delicious)	17.9% (94)	10.3% (54)	17.3% (91)	11.8% (62)	15.2% (80)	<b>27.4%</b> <b>(144)</b>	525
24 Document-sharing (e.g. Scribd)	20.4% (106)	13.1% (68)	15.4% (80)	9.8% (51)	13.1% (68)	<b>28.3%</b> <b>(147)</b>	520
25 Social networks (e.g. Facebook)	15.5% (82)	8.9% (47)	11.4% (60)	10.8% (57)	<b>38.3%</b> <b>(202)</b>	15.2% (80)	528
26 Chatting software	22.8% (120)	6.5% (34)	11.4% (60)	12.3% (65)	<b>27.7%</b> <b>(146)</b>	19.4% (102)	527

Table 34 shows the recommended technology applications that are currently not utilised although the responses show there would be interest in using them as part of learning in schools.

Table 34: Recommended Technology Applications

Using the Internet on Mobiles	
<b>YouTube</b>	Flickr
<b>Facebook</b>	Podcasts
<b>Forums</b>	Tagged
<b>Twitter</b>	HI5
<b>Email</b>	BlackBerry Messenger
<b>Messenger</b>	

Table 35 shows methods that respondents have used to work with fellow students on their course and/or share ideas with them. It shows that the most frequently used methods were telephone and email. Students also accessed social networking sites (such as Facebook) and discussion forums to work with fellow students on their courses and to share ideas with them. Many respondents stated they were also using Blackberry messengers in order to work and share ideas with classmates and friends.

Table 35: How Students Work and Share Ideas with Friends

	Response %	Response N
<b>Email</b>	74.4%	398
<b>Chat room</b>	30.1%	161
<b>Social networks (e.g. Facebook)</b>	41.5%	222
<b>Telephone</b>	86.5%	463
<b>Discussion forums</b>	28.6%	153
<b>Face-to-face</b>	66.4%	355
<b>Messages (SMS)</b>	62.2%	333
<b>Other</b>	2.8%	15
<b>Answered question</b>		535
<b>Skipped question</b>		64

Table 36 has shown that most responses have indicated that their skills were very much improved by using technology outside school.

Table 36: Improvements in Skills by Using Technology

	Response %	Response N
<b>(1) Not at all</b>	7.0%	37
<b>(2) Little</b>	5.7%	30
<b>(3) Medium</b>	14.9%	79
<b>(4) Good</b>	16.8%	89
<b>(5) Very much</b>	50.9%	270
<b>N/A: Do not use outside of school</b>	4.7%	25

### Part 3: Parents

Table 37 and Table 38 show parents' levels of education. These tables show that the parents of most students were at secondary school level, having passed a secondary school certificate.

Table 37: Fathers' Educational Level

Fathers' Educational Level	Response %	Response N
<b>Below secondary school</b>	14.4%	76
<b>Secondary school</b>	35.2%	186
<b>Diploma / Bachelor's degree</b>	26.8%	142
<b>Master's/ Doctorate degree</b>	12.9%	68
<b>D/K (Don't know)</b>	6.8%	36
<b>N/A (Not applicable)</b>	4.0%	21
<b>Answered Question</b>		529
<b>Skipped Question</b>		70

Table 38: Mothers' Educational Level

Mother Education level	Response %	Response N
<b>Below secondary school</b>	17.5%	93
<b>Secondary school</b>	36.3%	193
<b>Diploma / Bachelor's degree</b>	26.1%	139
<b>Master's/ Doctorate degree</b>	7.5%	40
<b>D/K (Don't know)</b>	8.1%	43
<b>N/A (Not applicable)</b>	4.5%	24
<b>Answered Question</b>		532
<b>Skipped Question</b>		67

Table 39 shows, in percentages, respondents' parents' (i.e. mothers' and fathers') use of the internet. The table shows that 66.0% of the fathers used the internet while 48.7% of the mothers used it. Table 40 shows the percentages of respondents' parents who were using EduWave, the E-learning platform.

Table 39: Parents Using the Internet

	Response %	Response N
<b>Father</b>		
<b>Yes</b>	66.0%	344
<b>D/K</b>	10.2%	53
<b>N/A</b>	7.9%	41
<b>No</b>	15.9%	83
<b>Mother</b>		
<b>Yes</b>	48.7%	250
<b>D/K</b>	14.8%	76
<b>N/A</b>	11.7%	60
<b>No</b>	24.8%	127

Table 40: Parents Using EduWave (E-learning Platform)

	Response %	Response N
<b>Father</b>		
<b>Yes</b>	19.1%	95
<b>D/K</b>	32.5%	162
<b>N/A</b>	16.3%	81
<b>No</b>	32.1%	160
<b>Mother</b>		
<b>Yes</b>	18.1%	90
<b>D/K</b>	33.5%	167
<b>N/A</b>	16.9%	84
<b>No</b>	31.5%	157

Table 41 shows how many times respondents' parents used EduWave, the E-learning platform and illustrates that most students were aware that their parents used this platform.

Table 41: Parents' Frequency of Use of EduWave (E-learning platform)

Times	Response %	Response N
<b>Daily</b>	3.5%	18
<b>Weekly</b>	4.6%	24
<b>Monthly</b>	9.1%	47
<b>Semester</b>	14.3%	74
<b>D/K</b>	34.8%	180
<b>N/A</b>	33.7%	174
<b>Answered Question</b>		517
<b>Skipped Question</b>		82

#### Part 4: Support

Table 42 shows the need for support, and the current help or support system in technologies available for students at school. It shows that 76.1% of the respondents needed help and support with technologies in school. However, only 66.8% of the respondents stated that a support system was available. Table 43 shows the type of help students needed in order to use technology in school. It shows that 64.6% of respondents were provided with help and support during lessons and 34.6% were given face-to-face help.

Table 42: Need for and the Existence of Help and Support

Times	Response %	Response N
<b>Need help and support</b>		
<b>Yes</b>	76.1%	399
<b>No</b>	23.9%	125
<b>Existence of a help or support system</b>		
<b>Yes</b>	33.2%	174
<b>No</b>	66.8%	350

Table 43: Type of Help

Type of Help	Response %	Response N
<b>Email</b>	20.7%	100
<b>During lessons</b>	64.6%	312
<b>Phone</b>	18.6%	90
<b>In own time</b>	21.1%	102
<b>Face-to-face</b>	34.6%	167
<b>Answered Question</b>		532
<b>Skipped Question</b>		67

Table 44 shows the responses with regard to the quality of technical support available in the schools. It shows that most respondents were not happy and rated the support they received as “very poor”. Table 45 shows the problems facing the student participants in using technology. It shows that most students faced technical problems, social problems and internet addiction. Many students reported other problems such as: (1) Internet speed is slow and (2) Parents do not allow or restrict their use of technology.

Table 44: Technical Support Rating

Type of Help	Response %	Response N
<b>(1) Very Poor</b>	30.4%	156
<b>(2) Poor</b>	18.5%	95
<b>(3) Neutral</b>	27.9%	143
<b>(4) Good</b>	13.8%	71
<b>(5) Very Good</b>	9.4%	48
<b>Answered Question</b>		513
<b>Skipped Question</b>		86

Table 45: Problems Facing Students in Using Technology

Type of Help	Response %	Response N
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<b>Technical problems</b>	39.4%	183
<b>Poor use of information</b>	13.5%	63
<b>Internet addiction</b>	38.7%	180
<b>Scams</b>	15.7%	73
<b>Social problems</b>	24.9%	116
<b>Hacking or viruses</b>	48.4%	225
<b>Other</b>	8.6%	40
<b>Answered Question</b>		465
<b>Skipped Question</b>		134

Table 46 shows that most students did not need help or support on issues not related to technical problems.

Table 46: Need for Help with “Non-technical” Problems

<b>Need Help</b>	<b>Response %</b>	<b>Response N</b>
<b>Yes</b>	34.9%	170
<b>No</b>	65.1%	317
<b>Answered Question</b>		487
<b>Skipped Question</b>		112

### Part 5: Resources

Table 47 indicates that most students had sufficient open access to computers (PCs) although they indicated there was no access to PCs at times that were most useful to them. While Table 48 shows that the majority of students had a computer at home;

Table 47: Open Access to PCs

<b>Times</b>	<b>Response %</b>	<b>Response N</b>
<b>Enough Open Access to PCs</b>		
<b>Yes</b>	34.9%	170

<b>No</b>	65.1%	317
<b>Accessible at Times that Are Useful to Students</b>		
<b>Yes</b>	26.8%	135
<b>No</b>	73.2%	369

Table 48: Students Having a PC at Home

<b>Having a PC at home</b>	<b>Response %</b>	<b>Response N</b>
<b>Yes</b>	94.4%	469
<b>No</b>	5.6%	28
<b>Answered Question</b>		497
<b>Skipped Question</b>		102

Table 49 indicates the number of students using computers outside school and is shows that 84.5% of the respondents were using a computer with an internet connection outside of school for the purpose of studying.

Table 50 shows the problems that faced students at home and indicates that most students were having problems with regard to the time they spent using the computer.

Table 49: Students Using a Computer Outside School

<b>Using a Computer Outside School</b>	<b>Response %</b>	<b>Response N</b>
<b>No</b>	9.5%	46
<b>Yes, but have no Internet access</b>	6.0%	29
<b>Yes, with an Internet connection</b>	84.5%	410
<b>Answered Question</b>		497
<b>Skipped Question</b>		102

Table 50: Problems at Home

Problems at Home	Response %	Response N
<b>Space</b>	22.1%	99
<b>Connecting to the Internet</b>	30.9%	138
<b>Time</b>	62.9%	281
<b>Cost of printing</b>	34.2%	153

Table 51 shows the extent to which students agreed that studying at home was good. It shows that most students strongly agreed that they were: (1) More able to learn at their own pace than in class, (2) Able to work at times that suited them, (3) Able to have more time for reflection, (4) Preferred working in groups, and (5) Liked to have a teacher to help them.

Table 51: Studying at Home

	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	Response N
1 More able to learn at my own pace than in class	20.2% (93)	13.4% (62)	20.8% (96)	11.5% (53)	<b>34.1%</b> <b>(157)</b>	461
2 Able to work at times that suit me	11.9% (54)	11.3% (51)	23.4% (106)	14.1% (64)	<b>39.3%</b> <b>(178)</b>	453
3 Able to have more time for reflection	12.7% (57)	7.4% (33)	16.7% (75)	17.0% (76)	<b>46.2%</b> <b>(207)</b>	448
4 Prefer working in groups	20.6% (93)	14.9% (67)	17.1% (77)	18.4% (83)	<b>29.0%</b> <b>(131)</b>	451
5 Like to have a teacher to help me	14.1% (64)	10.2% (46)	15.2% (69)	18.1% (82)	<b>42.4%</b> <b>(192)</b>	453
6 Like to have things explained in sequence	12.3% (56)	9.6% (44)	12.5% (57)	15.5% (71)	<b>50.1%</b> <b>(229)</b>	457

### Part 6: EduWave and its Content

Table 52 shows students' opinions about EduWave. It can be seen that most students strongly agreed that: (1) They were able to move from page to page and link to link with ease without getting lost or confused, (2) The navigation language was clear and understandable, (3) The information was easy to find, and (4) E-learning creates a sense of collaborative teamwork and "groupness". However, most students strongly disagreed that teachers motivated and encouraged them to use EduWave.

Table 52: Using EduWave

	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	N
1 It is easy to navigate EduWave	27.2% (131)	12.5% (60)	15.6% (75)	14.8% (71)	<b>29.9%</b> <b>(144)</b>	48 1
2 I can move from page to page, and link to link with ease without getting lost or confused	19.7% (94)	14.9% (71)	17.6% (84)	17.8% (85)	<b>30.1%</b> <b>(144)</b>	47 8
3 The navigation language is clear and understandable	12.4% (59)	11.4% (54)	14.6% (69)	15.0% (71)	<b>46.6%</b> <b>(221)</b>	47 4
4 The information is easy to find	20.0% (95)	10.9% (52)	17.9% (85)	20.0% (95)	<b>31.3%</b> <b>(149)</b>	47 6
5 Teachers are motivating and encouraging students to use EduWave	<b>40.8%</b> <b>(194)</b>	16.4% (78)	13.5% (64)	10.9% (52)	18.3% (87)	47 5
6 E-learning is creating a sense of collaborative teamwork and "groupness"	21.5% (102)	14.3% (68)	14.3% (68)	16.6% (79)	<b>33.3%</b> <b>(158)</b>	47 5

Table 53 shows the students' responses about e-learning content on EduWave compared to other content (e.g. text books, TV and video). It shows that most respondents strongly agreed that the e-learning content was more fun, more flexible and more focused; it was also user friendly and enabled them to learn faster and remember more. Moreover, it was easy to use and follow, it was more reflective and it helped them

to learn. Table 54, which shows how students were using the e-learning portal, indicates that most students were not using this e-learning portal. Many students mentioned they were using EduWave for viewing exam results.

Table 53: Comparing E-learning Content

	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	N
1 It is more fun	20.0% (96)	9.4% (45)	17.9% (86)	14.2% (68)	<b>38.5%</b> <b>(185)</b>	480
2 It is flexible	14.8% (71)	13.4% (64)	19.0% (91)	19.4% (93)	<b>33.4%</b> <b>(160)</b>	479
3 It is more focused	18.0% (85)	15.0% (71)	19.2% (91)	14.2% (67)	<b>33.6%</b> <b>(159)</b>	473
4 It is user friendly	14.9% (71)	11.4% (54)	16.8% (80)	14.7% (70)	<b>42.1%</b> <b>(200)</b>	475
5 I learn faster	19.5% (92)	11.0% (52)	19.5% (92)	12.5% (59)	<b>37.4%</b> <b>(176)</b>	471
6 I remember more	17.0% (81)	14.7% (70)	18.2% (87)	17.2% (82)	<b>32.9%</b> <b>(157)</b>	477
7 It is easy to use and follow	14.4% (68)	10.4% (49)	16.9% (80)	18.0% (85)	<b>40.4%</b> <b>(191)</b>	473
8 It is more practical	15.5% (73)	13.1% (62)	18.4% (87)	17.4% (82)	<b>35.6%</b> <b>(168)</b>	472
9 It is more reflective; it helps me learn	20.7% (99)	13.4% (64)	15.3% (73)	17.8% (85)	<b>32.8%</b> <b>(157)</b>	478
10 I can do the work in my own time	16.7% (80)	10.3% (49)	15.7% (75)	16.3% (78)	<b>41.0%</b> <b>(196)</b>	478

Table 54: How Students are Using EduWave (the E-learning Portal)

Are you using the EduWave (e-learning portal) to:	Response %	Response N
<b>Communicate and interact with other students</b>	25.5%	108
<b>Ask questions</b>	41.0%	174
<b>Share information and opinions</b>	12.0%	51
<b>Communicate and interact with teachers</b>	8.5%	36

Are you using the EduWave (e-learning portal) to:	Response %	Response N
<b>Give opinions</b>	16.7%	71
<b>Other</b>	31.1%	132
<b>Answered Question</b>		424
<b>Skipped Question</b>		175

Table 55 shows respondents' opinions of the electronic content and shows that most students believe that the electronic content is about right.

Table 55: Electronic Content

	Response %	Response N
<b>Too simple</b>	42.6%	200
<b>Too difficult</b>	9.4%	44
<b>About right</b>	48.1%	226
<b>Answered Question</b>		470
<b>Skipped Question</b>		129

## Part 7: Learning Outcomes

Table 56 shows the learning outcomes from the use of e-learning and indicates that most students strongly agreed that it would improve their grades and help them to get a job at the end of their studies.

Table 56: Learning Outcomes

Increased use of ICT/online learning	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	N
Will lead to better grades	19.2% (91)	10.8% (51)	19.8% (94)	14.8% (70)	<b>35.4%</b> <b>(168)</b>	474
Will help students get a job at the end of their studies	17.6% (84)	9.5% (45)	15.8% (75)	16.8% (80)	<b>40.3%</b> <b>(192)</b>	476

### **Students' Questionnaire Summary**

The result show that the majority of students are using computers, email, internet websites, SMS, video-sharing (YouTube), forums and social network sites (e.g. Facebook) in their daily lives. Based on results, students were using these ICTs and technologies in learning while teachers were not using them in learning. Students' answers about the types of ICTs that teacher used as part of learning show that teachers were using MS PowerPoint presentations with a data projector in some lessons but that teachers did not ever use most ICTs and technologies as part of learning. On the other hand, the results show that students were using these technologies both in learning and for creating a learning community. In fact, the results show that most students were using technologies and ICTs in learning as they reported using internet websites, forums, email, mobile devices, Short Message Service (SMS) and social networks (Facebook) on a daily basis in the learning process. However, the official learning portal, EduWave, is used only monthly as the majority of students were using it only to view their exam results. The findings show that the majority of students were using new technologies, such as YouTube and Facebook, to communicate with their classmates and friends, to comment on friends' posts, share resources among students, ask questions, evaluate the work of others, and to discuss and express support and encouragement for other students. This use of such technologies (Web 2.0) is creating communities of learners, as Palloff and Pratt (2007) stated. The results show that technologies such as YouTube and Facebook have changed the learning landscape where learners are becoming active participants, creators of knowledge, and seekers of engagement; and where learners are described as actively creating and sharing content and ideas.

### **6.3 Teacher Questionnaire**

The second questionnaire is teacher questionnaire which consisted of the following seven parts: (1) Teacher Information, (2) Technology, (3) Students' Parents, (4) Support, (5) Resources, (6) EduWave and its Content, and (7) Outcomes.

### Part 1: Teacher Information

The total number of respondents consisted of 84 teachers; this section presents their demographic characteristics as follows: (1) Respondents by Subject, (2) Respondents by School, (3) Respondents by Teaching Experience, (4) Respondents by Gender, (5) Respondents by Nationality, (6) Respondents by Age, and (7) Respondents by Educational Level.

**Respondents by Subject:** Table 57 explains the distribution of the participants according to their subject and shows that 15.5% were science teachers, 17.9% taught Arabic, 13.1% were English teachers, 15.5% were Maths teachers, 8.3% taught Business and 29.8% were teaching other subjects. **Respondents by School:** Table 58 presents the distribution of the participants in the eight schools studied. This shows that 7.1% were from the Sheikh Khalifa Technological Institute, 9.5% were from Al Hidaiya Al Khalifia Secondary School, 16.7% were from Ahmed Al Omran Secondary School, 9.5% were from East Rifa Secondary School, 20.2% were from Hamad Town Secondary School, 9.5% were from Al Istiqlal Secondary Commercial School, 17.9% were from Al Hooraa Secondary Commercial School, and 9.5% were from Sar Secondary School.

Table 57: Respondents by Subject

Subject	Response %	Response N
Science	15.5%	13
Arabic	17.9%	15
English	13.1%	11
Maths	15.5%	13
Business	8.3%	7
Other	29.8%	25
<b>Total</b>	<b>100%</b>	<b>84</b>

Table 58: Respondents by School

School	Response %	Response N
Sheikh Khalifa Technological Institute	7.1%	6
Al Hidaiya Al Khalifia Secondary School	9.5%	8
Ahmed Al Omran Secondary School	16.7%	14

School	Response %	Response N
East Rifa Secondary School	9.5%	8
Hamad Town Secondary School	20.2%	17
Al Istiqlal Secondary Commercial School	9.5%	8
Al Hooraa Secondary Commercial School	17.9%	15
Sar Secondary School	9.5%	8
<b>Total</b>	<b>100%</b>	<b>84</b>

**Respondents by Teaching Experience:** Table 59 offers the distribution of the participants by teaching experience and shows that 19.0% had 1-5 years, 28.6% had 6-10 years, 34.5% had 11-20 years, 14.3% had 21-30 years, 2.4% had 31-40 years, 1.2% had more than 40 years of teaching experience. **Respondents by Gender:** Table 60 and Table 61 show the distribution of the teacher participants by gender and indicates that 54.8% (46) were male while 45.2% (38) were female.

Table 59: Respondents by Teaching Experience

Year Experience	Response %	Response N
1-5 years	19.0%	16
6-10 years	28.6%	24
11-20 years	34.5%	29
21-30 years	14.3%	12
31-40 years	2.4%	2
40 + years	1.2%	1
<b>Total</b>	<b>100%</b>	<b>84</b>

Table 60: Respondents by Gender

Gender	Response %	Response N
<b>Male</b>	54.8%	46
<b>Female</b>	45.2%	38
<b>Total</b>	<b>100%</b>	<b>84</b>

Table 61: Respondents by Gender Based on Schools

School	Response %	Response N
<b>Male Schools</b>		
Sheikh Khalifa Technological Institute	7.1%	6
Al Hidayya Al Khalifia Secondary School	9.5%	8
Ahmed Al Omran Secondary School	16.7%	14
Hamad Town Secondary School	20.2%	17
<b>Total in Male Schools</b>	<b>54.8%</b>	<b>46</b>
<b>Female Schools</b>		
East Rifa Secondary School	9.5%	8
Al Istiqlal Secondary Commercial School	9.5%	8
Al Hooraa Secondary Commercial School	17.9%	15
Sar Secondary School	9.5%	8
<b>Total in Female Schools</b>	<b>45.2%</b>	<b>38</b>
<b>Total</b>	<b>100%</b>	<b>84</b>

**Respondents by Nationality:** Table 62 presents the distribution of the participants by nationality and this shows that 65.1% were Bahraini and 34.9% were from other nationalities. **Respondents by Age:** Table 63 shows the distribution of the participants by age and illustrates that 29.8% of teachers were between 24-32 years, 46.4% of teachers were between 33-42 years, 21.4% of teachers were between 43-55 years, and 2.4% of teachers were more than 55 years old.

Table 62: Respondents by Nationality

Nationality	Response %	Response N
<b>Bahraini</b>	65.1%	54
<b>Other</b>	34.9%	29
<b>Total</b>	<b>100%</b>	<b>83</b>

Table 63: Respondents by Age

Year	Response %	Response N
<b>20-23</b>	0.0%	0
<b>24-32</b>	29.8%	25
<b>33-42</b>	46.4%	39
<b>43-55</b>	21.4%	18
<b>55+</b>	2.4%	2
<b>Total</b>	<b>100%</b>	<b>84</b>

**Respondents by Educational Level:** Table 64 shows the distribution of the participants by level of education and indicates that 1.2% of teacher held a secondary school certificate, 91.7% of teachers held a Bachelor’s degree and 7.1% held a Master’s degree.

Table 64: Respondents by Educational Level

Year	Response %	Response N
<b>Secondary school</b>	1.2%	1
<b>Diploma Degree</b>	0.0%	0
<b>Bachelor Degree</b>	91.7%	77
<b>Master Degree</b>	7.1%	6
<b>Doctorate Degree</b>	0.0%	0
<b>Total</b>	<b>100%</b>	<b>84</b>

## Part 2: Technology Usage

Table 65 shows the teachers’ levels of enthusiasm for technology. It can be seen that 44.3% (35) of teachers were very enthusiastic towards ICT/technology in general while 39.5% (30) of teachers were very enthusiastic towards ICT/technology in teaching and learning.

Table 65: Enthusiasm towards Technology

	(1) Not at all enthusiastic	(2) Not enthusiastic	(3) Natural	(4) Enthusiastic	(5) Very enthusiastic	Too little experience	N
ICT/technology generally	3.8% (3)	1.3% (1)	17.7% (14)	31.6% (25)	<b>44.3%</b> <b>(35)</b>	1.3% (1)	79
ICT/technology in teaching and learning	3.9% (3)	1.3% (1)	21.1% (16)	32.9% (25)	<b>39.5%</b> <b>(30)</b>	1.3% (1)	76

Table 66 demonstrates teachers' answers with regard to how often they used these types of ICTs. It can be seen that the teachers were using computers, email, internet websites, and Short Message Service (SMS) on a daily basis. In addition, the respondent teachers were using the video-sharing website, YouTube, on a weekly basis.

Table 66: Times Using ICTs for Teachers

	Daily	Weekly	Monthly	Rarely used	Never	D/K	N
1 Computers	<b>87.7%</b> <b>(71)</b>	6.2% (5)	1.2% (1)	3.7% (3)	1.2% (1)	0.0% (0)	81
2 Email	<b>57.5%</b> <b>(46)</b>	21.3% (17)	6.3% (5)	7.5% (6)	7.5% (6)	0.0% (0)	80
3 Internet websites	<b>74.4%</b> <b>(58)</b>	14.1% (11)	2.6% (2)	7.7% (6)	1.3% (1)	0.0% (0)	78
4 Short Message Service (SMS)	<b>55.7%</b> <b>(44)</b>	22.8% (18)	2.5% (2)	11.4% (9)	7.6% (6)	0.0% (0)	79
5 Weblogs (blog)	2.7% (2)	10.7% (8)	16.0% (12)	22.7% (17)	<b>30.7%</b> <b>(23)</b>	17.3% (13)	75
6 Microblogging (e.g. Twitter)	0.0% (0)	5.0% (4)	11.3% (9)	12.5% (10)	<b>48.8%</b> <b>(39)</b>	22.5% (18)	80
7 Video-sharing (e.g. YouTube)	11.7% (9)	<b>27.3%</b> <b>(21)</b>	18.2% (14)	15.6% (12)	22.1% (17)	5.2% (4)	77
8 Picture-sharing (e.g. Flickr)	1.3% (1)	6.7% (5)	5.3% (4)	24.0% (18)	<b>42.7%</b> <b>(32)</b>	20.0% (15)	75
9 Wikis	2.6% (2)	3.8% (3)	6.4% (5)	15.4% (12)	<b>38.5%</b> <b>(30)</b>	33.3% (26)	78
10 Document-	1.3% (1)	5.1% (4)	6.4% (5)	15.4% (12)	<b>41.0%</b> <b>(32)</b>	30.8% (24)	78

	Daily	Weekly	Monthly	Rarely used	Never	D/K	N
sharing (e.g. Scribd)							
11 Social bookmarking (e.g. delicious)	1.3% (1)	7.7% (6)	7.7% (6)	16.7% (13)	<b>37.2%</b> <b>(29)</b>	29.5% (23)	78
12 Forums	<b>22.8%</b> <b>(18)</b>	17.7% (14)	20.3% (16)	<b>22.8%</b> <b>(18)</b>	12.7% (10)	3.8% (3)	79
13 Social networks (e.g. Facebook)	17.7% (14)	16.5% (13)	11.4% (9)	19.0% (15)	<b>32.9%</b> <b>(26)</b>	2.5% (2)	79
14 Podcasts	1.3% (1)	6.4% (5)	2.6% (2)	12.8% (10)	<b>41.0%</b> <b>(32)</b>	35.9% (28)	78
15 Chatting software	7.5% (6)	8.8% (7)	7.5% (6)	20.0% (16)	<b>53.8%</b> <b>(43)</b>	2.5% (2)	80
16 MySpace	1.3% (1)	2.5% (2)	2.5% (2)	18.8% (15)	<b>46.3%</b> <b>(37)</b>	28.8% (23)	80

Table 67 shows the numbers of teachers who were using new technologies, such as Facebook, YouTube, Flickr, blogs and Twitter. It indicates that 67% of teachers were not using these technologies. Table 68 shows teachers' use of social networks, and video- and picture-sharing websites. It illustrates that most teachers did not use social networks or picture-sharing websites; however, 47.4% of teachers used video-sharing websites.

Table 67: Teachers' Use of New Technologies

	Response %	Response N
<b>Yes</b>	67.5%	54
<b>No</b>	32.5%	26

Table 68: Teachers' Use of Facebook, YouTube and Flickr

Using	Response %	Response N
<b>Social Networks</b>		
<b>Facebook</b>	39.2%	31

Using	Response %	Response N
<b>Not using</b>	50.6%	40
<b>Other</b>	16.5%	13
<b>Video-sharing Websites</b>		
<b>YouTube</b>	47.4%	37
<b>Not using</b>	50.0%	39
<b>Other</b>	3.8%	3
<b>Picture-sharing Websites</b>		
<b>Flickr</b>	9.2%	7
<b>Not using</b>	85.5%	65
<b>Other</b>	6.6%	5

Table 69 shows that teachers were using these technologies (i.e. Facebook, YouTube, Flickr, blogs, Twitter and forums) for communication. The response showed that 87.7% were using these technologies to communicate with friends.

Table 69: Teachers Using Technologies for Communication

To Communicate With	Response %	Response N
<b>Students</b>	12.3%	7
<b>Staff and Teachers</b>	22.8%	13
<b>Friends</b>	87.7%	50

### *How teachers are using new technologies in learning*

The section above explained how teachers were using the new technologies in learning although the findings actually illustrated that most of the teacher respondents did not use these technologies; however, some did. The next section offers the findings concerning how each technology (i.e. YouTube and forums) were used in learning.

## ***1. YouTube***

The findings show that teachers were using YouTube in learning in the following ways: 1) Learning by watching videos, (2) Learning by sharing videos, and (3) Enhancing learning by using YouTube in the teaching process.

### **1.1 Learning by Watching Videos**

Teachers were using YouTube by encouraging students to learn by watching videos related to teachers' subjects. For this, teachers were viewing and downloading videos to prepare for and to use in lessons.

*"I view and download special clips relating to the lesson."*

*"I use YouTube in order to prepare lessons."*

### **1.2 Sharing Videos**

Teachers were using YouTube to share videos that are useful for students, such as good videos or experiment videos.

*"I upload a good support video or experiment video to YouTube."*

### **1.3 YouTube's Use in the Teaching Process**

Teachers were using YouTube to implement new teaching processes and/or to promote skills they had gained in order to support and enhance students' learning experience. Teachers said:

*"I download some clips from YouTube for teaching."*

*"The use of video, such as YouTube, enhances lessons by making available suitable videos for learning."*

*"I search for information, movies and photos that support the curriculum that I teach."*

*"Some videos on YouTube serve the teaching process so that videos explain the subject I want to explain."*

## 2. Forums

The findings show that teachers were using forums to obtain information and questions.

*“I obtain information and questions from the forums.”*

Table 70 explains how teachers are using the new technologies in learning.

Table 70: How Teacher Are Using Technology in Learning

Technology	How teacher are using this technology
<b>YouTube</b>	<ul style="list-style-type: none"> <li>• Learning by watching videos</li> <li>• Sharing videos</li> <li>• Use in teaching processes</li> </ul>
<b>Forums</b>	<ul style="list-style-type: none"> <li>• Finding information about a subject</li> </ul>

Table 71 shows how many teachers agreed with the following statements in relation to the use of new technologies (i.e. Facebook, YouTube, Flickr, blogs, Twitter, forums) in learning. This table shows that 31.6% (24) of teachers agreed that students can learn from these tools while 32.9% (25) of teachers agreed that these tools can support learning by doing. 27.6% (21) of teachers strongly agreed that these tools can enhance collaborative learning, 39.5% (30) of teachers strongly agreed that teachers can acquire knowledge using these tools and services and 36.0% (27) of teachers strongly agreed that teachers can design and develop activities for students with these tools. Finally, 41.7% (30) of teachers strongly agreed that teachers need the help of an expert in order to handle these tools and services.

