Potential Use of Online Collaborative Social Networks to Enhance Learning and Teaching in Saudi Higher Education

By

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A thesis submitted in accordance with the requirements
for the degree of Doctor of Philosophy

UNIVERSITY OF LEEDS

School of Education

January 2016

DECLARATION

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

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DEDICATION

I dedicate my dissertation work to my family and many friends. Special thanks are to my loving parents, wife, brothers and sisters who assisted me during my studies.

I also dedicate this thesis to Dr Maggie McPherson and Prof Jeremy Higham for their outstanding support and encouragement when I needed it the most.

Thank you all.

ABSTRACT

Education plays an important role in developing societies, and most governments around the world are paying more attention to collaborative learning in order to enhance educational outcomes. In this context, using technologies in education has been a critical factor in developing such educational systems.

The use of online collaborative social networks (OCSNs) for educational purposes has become a highly debated topic among researchers all over the world. The current study aims to contribute to this debate by examining the potential use of OCSNs in Saudi Arabia's higher education, which, due to its specific culture, faces particular educational issues. The study used a mixed method approach, with the Delphi method and followed up with interviews. Forty-eight experts selected from five Saudi government universities participated in the study and some of them participated in the later interviews. A combination of qualitative and quantitative data was obtained from these two methods and the findings of the interviews method were used to help understand the findings from Delphi method.

As part of the study, a new model of building knowledge in four dimensions was designed and was called the SNTPCK model. This model was used as a framework for the study and as a codes generator for data analysis.

The findings of the study showed that it is possible to improve Saudi higher education by using OCSNs, and stated a number of factors that might affect such usage. In addition, the study developed a new model for using OCSNs in higher education and described its implementation phases. In order to support the implementation model, the study developed a framework for the usage of OCSNs in education policy.

The study concluded to that the Delphi method is an appropriate method of researching such phenomena. It recommended using OCSNs in Saudi higher education and recommended that OCSN implementation carried out gradually in the educational process.

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LIST OF ABBREVIATIONS

ICT	Information and Communication Technology
OCSN	Online Collaborative Social Network
OCSNs	Online Collaborative Social Networks
UITAP	Urgent IT Action Plans
TK	Technological Knowledge
PK	Pedagogical Knowledge
CK	Content Knowledge
SNK	Social Network Knowledge
TPK	Technological Pedagogical Knowledge
TCK	Technological Content Knowledge
PCK	Pedagogical Content Knowledge
TPCK	Technological Pedagogical Content Knowledge
SNPK	Social Network Pedagogical Knowledge
SNTK	Social Network Technological Knowledge
SNCK	Social Network Content Knowledge
SNTPK	Social Network Technological Pedagogical Knowledge
SNPCK	Social Network Pedagogical Content Knowledge
SNTCK	Social Network Technological Content Knowledge
SNTPCK	Social Network Technological Pedagogical Content Knowledge

DEFINITIONS

Online Collaborative Social Network (OCSN): an OCSN is a website that consists of a network of users who collaborate and communicate to build the content and to exchange their experiences. This website has these three characteristics: [a] each user has a profile, [b] users have the ability to view some information on other profiles, such as friends' lists and contact information, and [c] users can comment on others' profile content.

The term OCSN has been used before for different contexts. For example, Stan et al. (2011) used it to refer to object-centred social networking (OCSN), which describes the network structure and is activated around a social object. These researchers did not focus largely on social objects, but investigated all network elements with balanced attention.

Web 2.0: Web 2.0 represents the second generation of the web, which mainly includes web applications and services that allow building an online network using two ways communication between its nodes (users, content, service, etc.).

Pedagogy 2.0: This term refers to the theoretical concepts of teaching and the learning process linked with the use of OCSNs for educational purposes.

Social Network: A social network is a group of people who share the same interests or have a social relationship linking them via a

communication method. Nowadays, this term usually refers to online social networks, which restrict the location of this network to online. Although this concept could be used in the current study, in order to emphasise the importance of collaboration as well as limit the type of social network to online social networks, it would be more appropriate to define a new concept.

Information and Communication Technology (ICT): ICT represents a set of equipment and concepts for use in the information and communication sectors.

SNTPCK Model: This model describes the building of knowledge in an environment consisting of four dimensions: social network, technology, pedagogy, and content. In reality, these four dimensions intersect with each other, leading to 15 types of knowledge to be considered when building new knowledge.

CHAPTER 1:   INTRODUCTION

1.1 Introduction

A strong relationship exists between research and the development of society in our daily lives. In fact, research is considered to be the basis of society's development processes as it works to identify problems and provide solutions in order to improve our lives, as evident from government spending in this field in most developed countries throughout the world. For example, between 2010 and 2015, the United Kingdom allocated £4.6 billion per annum in funding for research and development (GOV.UK, 2015).

Existing literature demonstrates the widespread problems and activities in the education field that researchers have examined. In fact, the education field has benefited from researchers' efforts, although further research is needed in this field to reach its potential, particularly given the rapid change in the information and communication technology (ICT) field. The term ICT represents a set of equipment and concepts used in the information and communication sectors.

Researchers' emphasis on the use of ICT in education does not mean the other aspects and activities related to education, such as learning methods, evaluation, and assessment, are less important; rather, these areas warrant more efforts as any change in educational environments will affect

other parts of the field. Such a change calls for being more comprehensive in research due to the strong relationship among various elements of the educational environment, such as the relationship among teachers, learners, content, and educational policies.

The effect of this change can extend to the learning and teaching processes involved and, in some cases, could lead to changes to the learning theory being used. This situation demonstrates how complex it is to make changes in educational environments and the importance of effective planning to do so.

Looking more closely at the use of technology in Saudi Arabia, in 2002 the government established a national plan to incorporate ICT use, starting with the Urgent IT Action Plan (UITAP), which consists of 21 recommendations distributed over six areas:

1. Reorganization of the IT sector

2. Building ICT capability

3. Building ICT infrastructure

4. Utilizing IT to support development

5. Enhancing the digitized Arabic and Islamic content

6. Supporting the implementation of e-government (ESCWA, 2003, p.2).

1.2 What and Why OCSN
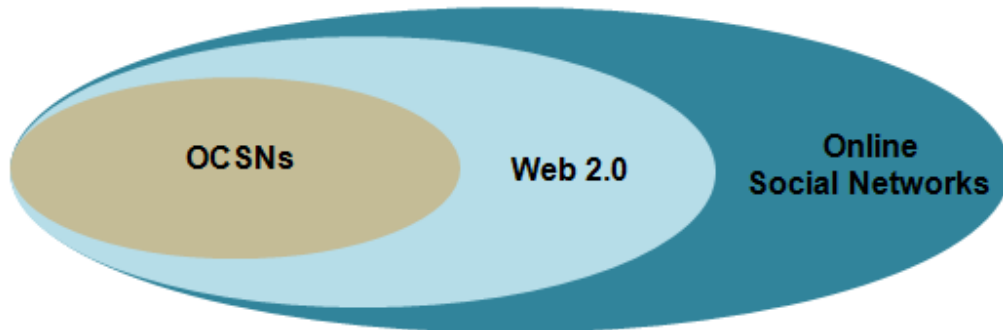
Figure 1-1: OCSN Term Derivation

In 2004, as information and communication technology (ICT) developed, a new concept emerged based on a new generation of Internet websites. This concept, called Web 2.0 or the second generation of the web, mainly includes the web applications and services that allow building an online network with two-way communication between the network nodes, such as users, content, and services. Based on the complexity of the study's problem, the term Web 2.0 was found to be inappropriate for describing the targeted social networks. Thus, a new term was adopted to cover its context: online collaborative social networks (OCSNs). OCSNs mainly refer to websites consisting of a network of users who collaborate and communicate to build the content and exchange their experiences (see Figure 1-1). These two concepts will be discussed in detail in the literature review chapter (Chapter 3). Nowadays, OCSNs have become the backbone of the most successful online applications; some of these will also be discussed later.