Table 71: Teachers’ Opinions Regarding the Use of New Technologies in Learning

	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	N/A	N
1 Students can learn from using	7.9% (6)	6.6% (5)	25.0% (19)	<b>31.6%</b> <b>(24)</b>	25.0% (19)	3.9% (3)	76

	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	N/A	N
these tools							
2 These tools can support learning by doing	6.6% (5)	13.2% (10)	18.4% (14)	<b>32.9%</b> <b>(25)</b>	26.3% (20)	2.6% (2)	76
3 These tools can enhance collaborative learning	7.9% (6)	17.1% (13)	19.7% (15)	26.3% (20)	<b>27.6%</b> <b>(21)</b>	1.3% (1)	76
4 I can acquire knowledge by using these tools and services	9.2% (7)	6.6% (5)	14.5% (11)	28.9% (22)	<b>39.5%</b> <b>(30)</b>	1.3% (1)	76
5 I can design and develop activities for students with these tools	12.0% (9)	13.3% (10)	22.7% (17)	14.7% (11)	<b>36.0%</b> <b>(27)</b>	1.3% (1)	75
6 I need the help of an expert user to handle these tools and services	9.7% (7)	6.9% (5)	19.4% (14)	20.8% (15)	<b>41.7%</b> <b>(30)</b>	1.4% (1)	72

Table 72 presents the findings with regard to teachers' use of the internet on mobiles. The table shows that 23.4% of teacher respondents used the internet on their mobiles while 76.6% did not.

Table 72: Teachers Using the Internet on Mobiles

Using Internet on mobile	Response %	Response N
Yes	23.4%	18
No	76.6%	59

Table 73 shows how often teachers currently use ICT/technology and it can be seen that 23.5% of teachers sometimes used ICT/technology in their classroom teaching while 24.7% of teachers had never used it in a learning centre. 38.8% of teachers never used ICT/technology in feedback/communication with learners, 29.5% of teacher never used ICT/technology in online learning and 30.9% (25) of teachers sometimes used ICT/technology at their desks in school. 29.6% (24) of teachers never used ICT/technology in communications with staff and other teachers while 46.3% (37) of teachers constantly used ICT/technology at home.

Table 73: Frequency of Teachers' Use of Technologies

	(1) Never	(2) Few times	(3) Some times	(4) Many times	(5) Constantly	N/A	N
1 Classroom teaching	21.0% (17)	11.1% (9)	<b>23.5%</b> <b>(19)</b>	21.0% (17)	<b>23.5%</b> <b>(19)</b>	0.0% (0)	81
2 In a learning centre	<b>24.7%</b> <b>(20)</b>	19.8% (16)	<b>24.7%</b> <b>(20)</b>	21.0% (17)	9.9% (8)	0.0% (0)	81
3 Feedback/ communication with learners	<b>38.8%</b> <b>(31)</b>	17.5% (14)	17.5% (14)	20.0% (16)	6.3% (5)	0.0% (0)	80
4 Online learning	<b>29.5%</b> <b>(23)</b>	12.8% (10)	24.4% (19)	20.5% (16)	11.5% (9)	1.3% (1)	78
5 At a desk in school	18.5% (15)	8.6% (7)	<b>30.9%</b> <b>(25)</b>	18.5% (15)	21.0% (17)	2.5% (2)	81
6 Communication with staff and other teachers	<b>29.6%</b> <b>(24)</b>	19.8% (16)	18.5% (15)	19.8% (16)	9.9% (8)	2.5% (2)	81
7 The home	16.3% (13)	5.0% (4)	10.0% (8)	21.3% (17)	<b>46.3%</b> <b>(37)</b>	1.3% (1)	80

Table 74 shows how valuable ICT is for teachers. It indicates that 51.3% of teachers believed that ICT/technology is essential, or at least valuable, in classroom teaching; 50.6% believed that ICT/technology is essential, or valuable, in learning centres; 40.0% of teachers believed that ICT/technology is essential, or valuable, in feedback/communication with learners; and 46.1% of teachers believed that ICT/technology is essential or valuable in online learning. 50.0% of teachers believed that ICT/technology is essential or valuable at their desks in school while 37.7% of teachers believed that ICT/technology is essential, or at least, valuable in communication with staff and other teachers. Finally, 50.6% of teachers believed that ICT/technology is essential or valuable to have at home. Table 75 shows to what extent the new learning technology has changed the way that teachers work over the last 5 years; in fact, it shows that it has changed quite a lot.

Table 74: How Valuable is ICT/Technology to Teachers?

	(1) Not at all	(2) Not	(3) Neutral	(4) Of little importance	(5) Essential	N/A	N
1 Classroom teaching	2.6% (2)	1.3% (1)	21.8% (17)	21.8% (17)	<b>51.3%</b> <b>(40)</b>	1.3% (1)	78
2 Learning centre	2.6% (2)	6.5% (5)	15.6% (12)	22.1% (17)	<b>50.6%</b> <b>(39)</b>	2.6% (2)	77
3 Feedback/communication with learners	8.0% (6)	5.3% (4)	21.3% (16)	24.0% (18)	<b>40.0%</b> <b>(30)</b>	1.3% (1)	75
4 Online learning	7.9% (6)	5.3% (4)	14.5% (11)	25.0% (19)	<b>46.1%</b> <b>(35)</b>	1.3% (1)	76
5 Desk at school	3.8% (3)	5.1% (4)	19.2% (15)	20.5% (16)	<b>50.0%</b> <b>(39)</b>	1.3% (1)	78
6 Communication with staff and other teachers	6.5% (5)	9.1% (7)	19.5% (15)	26.0% (20)	<b>37.7%</b> <b>(29)</b>	1.3% (1)	77
7 Your home	2.6% (2)	3.9% (3)	13.0% (10)	27.3% (21)	<b>50.6%</b> <b>(39)</b>	2.6% (2)	77

Table 75: Does Technology Change Teachers' Work?

	Response %	Response N
<b>Not at all</b>	3.8%	3
<b>A little</b>	25.3%	20
<b>Quite a lot</b>	55.7%	44

	Response %	Response N
<b>Completely</b>	15.2%	12
<b>Answered question</b>		79
<b>Skipped question</b>		5

Table 76 shows teachers' recommendations concerning the technologies they would like to use as part of the learning process in schools.

Table 76: Technology Recommendations from Teachers

Technologies Recommendation
<b>YouTube</b>
<b>Facebook</b>
<b>Twitter</b>

Table 77 shows that teachers usually work with other teachers and staff and that most of them use face-to-face and telephone communication to work with them.

Table 77: How Teachers Work with Others

	Response %	Response N
<b>Face-to-face</b>	70.5%	55
<b>By telephone</b>	89.7%	70
<b>By email</b>	66.7%	52
<b>Chat rooms</b>	12.8%	10
<b>Discussion forums</b>	7.7%	6
<b>Message (SMS)</b>	61.5%	48
<b>Social Networking such as Facebook</b>	11.5%	9
<b>Other</b>	1.3%	1

### Part 3: Students' Parents

Table 78 offers teachers' views with regard to students' parents using EduWave, the e-learning portal, and it shows that 58.4% of teachers strongly agreed that it is important for parents to use EduWave; 50.6% believed that this would improve students' learning.

Table 78: Teachers' Views about Students' Parents Using EduWave

	(1) Strongly Disagree	(2) Disagree	(3) Natural	(4) Agree	(5) Strongly Agree	N/A	N
It is important that parents use EduWave	3.9% (3)	1.3% (1)	16.9% (13)	19.5% (15)	<b>58.4%</b> <b>(45)</b>	0.0% (0)	77
It will improve students' learning	1.3% (1)	5.2% (4)	15.6% (12)	26.0% (20)	<b>50.6%</b> <b>(39)</b>	1.3% (1)	77

Table 79 displays the number of parents who follow-up their child's progress via EduWave and it can be seen that most teachers (80.3%) reported that parents did not use or follow up their child's progress using EduWave.

Table 79: Parents Following Students' Progress Using EduWave

	Response %	Response N
<b>Yes</b>	19.7%	15
<b>No</b>	80.3%	61

### Part 4: Support

Table 80 shows teachers' satisfaction with IT support and this indicates that 23.4% of teachers were dissatisfied with the IT support offered in relation to their use of the intranet. Moreover, 24.3% of teachers were dissatisfied with the IT support offered in relation to software.

Table 80: Teachers' Satisfaction with IT Support

	(1) Very Dissatisfied	(2) Dissatisfied	(3) Neutral	(4) Satisfied	(5) Very Satisfied	N/A	N
1) Use of the intranet	18.2% (14)	<b>23.4%</b> <b>(18)</b>	20.8% (16)	14.3% (11)	19.5% (15)	3.9% (3)	77
2) Hardware	16.2% (12)	21.6% (16)	<b>29.7%</b> <b>(22)</b>	10.8% (8)	16.2% (12)	5.4% (4)	74
3) Software	12.2% (9)	<b>24.3%</b> <b>(18)</b>	31.1% (23)	17.6% (13)	10.8% (8)	4.1% (3)	74
4) Staff development and training	19.2% (14)	17.8% (13)	<b>28.8%</b> <b>(21)</b>	24.7% (18)	6.8% (5)	2.7% (2)	73
5) Teaching materials	16.2% (12)	21.6% (16)	<b>23.0%</b> <b>(17)</b>	<b>23.0%</b> <b>(17)</b>	13.5% (10)	2.7% (2)	74

Table 81 shows the number of training courses designed to improve technology skills that teachers had attended in the last three years. It was noticed that the average number of courses was 2 (Mean= 1.99). Table 82 shows the number of training courses that teachers had attended in the last three years which were designed to help them use technology in teaching; this shows an average number of 1 (Mean= 1.26).

Table 81: Number of Teacher Training Courses Attended “Technology Skills”

Training	Response %	Response N
<b>0</b>	31.6 %	24
<b>1</b>	23.7 %	18
<b>2</b>	19.7 %	15
<b>3</b>	7.9 %	6
<b>4</b>	6.6 %	5
<b>5</b>	2.6 %	2
<b>7</b>	1.3 %	1
<b>9</b>	2.6 %	2
<b>10</b>	3.9 %	3
<b>Total</b>	100 %	76

Table 82: Number of Teacher Training Courses Attended “Technology in Teaching”

Teaching Training	Response %	Response N
<b>0</b>	44.2 %	34
<b>1</b>	26 %	20
<b>2</b>	11.7 %	9
<b>3</b>	5.2 %	4
<b>4</b>	7.8 %	6
<b>5</b>	2.6 %	2
<b>6</b>	1.3 %	1
<b>7</b>	1.3 %	1
<b>Total</b>	100 %	77

Table 83 shows how satisfied teachers were with the training courses they attended. The table illustrates that most teachers were neutral with regard to their level of satisfaction with courses that were designed to improve their technology skills and help them to use technology in teaching.

Table 83: Teachers’ Satisfaction with Training

	(1) Very Dissatisfied	(2) Dissatisfied	(3) Neutral	(4) Satisfied	(5) Very Satisfied	N
Improving technology skills	7.9% (5)	20.6% (13)	<b>31.7%</b> <b>(20)</b>	22.2% (14)	17.5% (11)	63
Helping with the use of technology in teaching	7.9% (5)	19.0% (12)	<b>33.3%</b> <b>(21)</b>	28.6% (18)	11.1% (7)	63

Table 84 shows how well teachers were prepared to deliver and support learning using ICT/technology and it reveals that most teachers (36.8%) felt they were properly prepared to deliver and support learning with ICT/technology.

Table 84: Teachers' Level of Preparation

	Response %	Response N
(1) Not at all Prepared	2.6%	2
(2) Not Prepared	15.8%	12
(3) Little Prepared	28.9%	22
(4) Prepared	<b>36.8%</b>	28
(5) Very Prepared	15.8%	12

Table 85 displays the types of support that teachers requested and shows that 38.9% of teachers requested support and help with basic IT problems, 51.4% requested support with network problems, 23.6% requested support in using EduWave, 47.2% requested support in using specific learning software, and 26.4% of teachers requested support with regard to teaching materials.

Table 85: Types of Support Requested by Teachers

	Response %	Response N
Help with basic IT problems	38.9%	28
Help with network problems	<b>51.4%</b>	37
Help in using EduWave	23.6%	17
Using specific learning software	47.2%	34
Teaching materials	26.4%	19
Other	2.8%	2

### Part 5: Resources

Table 86 shows those factors that prevented a greater use of e-learning in classrooms or e-learning centres. It reveals that most teachers (31.1%) reported that the unreliability of the network prevented the greater use of e-learning in classrooms or e-learning centres, while 28.4% of teachers reported that, on many occasions, having insufficient equipment prevented a greater use of e-learning. Also, many teachers (30.6%) reported that, in a few cases, a lack of students' ICT skills prevented greater use of e-learning.

The majority of teachers reported that ill-equipped rooms (e.g. a lack of network points) and poor software/ learning materials were considered as factors that prevented greater use of e-learning in the classroom or e-learning centre. Moreover, a lack of electronic course content, lack of support and guidance, and student reluctance to use materials were also considered as factors that prevented e-learning from being used more widely.

Table 86: Factors Preventing Greater Use of E-Learning

	(1) Never	(2) Few Times	(3) Some Times	(4) Many Times	(5) All the time	N
1) Unreliable network	9.5% (7)	12.2% (9)	21.6% (16)	25.7% (19)	<b>31.1%</b> <b>(23)</b>	74
2) Insufficient equipment	20.3% (15)	16.2% (12)	21.6% (16)	<b>28.4%</b> <b>(21)</b>	13.5% (10)	74
3) Ill-equipped rooms (e.g. lack of network points)	20.0% (15)	13.3% (10)	<b>33.3%</b> <b>(25)</b>	17.3% (13)	16.0% (12)	75
4) Poor software/ learning materials	6.7% (5)	25.3% (19)	<b>29.3%</b> <b>(22)</b>	29.3% (22)	9.3% (7)	75
5) Lack of electronic course content	21.9% (16)	19.2% (14)	<b>31.5%</b> <b>(23)</b>	17.8% (13)	9.6% (7)	73
6) Lack of support and guidance	18.9% (14)	25.7% (19)	<b>31.1%</b> <b>(23)</b>	20.3% (15)	4.1% (3)	74
7) Lack of student ICT skills	22.2% (16)	<b>30.6%</b> <b>(22)</b>	25.0% (18)	20.8% (15)	1.4% (1)	72
8) Student reluctance to use materials	15.5% (11)	23.9% (17)	<b>32.4%</b> <b>(23)</b>	23.9% (17)	4.2% (3)	71

Table 87 shows other factors that prevent a greater use of e-learning. These factors were: (1) Network problems, (2) Needing more computers, (3) Difficulties in managing e-learning classes, (4) Most teachers face difficulties in learning to deal with technology, (5) Internet access is not available in class, (6) The internet is very slow, and (7) There is only one e-learning centre in the school.

Table 87: Factors Preventing Greater Use of E-learning

Other factors preventing a greater use of e-learning
Network problems
Need for more computers
Managing an e-learning class is very difficult
Most teachers face difficulties in learning about technology
Internet access is not available in the class
The internet is very slow
There is only one e-learning centre in the school

Table 88 displays the number of teachers who had a computer at home and shows that all teachers had a computer at home; 97.4% of teachers had a computer at home with an internet connection.

Table 88: Teachers Having a Computer at Home

Having a computer at home	Response %	Response N
Yes, without internet connection	2.6%	2
Yes, with internet connection	97.4%	76
No	0.0%	0

## Part 6: EduWave and Content

Table 89 shows the number of teachers using EduWave (the e-learning portal) and the reasons for not using it. The table shows that 55.6% of teachers did use the e-learning portal.

Table 89: Teachers Using EduWave

Using EduWave	Response %	Response N
Yes	55.6%	30
No / why (please specify)	44.4%	24

Using EduWave	Response %	Response N
<ul style="list-style-type: none"> <li>• There is not enough time at school</li> <li>• Do not know how to use it</li> <li>• Do not know about it</li> <li>• Nobody asked me to use the portal</li> <li>• Internet speed is not helping the use of the portal</li> <li>• The internet is often not working</li> <li>• The network is not helping the use of the portal</li> <li>• The portal is never working</li> <li>• No one cares about it</li> </ul>		

Table 90 shows how often teachers were using the following methods and equipment in delivering learning and teaching in classrooms or e-learning centres. It indicates that most teachers used MS PowerPoint, data projectors, Internet websites, CD ROMs, and Email comments for the delivery of learning and teaching in classrooms or e-learning centres. Also, the table shows that most teachers never used the EduWave website, eBooks, forums, the video-sharing site, YouTube, or the social network site, Facebook.

Table 90: Teachers Using ICT in Learning

	(1) Never	(2) Few Times	(3) Some Times	(4) Many Times	(5) All the time	N/A	N
1 MS PowerPoint	5.2% (4)	9.1% (7)	9.1% (7)	24.7% (19)	<b>51.9%</b> <b>(40)</b>	0.0% (0)	77
2 Interactive Whiteboards (Smart Boards)	23.0% (17)	16.2% (12)	<b>28.4%</b> <b>(21)</b>	12.2% (9)	13.5% (10)	6.8% (5)	74
3 Data projectors	13.2% (10)	10.5% (8)	11.8% (9)	26.3% (20)	<b>35.5%</b> <b>(27)</b>	2.6% (2)	76
4 Class notes “online”	<b>42.5%</b> <b>(31)</b>	16.4% (12)	12.3% (9)	9.6% (7)	9.6% (7)	9.6% (7)	73
5 Book Zero (eBook)	<b>45.9%</b> <b>(34)</b>	16.2% (12)	13.5% (10)	6.8% (5)	10.8% (8)	6.8% (5)	74
6 Internet websites	18.2% (14)	14.3% (11)	<b>24.7%</b> <b>(19)</b>	15.6% (12)	<b>24.7%</b> <b>(19)</b>	2.6% (2)	77
7 EduWave website	<b>36.5%</b>	13.5%	18.9%	13.5%	10.8%	6.8%	74

CHAPTER 6: FINDINGS FROM SECOND FIELDWORK

	(1) Never	(2) Few Times	(3) Some Times	(4) Many Times	(5) All the time	N/A	N
	<b>(27)</b>	(10)	(14)	(10)	(8)	(5)	
8 Discussion boards	<b>51.9%</b> <b>(40)</b>	16.9% (13)	9.1% (7)	3.9% (3)	6.5% (5)	11.7% (9)	77
9 Video conferencing	<b>53.3%</b> <b>(40)</b>	16.0% (12)	6.7% (5)	5.3% (4)	6.7% (5)	12.0% (9)	75
10 TV/VCR/DVD	<b>47.3%</b> <b>(35)</b>	13.5% (10)	10.8% (8)	10.8% (8)	16.2% (12)	1.4% (1)	74
11 CD Roms	20.8% (15)	13.9% (10)	11.1% (8)	22.2% (16)	<b>27.8%</b> <b>(20)</b>	4.2% (3)	72
12 Email comments	26.3% (20)	10.5% (8)	14.5% (11)	18.4% (14)	<b>28.9%</b> <b>(22)</b>	1.3% (1)	76
13 Email for assessment feedback	<b>29.3%</b> <b>(22)</b>	12.0% (9)	18.7% (14)	14.7% (11)	18.7% (14)	6.7% (5)	75
14 Mobile devices (PDAs etc)	<b>32.9%</b> <b>(25)</b>	14.5% (11)	15.8% (12)	13.2% (10)	21.1% (16)	2.6% (2)	76
15 Weblogs (blog)	<b>54.7%</b> <b>(41)</b>	10.7% (8)	9.3% (7)	6.7% (5)	8.0% (6)	10.7% (8)	75
16 Microblogging (e.g. Twitter)	<b>58.4%</b> <b>(45)</b>	11.7% (9)	1.3% (1)	6.5% (5)	7.8% (6)	14.3% (11)	77
17 Video-sharing (e.g. YouTube)	<b>45.3%</b> <b>(34)</b>	16.0% (12)	10.7% (8)	10.7% (8)	12.0% (9)	5.3% (4)	75
18 Picture-sharing (e.g. Flickr)	<b>59.5%</b> <b>(44)</b>	10.8% (8)	8.1% (6)	4.1% (3)	4.1% (3)	13.5% (10)	74
19 Wikis	<b>62.2%</b> <b>(46)</b>	13.5% (10)	4.1% (3)	4.1% (3)	1.4% (1)	14.9% (11)	74
20 Document-sharing (e.g. Scribd)	<b>59.2%</b> <b>(45)</b>	10.5% (8)	5.3% (4)	2.6% (2)	2.6% (2)	19.7% (15)	76
21 Social bookmarking (e.g. delicious)	<b>56.0%</b> <b>(42)</b>	16.0% (12)	4.0% (3)	2.7% (2)	2.7% (2)	18.7% (14)	75
22 Forums	<b>38.7%</b> <b>(29)</b>	21.3% (16)	12.0% (9)	14.7% (11)	8.0% (6)	5.3% (4)	75
23 Social networks such as Facebook	<b>50.0%</b> <b>(37)</b>	18.9% (14)	9.5% (7)	5.4% (4)	4.1% (3)	12.2% (9)	74

Table 91 shows the number of teachers' courses available in EduWave and it was noticed that 50% of teachers' courses are available in EduWave. Table 92 shows the proportion of teachers' work which involved the delivery of e-learning and it was noticed that, for 35.8% of teachers, the proportion of work involved in delivering e-learning was about 0-20%.

Table 91: Teachers courses available in EduWave

	Response %	Response N
Yes	50.0%	35
No	50.0%	35

Table 92: Teachers' Work Involving E-Learning

	Response %	Response N
0-20%	<b>35.8%</b>	19
21-40%	28.3%	15
41-60%	11.3%	6
61-80%	9.4%	5
81-100%	15.1%	8

Table 93 reveals how often teachers used EduWave in their courses. The table indicates that most teachers never used EduWave: (1) to post lecture notes, (2) to display course calendar/ timetable information, (3) to track an individual student's progress, (4) to post tests and quizzes, (5) as a notice board, (6) as a chat-room for discussion with/between students, and (7) to email feedback to learners.

Table 93: Frequency of Teachers' Use of EduWave

	(1) Never	(2) Few Times	(3) Some Times	(4) Many Times	(5) All the time	N/A	N
1) To post lecture notes	<b>63.6%</b> <b>(49)</b>	13.0% (10)	5.2% (4)	7.8% (6)	9.1% (7)	1.3% (1)	77

	(1) Never	(2) Few Times	(3) Some Times	(4) Many Times	(5) All the time	N/A	N
2) To display course calendar/ timetable information	<b>60.0%</b> (45)	14.7% (11)	5.3% (4)	8.0% (6)	10.7% (8)	1.3% (1)	75
3) For tracking an individual student's progress	<b>60.5%</b> (46)	14.5% (11)	6.6% (5)	6.6% (5)	10.5% (8)	1.3% (1)	76
4) For posting tests and quizzes	<b>58.4%</b> (45)	13.0% (10)	7.8% (6)	10.4% (8)	9.1% (7)	1.3% (1)	77
5) As a notice board	<b>64.9%</b> (48)	12.2% (9)	8.1% (6)	8.1% (6)	5.4% (4)	1.4% (1)	74
6) As a chat-room for discussion with/between students	<b>73.7%</b> (56)	9.2% (7)	6.6% (5)	3.9% (3)	5.3% (4)	1.3% (1)	76
7) To email feedback to learners	<b>59.2%</b> (45)	13.2% (10)	6.6% (5)	11.8% (9)	7.9% (6)	1.3% (1)	76

### Part 7: Outcomes

Table 94 illustrates the impact of using technology on teaching and learning outcomes. It can be seen that most teachers reported that using technology in teaching and learning had done a great deal to improve retention, had made learning a more enjoyable experience, made students more motivated, produced higher overall grades, made students more employable, facilitated better record keeping, and made the management of courses easier.

Table 94: Impact of Technology on Teaching and Learning Outcomes

	(1) None	(2) Little	(3) Neutral	(4) Good Deal	(5) A Great Deal	D/K	N
1 Improved retention	5.1% (4)	12.8% (10)	16.7% (13)	21.8% (17)	<b>42.3%</b> (33)	1.3% (1)	78
2 More enjoyable	1.3% (1)	9.0% (7)	12.8% (10)	23.1% (18)	<b>52.6%</b> (41)	1.3% (1)	78

	(1) None	(2) Little	(3) Neutral	(4) Good Deal	(5) A Great Deal	D/K	N
learning experience							
3 Making students more motivated	2.6% (2)	5.2% (4)	14.3% (11)	29.9% (23)	<b>46.8%</b> <b>(36)</b>	1.3% (1)	77
4 Higher overall grades	6.7% (5)	13.3% (10)	21.3% (16)	<b>28.0%</b> <b>(21)</b>	<b>28.0%</b> <b>(21)</b>	2.7% (2)	75
5 Making students more employable	5.1% (4)	6.4% (5)	11.5% (9)	23.1% (18)	<b>50.0%</b> <b>(39)</b>	3.8% (3)	78
6 Better record keeping	2.7% (2)	2.7% (2)	18.7% (14)	22.7% (17)	<b>49.3%</b> <b>(37)</b>	4.0% (3)	75
7 Easier management of courses	11.5% (9)	14.1% (11)	11.5% (9)	19.2% (15)	<b>39.7%</b> <b>(31)</b>	3.8% (3)	78

Table 95 shows that teachers believed there was a relationship between e-learning and the creation of a sense of collaborative teamwork and “groupness” between students. It was noticed that 82.5% of teachers agreed that e-learning created a sense of collaborative teamwork and “groupness” among students.

Table 95: E-Learning Creating Collaborative Teamwork

	Response %	Response N
Yes	82.5%	52
No	17.5%	11

Table 96 shows that student learning outcomes have improved because of the application of technology. Around a third of teachers (32.1%) believed that the application of technology had improved students' learning outcomes a good deal while another third (35.1%) believed that using technology had improved outcomes a great deal. They also believed that learning outcomes will further improve in the future with updated applications of technology.

Table 96: Improvements in Learning Outcomes

	(1) None	(2) Little	(3) Neutral	(4) Good Deal	(5) A Great Deal	D/K	N
Students' learning outcomes have improved because of the application of technology so far	5.1% (4)	16.7% (13)	16.7% (13)	<b>32.1%</b> <b>(25)</b>	28.2% (22)	1.3% (1)	78
Learning outcomes will improve in the future because of the application of technology	2.7% (2)	14.9% (11)	10.8% (8)	<b>35.1%</b> <b>(26)</b>	<b>35.1%</b> <b>(26)</b>	1.4% (1)	74

### Teachers' Questionnaire Summary

Teachers' questionnaires show that the average proportion of teachers' work which involves delivering e-learning is 0-20%. This indicates that teachers are not using ICTs in learning and there is no real change in the learning system as teachers are only using e-learning for presentations with data projectors. The e-learning concept for most teachers is to use presentations and data projectors in learning without using any support technologies and ICTs. Clearly, this show that teachers are not using any type of virtual learning environment (VLE) in learning and that they do not integrate VLEs as part of the teaching and learning process. They only use MS PowerPoint presentations with a data projector in some lessons as a way of using of e-learning. Teachers are not using ICTs that allow interaction and knowledge-sharing with participants and they are not providing access to a wide range of resources which help students to 'Learn Any Where' and to 'Learn Any Time'. This shows that no real differences have been seen in the ways technology has been integrated into the classroom for teachers using technology. Researchers (Cuban, 2001; Laffey, 2004; Norris et al., 2003; Christensen et al., 2010) have mentioned that although huge amounts of money have been spent, no real difference has been seen to the ways technology has been integrated into the classroom. This is showing that teachers are adopting learning strategy that are not depend on technologies and ICTs.

## 6.4 Staff Questionnaire

The third questionnaire is staff questionnaire which consisted of the following five parts: (1) Staff Information, (2) Technology, (3) Support, (4) Social Administration; and (5) Final.

### Part 1: Staff Information

The number of staff respondents totalled 66 and this section presents their demographic characteristics. These included: (1) Respondents by type of staff, (2) Respondents by school, (3) Respondents by working experiences, (4) Respondents by gender, (5) Respondents by nationality, (6) Respondents by age, and (7) Respondents by educational level.

**Respondents by Type of Staff:** Table 97 shows the demographics of respondents by type of staff. It can be seen that 12.1% of respondents were from management (school principals / assistant principals), 27.3% were social administrators and 60.6% were support workers. **Respondents by School:** Table 98 presents the demographics of respondents by school and shows that 4.5% of respondents were from Sheikh Khalifa Technological Institute, 10.6% were from Al Hidaiya Al Khalifia Secondary School, 9.1% from Ahmed Al Omran Secondary School, 10.6% from East Rifa Secondary School, 10.6% from Hamad Town Secondary School, 7.6% from Al Istiqlal Secondary Commercial School, 18.2% from Al Hooraa Secondary Commercial School, and 3.0% of respondents were from Sar Secondary School.

Table 97: Respondents by Type of Staff

	Response %	Response N
Management (school principals / assistant principals)	12.1%	8
Social administrators	27.3%	18
Support workers	<b>60.6%</b>	40
<b>Answered Question</b>		<b>66</b>
<b>Skipped Question</b>		<b>0</b>

Table 98: Respondents by School

School	Response %	Response N
Sheikh Khalifa Technological Institute	4.5%	3
Al Hidaiya Al Khalifia Secondary School	10.6%	7
Ahmed Al Omran Secondary School	9.1%	6
East Rifa Secondary School	13.6%	9
Hamad Town Secondary School	10.6%	7
Al Istiqlal Secondary Commercial School	7.6%	5
Al Hooraa Secondary Commercial School	18.2%	12
Sar Secondary School	25.8%	17
<b>Total</b>	<b>100%</b>	<b>66</b>

**Respondents by Working Experience:** Table 99 explains the distribution of the participants by their working experience. It was noticed 12.1% had 1-5 years working experience, 42.4% had a working experience of 6-10 years, 27.3% had 11-20 years experience, 13.6% had 21-30 years working experience, and 4.5% had 31-40 years of working experience; no respondents had more than 40 years working experience.

**Respondents by Gender:** Table 100 and Table 101 illustrate the distribution of the participants by gender. This distribution shows that 34.8% (23) were male and 65.2% (43) were female.

Table 99: Respondents by Working Experience

Years of Experience	Response %	Response N
1-5 years	12.1%	8
6-10 years	42.4%	28
11-20 years	27.3%	18
21-30 years	13.6%	9
31-40 years	4.5%	3
40 + years	0.0%	0
<b>Total</b>	<b>100%</b>	<b>66</b>

Table 100: Respondents by Gender

Gender	Response	Response
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	%	N
<b>Male</b>	34.8%	23
<b>Female</b>	65.2%	43
<b>Total</b>	<b>100%</b>	<b>66</b>

Table 101: Respondents by Gender Based on Schools

School	Response %	Response N
<b>Male Schools</b>		
Sheikh Khalifa Technological Institute	4.5%	3
Al Hidayya Al Khalifia Secondary School	10.6%	7
Ahmed Al Omran Secondary School	9.1%	6
Hamad Town Intermediate Secondary School	10.6%	7
<b>Total from Male Schools</b>	<b>34.8%</b>	<b>23</b>
<b>Female Schools</b>		
East Rifa Secondary School	13.6%	9
Al Istiqlal Secondary Commercial School	7.6%	5
Al Hooraa Secondary Commercial School	18.2%	12
Sar Secondary School	25.8%	17
<b>Total from Female Schools</b>	<b>65.2%</b>	<b>43</b>
<b>Total</b>	<b>100%</b>	<b>84</b>

**Respondents by Nationality:** Table 102 displays the distribution of the participants by nationality and this table shows that all staff respondents were Bahraini.