Based on the findings of the literature review, the educational thinking and practices within Saudi Arabia are still often quite traditional (see Chapter 2, Section 2.1.4). This does not mean that the traditional style of education has lost its value today, but it could be developed to benefit from modern technologies in order to improve educational outcomes.

In this context, the use of OCSNs in education has received greater attention from researchers in developing countries. Using OCSNs in higher education offers a promising future for developing Saudi Arabia's higher education system using technologies along with new teaching and learning methods. Moreover, collaboration, the main characteristic of OCSNs, will help share and extend experiences between national and international universities at different levels including individuals and the educational system.

The integration of OCSNs into an education system is not an easy task. It requires a complex educational change in order to use OCSNs for educational purposes. Therefore, I want to explore the views of Saudi university faculty members' who are familiar with the use of ICT in Saudi Arabia's higher education regarding whether it possible to use OCSNs to enhance teaching and learning processes in Saudi Arabia's higher education. In addition, I will determine how it might be possible to integrate the use of OCSNs into Saudi Arabia's higher education system.

As part of my PhD study at the University of Leeds, this research project was conducted at five universities in Saudi Arabia. It focuses primarily on

the optional use of OCSNs in Saudi Arabia's higher education and the factors that might affect such use.

1.3 Justification of the Study

The researcher of this study has more than ten years of experience as an ICT teacher in a Saudi secondary school and approximately seven years as an ICT curriculum supervisor at the Ministry of Education in Saudi Arabia. In addition, he holds a master's degree from Manchester University in ICT in education. However, despite this experience, identifying the research problem remains challenging. The researcher's experience has shown that most students are willing to use technologies nowadays. In fact, in some cases they more quickly accept technology than their teachers do.

According to the literature reviewed, Saudi society has moved faster than its neighbours in using technologies, especially OCSNs. For example, a 2013 study estimated that approximately 40% of all tweets on Twitter (213,900,000 tweets) in the Arab world came from Saudi Arabia (Salem et al., 2014b). Indeed, Twitter has become one of most popular social networks in Saudi Arabia, and the government has used it as a communication channel with society. For example, the government's Twitter accounts include @KingSalman (King Salman bin Abdul Aziz, King of Saudi Arabia), @moe_gov_sa (the Ministry of Education), and @_KSU (King Saud University). Such use reflects the acceptance of one of the OCSNs at a societal level and at a governmental level. The literature also

indicated a degree of acceptance among higher education institutions along with a number of experiences and experiments using OCSNs.

Yet existing literature further alluded to the absence of guidelines or a model to help support this usage and ensure that these technologies are use in appropriate way. This highlights the need to investigate the use of OCSNs in Saudi Arabia's higher education in more depth in order to find a good way to implement such technologies and maximize their benefit.

Although conducting studies in the relevant context of the problem under study is important, it is also important not to refuse researchers' diverse efforts in this field, regardless of their social context, as their findings will help understand the same problem in other societies. To this end, the main purpose of this study is to explore the potential usage of OCSNs in higher education in Saudi Arabia. The study will focus on three main points:

- Identifying the possibility of using OCSNs to enhance teaching and learning processes in higher education in Saudi Arabia.
- Depicting a model for using OCSNs in higher education based on the Saudi context.
- Identifying the potential difficulties that could face such a model's implementation.

The significance of the study stems from the importance of the type of problem under investigation and the complexity of its context. Researching a new trend or technology usage such as OCSNs is important in itself; targeting the use of OCSNs and its implications for learning and teaching processes will increase this importance. Moreover, including the social dimension in the problem context adds further credit to the study.

1.4 Research Questions

Research questions in any study represent a useful guideline for research, facilitating the evaluation and control of the work. In addition to that, In addition, the research questions will represent the focus and inclusiveness outline of the research. Given these purposes, this study mainly attempts to answer the following questions:

- Can learning and teaching in higher education in Saudi Arabia be enhanced by using online collaborative social networks (OCSNs)?

If so, then

- [a] What would be an appropriate model to support learning and teaching in the Saudi context?
- [b] What would be the implication of such a model on higher education?