**Respondents by Age:** Table 103 shows the distribution of the participants by age, revealing that 30.3% of the staff were between 24-32 years, 45.5% were between 33-42 years, and 24.2% of teachers were between 43-55 years.

Table 102: Respondents by Nationality

Nationality	Response %	Response N
<b>Bahraini</b>	100%	66
<b>Other</b>	0	0

<b>Total</b>	<b>100%</b>	<b>66</b>
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Table 103: Respondents by Age

<b>Year</b>	<b>Response %</b>	<b>Response N</b>
<b>20-23</b>	0.0%	0
<b>24-32</b>	30.3%	20
<b>33-42</b>	45.5%	30
<b>43-55</b>	24.2%	16
<b>55+</b>	0.0%	0
<b>Total</b>	<b>100%</b>	<b>66</b>

**Respondents by Educational Level:** Table 104 shows the distribution of the participants by their level of education. It can be seen that 6.1% of staff held a secondary school certificate, 22.7% held a Diploma degree, 63.6% held a Bachelor’s degree and 7.6% held a Master’ degree.

Table 104: Respondents by Educational Level

<b>Year</b>	<b>Response %</b>	<b>Response N</b>
<b>Secondary school</b>	6.1%	4
<b>Diploma Degree</b>	22.7%	15
<b>Bachelor’s Degree</b>	63.6%	42
<b>Master’s Degree</b>	7.6%	5
<b>Doctorate Degree</b>	0.0%	0
<b>Total</b>	<b>100%</b>	<b>86</b>

## **Part 2: Technology Usage**

Table 105 shows the enthusiasm of staff towards ICT/technology generally and reveals that most staff (about 48.4%) were very enthusiastic about using ICT/technology.

Table 105: Staff Enthusiastic towards ICT/Technology

Year	Response %	Response N
<b>(1) Not at all enthusiastic</b>	6.3%	4
<b>(2) Not enthusiastic</b>	9.4%	6
<b>(3) Neutral</b>	23.4%	15
<b>(4) Enthusiastic</b>	10.9%	7
<b>(5) Very Enthusiastic</b>	<b>48.4%</b>	31
<b>Too little experience</b>	1.6%	1
<b>Total</b>	<b>100%</b>	<b>64</b>

Table 106 shows how much staff time was consumed using ICTs. It reveals that 77.3% of staff used a computer daily, 57.6% used email daily, 59.1% of staff used internet websites daily, and 64.6% used Short Message Service (SMS) daily.

Table 106: Frequency of Staff Using ICTs

	Daily	Weekly	Monthly	Rarely used	Never	D/K	N
1 Computers	<b>77.3%</b> (51)	6.1% (4)	4.5% (3)	7.6% (5)	4.5% (3)	0.0% (0)	6 6
2 Email	<b>57.6%</b> (38)	12.1% (8)	10.6% (7)	6.1% (4)	13.6% (9)	0.0% (0)	6 6
3 Internet websites	<b>59.1%</b> (39)	21.2% (14)	7.6% (5)	6.1% (4)	6.1% (4)	0.0% (0)	6 6
4 Short Message Service (SMS)	<b>64.6%</b> (42)	18.5% (12)	1.5% (1)	7.7% (5)	7.7% (5)	0.0% (0)	6 5
5 Weblogs (blog)	3.1% (2)	9.2% (6)	6.2% (4)	10.8% (7)	<b>52.3%</b> (34)	18.5% (12)	6 5
6 Microblogging (e.g. Twitter)	0.0% (0)	1.5% (1)	1.5% (1)	1.5% (1)	<b>60.0%</b> (39)	35.4% (23)	6 5

	Daily	Weekly	Monthly	Rarely used	Never	D/K	N
7 Video-sharing (e.g. YouTube)	6.1% (4)	21.2% (14)	7.6% (5)	16.7% (11)	<b>39.4%</b> <b>(26)</b>	9.1% (6)	6 6
8 Picture-sharing (e.g. Flickr)	0.0% (0)	1.5% (1)	4.6% (3)	7.7% (5)	<b>53.8%</b> <b>(35)</b>	32.3% (21)	6 5
9 Wikis	0.0% (0)	0.0% (0)	1.6% (1)	0.0% (0)	<b>51.6%</b> <b>(33)</b>	46.9% (30)	6 4
10 Document-sharing (e.g. Scribd)	0.0% (0)	0.0% (0)	0.0% (0)	4.6% (3)	<b>44.6%</b> <b>(29)</b>	50.8% (33)	6 5
11 Social bookmarking (e.g. delicious)	1.5% (1)	1.5% (1)	0.0% (0)	9.1% (6)	<b>45.5%</b> <b>(30)</b>	42.4% (28)	6 6
12 Forums	13.8% (9)	23.1% (15)	10.8% (7)	18.5% (12)	<b>24.6%</b> <b>(16)</b>	9.2% (6)	6 5
13 Social networks (e.g. Facebook)	9.2% (6)	7.7% (5)	1.5% (1)	9.2% (6)	<b>50.8%</b> <b>(33)</b>	21.5% (14)	6 5
14 Podcasts	1.5% (1)	0.0% (0)	0.0% (0)	0.0% (0)	<b>49.2%</b> <b>(32)</b>	49.2% (32)	6 5
15 Chatting software	3.1% (2)	7.7% (5)	9.2% (6)	15.4% (10)	<b>55.4%</b> <b>(36)</b>	9.2% (6)	6 5
16 MySpace	0.0% (0)	1.6% (1)	0.0% (0)	1.6% (1)	<b>50.0%</b> <b>(32)</b>	46.9% (30)	6 4

Table 107 displays the number of staff who were using new technologies such as Facebook, YouTube, Flickr, blogs, Twitter and reveals that most staff did not use these technologies.

Table 107: Staff Using New Technologies

	Response %	Response N
<b>Yes</b>	45.2%	28
<b>No</b>	54.8%	34

Table 108 illustrates the staff’s use of social networks, and video- and picture-sharing websites. It shows that most staff did not use social networks, video-sharing websites or picture-sharing websites. However, it should be noted that some staff used a Blackberry Messenger as a form of social networking. Table 109 shows staff’s use of the internet via mobiles and illustrates that 18.8% of staff used the internet on their mobiles while 81.3% did not use this facility.

Table 108: Staff’s Use of Facebook, YouTube and Flickr

Use	Response %	Response N
<b>Social Networks</b>		
<b>Facebook</b>	16.7%	11
<b>Not using</b>	80.3%	53
<b>Other</b>	7.6%	5
<b>Video-sharing websites</b>		
<b>YouTube</b>	36.5%	23
<b>Not using</b>	63.5%	40
<b>Other</b>	1.6%	1
<b>Picture-sharing websites</b>		
<b>Flickr</b>	3.1%	2
<b>Not using</b>	89.1%	57
<b>Other</b>	7.8%	5

Table 109: Staff Use of the Internet on Mobiles

Using Internet on mobile	Response %	Response N
<b>Yes</b>	18.8%	12
<b>No</b>	81.3%	52

Table 110 shows how staff usually worked with other teachers and other staff. It can be seen here that most staff worked with other teachers and staff face-to-face and/or by

telephone. Table 111 offers the number of staff who had a computer at home and shows that the majority (98.5%) had a computer at home, while 95.4% of staff had a computer at home with an internet connection.

Table 110: How Staff Work with Other Staff

	Response %	Response N
<b>Face to face</b>	91.9%	57
<b>Telephone</b>	87.1%	54
<b>Email</b>	43.5%	27
<b>Chat room</b>	4.8%	3
<b>Discussion forum</b>	3.2%	2
<b>Message (SMS)</b>	48.4%	30
<b>Social network (e.g. Facebook)</b>	4.8%	3
<b>Other</b>	0.0%	0

Table 111: Staff Having a Computer at Home

Having computer at home	Response %	Response N
Yes, without internet connection	3.1%	2
Yes, with internet connection	95.4%	62
No	1.5%	1

Table 112 presents the number of staff who used EduWave (the e-learning portal). It can be seen that most staff (75.4%) did not use EduWave; in fact, only 24.6% of them said they used it.

Table 112: Staff Using EduWave

Using EduWave	Response %	Response N
Yes	24.6%	16
No / why (please specify)	75.4%	49
<b>Reason</b>		
<ul style="list-style-type: none"> <li>• Do not have time</li> </ul>		

- **Not trained**
- **I do not need it**
- **I do not have a computer**
- **As staff I do not benefit from this portal**
- **I do not know about it**
- **I do not know how to use it**

### 6.4.1 Part 3: Support

Table 113 explains how satisfied staffs were with the IT support offered. It is noticeable that 27.6% of staffs were very satisfied with the IT support offered in relation to their use of the intranet.

Table 113: Staff Satisfaction with Regard to IT Support

	(1) Very Dissatisfied	(2) Dissatisfied	(3) Neutral	(4) Satisfied	(5) Very Satisfied	N/A	N
1) Use of the intranet	6.9% (4)	13.8% (8)	24.1% (14)	22.4% (13)	<b>27.6%</b> <b>(16)</b>	5.2% (3)	58
2) Hardware	23.2% (13)	14.3% (8)	<b>32.1%</b> <b>(18)</b>	17.9% (10)	7.1% (4)	5.4% (3)	56
3) Software	15.8% (9)	22.8% (13)	<b>21.1%</b> <b>(12)</b>	17.5% (10)	15.8% (9)	7.0% (4)	57
4) Staff development & training	16.7% (9)	18.5% (10)	<b>27.8%</b> <b>(15)</b>	18.5% (10)	14.8% (8)	3.7% (2)	54

Table 114 shows the number of training courses that staff had attended in the last three years that were designed to improve their technology skills. It illustrates that 44.4% of staff never attended any such course in the last three years.

Table 114: Number of Training Courses for Staff

Number of Training Courses	Response %	Response N
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0	44.4%	24
1	25.9%	14
2	13.0%	7
3	9.3%	5
4	3.7%	2
5	1.9%	1
6	1.9%	1
<b>Total</b>	<b>100%</b>	<b>54</b>

Table 115 shows staff satisfaction regarding the training courses that were designed to improve their technology skills. It can be noticed that 23.3% of staff were neutral and 23.3% were satisfied with the training courses that were designed to improve their technology skills. Table 116 presents the type of support staff requested and shows that 72.9% of them requested help with basic IT problems while 64.6% of staffs requested help with network problems.

Table 115: Staff Satisfaction with Training Courses

	Response %	Response N
(1) Very Dissatisfied	7.0%	3
(2) Dissatisfied	2.3%	1
(3) Neutral	25.6%	11
(4) Satisfied	23.3%	10
(5) Very Satisfied	18.6%	8
N/A	23.3%	10
<b>Total</b>	<b>100%</b>	<b>43</b>

Table 116: Type of Support Staff Requested

	Response %	Response N
Help with basic IT problems	72.9%	35

	Response %	Response N
Help with network problems	64.6%	31
Help in using EduWave	4.2%	2
Using specific learning software	0.0%	0
Other	8.3%	4
<b>Total</b>	<b>100%</b>	<b>48</b>

#### 6.4.2 Part 4: Social Administrators

Table 117 shows the level of preparedness of Social Administrators who deal with the problems caused by ICT and technologies that face students. It can be seen that most of the Social Administrators felt they were not at all prepared to deal with the problems that faced students with regard to ICT and technologies. Table 118 shows whether Social Administrators reported problems that were caused by ICT and technologies and this illustrates that 60.0% of them did report problems caused by ICT and technologies.

Table 117: Social Administrators' Level of Preparedness

	Response %	Response N
(1) Not at all	38.1%	8
(2) Not Well	28.6%	6
(3) Neutral	14.3%	3
(4) Well	9.5%	2
(5) Very Well	9.5%	2
<b>Total</b>	<b>100%</b>	<b>48</b>

Table 118: Social Administrators Reporting Problems

	Response %	Response N
Yes	60.0%	12
No	40.0%	8

Table 119 illustrates what social administrators believed were the main problems caused by ICTs and technologies and this shows that 57.1% of them strongly agreed that students faced problem in this area while 61.9% strongly agreed that they themselves needed training in this area in order to help students. Furthermore, 81.0% of social administrators strongly agreed that students needed help with problems caused by ICTs and technologies. Table 120 shows methods that help social administrators to solve problems caused by ICT and technologies.

Table 119: Social Administrators and ICT Problems

	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree	N
1) Students faced problems in this area	0.0% (0)	0.0% (0)	9.5% (2)	33.3% (7)	<b>57.1%</b> <b>(12)</b>	21
2) I need training in this area in order to help students	0.0% (0)	4.8% (1)	14.3% (3)	19.0% (4)	<b>61.9%</b> <b>(13)</b>	21
3) Students need help with these problems	0.0% (0)	0.0% (0)	9.5% (2)	9.5% (2)	<b>81.0%</b> <b>(17)</b>	21

Table 120: Help for Social Administrators

Points
Increase sessions for helping social administrators to improve their technology skills
Provide training courses for learning about these problems and how to solve them.
Organise workshops for Social Administrators to learn about these problems so they can learn from their experiences

### **6.4.3 Staffs' Questionnaire Summary**

The results from the staff questionnaire (not teachers) show that few staff were very satisfied with the IT support offered in relation to their use of the intranet. Moreover, many staff had attended no training courses in the last three years that were designed to improve their technology skills as it was shown that nearly half had never attended any such courses in the last three years.



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## Chapter 7: Discussion

*“Research is to see what everybody else has seen, and to think what nobody else has thought” Albert Szent-Gyorgyi  
(1893-1986)*

This chapter presents a discussion of the overall findings of this research in response to the research objectives: (1) Comprehending how teachers and students are using ICTs in learning; (2) Evaluating the current e-learning strategy from the perspective of students, teachers and the e-learning policy; (3) Investigating the role of the Web 2.0 tools in e-learning in terms of e-learning policy, staff, teachers and students; (4) Understanding e-learning, learning theories and redefining the notion of e-learning; and (5) Developing a theoretical framework for an e-learning strategy for the Kingdom of Bahrain. The discussion is divided into sections based on these objectives.

## CHAPTER 7: DISCUSSION

### 7.1 Introduction

The findings from chapter five (FINDINGS FROM FIRST FIELDWORK) and chapter six (FINDINGS FROM SECOND FIELDWORK) show that Web 2.0 and its associated applications and tools have resulted in significant shifts in the ways people connect, communicate, create and share information; these connectivity and communication facilities have created new forms of relationships and patterns of communicating and learning. Based on these results the discussion a number of themes: (1) Comprehending how teachers and students were using ICTs in learning; (2) Evaluating the current e-learning strategy from the perspective of students, teachers and staff; (3) Investigating the role of Web 2.0 tools and technologies, and e-learning in terms of e-learning policy, staff, teachers and students; (4) Understanding e-learning, learning theories and redefining the notion of e-learning; and (5) Exploring value of a theoretical framework for an e-learning strategy for the Kingdom of Bahrain.

### 7.2 Comprehending the Use of ICTs in Learning

The first objective of this discussion is to comprehend how teachers and students are using ICTs in learning and the results are discussed from two points of view: teachers and students.

#### 7.2.1 Teachers

In education, although the results show that teachers were very enthusiastic towards ICT/technology generally and in teaching and learning in particular, the observations showed that teachers were using e-learning only by carrying out presentations with a data projector; they were not using the virtual learning environment “EduWave”; results from the teachers’ questionnaire supported this finding. The results indicate that the majority of teachers were often using MS PowerPoint, data projectors, internet websites and CD-ROMs for delivering learning and teaching in classrooms or e-learning centres; also, most teachers were sometimes using internet websites and interactive whiteboards (smart boards). However, the majority of teachers never used ebooks, the virtual learning environment (EduWave), video-conferencing, TV/VCR/DVD, CD-ROM, email for assessment feedback, mobile devices (PDAs etc.), weblogs (blogs), microblogging (e.g. Twitter), video-sharing (e.g. YouTube), Picture-sharing (e.g.

Flickr), wikis, document-sharing (e.g. Scribd), social bookmarking (e.g. delicious), forums and social networks (Facebook).

The results from the teacher questionnaires show that the average proportion of teachers' work which involves delivering e-learning is 0-20%. This indicates that teachers are not using ICTs in learning and there is no real change in the learning system as teachers are only using e-learning for presentations with data projectors. The e-learning concept for most teachers is to use presentations and data projectors in learning without using any support technologies and ICTs, as students reported in the "Student Questionnaire". Their comments supported the results from the teachers' questionnaire, the observations and the interviews. The students' answers about the types of ICT that teacher were using in learning confirm this finding as it was shown that teachers were generally using "MS PowerPoint" for presentations with a data projector in some lessons; moreover and most teachers never used the following ICTs and technologies as part of learning: interactive boards (smart boards), ebooks such as "Book Zero", internet websites, the virtual learning environment (EduWave), video-conferencing, TV/VCR/DVD, CD, email comments, email for assessment feedback, mobile devices (PDAs etc), weblogs (blogs), microblogging (e.g. Twitter), video-sharing (e.g. YouTube), Picture-sharing (e.g. Flickr), wikis, document-sharing (e.g. Scribd), social bookmarking (e.g. delicious), forums and social networks (Facebook).

This makes clear that teachers are not using any type of virtual learning environment (VLE) in learning and that they do not integrate VLEs as part of the teaching and learning process. They only use MS PowerPoint presentations with a data projector in some lessons as a way of using of e-learning. Teachers are not using ICTs that allow interaction and knowledge-sharing with participants and they are not providing access to a wide range of resources which help students to 'Learn Any Where' and to 'Learn Any Time'.

The research makes clear that by their behaviour teachers see e-learning as occurring in school time only whereas students need a learning system that enhances the learning process, has the potential to improve face-to-face learning and which enables improvements to be made in the efficiency of communication, both student-to-student

and teacher-to-students, as well as allowing documents and learning resources to be shared. Therefore, no real differences have been seen in the ways technology has been integrated into the classroom for teachers using technology in learning as teachers are not using these technologies. These results are in line with the research by (Cuban, 2001; Laffey, 2004; Norris et al., 2003; Christensen et al., 2010) that they mentioned that although huge amounts of money have been spent, no real difference has been seen to the ways technology has been integrated into the classroom.

### **7.2.2 Students**

In order to comprehend how students are using ICTs in learning, it is important to determine which technologies students are using. The findings show that the majority of students are using computers, email, internet websites, SMS, video-sharing (YouTube), forums and social network sites (e.g. Facebook) in their daily lives. The results show that the majority of students were using Facebook as a social network and YouTube as a video-sharing site. In general, students were using these ICTs and technologies in learning while teachers were not using them in learning. The e-learning concept for teachers was to use presentations and data projectors in learning without using any support technologies and ICTs, as students reported in their questionnaire.

Students' answers about the types of ICTs that teacher used as part of learning show that teachers were using MS PowerPoint presentations with a data projector in some lessons but that teachers did not ever use most ICTs and technologies as part of learning. On the other hand, the results show that students were using these technologies both in learning and for creating a learning community. In fact, the results show that most students were using technologies and ICTs in learning as they reported using internet websites, forums, email, mobile devices, Short Message Service (SMS) and social networks (Facebook) on a daily basis in the learning process. However, the official learning portal, EduWave, is used only monthly as the majority of students were using it only to view their exam results.

This generation of “digital natives” consider technology as a fact of life and they are using technologies in a range of learning environments. The findings show the methods students used to work with fellow students on their courses and/or for sharing ideas with them. Students frequently used the telephone and email, but they also used social

networks (Facebook) more than discussion forums to work with other students and to share ideas with them. Moreover, many students mentioned that they were also using Blackberry messengers for work and to share ideas with friend. The findings show that the majority of students were using new technologies, such as YouTube and Facebook, to communicate with their classmates and friends, to comment on friends' posts, share resources among students, ask questions, evaluate the work of others, and to discuss and express support and encouragement for other students. This use of such technologies is creating communities of learners, as Palloff and Pratt (2007) stated. They noted that a community of learners occurs when there is: (1) Active interaction involving both course content and personal communication; (2) Collaborative learning evidenced by comments directed primarily student to student rather than student to instructor; (3) Socially constructed meaning evidenced by agreement or questioning, with the intent to achieve agreement on issues of meaning; (4) Sharing of resources among students; and (5) Expressions of support and encouragement exchanged between students, as well as a willingness to evaluate critically the work of others.

The results show that technologies such as YouTube and Facebook have changed the learning landscape where learners are becoming active participants, creators of knowledge, and seekers of engagement; and where learners are described as actively creating and sharing content and ideas. The results indicate that the majority of students believe that they can learn by using social network sites, video-sharing sites and online forums since majority strongly agreed that these tools enhance collaborative learning. These applications are therefore very useful for students as part of their learning and the results also indicate that most of these technologies are very useful for learning as the results show that most students are using forums, YouTube and Facebook for educational purposes. To comprehend how students are using ICTs in learning, the next section discusses each of the following technologies: (1) Forums, (2) YouTube and (3) Facebook.

### **Forums**

It is important to understand how students are using forums to comprehend how students are using ICTs in learning. Online discussion forums are a common information and communication tool used in education. The results of the students' questionnaire and observations in the schools showed that the majority of students were

using forums in learning; also the majority of students believed they could learn from using forums as they reported they found forums a very useful technological aid as part of their learning. Furthermore, many students recommended forums as a technological application they would like to use for e-learning projects. Clearly, students were using forums as a learning tool that supported and helped them. In short, they considered them an important tool for learning.

Cobos and Pifarre (2008) mentioned that forums are considered to be an important tool for students for knowledge construction and this has been proved by many research studies (Cobos and Pifarre, 2008). In this e-learning project, the findings indicate that students were using forums in learning to: discuss, share resources among students, search for content, and ask questions. The results show that students are using forums as online discussion boards which allow students to discuss learning topics; the main function of a forum is to act as a discussion site where people can hold conversations in the form of posted messages. Also, students were using forums to share resources, such as subject summaries and previous exam answers, among themselves. Moreover, students were using forums for searching and finding learning information such as reports, researches, school exams and notes; they were also using them for asking questions. The results of using forums have been discussed by many researchers as they are an important tool for students in terms of knowledge construction thus improving students' learning outcomes (Thomas, 2002; Cobos and Pifarre, 2008).

### **YouTube**

It is important to understand how students are using YouTube to comprehend how students are using ICT technologies in learning. YouTube has become “the new text” (Prensky, 2010). It is a video-sharing web application that allows users to upload and watch videos, which are then available online, and to embed these videos in users' websites, blogs and mobile devices. Results from student questionnaires and from observations in schools show that the majority of students use YouTube in learning. Watching videos improves learning (Bruhl et al., 2008) as it improves learning content and creates an interactive learning environment (Arguel and Jamet, 2009; Wong et al., 2009; Ayres et al., 2009). The results of this study support this notion as the majority of students said they believed that they could learn by using YouTube and that they considered this to be an effective learning method as it creates a more interactive

learning environment. The majority of students reported that they found YouTube very useful for their learning and, furthermore, many recommended YouTube as an application that they would like to be used in the e-learning project. Obviously, students were using YouTube as a learning tool that supported and helped them to learn.

Students considered YouTube as an important tool because it engaged them and enhanced their learning experience. The results show that YouTube is valuable for students' learning and shed light on how students are using it. Its value depends on how it is used. In general, as a social application for video sharing, YouTube allows users to: (1) Post and tag videos; (2) Post comments in a discussion format; (3) Search for content by keyword or category; (4) Create topical groups and participate in them; and (5) View members' profiles who have posted or commented on videos and see their favourite videos in order to contact them. The findings show that students are learning by using YouTube by: (1) watching videos; (2) sharing videos among students; (3) using the archival function for learning content; (4) searching for content 'videos', (5) social networking and (6) broadcasting and distributing learning materials. The results also indicate that students were using YouTube for learning by watching educational videos related to their subject, thus helping to obtain more in-depth learning. Students were also using YouTube in learning for sharing videos, such as recording a teacher's explanation then sharing the video with classmates, or for uploading previous exam solutions. Moreover, students were using YouTube as an archiving tool for learning content such as videos of experiments. Figure 29 shows how students are using YouTube for learning.

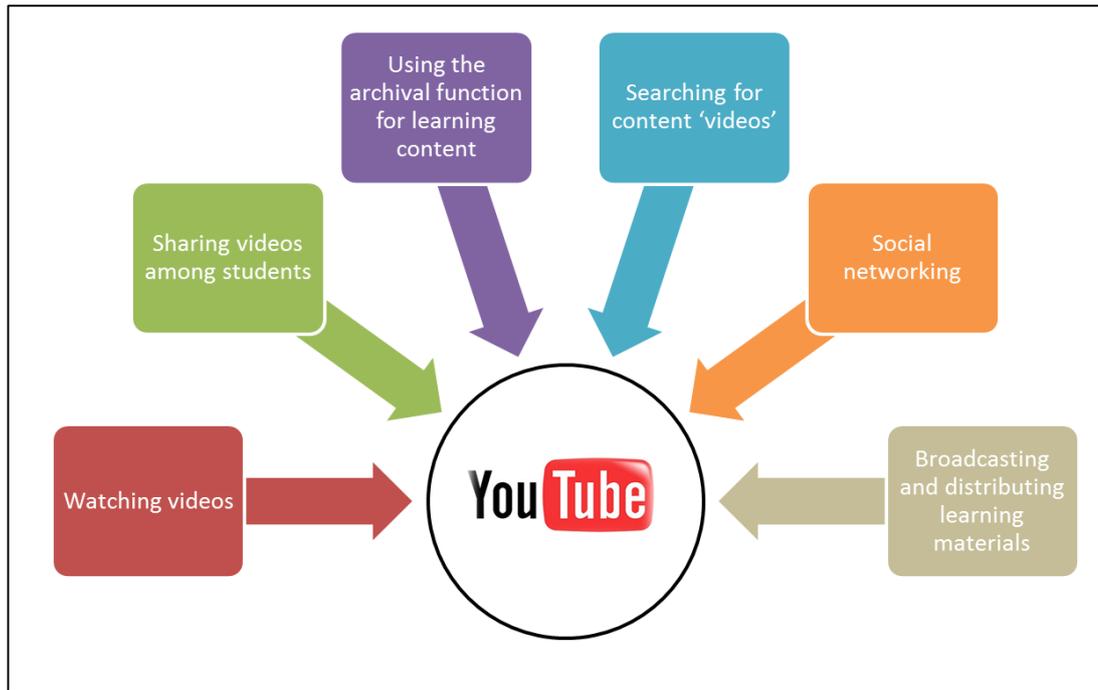


Figure 29: How Students Use YouTube in Learning

Furthermore, students were using YouTube to search for videos that related to their studies, as well as using it as a social network in which they checked the profiles of their classmates and friends for new videos, or simply shared videos with their friends. Also, students used YouTube to broadcast and distribute learning materials, such as lesson videos and course information, thus making students into publishers. Many students were learning by creating videos on YouTube, with many educators believing that the act of creating content in a virtual environment helps learners to understand a subject in more depth (Educause, 2006). The findings of this study confirm that YouTube is a powerful tool in a learning environment for educational and motivational reasons while YouTube, as a social networking tool, engages users in an environment that encourages them to “meet”, read and share opinions, as well as to be part of a community. This notion is supported by Duffy (2008) and Educause (2006). YouTube makes students into publishers as using it as a social-software application in learning movies students from passive learning to active participation, where every learner can contribute and communicate with others, and allowing them to engage with content as commentators and creators. As Snelson (2008a) mentions, this encourages collaboration and discussion among students as they watch and post comments on videos, which makes it an easy way to discuss issues related to course content.

YouTube helps students to learn by them sharing and viewing videos so they are able to amass information by connecting to others' knowledge. YouTube as an ICT provides learners with a tool to create new learning for themselves, and to contribute and store their new knowledge in a communal knowledge base for the benefit of the community's existing and new learners; this is a form of "Communal Constructivism". The results show that YouTube can be seen as an example of communal constructivist e-learning as it is a community of learners in a communal constructivist context. Communal constructivism is "an approach to learning in which students construct their own knowledge as a result of their experiences and interactions with others, and are afforded the opportunity to contribute this knowledge to a communal knowledge base for the benefit of existing and new learners" (Holmes et al., 2001). The majority of students in this study are using YouTube in learning; however, schools and teachers were not using it. Understanding how students are using YouTube sheds light on how they are using ICT and other technologies in learning which is useful for schools and teachers.

### **Facebook**

It is important to understand how students are using Facebook to comprehend how they are using ICTs/technologies in learning. Results from the students' questionnaire and from the observations indicate that students are not using the official e-learning system but are using Facebook to learn. The results support the idea that, for many students, Facebook is becoming an essential part of their lives and is increasingly, for them, a primary tool of communication and electronic socialisation. Results from the students' questionnaire show that the majority of students are using Facebook on a daily basis. A recent study about Facebook and learning supports the notion that Facebook and education can indeed be connected (Towner and Muñoz, 2011) and this study's findings from the students' questionnaires and observations in the schools indicate that the majority of students are using Facebook in learning. Much research supports the use of social network sites in education (Greenhow and Robelia, 2009b; 2009a; Tynes, 2007). In this research, the results show that the majority of students believe that they can learn by using Facebook. Selwyn (2009) explains this by mentioning that social network sites help learners to learn by allowing them to enter new networks of collaborative learning based around interests and affinities which are often not catered for in their immediate educational environment.

The results of this research show that the majority of students reported they found Facebook very useful as part of their learning; furthermore, many recommended Facebook as an application they would like to be used as part of the e-learning project. Obviously, students were using Facebook as a learning tool that supported and helped them. Facebook, as a social networking site, allows users to: (1) present themselves in an online profile, (2) accumulate “friends” who can comment on each other’s pages, (3) view each other’s profiles, (4) join virtual groups based on common interests, and (5) learn each others’ hobbies and interests through the profiles. Facebook, as a social network application, allows students to share many of the desirable qualities of good education technologies; it allows peer feedback and matches the social contexts of learning in schools. Responses to the students’ questionnaire show that students were using Facebook for: (1) Communication between students and teachers, (2) Sharing resources, (3) Its calendar, (4) Asking questions, (5) Discussing, (6) Social networking, (7) Creating a Facebook group for the class, and (8) Collaborating.

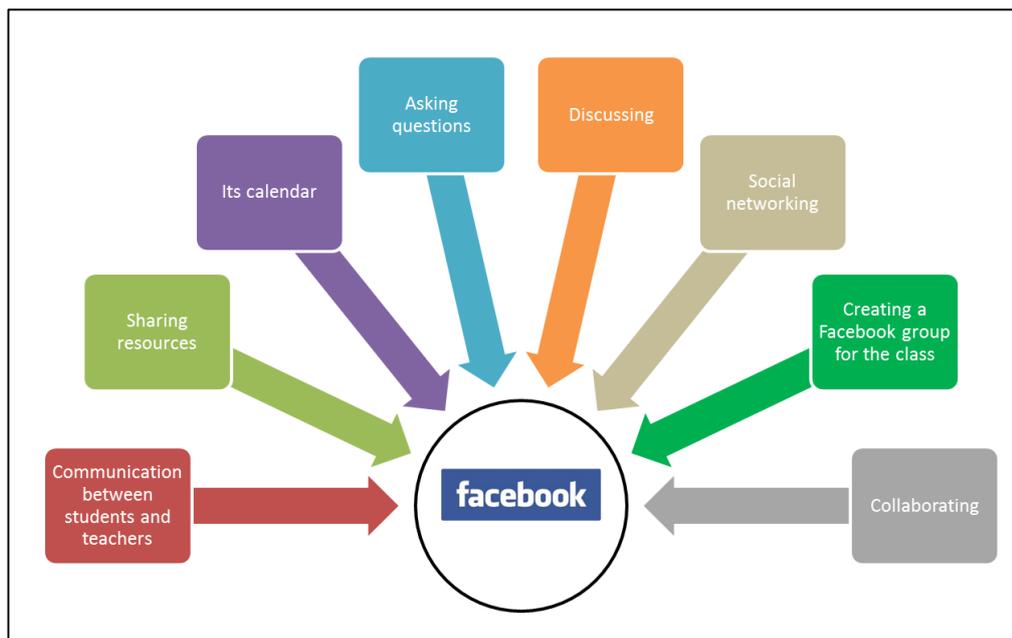


Figure 30: How Students Use Facebook in Learning

Results from the students’ questionnaire show that students are using Facebook as a communication tool among classmates; students also share resources such as photos (such as a class board or lessons), learning documents and videos (such as subject videos or videos of scientific experiments). Students also use Facebook as an online calendar for organising, scheduling and sharing events with friends, such as exam days

or homework submission days; and for asking questions, such as asking for help from their classmates and friends. Facebook is used by students for discussions, as social networks to build and reflect social relations, to share interests and activities, to ask questions, and to discuss a range of issues. In addition, students are using Facebook as an online collaborative tool, as they can work as a group on assignments and homework. Finally, students were using Facebook by creating a Facebook group as an e-learning platform for the class to share and to benefit from all the features mentioned above. Students said:

*“We have, as students, a special group on Facebook to share the latest news from our studies and to share some of the lessons that we have missed or which we did not write in our books; also, we added pictures of the class’s students.”*

*“I use Facebook to document pictures and for groups for the classes in the school. And I use it to record school activities which bring happiness for the person and pride in his activities in the school.”*

From observing students in the schools, it was clear that many students are using Facebook in learning as individuals or as part of a Facebook group for the class. The results from analysing the Facebook group are supported by results from the student questionnaires and observations: these show that students are using the Facebook group as a comprehensive e-learning platform, a virtual learning environment (VLE) and/or as a learning management system (LMS). The Facebook group has an important role in students’ learning and the analysis of this group offers a greater understanding of how students use Facebook since it can be seen that the Facebook group encourages students to share and create learning materials, such as the exam timetable, that are useful for students. Moreover, the findings show that the students were using the Facebook group as a learning community and for: (1) Communicating among themselves, (2) Sharing resources, (3) Using the calendar, (4) Social networking, (5) Commenting on friends’ posts, (6) Asking questions, (7) Evaluating the work of others, (8) Discussing, and (9) Expressing support and encouragement for other students.

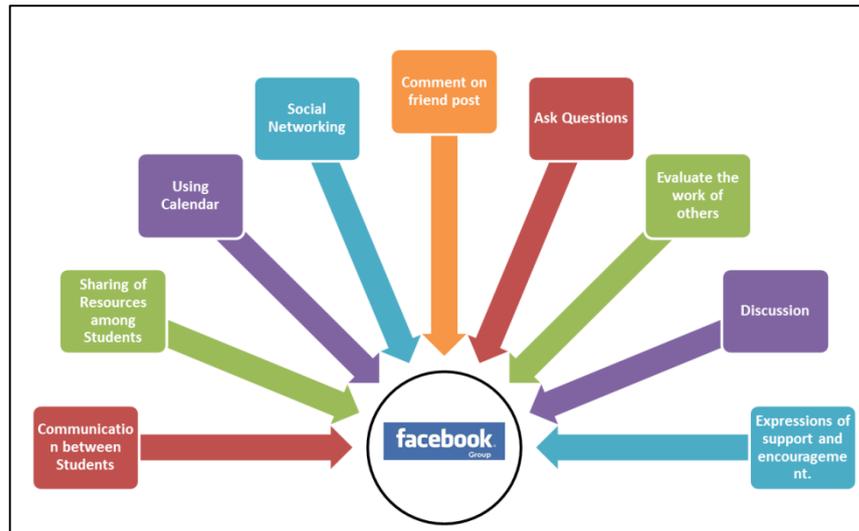


Figure 31: How Students Use the Facebook Group in Learning

Findings regarding the Facebook group show that students are using the group to share resources such as school documents (e.g. an exam timetable created by a student); additionally, they share lecture notes from a whiteboard by taking photos using a mobile or a conventional camera. Figure 32 shows these whiteboard lecture notes on a Facebook group photo. Moreover, students share videos, such as video records of experiments, since advances in technology now allow students to record and edit videos easily which have been recorded using a camera, mobile or smartphone. Such videos were shared by students by uploading them directly onto Facebook or by using video-sharing sites such as YouTube. Furthermore, students were sharing, with their friends, homework and previous exam solutions using the Facebook Group. Findings from an analysis of this Facebook group show that students were using the group as an online class calendar for organising, scheduling and sharing events with friends. Using an online calendar makes it easy for students to keep track of class events such as exam days or homework submission days.

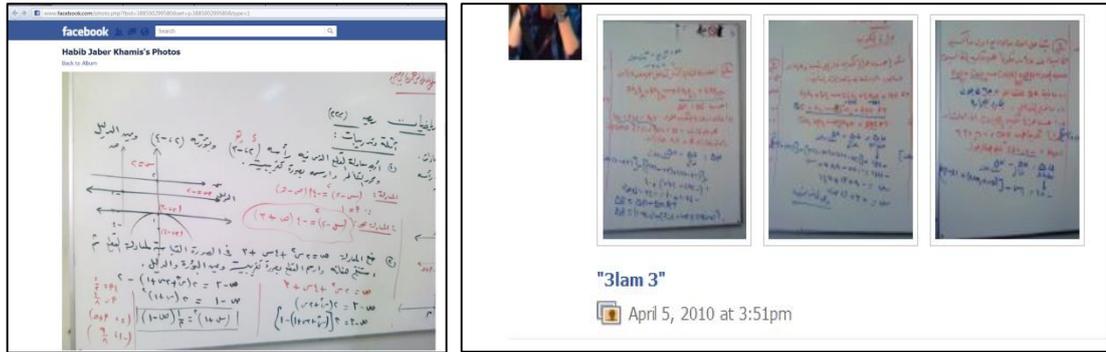


Figure 32: Lecture Notes from a Photo of a Whiteboard shared by the Facebook Group

The results from analysing the Facebook group support results from the student questionnaires and observations; they show that students were using the Facebook group as a comprehensive e-learning platform, as a virtual learning environment (VLE), as a Learning Management System (LMS), and as a Content Management System (CMS). The majority of students were using Facebook in general and for learning while, however, schools and teachers were not using Facebook for educational purposes. These results also support Towner and Muñoz (2011) argument that educators should start to integrate Facebook into academic lives because of students' level of personal involvement and the time they spend with Facebook, coupled with Facebook's ability to create faster community development (Towner and Muñoz, 2011). Facebook is creating a community of learners. Palloff and Pratt (2007) state that a community of learners occurs when there is: (1) Active interaction involving both course content and personal communication; (2) Collaborative learning evidenced by comments directed primarily student to student rather than student to instructor; (3) Socially constructed meaning evidenced by agreement or questioning, with the intent to achieve agreement on issues of meaning; (4) Sharing of resources among students; and (5) Expressions of support and encouragement exchanged between students, as well as willingness to critically evaluate the work of others. Therefore, students created a community of learners by using Facebook and such communities are the key to successful and effective e – learning, as mentioned by researchers such as (Palloff and Pratt, 2007; Gunawardena and Zittle, 1997).

Furthermore, the social dimension in learning allows learners to achieve higher levels of learning as students who feel socially connected to other students and faculty are more likely to persist in coursework and achieve a higher level of learning than

those who report being less connected (Woods and Baker, 2009, p. 1620). Such tools, in terms of the social dimension, provide many benefits for learners (Butler, 2001) as they support and develop interpersonal relationships between students (Hiltz, 1984; Rheingold, 1993), allow students to share knowledge, and encourage discussion (Kraut et al., 1996; Abbot, 1988). In addition, they facilitate collective activities between students (Butler, 2001), allow them to access resources and distribute their ideas quickly (Walther, 1996; Constant et al., 1996), and provide social and emotional support (Walther, 1996; Constant et al., 1996).

Based on constructivist learning theory, educational materials need to be provided in such a way that helps students to discover things for themselves rather than being told by an instructor or machine (Lin and Hsieh, 2001). This can help learners to take more responsibility for their own learning and communicate with their peers to find information beyond textbooks (Barker and Dickson, 1996). Web 2.0 tools, such as Facebook, have helped students to discover and learn for themselves via different materials provided by others on Facebook and YouTube, without the teacher telling them to do this. At the same time, while most teachers did not use the Web 2.0 tools, such applications can help students in the future to take more responsibility for their own learning and to find the information beyond what their teachers give them. These technologies are very useful for students as part of their learning as they enhance collaboration. Furthermore, Facebook provides students with an interactive space for learning, creating and sharing by clicking and linking with web-based applications. Ally (2003) mentions that learning should be interactive in order to support higher-level learning and social presence. This helps learners to develop new knowledge, skills and attitudes by interacting with information and the environment (Heinich et al., 2002). In addition, interaction helps to create a sense of presence and a sense of community for online learners, as well as promoting transformational learning (Murphy and Cifuentes, 2001).

Facebook is becoming a tool for a communication like email and many researchers have reported that the majority of students are using it; a great deal of other research supports the use of social network sites in education (Greenhow and Robelia, 2009b; 2009a; Tynes, 2007). Using Facebook in learning allows students to become publishers. Moreover, Facebook can be considered as a hidden curriculum for e-learning. The basic

concept of the ‘Hidden Curriculum’ is that learners learn much more than the content of the formal curriculum (Clarke, 2009; Jackson, 1990). Clarke (2009) argues that some non-compulsory, Coffee Bar type discussions could be conceptualised as forming part of the ‘hidden curriculum’ of online learning. Clearly, in this case, Facebook is part of the hidden curriculum as learners are learning much more than the content of the formal curriculum.

By using Facebook, students collect information by connecting to others’ knowledge and thus students become publishers; also, as a social network site, Facebook is moving students from passive learning to active participation, where every learner can contribute and communicate with others. Facebook as an ICT provides learners with the tools to create new learning for themselves and to contribute and store their new knowledge in a communal knowledge-base for the benefit of the community’s existing and new learners. This result shows that Facebook could be an example of communal constructivist e-learning as it is formed of communities of learners in a communal constructivist context. Understanding how students are using Facebook in learning allows researchers to comprehend how students are using ICTs in learning. This increases the understanding of how Facebook can be used in learning and is also helping to determine, for schools and teachers, how students use Facebook as a social network site.

Moreover, understanding how students are using Facebook is very important for two reasons: (1) there is limited research on how it impacts on students; and (2) most of these researches make suggestions and recommendations that are not based on research evidence. There is limited research on how the use of such tools impacts on students or, in other words, how they influence students’ learning experiences (Mix, 2010; Hew, 2011). The use of Web 2.0 in learning has attracted very limited research (Kitsantas and Dabbagh, 2011; Mix, 2010; Hew, 2011). Kitsantas and Dabbagh (2011), while noting that Web 2.0 tools have significant potential to support students’ learning processes, admit that empirical research in this area is very limited. Hew and Cheung (2011) assert that, with the recent explosion in the number of Web 2.0 tools and technologies, many claims and suggestions have been made about their learning potential; however, these claims and suggestions are not based on research evidence. Therefore, this research shows the educational learning potential of Web 2.0 tools in the form of a social

network site (Facebook) and a video-sharing site (YouTube) based on research evidence. Furthermore, this could help teachers to understand how to use Web 2.0 as a social network for education. As Chen and Bryer (2012) mentioned, there is a lack of empirical research in terms of what strategies teachers can use for teaching with Web 2.0 as a social medium. The findings of this study will expand knowledge about the use of Web 2.0 as a social medium and offer strategies for and examples of how these technologies could be used for learning.

### **7.2.3 Comprehending How Students Are Using ICTS in Learning**

As Mix (2010) and Hew (2011) have noted there is limited empirical research on eLearning and specifically Web 2.0. Kitsantas and Dabbagh (2011) note that Web 2.0 tools have significant potential to support students learning processes, admit that empirical research in this area is very limited. Most of these research studies offer suggestions and recommendations, which are not based on research evidence. Hew and Cheung (2011) assert that, with the recent explosion in the number of Web 2.0 tools and technologies, many claims and suggestion have been made about their learning potential; however, these claims and suggestions are not based on research evidence.

The results of the current research project contribute to understanding the impact of Web 2.0 on learning. The findings show that the majority of students were using new technologies, such as YouTube and Facebook, to communicate with their classmates and friends, to comment on friends' posts, share resources among students, ask questions, evaluate the work of others, and to discuss and express support and encouragement for other students. This use of such technologies is creating communities of learners, as Palloff and Pratt (2007) stated and results of this research explain how Web 2.0 could be used to create communities of learners. The results show that technologies such as YouTube and Facebook have changed the learning landscape where learners are becoming active participants, creators of knowledge, and seekers of engagement; and where learners are described as actively creating and sharing content and ideas. Furthermore, understanding how students are using ICTs in learning will help to: (1) evaluate e-learning strategy; (2) investigate the role of Web 2.0; (3) lead to redefining the notion of e-learning; and (4) develop an e-learning strategy framework. This understanding will help in rethinking the current e-learning strategy and replacing it with an e-learning strategy 2.0 which will reflect the new Web 2.0 tools. It will also

help explain the gap between student learning and the current modes of learning in the educational system.

### **7.3 Evaluating E-learning Strategy**

The second objective of this discussion is to evaluate the current e-learning strategy from the perspectives of students, teachers and staff. This evaluation is covered by three points: (1) Learning strategy; (2) Resources and support, and (3) Students' parents.

#### **7.3.1 Learning Strategy**

In order to evaluate the learning strategy it is important to: (1) understand what is the current official e-learning policy of the Ministry of Education; (2) understand how teachers are using ICTs in learning (i.e. teacher practice); and (3) understand how students are using ICTs in learning (i.e. student practice).

#### **E-learning Policy**

Findings from the stakeholder interviews, documents analysis and observations show that the Ministry of Education's policy with regard to this e-learning project is to adopt a learning strategy that depends on using the e-learning portal, EduWave, which is a virtual learning environment. To support this learning strategy, the Ministry of Education is promoting many ICTs, such as email, for every student, teacher and staff. Moreover, the Ministry is using the virtual learning environment (EduWave), smart-boards, PowerPoint presentations, MS Office and e-learning content. To analyse this, the Ministry of Education's policy is to make e-learning a multi-user learning strategy as they are using a virtual learning environment but this virtual learning environment does not allow learners to share, collaborate, communicate and learn based on a community of learners. Figure 33 shows the Ministry of Education's e-learning policy.

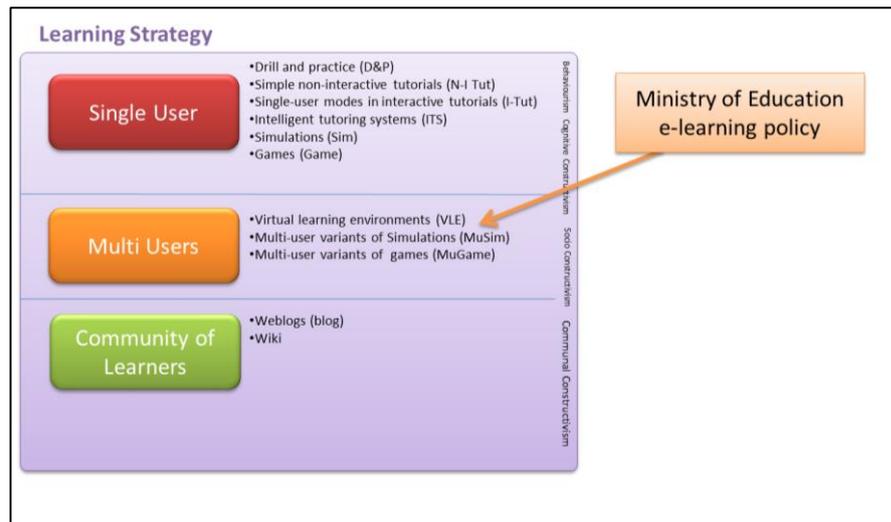


Figure 33: Ministry of Education’s E-learning Policy

### Teacher Practice

The observations in schools, and students’ and teachers’ questionnaires, show that teachers are only using presentations and data projectors in learning without using any support technologies. Teachers are not using any type of Virtual Learning Environment (VLE) in learning and teachers have never used most ICTs and technologies as part of learning. Although the results show that teachers were very enthusiastic towards ICT/technology generally, and also for teaching and learning, the findings show that teachers were using e-learning only by using presentations with a data projector without using the virtual learning environment, EduWave. The results show that the proportion of teachers’ work which involves delivering e-learning is 0-20% and, moreover, in this case, teachers are only using e-learning for students as single users because they are not using any technologies or ICTs that create virtual learning or communication environments. Figure 34 shows teachers’ current use of ICTs in learning.

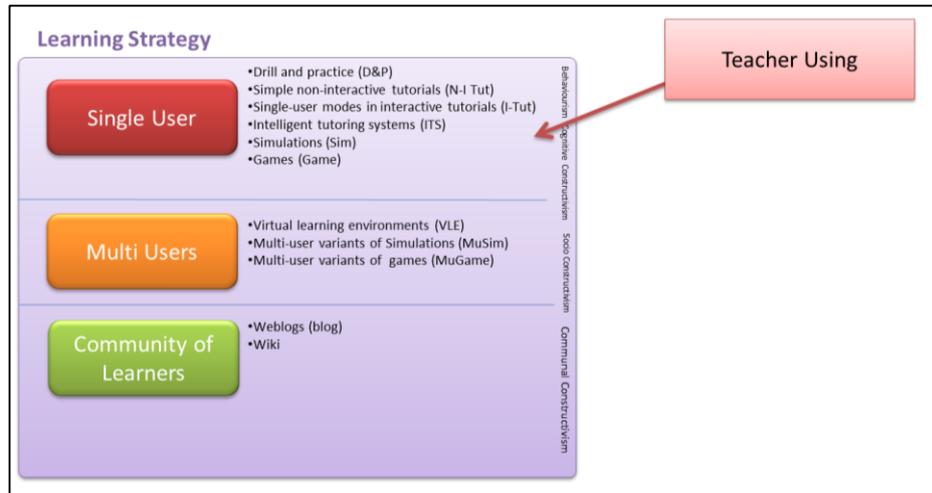


Figure 34: Teachers' Practice

### Student Practice

Students are not using the official e-learning portal. However, they are learning by using forums and Web 2.0 tools such as Facebook and YouTube. Students are using a Facebook group as a comprehensive e-learning platform for a Virtual Learning Environment (VLE) and/or as a Learning Management System (LMS). Students are also using Web 2.0 tools for education and these are motivational in the learning environment; furthermore, as social networking tools, they engage users in an environment that encourages meeting, reading and sharing opinions, and to become part of a community. The result of using Facebook and YouTube as social-software applications in learning is that this moves students from passive learning to active participation, where every learner can contribute and communicate with other learners. These technologies are making community of learners which is the key to successful e-learning and effective learning (Palloff and Pratt, 2007; Gunawardena and Zittle, 1997). Students are learning by using these Web 2.0 ICTs (YouTube and Facebook) because they provide students with the tools to create new learning for themselves, as well as to contribute and store their new knowledge in a communal knowledge base for the benefit of community's existing and new learners. Facebook and YouTube allow students to collect information by connecting to others' knowledge (an example of connectivism). Therefore, students are using e-learning as a community of learners when they are using social network sites like Facebook and YouTube as these applications allow learners to share, collaborate, communicate and learn in a community of learners. Figure 35 shows how students are using e-learning based on an e-learning user context and the underlying learning theory.

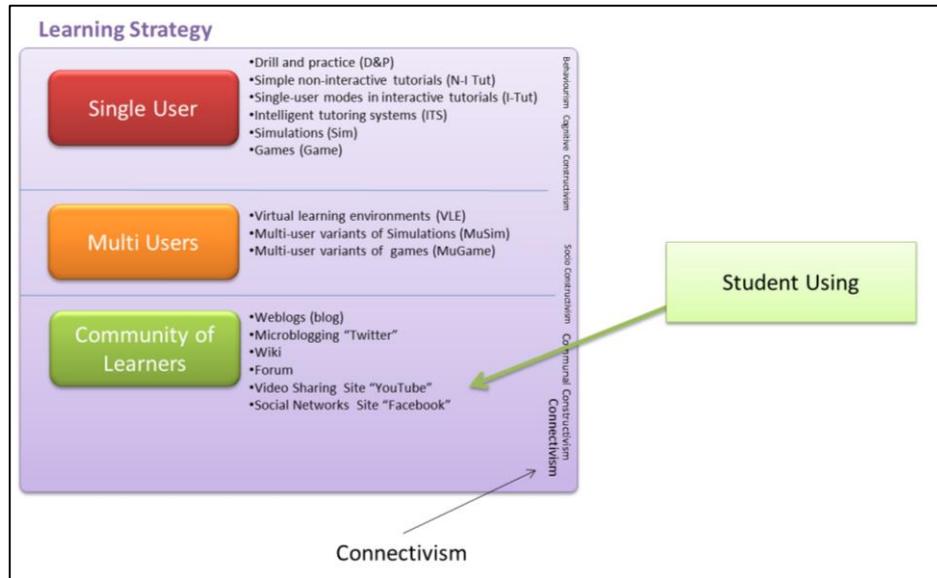


Figure 35: Student Practice

### Learning Strategy

The Ministry of Education’s official e-learning policy is to use e-learning as a multi-user learning strategy, while teachers are using e-learning as a single-user learning strategy. On the other hand, students, by using Web 2.0 tools (such as the social network site, Facebook, and the video-sharing site, YouTube) are using e-learning as a community of learners. Students are using e-learning in this way because the new Web 2.0 technologies have changed the learning landscape and learners are now becoming active participants, creators of knowledge, and seekers of engagement; in fact, they are described as actively creating and sharing content and ideas. This is redefining methods of teaching and learning which, in turn, demands new teaching and learning practices. Today’s students, as digital natives, grow up in an information society where they are using many types of ICTs, including Web 2.0 tools such as Facebook and YouTube. This generation of learners has high expectations of technologies and learning environments and are therefore using these tools for both personal and educational purposes. Thus, Web 2.0 is engaging young people with the technologies, connecting them to social worlds as participators and collaborators. Therefore, there is a gap between student learning and the modes of learning in the current educational system, as noted by McLoughlin and Lee (2008). Figure 36 shows the learning strategy for the e-learning policy, teachers and students.

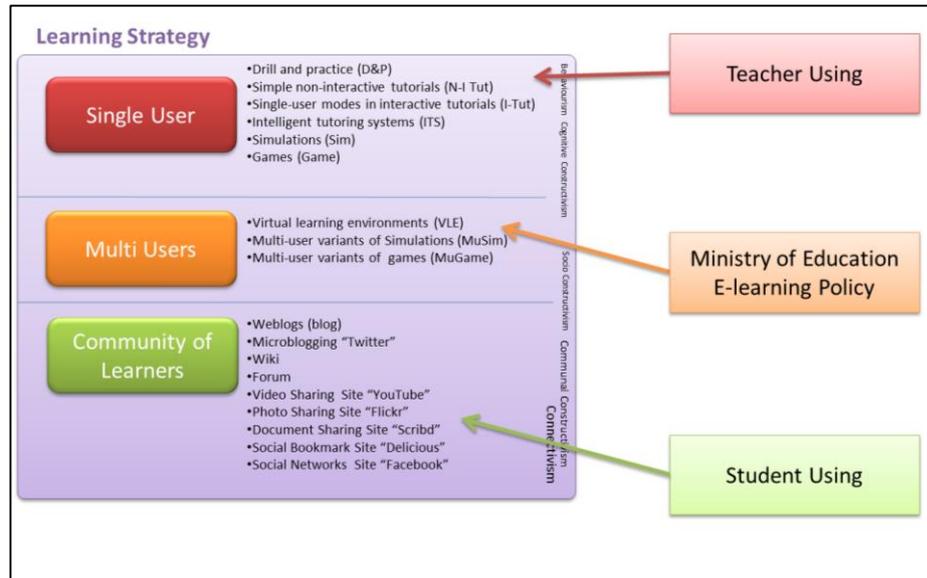


Figure 36: Learning Strategy for the E-learning Policy, Teachers and Students

The results of this research show that there is no real difference in the ways teachers are using technology in learning and much research has mentioned that, although huge amounts of money have been spent, it has not made a significant difference to ways in which technology has been integrated into the classroom (Cuban, 2001; Laffey, 2004; Norris et al., 2003; Christensen et al., 2010) Furthermore, many researchers have pointed out that the current e-learning does not effectively integrate technology into student learning (Farris-Berg, 2005; Tondeur et al., 2008; Voogt, 2008). In fact, many research studies have noted the failure to integrate ICTs into education and therefore, the expected effects on learning have also failed to materialise (Smeets, 2005; Voogt, 2008).

The evaluation in this research constitutes a further step, based on research evidence, in understanding and determining a reason for this problem, as well as explaining how students are learning by using the new technologies of Web 2.0. This research also shows another type of factor impacting on the successful integration of technology in e-learning: this is the distance between e-learning policy, and the practices of both teachers and students. Furthermore, in a research study concerning ICT and e-learning policy in Flanders (the Flemish-speaking region of Belgium), Tondeur et al. (2007) mention that there is a gap between the ICT proposed in the e-learning policy and the actual use of ICT by teachers. Their study showed that, while national educational authorities were keen to encourage and develop the integration of ICT in schools, this

often did not result in any real changes to teaching practices in the classroom. Tondeur et al. (2007) conclude that the gap between teachers' practice and e-learning policy are two worlds apart. This research take a further point step by showing the gap between e-learning policy, teacher practice and student practice, making them three worlds apart. This gap is illustrated well by comparing the use of the e-learning portal, EduWave, with the students' usage of Web 2.0 tools for learning. Without even having an instructor present, students have shown a very impressive ability to integrate ICT tools and their learning, which has a direct and positive effect on what and how they learn.

Students are growing up in an information society where they are using many types of ICT/technologies and Web 2.0 tools such as blogs and social networking sites; these have created new modes of interaction and expression. The e-learning policy should triangulate official e-learning policy, how students are learning and using e-learning (i.e. student practice) and how teachers are using e-learning (teacher practice). (See Figure 37: Triangulation of the E-learning Policy, Teacher Practice and Student Practice.) The e-learning policy should be designed according to how today's students use ICT technology. In this regard, Portimojärvi and Donnell (2010, p. 239) mention that Virtual Learning Environments are not meeting the needs of the current generation of students and that there is a disparity between how students choose to communicate in general, and how they are encouraged or required to communicate on accredited courses. Therefore, there is gap between technology and the education system. However, students, by using Web 2.0 tools, such as social networking sites and video-sharing sites, are bridging the gap between themselves, as digital natives, and the educational system. E-learning policy should include the new media cultures of youth and one solution is to adopt or integrate Web 2.0 into the virtual learning environment. For example, nowadays, Facebook is becoming a communication tool like email and many researchers report that the majority of students use it, so it is possible to integrate this ICT into a virtual learning environment; in fact, many researchers support the use of social network sites in education (Greenhow and Robelia, 2009b; 2009a; Tynes, 2007).

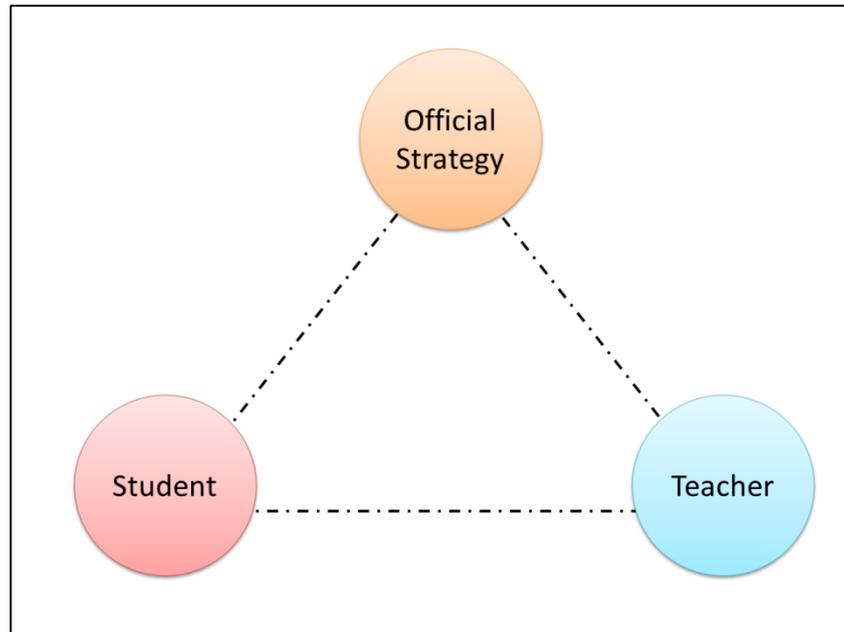


Figure 37: Triangulation of the E-learning Policy, Teacher Practice and Student Practice

### 7.3.2 Resources and Support

Many research studies have determined that using technology for learning in schools is influenced by resources (Hohlfeld et al., 2008; Norris et al., 2003; Karagiorgi, 2005) and by support (Lai et al., 2002; Davis et al., 2009; Rogers, 2000). In this research, findings from the student questionnaires show that the majority of students need help or a support system with regard to technologies in schools. However, the results show that most students were not happy as the support they received was very poor. Therefore, the Ministry of Education needs to improve support for students. The findings of the teachers' questionnaire also show that some teachers were dissatisfied with the IT support offered in relation to their use of the intranet and software. The number of training courses, designed to improve their technology skills, that teachers attended in the last three years was, on average, two, while teachers attended only one course on average in the last three years which was designed to help them use technology in their teaching. The Ministry of Education should increase the number of training courses for teachers and develop the content of the training program, there is a need for training teachers on using Web 2.0 tools in learning which are used by students and teachers are not aware of such as Facebook and YouTube. Nearly half of the teachers surveyed had requested support with network problems and support in using specific learning software. Therefore, there is a need to enhance the networks in schools. As for staff, the results from the staff questionnaire show that few staffs were very satisfied with the IT

support offered in relation to their use of the intranet. Moreover, many staffs had attended no training courses in the last three years that were designed to improve their technology skills as it was shown that nearly half had never attended any such courses in the last three years. Therefore, the Ministry of Education should focus on providing training for staff.

From the teachers' perspective, the results indicate that most teachers reported, on many occasions, that inadequate equipment had prevented them from making greater use of e-learning in the classroom or e-learning centre. The majority of teachers reported that, in a few cases, a lack of students' ICT skills had prevented a greater use of e-learning. The majority of teachers reported that ill-equipped rooms (e.g. a lack of network points) and poor software/ learning materials are sometimes factors that they considered prevented them from making greater use of e-learning in the classroom or e-learning centre. Moreover, a lack of electronic course content, a lack of support and guidance and students' reluctance to use materials were also considered obstacles to the greater use of e-learning in the classroom or e-learning centre.