- [c] What are the factors that might affect the success of OCSN usage to improve teaching and learning quality?

This study is conducted with the hope that its success will lead to: (a) identifying and describing an appropriate model for using OCSNs to enhance the quality of teaching and learning in Saudi Arabia's higher education, if possible; (b) extending the knowledge about the expected impact of OCSN usage in the Saudi context; (c) supporting planners and policymakers in higher education by providing useful information; and (d) conducting further in-depth research on the correlations related to using technology in the Saudi context.

1.5 Conceptual Framework

The problem under investigation involves a combination of factors related to different aspects, such as technology, pedagogy, and the learning process. Moreover, a number of factors have a direct and indirect effect on these problems, and some of them are rapidly changing, which increases the importance of developing a framework (or more) to help manage the work.
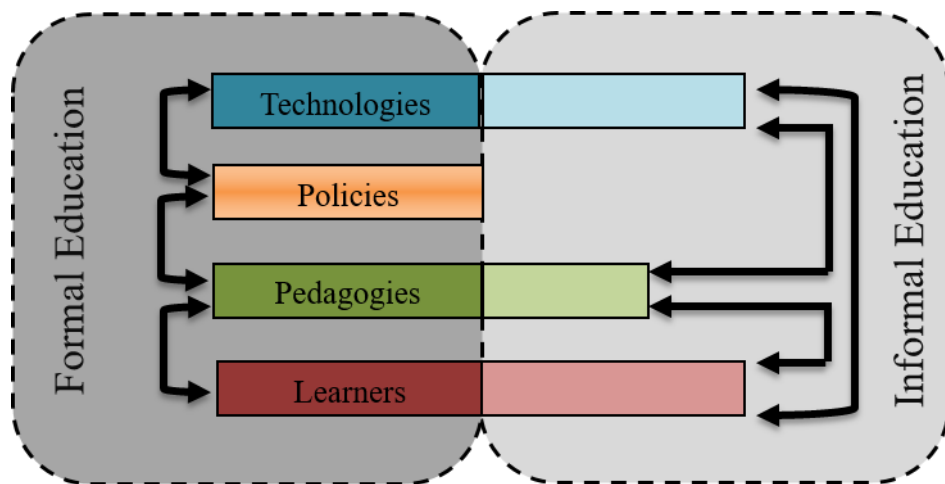
Figure 1-2-1: Education Concept Framework

In order to define the parameters of the research problem, this study uses two frameworks. The first one identifies a general educational concept for the problem setting. Figure 1-1 shows that two types of education can take place in any educational environment: formal and informal education. As this study targets the use of OCSNs in the first type (formal education), the study uses the education concepts framework to control this point.
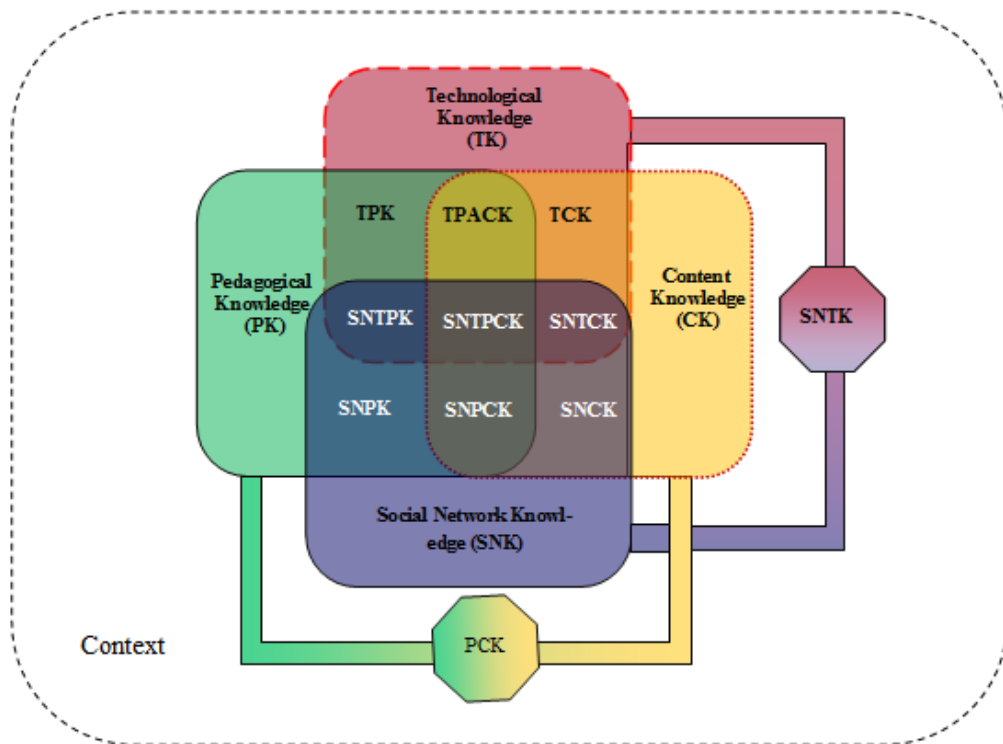
Figure 1-3: SNTPCK Framework