### **7.3.3 Students' Parents**

The Ministry of Education's e-learning platform, EduWave, allows all students, teachers, administrative staff and parents to access the e-learning portal according to their needs and restriction levels. The Ministry offers students' parents access to EduWave so that they can view students' exam results and students' attendance. However, the teachers' questionnaire shows that the majority of students' parents were not using EduWave; moreover, results from the observations and student questionnaires also confirm this. The results from the students' questionnaire indicate, however, most of the parents of students use the internet and this fact could "open a door" for Web 2.0 as Solomon and Schrum (2007) assert that Web 2.0 tools could be of significant use for parents. They point out that Web 2.0 could help parents to know what their children are doing and to monitor their progress, both important factors for parents.

### **7.3.4 Conclusions**

In conclusion, the evaluation of current e-learning strategy showed that the Ministry of Education's official e-learning policy is to use e-learning as a multi-user learning strategy by using Virtual learning environment while teachers are not using

technologies so they are using e-learning as a single-user learning strategy. On the other hand, students, by using Web 2.0 tools (such as the social network site, Facebook, and the video-sharing site, YouTube) are using e-learning as a community of learners (communal constructivism) by creating and sharing content and ideas. The evaluation shows the distance between e-learning policy, and the practices of both teachers and students. Therefore, e-learning policy how students are learning and using e-learning (i.e. student practice) and how teachers are using e-learning (teacher practice). The e-learning policy should be designed according to how today's students use ICT technology and should increase the number of training courses for teachers. Furthermore, the Ministry of Education could use Web 2.0 for students' parents as it could help parents to know what their children are doing and to monitor their progress.

## **7.4 Investigating the role of Web 2.0**

The third objective of this discussion is to investigate the role of Web 2.0 tools and technologies in terms of e-learning for the policy, staff, teachers and students. Web 2.0 tools and technologies play a critical role for students but do not play any role in the e-learning policy and for teachers. The policy makers do not consider Web 2.0 in their e-learning policy. The official learning strategy is to encourage learning by using EduWave as a virtual learning environment and the document analysis and interviews show that Web 2.0 tools and technologies do not play any role in the current e-learning policy. Web 2.0 tools and technologies do not play any role in the e-learning policy for staff; they do not even use these technologies in their daily lives. The observations in the schools, and results from the teachers' and students' questionnaires show that Web 2.0 tools and technologies play no role for teachers; teachers are not even using Web 2.0 in their daily lives.

### **7.4.1 Students**

The situation is different for students because Web 2.0 plays a critical role in their educations and in their daily lives. Web 2.0 tools (such as Facebook and YouTube) play a central role in the lives of students as: (1) an interactive space that facilitates learning; (2) providing a community of learners; (3) part of the hidden curriculum; (4) bridging the gap between digital natives and the educational system; (5) an example of the successful integration of technology in learning; and (6) in terms of ethical issues.

### **Interactive Space that Facilitates Learning**

Web 2.0 provides students with an interactive space for creating and sharing learning by clicking and linking with web-based applications such as Facebook and YouTube. These allow collaboration between users and creators, enhancing communication and information sharing. Web 2.0 facilitates learning by allowing students to be collaborative and involve themselves in active interaction in terms of both course content and personal communication, as well as helping students to share resources, and expressions of support and encouragement. The results indicate that the majority of students believe that they can learn by using social network sites such as Facebook, and video-sharing sites such as YouTube as the majority of students strongly agreed that these tools enhance collaborative learning. These applications are very useful to students as part of their learning, a notion borne out by the results of this study.

The results of this research confirm the suggestion that Web 2.0 could change the learning landscape as students are learning by using Facebook and YouTube. Moreover, the results showed that Web 2.0 is indeed changing the learning landscape into one in which learners are becoming active participants, creators of knowledge, and seekers of engaging personal experiences, as well as a landscape in which they are actively creating and sharing content and ideas. In this research, it was found that students are mainly using Facebook and YouTube. Facebook and YouTube have made significant shifts in the way students connect, communicate, create and share information; such services have created new relationships and patterns of communication and learning as the Web has become a social place for students. This shifts their position from just existing on the Web to participating in the Web. The results of this study show that students are participating in the creation of learning resources, such as exam timetables, to share with other students in a Facebook group. Additionally, students are sharing lecture notes on whiteboards by taking photos from mobiles or cameras. Moreover, they are sharing videos, such as videos of experiments, and advances in technology allow students to record and edit videos with ease by using cameras, mobiles or smartphones. Such videos are shared by uploading them directly onto Facebook or by using YouTube. Furthermore, students are sharing solutions to homework and previous exams with their friends via the Facebook Group. This is making student into publishers rather than them being merely consumers of information. Therefore, there are existing interactive

collaborative learning spaces that are effectively used and developed by students, while the teachers and policy makers are not aware of it.

### **Community of learners**

The findings show that students are using new technologies such as YouTube and Facebook to communicate with their classmates and friends, comment on friends' posts, share resources, ask questions, evaluate the work of others, discuss and express support and encouragement for other students. These uses of Facebook lead to the formation of communities of learners which is the key to successful e-learning and effective learning. Therefore, Facebook makes communities of learners by allowing learner to share information they found it useful in their learning process and by sharing it to their friends which could help those more effective learning elements propagate through the network making communal constructivism happen as it allow learners to share their own participation to communal.

### **Hidden Curriculum**

Web 2.0 tools and technologies could be said to be a part of the hidden curriculum. In this research, Facebook could be considered to be a part of the hidden curriculum for e-learning. The basic concept of the 'Hidden Curriculum' is that learners learn much more than the content of the formal curriculum (Clarke, 2009; Jackson, 1990). Clarke (2009) argues that, in online learning, some non-compulsory Coffee Bar type discussions could be conceptualised as forming part of the 'hidden curriculum' of online learning. Clearly, Facebook can be considered as part of the hidden curriculum since learners are learning much more than the content of the formal curriculum.

### **Bridging the Gap between Digital Natives and the Educational System**

Today's students, as digital natives, have grown up in an information society where they are using many types of ICT technologies such as Web 2.0 tools. The results of this study support Pernsky's (2001b) argument that that today's students are no longer the people our education system was designed to teach and that teachers are "digital immigrants" who speak an outdated language (of the pre-digital age). Thus, they are struggling to teach a population that speaks an entirely new language. The results show

that students are using social networking sites and have created new modes of interaction and expression, as shown in the results. These results confirm that ICTs such as Virtual Learning Environments (e.g. EduWave) are not meeting the needs of the current generation of students and that a disparity now exists between how students choose to communicate in general and how they are encouraged or required to communicate on accredited courses (Portimojärvi and Donnell, 2010, p. 239). This also confirms that there is a gap between students' learning and the modes of learning in the educational system (McLoughlin and Lee, 2008). Prensky (2006) argues that, in the current education system, there is a gap between schools and the needs of the new generation as the net-generation (or digital natives) who have become disengaged from traditional instruction. Portimojärvi and Donnell (2010) argue that research into education technology does not often converge with research into the new media cultures of youth. However, in learning, Web 2.0 can bridge the gap between these digital natives and the educational system. This supports the suggestions made by McLoughlin and Lee (2008) that Web 2.0 could help in engaging young people, connecting them to social worlds in a participatory and collaborative way, as there is presently a gap between student learning and the modes of learning in the educational system.

### **Successful Integration of Technology in Learning**

Realising the importance of e-learning and the positive impact of using ICTs in education, has led many governments to adopt e-learning in schools (Hew and Brush, 2007); however, this has also resulted in substantial expenditure (Mulkeen, 2003). An enormous amount of money has been spent on adopting technologies in learning systems in schools and yet this has resulted in little change to how students learn (Christensen et al., 2010). Many research studies have shown that using ICTs in learning has failed to integrate those ICTs into education and therefore, the expected effects on learning have failed to materialise (Smeets, 2005; Voogt, 2008). This failure has been demonstrated with regard to the e-learning portal, EduWave. It is interesting to compare this failure with the success of students' usage of Web 2.0 tools in learning as, even without an instructor present, students have shown a very impressive ability to integrate ICT tools and their learning. In this research, Web 2.0 tools such as social network sites (Facebook) and video-sharing sites (YouTube) have been successfully integrated into education and have had a successful effect on learning since students are

learning by using Facebook and YouTube. This successful integration of technology in education bridges the gap between the digital natives and educational learning.

### **Ethical Issues**

Students using Web 2.0 tools, such as the social network site, Facebook, and the video-sharing site, YouTube, are giving rise to concerns about ethical issues. There are some concerns with regard to using Web 2.0 as a teaching and learning tool as there are discussions in the literature which concern the use of Web 2.0 in academic environments. These concerns are: (1) Issues with regard to privacy and ethical aspects, and (2) Aspects concerning copyright and inappropriate content. The advent of Web 2.0 and online social networking tools has enhanced communication capabilities but, at the same time, has challenged traditional ideas about privacy and ethical conduct. There are some concerns regarding the use of Web 2.0 as a teaching and learning tool in academic environments as there are discussions in the literature about ethical issues, concerns regarding students' privacy, and security problems (Foulger et al., 2009). Therefore, students need more definitive guidelines about their participation in social networking spaces and some educational organisations have warned teachers not to use social networking sites while others have provided guidelines for responsible use (Foulger et al., 2009). Chen and Bryer (2012) mention that, because some students are not conscious about privacy issues, it should be made known that information posted on social media could be publicly available; this might lead to issues of identity theft which might prevent students from benefitting from future career opportunities.

Web 2.0 tools allow learners to share a variety of resources such as videos, images and documents in an online learning environment. This has been criticised because content may contain illegal material that is without copyright. For example, video-sharing sites such as YouTube have been criticised because it may contain illegal, uncopyrighted material (Hunt, 2007). Moreover, such sites may contain inappropriate content (Educause, 2006). Snelson (2008a) argues that educators are facing significant problems with regard to, for example, YouTube and such video-sharing sites, as some video content may be inappropriate, inaccurate, of poor quality, and not suitable for educational needs. As a result, many schools have blocked access to some video-sharing sites such as YouTube because of the presence of inappropriate content.

## 7.5 Redefining the Notion of E-Learning

The fourth objective of this discussion is to understand e-learning, learning theories and to redefine the notion of e-learning. As previously mentioned, e-learning is using information and communication technologies (ICTs) for education;

*“Research is to see what everybody else has seen, and to think what nobody else has thought” Albert Szent-Gyorgyi (1893-1986.)*

students use technologies to support their studies, even if this is not officially part of their requirements. Web 2.0 has changed the notion of e-learning as it has caused a significant shift in the way learners connect, communicate, create and share information. This has created new forms of communication and learning and has changed the learning landscape, with learners becoming active participants who are connected with other learners. Before Web 2.0, e-learning was designed based on e-learning theories, designed to explain the learning process. However, recent learning theories, such as communal constructivism and connectivism, have been developed in order to explain the new notion of e-learning using Web 2.0. For example, the communal constructivism learning theory, as defined by Holmes and Gardner (2006), states that this theory: “expands the definition of socio constructivism which should consider the synergy between the new information technology in communication ICT and learning that lead to have a community of learners.” The connectivist learning theory, as Solomon and Schrum (2007) mention, considers technology as a key factor for such connections and, as Siemens (2005) (the creator of the theory of constructivism) states: “technology and connection making as learning activities begin to move learning theories into a digital age”; this is because learners collect information by connecting to others’ knowledge via the use of technology.

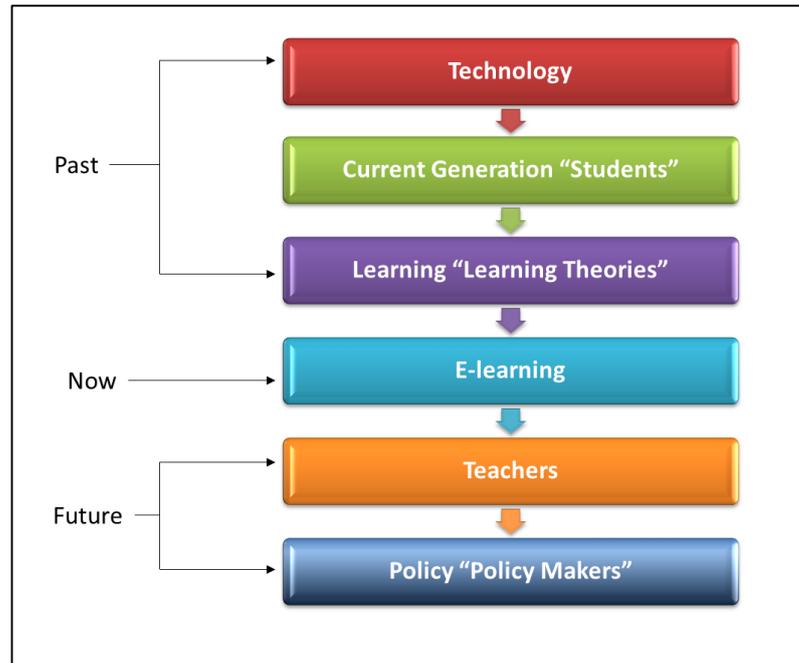


Figure 38: Effect of Web 2.0

When Web 2.0 began, it changed *technology*; then it changed the *current generation*. After that it changed *learning* and now this is changing *e-learning*. In the future, Web 2.0 will change *teachers* and *e-learning policy*. In the early stages of Web 2.0, the *technology* of web design changed to enhance creativity, communication, secure information sharing, collaboration and functionality. Then, changes occurred to reflect the new generation of learners who grew up in an information society where they are using many types of Web 2.0 tools, such as blogs and social networking sites which have created new modes of interaction and expression. After this, Web 2.0 changed learning by making learning, not an internal, individualistic activity, but learning where students collect information by connecting to others' knowledge. Now, e-learning is changing to e-learning 2.0 where Web 2.0 tools can be integrated into education systems. As a result, researchers are arguing that Web 2.0 should be used for education based on research evidence. For example, Hew and Cheung (2011) argue that many claims and suggestions have been made about the learning potential of Web 2.0 tools and technologies; however, these claims and suggestions are not based on research evidence. In the future, Web 2.0 will change both teachers' practice and e-learning policy for two main reasons: (1) the current generation of students are the future teachers and policy makers; and (2) there is a need to change current e-learning systems because they are not meeting the needs of the current generation of students. Therefore, teachers are struggling how to use Web 2.0 or they do not use it at all for learning, while

policy makers do not pay attention to Web 2.0. Figure 38 explains this concept while Table 121 offers a conclusion regarding this idea and prediction. There is a gap between e-learning policy, teacher practice and student practice; the e-learning policy should bridge the gap by using Web 2.0. Figure 39 illustrates this idea.

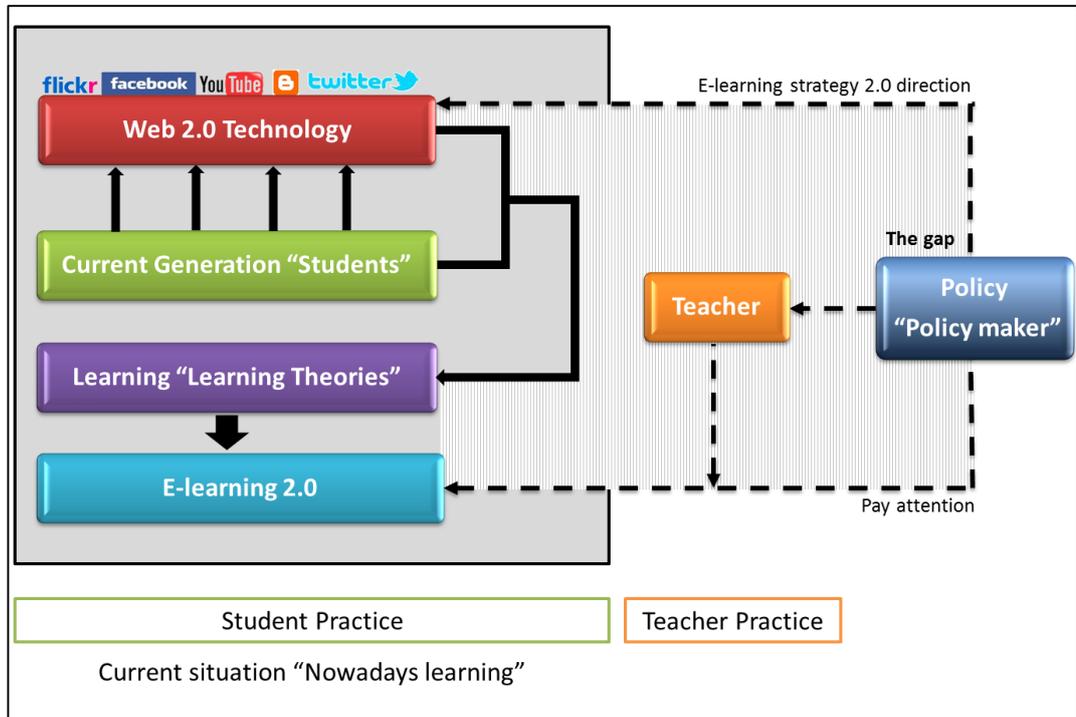


Figure 39: Current E-learning

Table 121: Effect of and Predictions Concerning Web 2.0

Aspect	Change from	Change to
<b>Technology</b>	Web 1.0	Web 2.0
<b>Generation (Students)</b>	Student	Student 2.0 “Digital Natives”
<b>Learning</b>	Ordinary learning theories	Learning theories 2.0 such as connectivism
<b>E-learning</b>	E-learning	E-learning 2.0
<b>Teachers</b>	Teachers	Teachers 2.0
<b>Policy (Policy Makers)</b>	Policy	Policy 2.0

The new notion of e-learning is that learning takes place, not only in a class as is currently the case, but both in and outside classes, by benefitting from the advantages of Web 2.0 technologies such as Facebook and YouTube. Web 2.0 is making learning not an internal, individualistic activity but where learners collect information by connecting to others' knowledge using Web 2.0 applications such as Facebook, YouTube and blogs. This new notion of e-learning has generated the term "e-learning 2.0", as compared previously to e-learning which is likely to be related to the delivery of content to students, contents which are assessed by teachers. This type of learning is also usually related to software and virtual learning environments (VLEs) as learning portals for online learner activities. While e-learning 2.0 is likely to be related to Web 2.0 tools and its concepts, it does not require any more software such as virtual learning environments (VLEs); instead, it could relate to social network sites, blogs, micro-blogs, Twitter or YouTube, or any type of technology or tools of Web 2.0.

Furthermore, Web 2.0 has changed the notion of e-learning in terms of resources and support as Web 2.0 tools do not require money to be spent on e-learning interfaces and e-learning packages since most Web 2.0 tools are free. It is significant that the former e-learning required a large amount of time and money to be spent on training courses in order to support users and enhance their ability to use e-learning software. The new e-learning Web 2.0 does not need the same amount of money and time to be spent on training because most students are already using these tools and the Web 2.0 tools are easy to use. The future of e-learning depends on Web 2.0 tools and concepts. For example, the learning management system cannot ignore Web 2.0 tools; it must either create an e-learning package which supports learners as part of the package or use concepts such as social network sites or video-sharing sites.

## **7.6 Exploring Value of a Framework for an E-Learning Strategy for the Kingdom of Bahrain.**

The e-learning strategy framework is used as theoretical framework and it consists of three dimensions: the Policy Dimension, the Learning Strategy Dimension and the Structural Dimension. *Policy Dimension* refers to the strategic issues and policies in e-learning created by policy-makers; these include the vision, mission, strategic plan and e-learning goals. *Learning Strategy* refers to the learning strategy which was based on

Holmes and Gardner's (2006) e-learning user context, as well as underlying learning theory. Holmes and Gardner (2006) developed an e-learning framework that described types of e-learning by using the analogy of a river. Figure 2 (Page 29) illustrates this framework which represents the growing complexity of user engagement in e-learning, moving from a single user, to multi-users, to a community of learners. This mirrors the underlying learning theory which moves from behaviourism to cognitivism, and then from constructivism to socio constructivism and finally to communal constructivism. The *Structural Dimension* refers to resources, support, the virtual learning environment, content and evaluation. Figure 41 shows the e-learning strategy framework. The framework is used as theoretical framework which reflects key themes from the literature review and it provided a basis for the research design. The Document Analysis and Interview are used to explore the strategy dimension, while Observation and questionnaire are used to find out Learning Strategy Dimension and Structural Dimension.

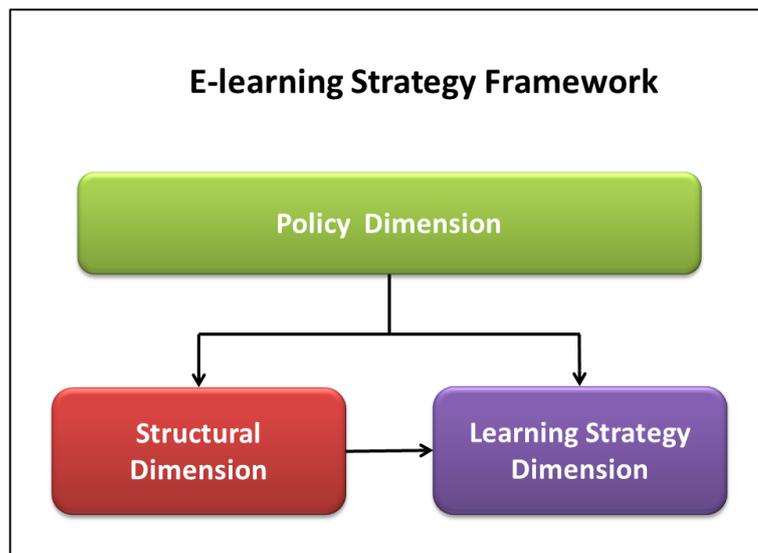


Figure 40: Dimensions of the E-learning Strategy Framework

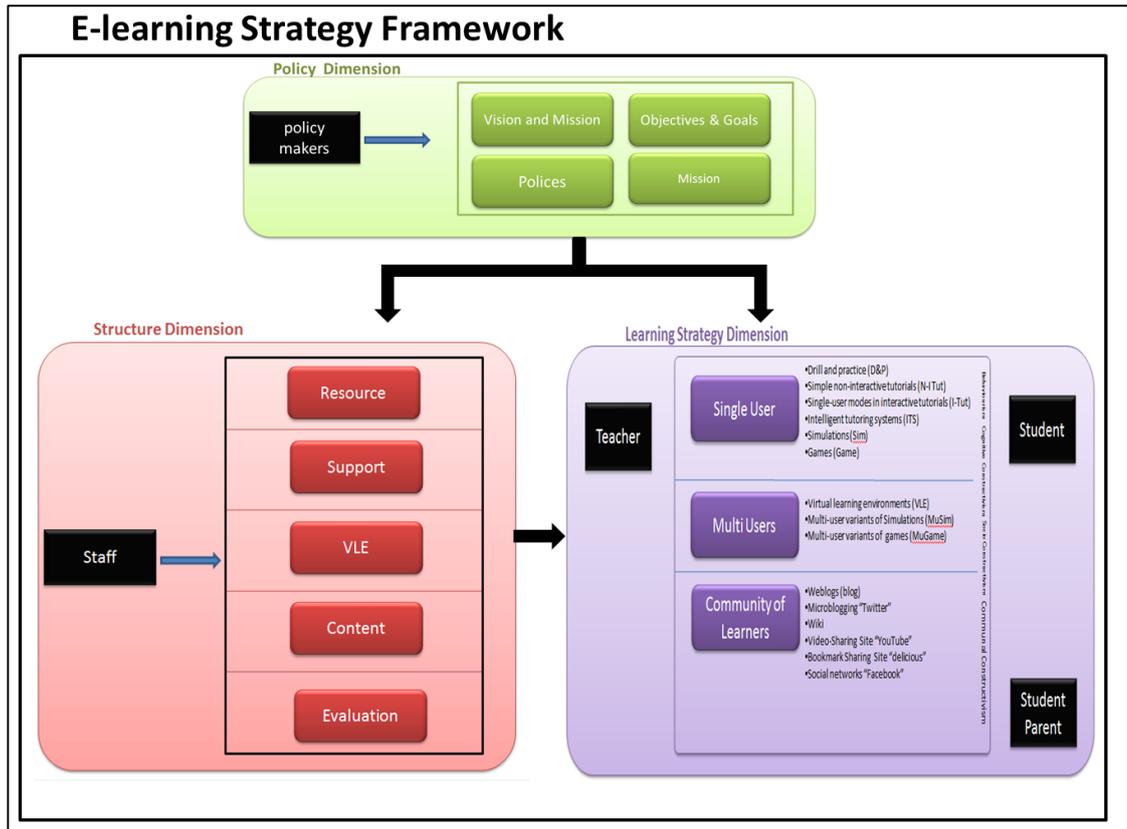


Figure 41: E-learning Strategy Framework

As mentioned above, enormous amounts of money have been spent on adopting technologies in learning systems in schools. However, this has resulted in little change to how students learn. This framework attempts to increase the change in how students learn by making policy makers and researchers aware of the problem that their e-learning policy could be different from the actual practices of teachers and students. This framework is built on Web 2.0 technologies and tools which are a very strong factor for learners in the digital age; indeed, many educators are seeing the power and advantages of using these technologies for the achievement of academic goals. The strength of this framework is that it will encourage people to rethink the current e-learning strategy as e-learning strategy 2.0 that will reflect the new Web 2.0 tools. It considers the following three main points: (1) There is a gap between student learning and the current modes of learning in the educational system (2) The new generation is the “net-generation” or “digital natives” who have become disengaged from traditional instruction (Prensky, 2006); and (3) This framework includes the new media culture of youth as previous research into educational technology does not often converge with research concerning media youth cultures. Also, this framework could increase awareness of the use of Web 2.0 tools. Using Web 2.0 could further help in engaging

young people with technologies, connecting them to social worlds in a participatory and collaborative way as, currently; there is a gap between student learning and the modes of learning in the educational system. Furthermore, this framework could help to construct a bridge between the educational system and the digital generation because it builds on a deeper understanding of how students learn as the “new generation”. Using the framework help the researcher to analysis e-learning strategy and it helping to understand what is happing in e-learning. Many research discussed and suggested the importance of e-learning and web 2.0, whoever this framework is showing how student are learning in e-learning by Web 2.0 tools as community of learning through its tools which support the theory of communal constructivism learning.



Rethinking E-learning Strategy 2.0 in The Digital Age

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**Chapter 8: Conclusion and Recommendations**

*"Education is not preparation for life: Education is life itself" - John Dewey (1859 - 1952)*

This chapter present the main conclusions of this research based on the research objectives; it also provides an E-learning Strategy 2.0 “Listening to Student Voices” as guidelines for making education policy decisions. It then provides recommendations for practical solutions to e-learning strategy in the Kingdom of Bahrain based on the results of this research. Moreover, this chapter discusses the implications and contribution of this research to theory, policy and practice. This chapter also provides the research’s limitations. Finally it provides recommendations for further research.

## CHAPTER 8: CONCLUSIONS

### 8.1 Introduction

This research seeks to rethink e-learning strategy by investigating and evaluating current e-learning strategy in order to understand, in greater depth, learning for the Web 2.0 generation; then, based on empirical work, this leads to the formation of an E-learning Strategy 2.0.

This research was a case study investigating and evaluating the e-learning strategy for high schools in the future project organised by the Ministry of Education in the Kingdom of Bahrain. The research objectives were: (1) Comprehending how teachers and students are using ICTs in learning; (2) Evaluating the current e-learning strategy from the perspective of students, teachers and the e-learning policy; (3) Investigating the role of the Web 2.0 tools in e-learning in terms of e-learning policy, staff, teachers and students; (4) Understanding e-learning, learning theories and redefining the notion of e-learning; and (5) Developing a theoretical framework for an e-learning strategy for the Kingdom of Bahrain.

This chapter presents the conclusions of this research. Then it discusses the theoretical contributions and practical contributions of this research. This chapter also provides the research's limitations and finally, it provides recommendations for further research.

### 8.2 Conclusions

In conclusion, the results of this research show that teachers do not integrate Virtual Learning Environments (VLEs) as part of the teaching and learning process; they only use presentations (MS PowerPoint) with a data projector in some lessons as a way of using e-learning. Students are learning by using forums, YouTube and Facebook and consider these as important tools for knowledge construction. (**Research Objective 1**)

The Ministry of Education's official e-learning policy is to use e-learning as a multi-user learning strategy by using a virtual learning environment. However, teachers are not using these technologies so they are using e-learning as a single-user learning strategy while students are using e-learning as a community of learners by using the

new technologies of Web 2.0, such as Facebook and YouTube. This gap between e-learning policy, teacher practice and student practice in using ICTs for learning is making e-learning three worlds apart. Huge amounts of money have been spent on integrating technology into student learning. However, no real difference has been seen in the ways technology has been integrated into the classroom. The results of the evaluation in this research, which is based on empirical research, offer a further step in understanding and determining one reason for this problem as it explains how students are learning by using the new technologies of Web 2.0. This research also shows another factor impacting on the successful integration of technology in e-learning: this is the distance between e-learning policy, teacher practice and student practice. The e-learning policy should triangulate official e-learning policies, how students are learning and using e-learning (i.e. student practice) and how teachers are using e-learning (i.e. teacher practice). **(Research Objective 2)**

Web 2.0 tools and technologies play a critical role for students and yet these have no role for e-learning policy, staff and teachers. Web 2.0 tools, such as Facebook and YouTube, have an important role in the lives of students. These roles are: (1) Web 2.0 tools create an interactive space that facilitates learning; (2) Web 2.0 tools create a community of learners; (3) Web 2.0 could be part of the hidden Curriculum; (4) Web 2.0 tools bridge between students as digital natives and the educational system; (5) Web 2.0 tools can successfully integrate technology in learning. **(Research Objective 3)**

These Web 2.0 ICTs provide learners with the tools to create new learning for themselves and to contribute and store their new knowledge in a communal knowledge base for the benefit of the community's existing and new learners. This moves students from passive learning to active participation, where every learner can contribute and communicate with others, making them engage with content. Students are learning by using Facebook and YouTube which allow them to collect information by connecting to others' knowledge. This is a form of "Communal Constructivism". Therefore, Web 2.0 has changed the notion of e-learning as it has made significant shifts in the way people connect, communicate, create and share information; this has created new forms of communicating and learning **(Research Objective 4)**.

The new notion of e-learning is that learning takes place, not only in the classroom, as with current teacher use, but is designed for students to learn both inside and outside of class, benefitting from the advantages of web technologies such as Facebook and YouTube. Web 2.0 is making learning not just an internal, individualistic activity but as one where learners collect information by connecting to others' knowledge, using Web 2.0 tools such as Facebook, YouTube and blogs. Web 2.0 is changing learning from the use only of virtual learning environments (VLEs) to the employment of other tools such as social network sites, blogs, micro-blogs (e.g. Twitter) or YouTube or any other type of technology or tool from Web 2.0. Furthermore, Web 2.0 has changed the notion of e-learning in terms of resource and support as the Web 2.0 tools do not require money to be spent on e-learning interfaces and e-learning packages since most Web 2.0 tools are free. In addition, old e-learning needed to spend a large amount of time and money on training courses in order to support users and enhance their ability to use e-learning software. Conversely, the new e-learning via Web 2.0 does not need to spend the same amount of money and time for training.

Finally, the researcher used a framework to evaluate and analyse e-learning strategy for the Kingdom of Bahrain (**Research Objective 5**). The e-learning strategy framework consists of three dimensions: the Policy Dimension, the Learning Strategy Dimension and the Structural Dimension. This framework helps to understand how students learn by making policy makers and researchers aware of the problem that their e-learning policy could be different from the actual practices of teachers and students. The strength of this framework is that it helps the policy maker and the researcher to consider e-learning strategy 2.0 that will reflect the new Web 2.0 tools. Moreover, this framework increases awareness of the use of Web 2.0 tools and helps to construct a bridge between the educational system and the digital generation because it builds on a deeper understanding of how students learn as a “new generation” and how they integrated Web 2.0 tools in their current learning practice. Using the framework helped the researcher to analyse e-learning strategy and understand what is happening in e-learning (Figure 41 shows the Strategy Framework for E-learning).

### 8.3 Theoretical Contributions

Web 2.0 technologies and tools are becoming important for learners in the digital age and educators are seeing the potential of using these technologies for academic goals

(Hughes, 2009). However, there is limited research on how such technologies impact on students or, in other words, how they influence students' learning experience (Mix, 2010; Hew, 2011). Kitsantas and Dabbagh (2011) note that Web 2.0 tools have a significant potential to support student processes and yet empirical research in this area is very limited. Mix (2011) and Hew and Cheung (2011) also note the lack of empirical research.

An important contribution of this research is to provide rich empirical evidence exploring how students are using Web 2.0 and indicating its contribution to learning. Moreover, this research contributes to communal constructivism learning theory. The results of this research showed that Facebook and YouTube as ICTs provide learners with the tools to create new learning for themselves, and to contribute and store their new knowledge in a communal knowledge base for the benefit of a community's existing and new learners; this is a form of "Communal Constructivism". Holmes and Gardner (2006) represent communal constructivist e-learning as by weblogs (blogs) and multi-editor wiki systems (wikis), based on communities of users/learners in a communal constructivist context. The results of this study show that social network sites (SNSs), such as Facebook, and video-sharing sites, such as YouTube, as Web 2.0 technologies can create a community of learners as proposed by communal constructivism theory.

This research contributes by providing evidence of how students are using YouTube and social network site Facebook for education. This research expands the understanding of the use of YouTube in learning and helps in determining how students are using YouTube as a video-sharing site. The findings of this research show that students are learning by using YouTube for: (1) watching videos; (2) sharing videos among themselves; (3) archiving learning content; (4) searching for content videos, (5) social networking and (6) broadcasting and distributing learning materials. Then this research expands the understanding of the use of Facebook in learning, as well as helping to determine how students are using Facebook as a social network site. The findings of this research show that students are learning by using Facebook in learning for: (1) Communication between students and teachers, (2) Sharing resources, (3) Using the calendar, (4) Asking questions, (5) Discussing, (6) Social networking, (7) Creating a Facebook group for the class, (8) Collaborating, (9) Commenting on friends' posts, (10)

Evaluating the work of others, and (11) Expressing support and encouragement among students.

Huge amounts of money have been spent on integrating technology into student learning. However, no real difference has been seen in the ways technology has been integrated into the classroom (Cuban, 2001; Laffey, 2004; Norris et al., 2003; Christensen et al., 2010). Many researchers point out that the current e-learning does not integrate technology into student learning effectively (Farris-Berg, 2005; Tondeur et al., 2008; Voogt, 2008). This research, based on empirical evidence, makes a contribution by taking a further step in understanding and determining one reason for this problem. This research shows another type of factor impacting on the successful integration of technology in e-learning: the distance between e-learning policy, teachers' practice and students' practice which makes ICT in learning three worlds apart. This research has developed an e-learning strategy framework based on three dimensions: a policy dimension, a learning strategy dimension and a structural dimension. This framework attempts to increase the change in how students learn by making policy makers and researchers aware of the problem that an e-learning policy could be different from the actual practices of both teachers and students. This framework is built on Web 2.0 technologies and tools which are becoming a very strong presence for learners in the digital age and the framework could help to increase awareness of the use of Web 2.0 tools in engaging young people with technologies, connecting them to social worlds in a participatory and collaborative way. This is important as, currently, there is a gap between student learning and the modes of learning in the educational system.

### **8.4 Practical Contributions**

#### **8.4.1 Implications for Teacher**

This study also leads to important practical implications for teacher. In a recent research study, Chen and Bryer (2012) mention that there is a lack of empirical research in terms of what strategies teachers use for teaching with Web 2.0 as social media. The results of this research could help teachers to understand how to use Web 2.0 as social media YouTube and Facebook for education. In previous research, researchers have highlighted the importance of using web 2.0 in e-learning and listed the tools that can be used, while they do not show or explain how to use it. However, this research reveals how to use web 2.0 in learning by showing existing examples of integrating web 2.0

with learning successfully by students, these examples on one hand show teachers examples of how to apply and use web 2.0 in to their current learning strategy and on the other hand they aid teachers to support their students' in their using.

Moreover, this research shows that Facebook and YouTube could be considered as part of the hidden curriculum for e-learning. The basic concept of the 'Hidden Curriculum' is that learners learn much more than the content of the formal curriculum (Clarke, 2009; Jackson, 1990). Clearly, Facebook and YouTube are part of the hidden curriculum where learners can learn much more than the content of the formal curriculum; this can be conceptualised as forming part of the 'hidden curriculum' of online learning.

### **8.4.2 Implications for Policy Maker**

This research found a distance between e-learning policy, teachers' practice and students' practice. This is important because e-learning strategies that are adopted by policy makers are different from what is actually happening in classes (i.e. in teacher practice) and both are different from how students choose to learn (i.e. student practice). Thus, the aspirations of national educational authorities to foster ICT integration in schools does not easily result in concrete changes in instructional practices at a class level, and both are different from student practice. Therefore, the e-learning strategy should triangulate e-learning policy, teachers' practice and students' practice. This triangulation could be achieved by using Web 2.0 as Facebook and YouTube in learning or by integrating them into the current virtual learning environment (VLE). Therefore, policy makers should be aware of the distance between e-learning policy, teachers' practice and students' practice. One solution, to triangulate e-learning policy, teachers' practice and students' practice, is by allowing students and teachers to participate in creating e-learning policy in order to generate ideas and suggestions, and to identify key issues, problems or needs. Therefore, students and teachers participating in creating an e-learning strategy would generate ideas and suggestions; it would also identify key issues, problems or needs in terms of the e-learning strategy.

This lead to redefine the notion of e-learning, as Web 2.0 has changed this by making significant shifts in the way students connect, communicate, create and share information; therefore, it has changed the learning landscape with learners now

becoming active participants who are connected with other learners. E-learning is no longer just software such as virtual learning environments (VLEs); it can also be social network sites, blogs, micro-blogs (Twitter), YouTube or other Web 2.0 tools. Therefore, policy makers should be aware of Web 2.0 tools.

Students, as “digital natives”, grow up in an information society where they are using many types of technologies like Web 2.0 tools such as blogs and social networking sites which have created new modes of interaction and expression. Portimojärvi and Donnell (2010, p. 239) state that technologies such as Learning Management Systems (LMSs) or Virtual Learning Environments (VLEs) are “not meeting the needs of the current generation of students “digital natives”, and that a disparity exists between how the students choose to communicate, in general, and how they are encouraged or required to communicate in accredited courses”. This research show that students are not currently using the Virtual Learning Environment and this is means there is a need to rethink the use of the Virtual Learning Environment. This should meet the needs of the current generation of students (the digital natives) in order to meet the needs of learning nowadays. Therefore, policy makers should rethink the use of the Virtual Learning Environment (VLE) because students were not using it; instead, they were using Facebook.

Moreover, this research showed that Web 2.0 bridging the gap and successfully integrating technology into learning and this is very important for policy makers. This study shows that students are using social networking sites (e.g. Facebook) in learning. Prensky (2006) argues that, in current education, there is a gap between schools and the needs of the new generation as the net-generation or digital natives who have become disengaged from traditional instruction. However, by using Web 2.0 tools, such as social network sites and video-sharing sites, the gap can be bridged between students, as digital natives, and the educational system.

Many research studies show that, in using technologies in learning, there has often been a failure to integrate ICTs into education and also, therefore, a failure to achieve the expected effects on learning (Smeets, 2005; Voogt, 2008). This failure can be seen in the result of this study concerning the e-learning portal; at the same time, this failure can be compared with the success of students’ usage of Web 2.0 tools in learning.

Without even an instructor being present, students have shown a very impressive integration between ICT tools and their learning which has had a direct and positive effect on their learning. In this research, Web 2.0 tools, such as the social network site, Facebook, and the video-sharing site, YouTube, have successfully integrated technology in education and have also resulted in having a positive effect on students' learning.

Furthermore, the above discussion on the contributions and implications of e-learning strategy provides a basis for guidelines to policy makers for e-learning strategy 2.0, which could be "Listening to Student Voices". This research shows the gap between education policy, teachers' practices and students' practices in terms of using technology in learning. E-learning Strategy 2.0 represents the notion of listening to students' voices regarding the use of technology. The investigation in this research into the role of Web 2.0 shows that it is not playing a sufficient role in e-learning policy; at the same time it is playing a critical role for students. Therefore, there is need for strategic direction for e-learning in order for it to have a significant impact because, although a large amount of money has been spent on adopting e-learning into learning systems, it has resulted in little change to how students learn. For the E-learning Strategy 2.0, there are certain points education policy decision-makers should be aware of in using and integrating technology into education. These points are:

1. Today's students (or digital natives) are no longer the people our education system was designed to teach;
2. Web 2.0 is playing a critical role in students' education;
3. Web 2.0 has changed the learning landscape
4. The use of Web 2.0 tools is growing;
5. Web 2.0 has changed how students learn;
6. Students use technology mainly outside school;
7. E-learning is not only a virtual learning environment (VLE) package;
8. Disparity exists between how students choose to communicate and how they are encouraged or required to communicate;
9. The current Virtual Learning Environments (VLEs) are not meeting the needs of the current generation of students (or digital natives);
10. In school, technology use is not integrated or may be unsuccessfully integrated;
11. Students want to use technology to learn, and in a variety of ways;
12. Web 2.0 is an interactive space that facilitates learning;

13. Web 2.0 can create a community of learners;
14. Web 2.0 bridges the gap between students and the educational system;
15. Web 2.0 can successfully integrate technology in learning;
16. Teachers are struggling to use technology in learning.

## **8.5 Research Limitations and Delimitations**

The research has focused on learning strategy and Web 2.0 only in e-learning; it was also restricted by the researcher's time and the word count. Although the boundaries of the Web are admittedly limitless, this research aims to investigate and evaluate the e-learning strategy for high schools participating in the Schools of the Future Project developed by the Ministry of Education in the Kingdom of Bahrain which means that the study is limited to this region. The e-learning policy, teachers' practice, students' practice, use of certain Web 2.0 tools and the learning environment in the Kingdom of Bahrain are different from those in other countries outside the region in the digital age. This limits the generalisations of this research study to the Kingdom of Bahrain and this region. A very large number of Web 2.0 tools and technologies is available online and it was impossible to cover all of these in this research.

Although the researcher used questionnaires to confirm the results of his observations and to triangulate the results, it is possible the thesis is affected by bias because of: (1) the researcher's experience and knowledge; and (2) the schools chosen for the observations. This research started in 2007 and was a new field at the beginning of the research as the use of social networking was in its infancy; at the same time, literature was developing on this theme during the research. Moreover, the data collection occurred prior to the Arab Spring and, since the Arab Spring, the use of social networks and social media has increased dramatically. For example, while the Kingdom of Bahrain was one of the top 10 in terms of new Twitter users in the Arab region (Salem and Mourtada, 2011), the results do not show the effect of Twitter. Finally, the results of this study are limited due to this and the time needed to collect the data because technology is changing very fast.

## **8.6 Further Research**

Based on the results and the research journey, there are some areas that need further research. These areas are: (1) Data should be recollected after the Arab Spring because,

after this, the use of social networks and social media has increased dramatically in the Kingdom of Bahrain; (2) There is a need to understand why policy makers do not pay attention to Web 2.0 and/or why Web 2.0 does not play a role in e-learning policy; (3) There is also a need to rethink the virtual learning environment (VLE); (4) It is important to understand how to integrate Web 2.0 into education from the perspective of teachers; (5) To comprehend how students and teachers could use Twitter for education is an important line of future research, and (6) There is an opportunity for further research to explore how different students approach e-learning

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**APPENDICES**



## APPENDICES

## APPENDIX 1: School Time Table (English)

**Secondary School Time Table In The  
Kingdom Of Bahrain 2009/2010**

Lecture	Time		Duration
	From	To	
First	7:30	8:05	45 Minutes
Second	8:10	8:55	45 Minutes
Third	9:00	9:45	45 Minutes
First Break	9:45	10:15	
Fourth	10:15	11:00	45 Minutes
Fifth	11:05	11:50	45 Minutes
Second Break	11:50	12:00	
Sixth	12:00	12:45	45 Minutes
Seventh	12:45	1:30	45 Minutes

Note: The school start at 7:10am and from 7:10 to 7:25 Morning line

## APPENDIX 2: STUDENT QUESTIONNAIRE (ENGLISH)

### STUDENT QUESTIONNAIRE

#### Introduction

Dear Student,

This questionnaire concerns your usage of technologies and your personal opinions about using technologies and the e-learning project in the Schools of the Future developed by the Ministry of Education. This questionnaire aims to help in improving the e-learning project in the Kingdom of Bahrain. There is no need to write your name when you complete this questionnaire. This questionnaire will be used for academic purposes only. The terms 'Information and Communications Technology' (ICT) and 'technology' are used here as catch-all terms to refer to the use of computers and other related technologies. We deeply appreciate your precious time and effort.

#### Instructions for completion

Please mark the box like this  against the option which most closely represents your answer. If there is a five-point scale, then mark the box which you think most closely represents your views. For instance, in the example shown, the respondent has indicated he/she thinks accessing information from DVDs is a useful part of learning but that it is not "very" useful.

**Q7: How useful have you found the following uses of technology as part of your learning?**

			Totally useless					Very useful	N/A
			1	2	3	4	5		
Accessing DVDs	information	from	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The N/A box means  
'Not applicable'.

**Part 1: Student Information****Q1: What is your school?****Boys' Schools:**

- Sheikh Khalifa Technological Institute
- Al Hidaiya Al Khalifia Secondary School
- Ahmed Al Omran Secondary School
- East Rifa Secondary School
- Hamad Town Intermediate Secondary School
- Al-Naeem Secondary School

**Girls' Schools:**

- Al Istiqlal Secondary Commercial School
- Al Hoorra Secondary Commercial School
- Sitra Secondary School
- West Rifa Secondary School
- Isa Town Secondary Commercial School
- Khawla Secondary School

**Q2: In which of these tracks or areas do you study?**

- Scientific track                       Literary track
- Commercial track                       Textile track
- Technical track

**Q3: What level you are?**

- First year                       Second year                       Third year

**Q4: Gender.**

- Are you?                       Male                       Female

**Q5: Nationality**

- Are you?                       Bahraini
- Arabian Gulf: --- -----
- Other: -----

**Q6: What is your GPA?**

- 100%-91%                       90%-81%                       80%-71%
- 70%-61%                       60%-51%                       less than 50%

**Part 2: Technology****Q7: How often does your teacher use these ICTs as part of your learning:**

	Every lesson	Most lessons	Some lessons	Never	D/k
MS PowerPoint	<input type="checkbox"/>				
Interactive Whiteboard (Smart Board)	<input type="checkbox"/>				
Data projector	<input type="checkbox"/>				
Class notes online	<input type="checkbox"/>				
Book Zero (eBook)	<input type="checkbox"/>				
Networked PCs	<input type="checkbox"/>				
Internet websites	<input type="checkbox"/>				
EduWave website	<input type="checkbox"/>				
Discussion boards	<input type="checkbox"/>				
Video-conferencing	<input type="checkbox"/>				
TV/VCR/DVD	<input type="checkbox"/>				
CD-ROM	<input type="checkbox"/>				
Email comments	<input type="checkbox"/>				
Email for assessment feedback	<input type="checkbox"/>				
Mobile devices (PDAs etc.)	<input type="checkbox"/>				
Weblogs (blogs)	<input type="checkbox"/>				
Microblogging (e.g. Twitter)	<input type="checkbox"/>				
Video-sharing (e.g. YouTube)	<input type="checkbox"/>				
Picture-sharing (e.g. Flickr)	<input type="checkbox"/>				
Wiki	<input type="checkbox"/>				
Document-sharing (e.g. Scribd)	<input type="checkbox"/>				
Social bookmarking (e.g. delicious)	<input type="checkbox"/>				
Forum	<input type="checkbox"/>				
Social networks (e.g. Facebook)	<input type="checkbox"/>				

**Q8: How often do you use these ICTs technologies in your daily life? (if you do not know what any of them mean, please choose Never)**

	Daily	Weekly	Monthly	Never
Computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short Message Service (SMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Weblogs (blog)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microblogging (e.g. Twitter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video-sharing (e.g. YouTube)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picture-sharing (e.g. Flickr)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wiki	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document-sharing (e.g. Scribd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social bookmarking (e.g. delicious)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social networks (e.g. Facebook)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Podcast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chatting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MySpace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q9: If you are using the new technologies, please state**

**A) Which Social Network you are using**

Facebook                       Other: \_\_\_\_\_                       Not using

**B) Which video-sharing website you are using**

YouTube                       Other: \_\_\_\_\_                       Not using

**C) Which picture-sharing website you are using**

Flickr                       Other: \_\_\_\_\_                       Not using

**D) Do you have a personal blog?**

Yes                       No

**Q10: How you are using social networks (Facebook), picture-sharing (Flickr), video-sharing (YouTube), blogs, document-sharing (Scribd), social bookmarking (delicious) and Twitter in learning?**

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**Q11: How many hours do you spend using the internet daily?**

1-3 hours                       4-6 hours                       7-9 hours

**Q12: Do you access the internet on your mobile?**

Yes                       No

**Q13: With regard to using the new technologies, such as Facebook, Flickr, YouTube, blogs, document-sharing, Twitter etc., how much do you agree with the following statements:**

	Strongly Disagree				Strongly Agree	N/A
	1	2	3	4	5	
I can learn from using social networks such as Facebook	<input type="checkbox"/>					
I can learn from picture-sharing sites such as Flickr	<input type="checkbox"/>					
I can learn from video-sharing sites such as YouTube	<input type="checkbox"/>					
I can learn from blogs	<input type="checkbox"/>					
I can learn from document-sharing sites such as Scribd	<input type="checkbox"/>					
I can learn from Twitter	<input type="checkbox"/>					
I can learn from social bookmarking such as delicious	<input type="checkbox"/>					
I can learn from forums	<input type="checkbox"/>					
These tools (blogs, wikis, YouTube, Facebook) enhance collaborative learning	<input type="checkbox"/>					

**Q14: Are you using these tools and services (forums, blogs, wikis, YouTube, Facebook, Flickr) for the following? (Mark those which apply.)**

- |  |  |
|--|--|
| <input type="checkbox"/> Communicate with your friends   | <input type="checkbox"/> Comment on friends' posts |
| <input type="checkbox"/> Share resources among students  | <input type="checkbox"/> Ask questions             |
| <input type="checkbox"/> Evaluate the work of others   | <input type="checkbox"/> For discussions           |
| <input type="checkbox"/> Express and exchange messages of support and encouragement among students |  |
| <input type="checkbox"/> Other:-----   |  |

**Q15: How often do you use these as part of your learning: (if you do not know what any of these mean, please choose Never)**

	Daily	Weekly	Monthly	Never
MS PowerPoint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book Zero (eBook)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Networked PCs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EduWave websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion boards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video-conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TV/VCR/DVD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flash Memory "USB"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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CD-ROM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Email comments to teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Email comments to student	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Email for assessment feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Short Message Service (SMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mobile devices (PDAs etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Weblogs (blogs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Microblogging (e.g. Twitter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Video-sharing (e.g. YouTube)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Picture-sharing (e.g. Flickr)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wiki	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Document-Sharing (e.g. Scribd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Social bookmarking (e.g. delicious)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Forum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Social Networks such as Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Podcast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Chatting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Q16: How useful have you found the following applications of technology as part of your learning? (if you do not know what any of these mean, please choose N/A)</b>					
	Totally Useless			Very Useful	N/A
	1	2	3	4	5
PowerPoint presentations	<input type="checkbox"/>				
Using MS Office (Word, Excel, Access etc.) applications	<input type="checkbox"/>				
Using the Internet to find information	<input type="checkbox"/>				
Accessing information from CD-ROMs	<input type="checkbox"/>				
Accessing information from DVDs	<input type="checkbox"/>				
Using email	<input type="checkbox"/>				
Accessing EduWave	<input type="checkbox"/>				
Downloading lecture notes and messages from the Intranet "EduWave"	<input type="checkbox"/>				
Using message boards and chat rooms on EduWave/Intranet	<input type="checkbox"/>				
Using self-assessment tests	<input type="checkbox"/>				



**Part 3: Parents**

**Q20: What is the level of your parents' education?**

**Mother:**

- Less than secondary school                       Secondary school  
 Diploma / Bachelor's Degree                       Master's / Doctorate Degree  
 D/K (Don't know)                       N/A (Not applicable)

**Father:**

- Less than secondary school                       Secondary school  
 Diploma / Bachelor's Degree                       Master's / Doctorate  
 D/K (Don't know)                       N/A (Not applicable)

**Q21: With regard to your parents using EduWave, how much do you agree with the following statements:**

	Strongly Disagree				Strongly Agree		N/A
	1	2	3	4	5		
I like my parents to use EduWave	<input type="checkbox"/>						
It is useful for my learning	<input type="checkbox"/>						

**Q22: Do your parents use the internet?**

**Mother**

- No → **Why:** \_\_\_\_\_  
 Yes,                       D/K (Don't know)                       N/A

**Father**

- No → **Why:** \_\_\_\_\_  
 Yes,                       D/K (Don't know)                       N/A

**Q23: Do your parents use EduWave? (For example, to track your progress on EduWave)**

**Mother**

- No → **Why:** \_\_\_\_\_  
 Yes,                       D/K (Don't know)                       N/A

**Father**

- No → **Why:** \_\_\_\_\_  
 Yes,                       D/K (Don't know)                       N/A

**Q24: How often do your parents use EduWave?**

- Daily     
  Weekly     
  Monthly     
  Semester     
  D/K     
  N/A

**Part 4: Support**

**Q25: Do you need help and support with technologies in school?**

- Yes                                     
  No

**Q26: Is there a help or support system for students in your school?**

- Yes                                     
  No

**Q27: How are you helped to use technology in your school? (Mark those which apply.)**

- Face-to-face                     
  Email                             
  During lessons  
 In own time                     
  Help Desk

**Q28: How do you rate the technical support you receive in school?**

- |                          |                          |                          |                          |                          |           |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| Very poor                |                          |                          |                          |                          | Very good |
| 1                        | 2                        | 3                        | 4                        | 5                        |           |
| <input type="checkbox"/> |           |

**Q29: What technical support is available? (Mark those which apply)**

- Help Desk  
 On-line help  
 Other (please specify) -----

**Q30: Do you face these problems in using technology? (Mark those which apply)**

- Technical problems                     
  Internet addiction  
 Poor use of your information             
  Social problem  
 Scams   
  Hacking or viruses  
 Other (please specify) -----

**Q31: What types of problem have you faced that are related to using ICTs and that are non-technical problems, such as poor use of your information or social problems?**

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**Q32: Do you need help with any problems that are based on technology, such as Internet addiction or social problems?**

- Yes  No

### **Part 5: Resources**

**Q33: Are there enough open access PCs in the school for you to use for completing course work?**

- Yes  No

**Q34: Are they accessible at times that are useful to you?**

- Yes  No

**Q35: Do you have a computer at home?**

- Yes  No → [Please go to Q37]

**Q36: Is the computer....**

- A private computer (i.e. “only for me”)?  
 A shared computer in the home?

**Q37: What type of computer is this?**

- Desktop  Laptop

**Q38: Do you use a computer at home or outside the school for studying?**

- No → [Please go to Part 6]  
 Yes, but have no Internet access → [Please go to Part 6]  
 Yes, with an Internet connection

**Q39: In general, at home, do you find you have problems with:** (*Mark those which apply*)

- Time  Space  
 Connecting to the Internet  Cost of printing

**Q40: Do you access materials through EduWave (such as lecture notes, announcements, tests and quizzes) from home as well as at school?**

- Yes  No → [Please go to Part 6]

**Q41: Do you have any of the following problems accessing EduWave from your home PC?** (*Mark those which apply*)

- Restricted times for using the Internet  Slow connection

- Interface problems (layout, colours)  None  
 Other (please specify) -----

**Q42: If you do study at home, how much do you agree with the following statements:**

	Strongly disagree 1	2	3	4	Strongly agree 5
More able to learn at my own pace than in class	<input type="checkbox"/>				
Able to work at times best suited to me	<input type="checkbox"/>				
Allows more time for reflection	<input type="checkbox"/>				
Prefer working in groups	<input type="checkbox"/>				
Like to have a teacher to help me	<input type="checkbox"/>				
Like to have things explained in sequence	<input type="checkbox"/>				

**Part 6: EduWave & Content**

**Q43: With regard to using EduWave, how far do you agree or disagree that:**  
 ...

	Strongly disagree 1	2	3	4	Strongly agree 5
It is easy to navigate EduWave	<input type="checkbox"/>				
I can move from page to page, and link to link with ease without getting lost or confused	<input type="checkbox"/>				
The navigation language is clear and understandable	<input type="checkbox"/>				
The information is easy to find	<input type="checkbox"/>				
Teachers motivate and encourage students to use EduWave	<input type="checkbox"/>				
E-learning creates a sense of collaborative teamwork and “groupness”	<input type="checkbox"/>				

**Q44: Thinking about the e-learning (EduWave) content of the course that you access independently through the Internet (at school or at home) compared to other content (e.g. text books, TV and video), how much do you agree or disagree that:**

	Strongly disagree 1	2	3	4	Strongly agree 5
It is more fun	<input type="checkbox"/>				

It is flexible	<input type="checkbox"/>				
It is more focused	<input type="checkbox"/>				
It is user friendly	<input type="checkbox"/>				
It is visually more stimulating	<input type="checkbox"/>				
I learn faster	<input type="checkbox"/>				
I remember more	<input type="checkbox"/>				
It is easy to use and follow	<input type="checkbox"/>				
It is more practical	<input type="checkbox"/>				
It is more reflective, it help me learn	<input type="checkbox"/>				
I can do the work in my own time	<input type="checkbox"/>				

**Q45: Are you using EduWave (the e-learning portal) to:** *(Mark those which apply)*

- Communicate and interact with other students
- Communicate and interact with teachers
- Ask questions
- Give opinions
- Share information and opinions

**Q46: In general, do you find that the electronic content on the courses you access independently is:**

- Too simple                       Too difficult                       About right

**Part 7: Learning Outcomes**

**Q47: To what extent do you agree/disagree with the following statements?**

**Increased use of ICT/online learning:**

	Strongly disagree				Strongly agree
	1	2	3	4	5
...will lead to better grades	<input type="checkbox"/>				
...will help students get a job at the end of their studies	<input type="checkbox"/>				

**Finally,**

**Q48: Have you any other comments on the use of technology as part of your learning?**

-----  
-----  
-----  
-----

**On the e-learning project in the Kingdom of Bahrain?**

-----  
-----  
-----  
-----

**Thank you for your time and co-operation in completing this questionnaire.**

### APPENDIX 3: TEACHER QUESTIONNAIRE (ENGLISH)

#### TEACHER QUESTIONNAIRE

##### Introduction

This questionnaire concerns your usage of technologies and your personal opinions about using technologies and the e-learning project in the Schools of the Future developed by the Ministry of Education. This questionnaire aims to help in improving the e-learning project in the Kingdom of Bahrain. There is no need to write your name when you complete this questionnaire. This questionnaire will be used for academic purposes only. The terms 'Information and Communications Technology' (ICT) and 'technology' are used here as catch-all terms to refer to the use of computers and other related technologies. We deeply appreciate your precious time and effort.

##### Instructions for completion

Please mark the box like this  against the option which most closely represents your answer. If there is a five-point scale, then mark the box which you think most closely represents your views. For instance, in the example below, the respondent has indicated he/she uses ICT/technology in classroom teaching a lot but not constantly.

##### Q9: How often do you currently use ICT/technology in:

	Never			Constantly	N/A	
	1	2	3	4	5	
a) Classroom teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The N/A box means  
'Not Applicable'.

**Part 1: Teacher Information**

As part of the questionnaire we need to collect teacher information to ensure that every teacher's views are represented, and to ensure equality of opportunity. All answers are anonymous and confidential.

**Q1: What subject do you teach?**

- Science       Arabic       English  
 Maths       Business       Other: -----

**Q2: What is your school?****Boys' Schools:**

- Sheikh Khalifa Technological Institute  
 Al Hidaiya Al Khalifia Secondary School  
 Ahmed Al Omran Secondary School  
 East Rifa Secondary School  
 Hamad Town Intermediate Secondary School  
 Al-Naeem Secondary School

**Girls' Schools:**

- Al Istiqlal Secondary Commercial School  
 Al Hoorra Secondary Commercial School  
 Sitra Secondary School  
 West Rifa Secondary School  
 Isa Town Secondary Commercial School  
 Khawla Secondary School

**Q3: How many years you been working as a teacher?**

(if less than a year, indicate 1-5 years)

- 1-5 years       6-10 years       11-20 years  
 21-30 years       31-40 years       more than 40 years

**Q4: Gender.**

Are you?       Male       Female

**Q5: Nationality**

Are you?       Bahraini  
 Arabian Gulf: -----  
 Other: -----

**Q6: How old are you?**

20-23       24-32       33-42       43-55       55+

**Q7: What is your level of education?**

Secondary School       Diploma Degree  
 Bachelor's Degree       Master's Degree  
 Doctorate Degree

**Part 2: Technology**

Please provide us with an honest assessment of how enthusiastic you feel about using computers and other related technologies in your school.

**Q8: How would you characterise your attitude towards:**

	Not at all enthusiastic			Very enthusiastic		Too little experience
	1	2	3	4	5	
a) ICT/technology generally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) ICT/technology in teaching and learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q9: How often do you use these ICTs technologies in your daily life? (If you do not know what any of them means, please choose Never)**

	Daily	Weekly	Monthly	Never
Computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short Message Service (SMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weblogs (blog)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microblogging (e.g. Twitter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video-sharing (e.g. YouTube)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picture-sharing (e.g. Flickr)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wiki	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document-sharing (e.g. Scribd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social bookmarking (e.g. delicious)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social networks such as Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Podcast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chatting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MySpace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q10: Are you using the new technologies such as Facebook, YouTube, Flickr, Blogs, Twitter?**

Yes                       No → [Please go Q13] → Why: -----  
 --

**E) Which social network do you use?**

Facebook                       Other: \_\_\_\_\_                       Not using

**F) Which video-sharing site do you use?**

YouTube                       Other: \_\_\_\_\_                       Not using

**G) Which picture-sharing site do you use?**

Flickr                       Other: \_\_\_\_\_                       Not using

**H) Do you have a personal blog?**

Yes                       No

**Q11: Are you using these new technologies (Facebook, YouTube, Flickr, Blog, Twitter, forums) to communicate with:**

Students                       Staff and Teachers                       Friends

**Q12: How you are using these new technologies (e.g. Facebook, YouTube, Flickr, Blogs, Twitter, forums) in learning?**

-----  
 -----

**Q13: With regard to using the new technologies (Facebook, YouTube, Flickr, Blogs, Twitter, forums), how much do you agree with the following statements:**

	Strongly disagree				Strongly agree	N/A
	1	2	3	4	5	
Student can learn from these tools	<input type="checkbox"/>					
These tools can support learning by doing	<input type="checkbox"/>					

These tools can enhance collaborative learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can acquire knowledge by using these tools and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can design and develop activities for students with these tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I need the help of an expert user to handle these tools and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q14: How many hours do you spend using the internet daily?</b>						
<input type="checkbox"/> I don't use it	<input type="checkbox"/> Less than 1 hour				<input type="checkbox"/> 1-3 hours	
<input type="checkbox"/> 4-6 hours	<input type="checkbox"/> 7-9 hours					
<b>Q15: Do you access the internet on your mobile?</b>						
<input type="checkbox"/> Yes	<input type="checkbox"/> No					
<b>Q16: How often do you currently use ICT/technology in:</b>						
	Never			Constantly		N/A
	1	2	3	4	5	
Classroom teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feedback/communication with learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desk at school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication with staff and teachers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Q17: How valuable is ICT/technology in:</b>						
	Not at all			Essential		N/A
	1	2	3	4	5	
Classroom teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workshops/learning centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feedback/communication with learners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desk at school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication with staff and teachers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q18: To what extent has the new learning technology changed the way you work over the last 5 years? (Please mark one.)**

Not at all      A little      Quite a lot      Completely      N/A

**Q19: Are there any applications of technology which you are not using currently, but would like to be used as part of learning in your school? (For example, YouTube or other)**

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**Q20: As a teacher, how do you usually work with other teachers and staff? (Mark those which apply)**

Face-to-face                       Telephone                       Email

Chat room                       Discussion forum                       Message (SMS)

Social network such as Facebook                       Other -----

**Part 3: Students' Parents**

**Q21: With regard to students' parents using EduWave, how far do you agree with the following statements?**

	Strongly disagree					Strongly agree		N/A
	1	2	3	4	5			
It is important that students' parents use EduWave	<input type="checkbox"/>							
It will improve students' learning	<input type="checkbox"/>							

**Q22: Do students' parents contact you about their children's progress via EduWave?**

Yes

No                      →                      **Why:**

\_\_\_\_\_

**Part 4: Support**

**Q23: How satisfied are you with the IT support offered in relation to the following:**

Very dissatisfied                      Very satisfied                      N/A

	1	2	3	4	5	
a) Use of the intranet	<input type="checkbox"/>					
b) Hardware	<input type="checkbox"/>					
c) Software	<input type="checkbox"/>					
d) Staff development & training	<input type="checkbox"/>					
e) Teaching materials	<input type="checkbox"/>					

**Q24: How many courses have you attended in the last 3 years which were designed to:**

Improve your technology skills? -----

Help you use technology in teaching? -----

**Q25: How satisfied were you with the courses that were designed to:**

	Very dissatisfied				Very satisfied	N/A
	1	2	3	4	5	
Improve your technology skills	<input type="checkbox"/>					
Help you use technology in teaching	<input type="checkbox"/>					

**Q26: How well prepared do you feel to deliver and support learning using ICT/technology?**

Not at all prepared					Very prepared
1	2	3	4	5	
<input type="checkbox"/>					

**Q27: What types of support have you requested?**

*(Please mark all that apply)*

- |   |   |
|---|---|
| <input type="checkbox"/> Help with basic IT problems  | <input type="checkbox"/> Help with network problems       |
| <input type="checkbox"/> Help in using EduWave        | <input type="checkbox"/> Using specific learning software |
| <input type="checkbox"/> Help with teaching materials | <input type="checkbox"/> Other (Please specify) -----     |

**Part 5: Resources**

Clearly the use of ICT is not appropriate for all learning occasions. However, this question relates to times when you consider ICT would be useful in the classroom or learning centre.

**Q28: How often do you find the following factors prevent a greater use of e-learning in the classroom or e-learning centre?**

	Never					All the time				
	1	2	3	4	5	1	2	3	4	5
a) Unreliable network	<input type="checkbox"/>									
b) Insufficient equipment	<input type="checkbox"/>									
c) Ill-equipped rooms (e.g. lack of network points)	<input type="checkbox"/>									
d) Poor software / learning materials	<input type="checkbox"/>									
e) Lack of electronic course content	<input type="checkbox"/>									
f) Lack of support and guidance	<input type="checkbox"/>									
g) Lack of students' ICT skills	<input type="checkbox"/>									
a) Students' reluctance to use materials	<input type="checkbox"/>									

**Q29: Are there any other factors preventing a greater use of e-learning in the classroom or e-learning centre?**

- No
- Yes: .....

**Q30: Would you be more likely to use technology in the classroom if there were:**

	Not at all					A great deal				
	1	2	3	4	5	1	2	3	4	5
More training for teaching staff in general ICT skills	<input type="checkbox"/>									
More training for teaching staff in using ICTs in teaching and learning	<input type="checkbox"/>									
More and better technology equipment	<input type="checkbox"/>									
A personal PC in the classroom for every teacher	<input type="checkbox"/>									
More e-learning or information learning technology content	<input type="checkbox"/>									

**Q31: Do you have a computer at home?**

- Yes, without an internet connection
- Yes, with an internet connection
- No

**Part 6: EduWave & Content**

**Q32: Are you using EduWave?**

- Yes
- No: Why:-----

**Q33: How often do you use the following methods and equipment for delivering learning and teaching in your classroom or e-learning centre?**

*(If you do not know what any of these mean, please choose Never)*

	Never		All the time			N/A
	1	2	3	4	5	
PowerPoint	<input type="checkbox"/>					
Interactive whiteboard	<input type="checkbox"/>					
Video conferencing	<input type="checkbox"/>					
Data projector	<input type="checkbox"/>					
Stand-alone PCs for some students	<input type="checkbox"/>					
Networked PCs for some students	<input type="checkbox"/>					
Stand-alone PCs for each student	<input type="checkbox"/>					
Networked PCs for each student	<input type="checkbox"/>					
One PC for staff or student use	<input type="checkbox"/>					
Mobile devices (PDAs etc.)	<input type="checkbox"/>					
Weblogs (blogs)	<input type="checkbox"/>					
Microblogging (e.g. Twitter)	<input type="checkbox"/>					
Video-sharing (e.g. YouTube)	<input type="checkbox"/>					
Picture-sharing (e.g. Flickr)	<input type="checkbox"/>					
Wiki	<input type="checkbox"/>					
Document-sharing (e.g. Scribd)	<input type="checkbox"/>					
Social bookmarking (e.g. delicious)	<input type="checkbox"/>					

**Q34: Are any of the courses you teach available in EduWave?**

- Yes       No

**Q35: If Yes, roughly what proportion of your work involves delivering e-learning?**

- 0-20%       21-40%       41-60%       61-80%       81-100%

**Q36: How often do you use EduWave on the courses that you teach:**

	Never		3	All the time		N/A
	1	2		4	5	
a) To post lecture notes	<input type="checkbox"/>					
b) To post seminar themes and questions	<input type="checkbox"/>					
c) To display course calendar/timetable information	<input type="checkbox"/>					
d) For tracking an individual student's progress	<input type="checkbox"/>					
e) For posting tests and quizzes	<input type="checkbox"/>					
f) As a notice board	<input type="checkbox"/>					
g) As a chat-room for discussion with/between students	<input type="checkbox"/>					
h) To email feedback to learners	<input type="checkbox"/>					

**Part 7: Outcomes****Q37: In your view, how much impact does the use of technology in teaching and learning have on the following outcomes?**

	None			A great deal		D/K
	1	2	3	4	5	
Improved retention	<input type="checkbox"/>					
More enjoyable learning experience	<input type="checkbox"/>					
Making students more motivated	<input type="checkbox"/>					
Higher overall grades	<input type="checkbox"/>					
Making students more employable	<input type="checkbox"/>					
Better record keeping	<input type="checkbox"/>					
Easier management of courses	<input type="checkbox"/>					

**Q38: Is e-learning creating a sense of collaborative teamwork and “groupness” between students?** Yes No**Q39: To what extent do you think:**

	None				A great deal	D/K
	1	2	3	4	5	
Students' learning outcomes have improved because of the application of technology so far	<input type="checkbox"/>					
Learning outcomes will improve in the future because of the application of technology	<input type="checkbox"/>					

**Finally,**

**Q40: Have you any other comments on:**

**The use of technology as part of learning?**

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**The e-learning project in the Kingdom of Bahrain?**

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**Thank you for your time and co-operation in completing this questionnaire.**

## APPENDIX 4: STAFF QUESTIONNAIRE (ENGLISH)

### STAFF QUESTIONNAIRE

#### Introduction

Dear Staff,

This questionnaire concerns your usage of technologies and your personal opinions about using technologies and the e-learning project in the Schools of the Future developed by the Ministry of Education. This questionnaire aims to help in improving the e-learning project in the Kingdom of Bahrain. There is no need to write your name when you complete this questionnaire. This questionnaire will be used for academic purposes only. The terms 'Information and Communications Technology' (ICT) and 'technology' are used here as catch-all terms to refer to the use of computers and other related technologies. We deeply appreciate your precious time and effort.

#### Instructions for completion

Please mark the box like this  against the option which most closely represents your answer. If there is a five-point scale, then mark the box which you think most closely represents your views. For instance, in the example below, the respondent has indicated he/she uses ICT/technology in classroom teaching a lot but not constantly.

#### Q9: How often do you currently use ICT/technology in:

	Never			Constantly		N/A
	1	2	3	4	5	
a) Classroom teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The N/A box means  
'Not Applicable'.

**Part 1: Staff Information****Q1: What type of staff member are you?**

- Management (School principal / Assistant principal)
- Administration (clerical/secretarial)
- Social administration
- Support work (technician/ librarian/ learning centre staff)

**Q2: What is your school?****Boys' Schools:**

- Sheikh Khalifa Technological Institute
- Al Hidaiya Al Khalifia Secondary School
- Ahmed Al Omran Secondary School
- East Rifa Secondary School
- Hamad Town Intermediate Secondary School

**Girls' Schools:**

- Al Istiqlal Secondary Commercial School
- Al Hoorah Secondary Commercial School
- Sitra Secondary School
- West Rifa Secondary School
- Isa Town Secondary Commercial School

**Q3: How many years have you been working?**

(if less than a year, please indicate 1-5 years)

- 1-5 years                       6-10 years                       11-20 years
- 21-30 years                       31-40 years                       more than 40 years

**Q4: Gender.**

**Are you?**                       Male                       Female

**Q5: Nationality**

**Are you?**                       Bahraini

Arabian Gulf: -----

Other: -----

**Q6: How old are you?**

18-23       24-32       33-42       43-55       55+

**Q7: What is the level of your education?**

Secondary school       Diploma Degree  
 Bachelor's Degree       Master's Degree  
 Doctorate Degree

**Part 2: Technology**

Please provide us with an honest assessment of how enthusiastic you feel about using computers and other related technologies in your school.

**Q8: How would you characterise your attitude towards:**

	Not at all	1	2	3	4	5	Very enthusiastic	Too little experience
ICT/technology generally		<input type="checkbox"/>						

**Q9: How often do you use these ICTs/technologies in your daily life? (If you do not know what any of these mean, please choose Never)**

	Daily	Weekly	Monthly	Never
Computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short Message Service (SMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weblogs (blogs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microblogging (e.g. Twitter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video-sharing (e.g. YouTube)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picture-sharing (e.g. Flickr)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wiki	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document-sharing (e.g. Scribd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social bookmarking (e.g. delicious)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social networks such as Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Podcast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Chatting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MySpace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chatting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q10: Do you use the new technologies such as Facebook, YouTube, Flickr, Blogs, Twitter?**

Yes                       No → [Please go Q13] → Why: -----  
 --

**I) Which social network site are you using?**

Facebook                       Other: \_\_\_\_\_                       Not using

**J) Which video-sharing are you using?**

YouTube                       Other: \_\_\_\_\_                       Not using

**K) Which picture-sharing site are you using?**

Flickr                       Other: \_\_\_\_\_                       Not using

**Q11: How many hours do you spend using the internet daily?**

I don't use it                       less than 1 hour                       1-3 hours  
 4-6 hours                       7-9 hours

**Q12: Do you access the internet on your mobile?**

Yes                       No

**Q13: As a staff member, how do you usually work with teachers and other staff? (Mark those which apply):**

Face-to-face                       Telephone                       Email  
 Chat room                       Discussion forum                       Message (SMS)  
 Social networks such as Facebook                       Other -----

**Q14: Do you have a computer at home?**

Yes, without an internet connection  
 Yes, with an internet connection  
 No

**Q15: Are you using EduWave?**

- Yes
- No: Why: -----

**Part 3: Support**

**Q16: How satisfied are you with the IT support offered in relation to the following:**

	Very dissatisfied				Very satisfied	N/A
	1	2	3	4	5	
a) Use of the intranet	<input type="checkbox"/>					
b) Hardware	<input type="checkbox"/>					
c) Software	<input type="checkbox"/>					
d) Staff development & training	<input type="checkbox"/>					

**Q17: How many courses have you attended in the last 3 years which were designed to improve your technology skills? -----**

**Q18: How satisfied were you with the courses that were designed to improve your technology skills?**

	Very dissatisfied				Very satisfied	N/A
	1	2	3	4	5	
	<input type="checkbox"/>					

**Q19: How well prepared do you feel to use ICT/technology in general?**

Not at all prepared				Very prepared
1	2	3	4	5
<input type="checkbox"/>				

**Q20: What types of support have you requested? (Please mark all that apply)**

- Help with basic IT problems                       Help with network problems
- Help in using EduWave                               Other (Please specify) -----

***If you are not a social administrator, please go to Part 5: Finally***

**Part 4: Social Administrators**

**Note: this section covers problems, which are not technical problems that are faced students in connection with the use of ICT and technologies.**

**Q21: How well prepared do you feel to deal with problems that face students that are caused by ICT and technologies?**

	Not at all				Very well
	1	2	3	4	5
	<input type="checkbox"/>				

**Q22: Are problems reported that are caused by ICT and technologies?**

No → **[Go To Question 23]**

Yes

**Q23: What are these problems?**

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**Q24: Concerning these problems faced by students with regard to ICTs and technologies, how far do you agree with the following statements?**

	Strongly disagree	1	2	3	4	Strongly agree
Students face problems in this area	<input type="checkbox"/>					
I need training in this area in order to help students	<input type="checkbox"/>					
Students need help with these problems	<input type="checkbox"/>					

**Q25: In your opinion, how could the help given to Social Administrators be improved in dealing with and solving the problems of these students?**

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**Part 5: Finally**

**Q26: Have you any other comments on the e-learning project in the Kingdom of Bahrain?**

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-----  
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**Thank you for your time and co-operation in completing this questionnaire.**

## APPENDIX 5: STUDENT QUESTIONNAIRE (ARABIC)

## استبانة الطالب

## مقدمة

عزيزي الطالب، هذا الاستبيان يهتم بمدى استخدامك للتكنولوجيا وبرأيك الشخصي حول التعلم الإلكتروني في مشروع جلالة الملك حمد لمدارس المستقبل. وليس هناك حاجة لكتابة اسمك عند استكمال هذا الاستبيان. الهدف من استخدام هذا الاستبيان هو للأغراض الأكاديمية. يستخدم المصطلح (تكنولوجيا المعلومات والاتصالات) للإشارة إلى استخدام الحواسيب وغيرها من التكنولوجيات ذات الصلة في التعليم. شكرا لتعاونك معنا.

## تعليمات لإتمام ملئ الاستمارة

يرجى وضع علامة X في المربع الذي يمثل أوثق جواب بالنسبة إليك. إذا كان هناك خمس درجات، يرجى وضع علامة في المربع الذي تعتقد أنه الأقرب إلى تمثيل رأيك. على سبيل المثال: في المثال التالي، الطالب قد أشار إلى أنه يعتقد أن الحصول على المعلومات من قرص الفيديو الرقمي DVD كجزء من عملية التعلم مفيدة ولكنها ليست مفيدة للغاية.

السؤال: ما مدى الفائدة التي وجدتها في استخدام أدوات التكنولوجيا التالية كجزء من عملية التعلم؟

غير ملائم	مفيدة جدا	5	4	3	2	1	عديمة الفائدة تماما
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الحصول على المعلومات من أقراص الفيديو الرقمية DVD

## القسم الأول: المعلومات الشخصية

س1: ما هي مدرستك؟

مدارس البنين

مدرسة الهداية الخليفية

مدرسة احمد العمران الثانوية

الثانوية

مدرسة الرفاع الشرقي

معهد الشيخ خليفة للتكنولوجيا

الثانوية

مدرسة مدينة حمد

مدرسة النعيم الثانوية

الإعدادية الثانوية

مدارس البنات

مدرسة الحورة

مدرسة الاستقلال الثانوية التجارية

الثانوية التجارية

مدرسة الرفاع الغربي الثانوية  
 مدرسة مدينة عيسى  
 مدرسة خولة الثانوية  
 مدرسة سترة الثانوية

**س2: ما هو تخصصك**  
 علمي (كيمياء أحياء/ فيزياء رياضيات)  
 أدبي (علم اجتماع/ لغات)  
 تجاري  
 صناعي

**س3: ما هي مرحلتك الدراسية؟**  
 السنة الأولى في المرحلة الثانوية  
 السنة الثانية في المرحلة الثانوية  
 السنة الثالثة في المرحلة الثانوية

**س4: الجنس**  
 ذكر  
 أنثى

**س5: الجنسية**  
 بحريني  
 خليجي:  
 أخرى:

**س6: ما هو معدلك الدراسي**  
 من 90% إلى 100%  
 من 81% إلى 90%  
 من 71% إلى 80%  
 من 61% إلى 70%  
 من 51% إلى 60%  
 اقل من 50%

**القسم الثاني: التكنولوجيا**

**س7: كم مرة يستخدم معلمك هذه الأدوات كجزء من العملية التعليمية؟**

لا اعرف ما هو	لا يستخدم	بعض المرات	اغلب المرات	دائماً	
<input type="checkbox"/>	مايكروسوفت بوربوينت MS PowerPoint				
<input type="checkbox"/>	السبورة الذكية				
<input type="checkbox"/>	جهاز العرض Data projector				
<input type="checkbox"/>	مذكرة شرح المدرس على الانترنت				

APPENDICES

<input type="checkbox"/>	الكتاب الإلكتروني				
<input type="checkbox"/>	المواقع الإلكترونية				
<input type="checkbox"/>	صفحة المنظمة التعليمية EduWave				
<input type="checkbox"/>	صفحة النقاش في المنظومة				
<input type="checkbox"/>	التحادث المرئي Video conferencing				
<input type="checkbox"/>	التلفزيون/ الفيديو/ DVD				
<input type="checkbox"/>	السي دي CD				
<input type="checkbox"/>	البريد الإلكتروني للتواصل				
<input type="checkbox"/>	البريد الإلكتروني لتقديم الملاحظات				
<input type="checkbox"/>	النقال Mobile				
<input type="checkbox"/>	المدونات Blog				
<input type="checkbox"/>	مواقع نشر ومشاركة ملفات الفيديو مثل YouTube				
<input type="checkbox"/>	مواقع نشر ومشاركة الصور مثل Flickr				
<input type="checkbox"/>	تويتر Twitter				
<input type="checkbox"/>	الويكي Wiki				
<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd				
<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل Delicious				
<input type="checkbox"/>	المنتديات				
<input type="checkbox"/>	مواقع التواصل الاجتماعي مثل Facebook				

س8: كم مرة تستخدم تقنيات تكنولوجيا المعلومات والاتصالات في حياتك اليومية؟ (إذا لا تعرف ما هو الرجاء اختيار لا استخدم)

	لا استخدم	نادرا	شهريا	أسبوعيا	يومية
الكمبيوتر	<input type="checkbox"/>				
البريد الإلكتروني	<input type="checkbox"/>				
صفحات الانترنت	<input type="checkbox"/>				
رسائل الجوال SMS	<input type="checkbox"/>				
المدونات Blog	<input type="checkbox"/>				
مواقع نشر ومشاركة ملفات الفيديو مثل YouTube	<input type="checkbox"/>				
مواقع نشر ومشاركة الصور مثل Flickr	<input type="checkbox"/>				

<input type="checkbox"/>	تويتر Twitter				
<input type="checkbox"/>	الويكي Wiki				
<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd				
<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل delicious				
<input type="checkbox"/>	المنتديات				
<input type="checkbox"/>	مواقع التواصل الاجتماعي مثل Facebook				
<input type="checkbox"/>	الدرشة الالكترونية chats				
<input type="checkbox"/>	بودكاست Podcast				
<input type="checkbox"/>	MySpace				

س9: إذا كنت تستخدم التقنيات الحديثة، الرجاء تحديد الأتي ( أ ) ما هو الموقع المستخدم للتواصل الاجتماعي

فيس بوك Facebook  أخرى: -----  لا

استخدم

(ب) ما هو الموقع المستخدم للمشاركة ونشر الفيديو؟

YouTube  أخرى: -----  لا

استخدم

(ت) ما هو الموقع المستخدم للمشاركة ونشر الصور؟

Flickr  أخرى: -----  لا

استخدم

(ث) هل لك مدونة شخصية؟

نعم  لا

س10: كيف تستخدم هذه التقنيات (المنتديات / المدونات / Blog / Facebook / YouTube / Flickr / Twitter) في عملية التعليم في المدرسة أو لغرض التعلم في أمور أخرى ؟

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س11: كم ساعة تقضي يوميا في استخدام الانترنت تقريبا؟

1-3 ساعات  4-6 ساعات  7-9 ساعات

س12: هل تستخدم الانترنت من الجوال "النقال"؟

نعم  لا

س13: بالنسبة لاستخدام هذه التقنيات (المنتديات / المدونات /Blog /Facebook / Flickr /YouTube/ Twitter ) إلى أي مدى توافق مع العبارات التالية

غير ملائم	أوافق بشدة	4	3	2	1 لا أوافق بشدة	
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام برامج التواصل الاجتماعي مثل Facebook					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام مواقع نشر ومشاركة الفيديو مثل YouTube					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام مواقع نشر ومشاركة الصور مثل Flickr					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام المدونات Blogs					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام مواقع نشر ومشاركة الملفات مثل Scribd					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام Twitter					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل delicious					
<input type="checkbox"/>	أستطيع التعلم من خلال استخدام المنتديات					
<input type="checkbox"/>	هذه التقنيات (المنتديات / المدونات / Blog/ Facebook/ YouTube/ Flickr/ Twitter ) تعزز التعلم الجماعي والتعاوني					

س14: هل تستخدم هذه التقنيات (المنتديات / المدونات / Flickr/ YouTube/ Facebook/ Blogs / Twitter) في كل من الآتي؟ (يمكنك اختيار أكثر من إجابة)

<input type="checkbox"/>	التعليق على مشاركات الأعضاء	<input type="checkbox"/>	التواصل مع الطلاب والأصدقاء
<input type="checkbox"/>	نشر ومشاركة الأخبار والمصادر	<input type="checkbox"/>	السؤال والاستفسار عن موضوع معين
<input type="checkbox"/>	تقييم عمل الآخرين والأصدقاء	<input type="checkbox"/>	عبارات الدعم والتشجيع المتبادل بين الطلاب
<input type="checkbox"/>	أخرى: .....		

س15: ما مدى استخدامك لهذه الأدوات كجزء من العملية التعليمية؟

لا اعرف ما هو	لا استخدم	بعض المرات	اغلب المرات	دائما	
<input type="checkbox"/>	مايكروسوفت بوربوينت MS PowerPoint				
<input type="checkbox"/>	السيورة الذكية				
<input type="checkbox"/>	Data projector				

APPENDICES

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الكتاب الإلكتروني	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	المواقع الإلكترونية	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	صفحة المنظمة التعليمية EduWave	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	المنتديات	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	التحادث المرئي Video conferencing	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	التلفزيون/ الفيديو/ DVD	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	السي دي CD	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	البريد الإلكتروني	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	النقل	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	المدونات Blog	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة ملفات الفيديو مثل YouTube	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة الصور مثل Flickr	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	تويتر Twitter	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الويكي Wiki	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل Delicious	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الدرشة الإلكترونية	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع التواصل الاجتماعي مثل Facebook	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	بودكاست Podcast	
<p>س16: ما هي مدى الفائدة التي وجدتها من استخدام أدوات التكنولوجيا التالية كجزء من عملية التعلم؟</p>						
غير ملائم	مفيدة جدا				عديمة الفائدة تماما	
	5	4	3	2	1	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	عروض بوربوينت MS PowerPoint
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	برامج مايكروسوفت أوفيس (ورد، اكسل إلخ)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	استخدام الانترنت للحصول على المعلومات
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الحصول على المعلومات من الأقراص المدمجة CD
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الحصول على المعلومات من أقراص الفيديو الرقمية DVD

<input type="checkbox"/>	استخدام البريد الإلكتروني					
<input type="checkbox"/>	استخدام المنظومة التعليمية EduWave					
<input type="checkbox"/>	تنزيل مذكرات المحاضرات والرسائل من المنظومة التعليمية EduWave					
<input type="checkbox"/>	استخدام اختبارات التقييم الذاتي					
<input type="checkbox"/>	استخدام الاختبارات والامتحانات على الانترنت مع ردود الفعل الفورية الالكترونية					
<input type="checkbox"/>	تقديم الواجبات عبر البريد الإلكتروني					
<input type="checkbox"/>	استخدام على شبكة الإنترنت للحصول على معلومات إضافية					
<input type="checkbox"/>	تتبع سير تقدمك من خلال EduWave					
<input type="checkbox"/>	تتبع والديك سير تقدمك من خلال EduWave					
<input type="checkbox"/>	رسائل الجوال النصية SMS					
<input type="checkbox"/>	النقل Mobile					
<input type="checkbox"/>	المدونات Blog					
<input type="checkbox"/>	مواقع نشر ومشاركة ملفات الفيديو مثل YouTube					
<input type="checkbox"/>	مواقع نشر ومشاركة الصور مثل Flickr					
<input type="checkbox"/>	تويتر Twitter					
<input type="checkbox"/>	الويكي Wiki					
<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd					
<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل Delicious					
<input type="checkbox"/>	الدرشة الالكترونية					
<input type="checkbox"/>	مواقع التواصل الاجتماعي مثل Facebook					

س17: هل هناك أية تطبيقات تكنولوجية لا تستخدمها في الوقت الراهن وتريد أن تستخدمها كجزء من عملية التعلم في المدرسة؟ (مثل YouTube / Facebook )

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س18: عادةً كيف تتواصل وتتعامل مع زملائك الطلاب في الدراسة وتتبادل الأفكار معهم؟ (يمكنك اختيار أكثر من إجابة)

- البريد الإلكتروني       الهاتف       وجها لوجه  
 الدردشة الإلكترونية       المنتديات       رسائل الجوال SMS  
 برامج التواصل الاجتماعي Facebook       أخرى: \_\_\_\_\_

س19: إلى أي مدى تم تحسين مهاراتك من خلال استخدام الشخصي للتكنولوجيا خارج المدرسة؟

لا يوجد تغير تماما	1	2	3	4	5	تحسين كبير	لا استخدم خارج المدرسة
<input type="checkbox"/>							

### القسم الثالث: الآباء

س20: ما هو مستوى تعليم الآباء؟

الآب:

- اقل من المرحلة الثانوية       المرحلة الثانوية  
 دراسة جامعية (دبلوم، بكالوريوس)       دراسات عليا (ماجستير، دكتوراه)  
 لا اعلم       غير ملائم

الأم

- اقل من المرحلة الثانوية       المرحلة الثانوية  
 دراسة جامعية (دبلوم، بكالوريوس)       دراسات عليا (ماجستير، دكتوراه)  
 لا اعلم       غير ملائم

س21: فيما يتعلق باستخدام والداك للمنظومة التعليمية EduWave، إلى أي مدى تتفق مع البيانات التالية؟

لا أوافق بشدة	1	2	3	4	5	أوافق بشدة	غير ملائم
<input type="checkbox"/>	أنا أحب استخدام والدي للمنظومة التعليمية EduWave						
<input type="checkbox"/>	يفيد عملية التعليم لدي						

س22: هل يستخدم والديك الانترنيت؟

الأب: نعم  لا اعلم  غير ملائم

لا لماذا: -----

الأم: نعم  لا اعلم  غير ملائم

لا لماذا: -----

س23: هل يستخدم والديك المنظومة التعليمية EduWave؟

الأب: نعم  لا اعلم  غير ملائم

لا لماذا: -----

الأم: نعم  لا اعلم  غير ملائم

لا لماذا: -----

س24: كم عدد المرات التي يستخدم والديك المنظومة التعليمية EduWave تقريبا؟

يومي  أسبوعي  شهري  فصلي  لا اعلم  غير ملائم

### القسم الرابع: الدعم الفني

س25: هل تحتاج إلى الدعم الفني والتقني في التكنولوجيا في المدرسة؟

نعم  لا

س26: هل توفر المدرسة الدعم الفني للطلاب في المدرسة؟

نعم  لا

س27: كيف تمت مساعدتك في استخدام التكنولوجيا في المدرسة؟ (يمكنك اختيار أكثر من إجابة)

البريد الإلكتروني  الهاتف  وجها لوجه   
أثناء الدرس  في الوقت نفسه

س28: كيف تقيم الدعم التقني الذي حصلت عليه في المدرسة؟

سيئ جدا 1 2 3 4 5 ممتاز جدا

س29: ما هو الدعم الفني المتوفر حالياً؟ (يمكنك اختيار أكثر من إجابة)

مكتب المساعدة Help Desk  عن طريق الانترنت  أخرى:

س30: هل تواجه المشاكل التالية في استخدام الحاسب وتكنولوجيا المعلومات والاتصالات (مثل الانترنت/ Facebook)؟ (يمكنك اختيار أكثر من إجابة)

مشاكل تقنية  مشاكل أخلاقية   
مشكلة استخدام الانترنت لساعات طويلة  مشاكل أخلاقية   
استخدام سيئ لمعلوماتك الشخصية  عملية نصب واحتيال   
اختراق وفيروسات الحاسب  أخرى: (الرجاء التحديد):

س31: ما هي المشاكل التي واجهتها عند استخدام الحاسوب وتكنولوجيا المعلومات والاتصالات (الانترنت / Facebook) مثل مشكلة استخدام الانترنت لساعات طويلة أو مشاكل أخلاقية؟ (غير مشاكل اختراق وفيروسات الحاسب)

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س32: هل تحتاج إلى دعم ومساعدة في هذه المشكلات مثل مشكلة استخدام الانترنت لساعات طويلة أو مشاكل أخلاقية؟

نعم  لا

### القسم الخامس: الموارد

س33: هل هناك ما يكفي من أجهزة الكمبيوتر العامة في المدارس لتتمكن من استخدامها في استكمال الواجبات الدراسية؟

نعم  لا

س34: هل يمكن الوصول إليها في الأوقات المناسبة إليك؟

نعم  لا

س35: هل لديك جهاز كمبيوتر في المنزل؟

نعم  لا (الرجاء الذهاب إلى السؤال 38)

س36: هل هذا الكمبيوتر؟

جهاز خاص لك  جهاز مشترك في البيت

س37: نوع الكمبيوتر

لابتوب laptop   
desktop

س38: هل تستخدم الحاسب للدراسة في المنزل أو خارج المدرسة؟

لا  (الرجاء الذهاب القسم السادس)  
نعم مع وجود الانترنت   
نعم: بدون الانترنت (الرجاء الذهاب القسم السادس)

س39: بالنسبة للتعليم في المنزل أو خارج المدرسة، هل لديك مشاكل مع؟ (يمكنك اختيار أكثر من إجابة)

المكان  الوقت   
الاتصال بالانترنت  تكلفة الطباعة

س40: هل تستخدم المنظومة التعليمية EduWave

نعم لا / لماذا: 

س41: هل تستخدم المنظومة التعليمية EduWave لتحميل المواد الدراسية (مثل مذكرات المحاضرات، والإعلانات) من المنزل أو خارج المدرسة؟

نعم لا / لماذا:  (الرجاء الذهاب إلى القسم السادس)

س42: هل لديك أي من المشاكل التالية في الوصول إلى المنظومة التعليمية EduWave في البيت أو خارج المدرسة؟ (يمكنك اختيار أكثر من إجابة)

وقت محدد لاستخدام الإنترنت  بطئ اتصال   
مشاكل في صفحة المنظومة (التصميم والألوان)  لا توجد مشاكل   
أخرى (الرجاء تحديدها):

س43: بالنسبة للدراسة في المنزل أو خارج المدرسة، إلى أي مدى توافق مع العبارات التالية؟

أوافق بشدة	5	4	3	2	1	لا أوافق بشدة
<input type="checkbox"/>	أكثر قدرة على التعلم في البيت من الصف					
<input type="checkbox"/>	القدرة على العمل في الأوقات المناسبة لي					
<input type="checkbox"/>	تفضيل العمل في مجموعات					
<input type="checkbox"/>	أحب أن يكون المعلم متواجد لمساعدتي					
<input type="checkbox"/>	أود أن توضح الأمور لي في تسلسل					
<input type="checkbox"/>	إتاحة مزيد من الوقت للتفكير والمراجعة					

### القسم السادس: المنظومة التعليمية EduWave والمحتوى

س44: فيما يتعلق باستخدام المنظومة التعليمية EduWave، إلى أي مدى توافق مع التالي

أوافق بشدة	4	3	2	لا أوافق بشدة	1
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

س45: بالمقارنة في التعليم الإلكتروني بين محتوى المنظومة التعليمية مع غيرها من المحتويات (مثل الكتب والتلفزيون والفيديو) إلى أي مدى تتفق أو تختلف مع إن التعليم الإلكتروني

أوافق بشدة	4	3	2	لا أوافق بشدة	1
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

س46: هل تستخدم المنظومة التعليمية في؟

<input type="checkbox"/>	التواصل والتفاعل مع الطلاب	<input type="checkbox"/>	التواصل والتفاعل مع المدرسين
<input type="checkbox"/>	الاستفسار والسؤال	<input type="checkbox"/>	إبداء الرأي
<input type="checkbox"/>	نشر ومشاركة المعلومات والآراء	<input type="checkbox"/>	أخرى: -----

س47: بشكل عام، هل تجد أن المحتوى الإلكتروني

<input type="checkbox"/>	سهل جدا	<input type="checkbox"/>	صعب جدا	<input type="checkbox"/>	ملائم
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القسم السابع: المخرجات

س48: إلى أي مدى توافق / تختلف مع العبارة التالية؟ زيادة استخدام تكنولوجيا المعلومات والاتصالات في التعليم الإلكتروني تؤدي إلى

أوافق بشدة  
5 4 3 2 1  
لا أوافق بشدة

.... سوف يؤدي إلى تحسين درجات

.... سوف يساعد الطلاب على الحصول على وظيفة في نهاية دراستهم

أخيرا

س49: هل لديك أية ملاحظات أخرى على استخدام التكنولوجيا كجزء من عملية التعليم

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مشروع التعليم الإلكتروني في مملكة البحرين

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شكرا لك على وقتك وتعاونك في ملئ هذا الاستبيان

## APPENDIX 6: TEACHER QUESTIONNAIRE (ARABIC)

## استبيان المعلم

## مقدمة

عزيزي المدرس، هذا الاستبيان يهتم بمدى استخدامك للتكنولوجيا وبرايتك الشخصي حول التعلم الإلكتروني في مشروع جلالة الملك حمد لمدارس المستقبل. وليس هناك حاجة لكتابة اسمك عند استكمال هذا الاستبيان. الهدف من استخدام هذا الاستبيان هو للأغراض الأكاديمية. يستخدم المصطلح (تكنولوجيا المعلومات والاتصالات) للإشارة إلى استخدام الحواسيب وغيرها من التكنولوجيات ذات الصلة في التعليم. شكرا لتعاونك معنا.

## تعليمات لإتمام ملئ الاستمارة

يرجى وضع علامة X في المربع الذي يمثل أوثق إجابة بالنسبة إليك. إذا كان هناك خمس درجات، يرجى وضع علامة في المربع الذي تعتقد انه الأقرب إلى تمثيل رأيك. على سبيل المثال: في المثال التالي، المدرس قد أشار إلى أنه يعتقد أن الحصول على المعلومات من قرص الفيديو الرقمي DVD كجزء من عملية التعلم مفيدة ولكنها ليست مفيدة للغاية.

السؤال: ما مدى الفائدة التي وجدتها في استخدام أدوات التكنولوجيا التالية كجزء من عملية التعلم؟

غير ملائم	مفيدة جدا	5	4	3	2	1 تماما الفائدة عديمة
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

الحصول على المعلومات من أقراص الفيديو الرقمية  
DVD

## القسم الأول: المعلومات الشخصية

س1: ما هي المادة التي تدرسها؟

- العلوم  اللغة الانجليزية  اللغة العربية
- الرياضيات  المواد التجارية  أخرى: -----

س2: ما هي مدرستك؟

مدارس البنين

- مدرسة احمد العمران الثانوية  مدرسة الهداية الخليفية الثانوية
- معهد الشيخ خليفة للتكنولوجيا  مدرسة الرفاع الشرقي الثانوية
- مدرسة النعيم الثانوية  مدرسة مدينة حمد الاعدادية الثانوية

مدارس البنات

- مدرسة الاستقلال الثانوية التجارية  مدرسة الحورة الثانوية التجارية

- مدرسة الرفاع الغربي الثانوية  مدرسة مدينة عيسى التجارية الثانوية  
 مدرسة سترة الثانوية  مدرسة خولة الثانوية

س3: كم عدد السنوات التي عملت مدرسا؟ (إذا اقل من سنه، ضع 1-5 سنه)

- 5-1 سنة  6-10 سنة  11-20 سنة  
 21-30 سنة  31-40 سنة  أكثر من 40 سنة

س4: الجنس

- ذكر  أنثى

س5: الجنسية

- بحريني  
 خليجي: \_\_\_\_\_  
 أخرى: \_\_\_\_\_

س6: كم عمرك؟

- 20-23 سنة  24-32 سنة  33-42 سنة  
 43-55 سنة  اكبر من 55 سنة

س7: ما هو مستواك التعليمي؟

- المرحلة الثانوية  دبلوم  بكالوريوس  
 ماجستير  دكتوراه

### القسم الثاني: التكنولوجيا

س8: في ما يتعلق استخدام التكنولوجيا ما هو مدى حماسك لاستخدام كل من الآتي

- | لا املك<br>المهارة | متحمس<br>جدا | 5 | 4 | 3 | 2 | 1 | غير<br>متحمس |
|--------------------|--------------|---|---|---|---|---|--------------|
|--------------------|--------------|---|---|---|---|---|--------------|

- 

تكنولوجيا المعلومات والاتصالات بشكل عام

- 

تكنولوجيا المعلومات والاتصالات في التدريس

س9: كم مرة تستخدم تقنيات تكنولوجيا المعلومات والاتصالات في حياتك اليومية (إذا لا تعرف ما هو المقصود، الرجاء اختيار لا استخدم)؟

لا استخدم	نادرا	شهريا	أسبوعيا	يوميا	
<input type="checkbox"/>	الكمبيوتر				
<input type="checkbox"/>	البريد الالكتروني Email				
<input type="checkbox"/>	صفحات الانترنت				
<input type="checkbox"/>	رسائل الجوال SMS				
<input type="checkbox"/>	المدونات Blog				
<input type="checkbox"/>	مواقع نشر ومشاركة ملفات الفيديو مثل YouTube				
<input type="checkbox"/>	مواقع نشر ومشاركة الصور مثل Flickr				
<input type="checkbox"/>	تويتر Twitter				
<input type="checkbox"/>	الويكي Wiki				
<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd				
<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل delicious				
<input type="checkbox"/>	المنتديات				
<input type="checkbox"/>	التواصل الاجتماعي مثل Facebook				
<input type="checkbox"/>	الدرشة الالكترونية chats				
<input type="checkbox"/>	بودكاست Podcast				
<input type="checkbox"/>	MySpace				

س10: هل تستخدم التقنيات الحديثة مثل (المنتديات، المدونات، Facebook, YouTube)؟

نعم

لا ← لماذا: ----- (الرجاء الذهاب إلى سؤال 13)

1. ما هو الموقع الذي تستخدمه للتواصل الاجتماعي

فيس بوك Facebook  أخرى: -----

لا استخدم

2. ما هو الموقع الذي تستخدمه للمشاركة ونشر الفيديو؟

YouTube  أخرى: -----

لا استخدم

3. ما هو الموقع الذي تستخدمه للمشاركة ونشر الصور؟

- Flickr  أخرى: -----  
 لا استخدم

4. هل عندك مدونة شخصية؟

- نعم  لا

س11: هل تستخدم هذه التقنيات (المنتديات / المدونات Flickr/ /YouTube /Facebook /Blogs / Twitter) مع؟ (يمكنك اختيار أكثر من إجابة)

- الطلاب  المدرسين والإداريين في المدرسة  الأصدقاء

س12: كيف تستخدم هذه التقنيات (المنتديات / المدونات Flickr/ /YouTube /Facebook /Blogs / Twitter) في التعلم والتعليم؟

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 -----  
 -----

س13: بالنسبة لاستخدام هذه التقنيات (المنتديات / المدونات /YouTube/ Flickr /Facebook /Blog / Twitter) إلى أي مدى توافق مع العبارات التالية

غير ملائم	أوافق بشدة	5	4	3	2	1	لا أوافق بشدة
<input type="checkbox"/>	هذه التقنيات تساعد الطلاب على التعلم						
<input type="checkbox"/>	هذه التقنيات تعزز التعليم الجماعي						
<input type="checkbox"/>	أستطيع من خلال هذه التقنيات على اكتساب المعرفة والتعلم						
<input type="checkbox"/>	أستطيع من خلال هذه التقنيات تصميم وتطوير أنشطة للطلاب						
<input type="checkbox"/>	احتاج إلى مساعدة في استخدام هذه التقنيات						

س14: كم ساعة تقضي يوميا في استخدام الانترنت تقريبا؟

- لا استخدم  أقل من ساعة يوميا  1-3 ساعات  
 4-6 ساعات  7-9 ساعات

س15: هل تستخدم الانترنت من خلال الجوال (النقال)؟

- نعم  لا

س16: كم مرة حاليا تستخدم تكنولوجيا المعلومات والاتصالات في

غير لائم	دائما	لا استخدم				
		5	4	3	2	1
<input type="checkbox"/>	التدريس في الفصل					
<input type="checkbox"/>	في مركز التعليم الالكتروني					
<input type="checkbox"/>	التواصل مع الطلاب					
<input type="checkbox"/>	في التعليم على الانترنت					
<input type="checkbox"/>	في المدرسة					
<input type="checkbox"/>	في البيت					

س17: ما مدى أهمية تكنولوجيا المعلومات والاتصالات في

غير لائم	مهم جدا	غير مهم				
		5	4	3	2	1
<input type="checkbox"/>	التدريس في الفصل					
<input type="checkbox"/>	في مركز التعليم الالكتروني					
<input type="checkbox"/>	التواصل مع الطلاب					
<input type="checkbox"/>	في التعليم على الانترنت					
<input type="checkbox"/>	في المدرسة					
<input type="checkbox"/>	في البيت					

س18: إلى أي مدى تم تغير طريقتك في التدريس في 5 السنوات الماضية بالنسبة للطرق الحديثة في تكنولوجيا التعليم؟

لا يوجد تغير	تغير قليل	تغير كبير	تغير كبير جدا
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

س19: هل هناك أية تطبيقات تكنولوجية لا تستخدم في الوقت الراهن وتريد أن تستخدمها كجزء من عملية التعلم؟ (مثل Facebook /YouTube)

س20: عادة كيف تتواصل وتتعامل مع زملائك المدرسين والإداريين؟ (يمكنك اختيار أكثر من إجابة)

<input type="checkbox"/>	البريد الإلكتروني	<input type="checkbox"/>	الهاتف	<input type="checkbox"/>	وجها لوجه
<input type="checkbox"/>	الدرشة الإلكترونية	<input type="checkbox"/>	المنتديات	<input type="checkbox"/>	رسائل النقال SMS
<input type="checkbox"/>	برامج التواصل الاجتماعي Facebook	<input type="checkbox"/>	أخرى:		

### القسم الثالث: الآباء

س21: فيما يتعلق باستخدام آباء الطلبة للمنظومة التعليمية EduWave، إلى أي مدى توافق على العبارات التالية؟

غير ملائم	أوافق بشدة	4	3	2	لا أوافق بشدة	1
<input type="checkbox"/>	انه من المهم السماح للآباء لاستخدام المنظومة التعليمية					
<input type="checkbox"/>	يفيد عملية التعليم لدى الطالب					

س22: هل يتواصل آباء الطلبة معك بخصوص سير تقدم أبنائهم في المنظومة التعليمية EduWave ؟

نعم

لا ، لماذا: -----

### القسم الرابع: الدعم الفني

س23: ما مدى رضاك في الدعم الفني المقدم لك فيما يتعلق بالتالي:

غير ملائم	راضي جدا	5	4	3	2	1	غير راضي جدا
<input type="checkbox"/>	استخدام الإنترنت						
<input type="checkbox"/>	الأجهزة (Hardware)						
<input type="checkbox"/>	برمجيات (Software)						
<input type="checkbox"/>	تدريب وتنمية قدرات الموظفين						
<input type="checkbox"/>	مواد التدريس						

س24: كم عدد الدورات التي حضرتها في آخر 5 سنوات والتي تهدف إلى

تحسين مهاراتك في استخدام التكنولوجيا بشكل عام؟ -----

مساعدتك في استخدام التكنولوجيا في التدريس؟ -----

س25: إلى أي مدى كنت راضيا عن هذه الدورات

راضي جدا	5	4	3	2	1	غير راضي جدا
<input type="checkbox"/>	تحسين مهاراتك في التكنولوجيا					
<input type="checkbox"/>	مساعدتك في استخدام التكنولوجيا في التدريس					

س26: حاليا هل أنت مؤهل لاستخدام تكنولوجيا المعلومات والاتصالات في التعليم

مؤهل بشكل كامل	5	4	3	2	1	غير مؤهل مطلقا
<input type="checkbox"/>						

س27: ما هي أنواع الدعم التي طلبتها؟ (يمكنك اختيار أكثر من إجابة)

- مساعدة في حل المشاكل تكنولوجيا المعلومات الأساسية  مساعدة مع مشاكل في الشبكة
- مساعدة في استخدام المنظومة EduWave  مساعدة في استخدام برامج تعليمية محددة
- مساعدة في مواد التدريس  أخرى (الرجاء التحديد): -----

### القسم الخامس: المصادر

س28: كم عدد المرات التي تجد أن العوامل التالية تحول دون زيادة استخدام التعلم الإلكتروني في الفصول الدراسية أو مركز التعلم الإلكتروني؟

دائما	5	4	3	2	1	أبدا
<input type="checkbox"/>	مشكلة في الشبكة					
<input type="checkbox"/>	عدم كفاية المعدات والأدوات					
<input type="checkbox"/>	غرف غير مجهزة (على سبيل المثال عدم وجود نقاط الشبكة)					
<input type="checkbox"/>	ضعف في البرمجيات أو مواد التعلم					
<input type="checkbox"/>	الافتقار إلى المحتوى الإلكتروني					
<input type="checkbox"/>	الافتقار إلى الدعم والتوجيه					
<input type="checkbox"/>	ضعف في مهارات تكنولوجيا المعلومات والاتصالات لدى الطالب					
<input type="checkbox"/>	عدم استخدام الطلاب للموارد					

س29: هل هناك أي عوامل أخرى تمنع زيادة استخدام التعليم الإلكتروني في الفصول الدراسية أو مركز التعلم الإلكتروني؟

لا

نعم:

س30: هل يمكنك أن تكون أكثر ميلا لاستخدام التكنولوجيا في الفصول الدراسية إذا كانت هناك  
لا ويشدة

نعم  
ويشدة

5

4

3

2

1

زيادة التدريب لأعضاء هيئة التدريس في مهارات تكنولوجيا المعلومات والاتصال بشكل عام

زيادة التدريب لأعضاء هيئة التدريس في مهارات تكنولوجيا المعلومات والاتصال في التدريس

زيادة وتحسين معدات التكنولوجيا

توفير حاسوب لكل مدرس في الفصل

زيادة المحتوى في تكنولوجيا المعلومات

س31: هل لديك جهاز كمبيوتر في المنزل؟

لا

نعم مع وجود الانترنت

نعم بدون انترنت

### القسم السادس: المنظومة التعليمية EduWave والمحتوى

س32: هل تستخدم المنظومة التعليمية EduWave؟

نعم

لا، لماذا:

س33: كم مرة تستخدم هذه الأساليب والمعدات في التعليم والتدريس في الفصل أو في المركز التعليم الإلكتروني؟ (إذا لا تعرف ما هو المقصود، الرجاء اختيار لا استخدم)

لا استخدم

دائما

5

4

3

2

أبدا

1

مايكروسوفت بوربوينت MS PowerPoint

السبورة الذكية

المحادثة المرئية Video conferencing

جهاز العرض Data projector

الوقوف أمام الطلاب (جهاز لكل طالب)

APPENDICES

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	استخدام الكمبيوتر أمام الطلاب
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	استخدام الكمبيوتر موصل بالشبكة أمام الطلاب
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الكتاب الإلكتروني
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	المواقع الإلكترونية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	صفحة المنظمة التعليمية EduWave
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	المنتديات
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	التلفزيون/ الفيديو/ DVD
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	السي دي CD
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	البريد الإلكتروني
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	النقال Mobile
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	المدونات Blog
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة ملفات الفيديو مثل YouTube
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة الصور مثل Flickr
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	تويتر Twitter
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	الويكي Wiki
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل Delicious
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	مواقع التواصل الاجتماعي مثل Facebook
<p>س34: هل يوجد أي من المواد الدراسية التي تدرسها متوفرة في المنظومة التعليمية EduWave ؟</p> <p><input type="checkbox"/> لا <input type="checkbox"/> نعم</p>						
<p>س35: إذا نعم، ما هي نسبة التدريس باستخدام التعليم الإلكتروني؟</p> <p>0-20% <input type="checkbox"/> 21-40% <input type="checkbox"/> 41-60% <input type="checkbox"/></p> <p>61-80% <input type="checkbox"/> 81-100% <input type="checkbox"/></p>						
<p>س36: كم مرة تستخدم المنظومة التعليمية في التدريس في؟</p> <p>دائما 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> ولا مرة</p> <p>غير ملائم <input type="checkbox"/></p>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	لوضع مذكرات الفصل
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	لوضع الأسئلة والامتحانات

<input type="checkbox"/>	لوضع التقويم و الجدول الدراسي					
<input type="checkbox"/>	لنتبع تقدم وسير عمل الطالب student's progress					
<input type="checkbox"/>	لوضع الملاحظات					
<input type="checkbox"/>	الدخول في الدردشة " chat-room " مع الطلاب					
<input type="checkbox"/>	استخدام البريد الالكتروني في التواصل مع الطلاب					

**القسم السابع: المخرجات**

س37: في رأيك، ما هو تأثير استخدام التكنولوجيا في التعليم والتعلم في تغيير المخرجات التالية؟

لا اعلم	تأثير كبير جدا	4	3	2	لا يوجد تأثير	1	
<input type="checkbox"/>	زيادة الحضور						
<input type="checkbox"/>	تحسين الأداء						
<input type="checkbox"/>	زيادة المتعة في العملية التعليمية						
<input type="checkbox"/>	زيادة التحفيز عند الطلاب						
<input type="checkbox"/>	تحسين درجات الطلاب						
<input type="checkbox"/>	تهيئة الطلاب لسوق العمل						
<input type="checkbox"/>	أفضل في الاحتفاظ بالسجلات						
<input type="checkbox"/>	أسهل في إدارة الفصل الدراسي						

س38: هل التعليم الإلكتروني يخلق حس العمل الجماعي والتعاوني لدى الطالب؟

نعم  لا

س39: إلى أي مدى تعتبر أن

أوفق بشدة	4	3	2	لا أوفق بشدة	1	
<input type="checkbox"/>	زيادة استخدام تكنولوجيا المعلومات والاتصالات في التعليم الالكتروني ساهمت في زيادة مخرجات التعليم لدى الطالب					
<input type="checkbox"/>	زيادة استخدام تكنولوجيا المعلومات والاتصالات في التعليم الالكتروني سوف تساهم في تطوير مخرجات التعليم لدى الطالب في المستقبل					

أخيرا

س40: هل لديك أية ملاحظات أخرى على  
استخدام التكنولوجيا كجزء من عملية التعليم

مشروع التعليم الالكتروني في مملكة البحرين

شكرا لك على وقتك وتعاونك في ملئ هذا الاستبيان

## APPENDIX 7: STAFF QUESTIONNAIRE (ARABIC)

## استبانه الإداري

## مقدمة

عزيزي الإداري، هذا الاستبيان يهتم بمدى استخدامك للتكنولوجيا وبرأيك الشخصي حول التعلم الإلكتروني في مشروع جلالة الملك حمد لمدارس المستقبل. وليس هناك حاجة لكتابة اسمك عند استكمال هذا الاستبيان. الهدف من استخدام هذا الاستبيان هو للأغراض الأكاديمية. يستخدم المصطلح (تكنولوجيا المعلومات والاتصالات) للإشارة إلى استخدام الحواسيب وغيرها من التكنولوجيات ذات الصلة في التعليم. شكرا لتعاونك معنا.

## القسم الأول: المعلومات الشخصية

س1: ما هي الوظيفة في المدرسة؟

الإدارة (المدير / مساعد المدير)  المشرف الاجتماعي

الوظائف المساعدة (فني / المكتبة / مركز التعلم الإلكتروني/ المختبر / السكرتارية / الكاتب)

س2: ما هي مدرستك؟

مدارس البنين

مدرسة احمد العمران الثانوية  مدرسة الهداية الخليفة الثانوية

معهد الشيخ خليفة للتكنولوجيا  مدرسة الرفاع الشرقي الثانوية

مدرسة النعيم الثانوية  مدرسة مدينة حمد الإعدادية

الثانوية

مدارس البنات

مدرسة الاستقلال الثانوية التجارية  مدرسة الحورة

الثانوية التجارية

مدرسة الرفاع الغربي الثانوية  مدرسة مدينة عيسى التجارية

الثانوية

مدرسة سترة الثانوية  مدرسة خولة الثانوية

س3: كم عدد السنوات التي عملت؟ (إذا اقل من سنة، ضع 1-5 سنة)

5-1 سنة  10-6 سنة  20-11 سنة

30-21 سنة  40-31 سنة  أكثر من 40 سنة

س4: الجنس

ذكر  أنثى

س5: الجنسية

بحريني خليجي: أخرى: 

س6: كم عمرك؟

23-18 سنة 32-24 سنة 42-33 سنة 55-43 سنة اكبر من 55 سنة 

س7: ما هو مستواك التعليمي؟

المرحلة الثانوية دبلوم بكالوريوس ماجستير دكتوراه 

## القسم الثاني: التكنولوجيا

س8: في ما يتعلق استخدام التكنولوجيا ما هو مدى حماسك لاستخدام تكنولوجيا المعلومات والاتصالات بشكل عام

لا املك المهارة	متحمس جدا	متحمس	غير متحمس
5	4	3	2
1			

س9: كم مرة تستخدم تقنيات تكنولوجيا المعلومات والاتصالات في حياتك اليومية

(إذا لا تعرف ما هو المقصود، الرجاء اختيار لا استخدم؟)

يومية أسبوعيا شهريا نادرا لا استخدم

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

الكمبيوتر

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

البريد الالكتروني Email

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

صفحات الانترنت

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

رسائل الجوال SMS

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

المدونات Blog

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

مواقع نشر ومشاركة ملفات الفيديو مثل YouTube

<input type="checkbox"/>				
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

مواقع نشر ومشاركة الصور مثل Flickr

<input type="checkbox"/>	تويتر Twitter				
<input type="checkbox"/>	الويكي Wiki				
<input type="checkbox"/>	مواقع نشر ومشاركة الملفات مثل موقع Scribd				
<input type="checkbox"/>	مواقع نشر ومشاركة المفضلات أو روابط الانترنت مثل delicious				
<input type="checkbox"/>	المنتديات				
<input type="checkbox"/>	التواصل الاجتماعي مثل Facebook				
<input type="checkbox"/>	الدرشة الالكترونية chats				
<input type="checkbox"/>	بودكاست Podcast				
<input type="checkbox"/>	MySpace				

س10: هل تستخدم التقنيات الحديثة مثل (المنتديات، المدونات، Facebook ,YouTube)؟

نعم

لا ← لماذا: ----- (الرجاء

الذهاب إلى سؤال 10)

ج) ما هو الموقع الذي تستخدمه للتواصل الاجتماعي

فيس بوك Facebook  أخرى: -----

لا استخدم

ح) ما هو الموقع الذي تستخدمه للمشاركة ونشر الفيديو؟

YouTube  أخرى: -----

لا استخدم

خ) ما هو الموقع الذي تستخدمه للمشاركة ونشر الصور؟

Flickr  أخرى: -----

لا استخدم

س11: كم ساعة تقضي يوميا في استخدام الانترنت تقريبا؟

لا استخدم  اقل من ساعة يوميا -1

3 ساعات

6-4 ساعات  9-7 ساعات

س12: هل تستخدم الانترنت من خلال الجوال (الموبايل)؟

نعم  لا

س13: عادة كيف تتواصل وتتعامل مع زملائك الإداريين ؟ (يمكنك اختيار أكثر من إجابة)

- البريد الإلكتروني  الهاتف  وجها لوجه  
 الدردشة الإلكترونية  المنتديات  رسائل الجوال SMS  
 برامج التواصل الاجتماعي Facebook  أخرى: \_\_\_\_\_

س14: هل لديك جهاز كمبيوتر في المنزل؟

- نعم بدون انترنت  نعم مع وجود الانترنت  لا

س15: هل تستخدم المنظومة التعليمية EduWave؟

- نعم

لا، لماذا: -----  
 -----

### القسم الثالث: الدعم الفني والتقني

س16: ما مدى رضاك في الدعم الفني المقدم لك فيما يتعلق بالتالي:

غير ملائم	راضي جدا	5	4	3	2	1	غير راضي جدا
<input type="checkbox"/>	استخدام الإنترنت						
<input type="checkbox"/>	الأجهزة (Hardware)						
<input type="checkbox"/>	برمجيات (Software)						
<input type="checkbox"/>	تدريب وتنمية قدرات الموظفين						
<input type="checkbox"/>	مواد التدريس						

س17: كم عدد الدورات التي حضرتها في آخر 3 سنوات والتي تهدف إلى تحسين مهاراتك في التكنولوجيا؟--

-----

س18: إلى أي مدى كنت راضيا عن هذه الدورات التي تهدف إلى تحسين مهاراتك في التكنولوجيا

غير ملائم	راضي جدا	5	4	3	2	1	غير راضي جدا
<input type="checkbox"/>							

س19: حاليا هل أنت مؤهل لاستخدام تكنولوجيا المعلومات والاتصالات بشكل عام

مؤهل بشكل كامل					غير مؤهل مطلقا
5	4	3	2	1	
<input type="checkbox"/>					

س20: ما هي أنواع الدعم التي طلبتها؟ (يمكنك اختيار أكثر من إجابة)

- مساعدة في حل مشاكل التكنولوجيا الأساسية
- مساعدة مع مشاكل في الشبكة
- مساعدة في استخدام المنظومة EduWave
- أخرى (الرجاء التحديد): -----

إذا لم تكن المشرف الاجتماعي الرجاء الذهاب إلى القسم الخامس: أخيرا

### القسم الرابع: المشرف الاجتماعي

ملاحظة:

هذه الأسئلة تتحدث عن المشاكل التي تواجه الطلبة الناتجة عند استخدام الحاسوب وتكنولوجيا المعلومات والاتصالات (الانترنت / Facebook) مثل مشكلة استخدام الانترنت لساعات طويلة أو مشاكل أخلاقية؟ (غير المشاكل التقنية كمشاكل اختراق وفيروسات الحاسب)

س21: ما هو مدى استعدادك وتأهيلك للتعامل وحل هذه المشاكل التي تواجه الطلبة الناتجة عن استخدام الحاسوب وتكنولوجيا المعلومات والاتصالات (الانترنت / Facebook) مثل المشاكل الأخلاقية في الحاسوب؟

مؤهل بشكل كامل					غير مؤهل مطلقا
5	4	3	2	1	
<input type="checkbox"/>					

س22: هل هناك مشاكل تمت الشكوى منها؟

- نعم
- لا

س23: ما هي هذه المشاكل؟

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س24: بالنسبة إلى هذه المشاكل الناتجة عن استخدام الحاسوب وتكنولوجيا المعلومات والاتصالات، إلى أي مدى توافق / تختلف مع العبارة التالية؟

أوفق بشدة	5	4	3	2	1	لا أوفق بشدة
	<input type="checkbox"/>	الطلاب يواجهون هذه المشاكل المذكورة أعلاه				
	<input type="checkbox"/>	احتاج للتدريب للتعامل وحل هذه المشاكل للطلاب				
	<input type="checkbox"/>	الطلاب يحتاجون مساعدة في حل المشاكل				

س25: في رأيك، كيف يتم تطوير المشرف الاجتماعي للتعامل وحل هذه المشاكل؟

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#### القسم الخامس: أخيرا

س26: هل لديك أية ملاحظات أخرى على مشروع التعليم الإلكتروني في مملكة البحرين

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شكرا لك على وقتك وتعاونك في ملئ هذا الاستبيان