The second framework used in this study is the Social Network, Technological, Pedagogical, and Content Knowledge (SNTPCK) framework which consists of these four dimensions and their related contexts (see Figure 1-2). The SNTPCK framework was developed based on Koehler and Mishra's (2008) Technological, Pedagogical, and Content Knowledge (TPACK) model and fits this study better. SNTPCK and TPACK are discussed in detail in Chapter 4 of this document. The SNTPCK framework was used to organise the study's search processes to ensure that they cover all aspects and phenomena related to the problem under investigation.

1.6 Structure of the Thesis

Despite the difficulty of splitting interrelated information, such information needs to be separated in some way to make it more readable and understandable. To this end, and in order to organise this thesis, the content has been grouped into two main parts. The first main part covers the theoretical division of the study (see Figure 1-3); it mainly consists of four areas related to this study and described broadly in two chapters of this document.

Education System

Study Context

Technology Environment
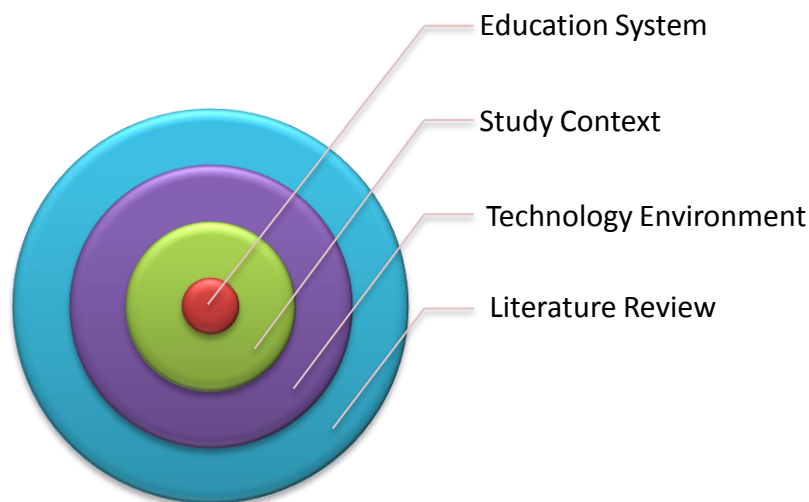
Literature Review

Figure 1-4: Theoretical Areas of the Study

Three of these areas (education system, study context, and technology environment) serve as the study's background and form the content of Chapter 2. The fourth area (literature review) is discussed in Chapter 3.

Some information that could be considered part of the literature review is included in Chapter 2 because of its strong relationship to the content. An

example is the number of studies on the use of technologies in Saudi Arabia included under ICT in the higher education section.

The second main part of the content grouping covers the action research and its requirements, including methodology, research instruments, and data analysis. This information is covered in Chapters 4, 5, 6, and 7.

In general, the thesis consists of seven chapters, and each chapter is divided into a number of sections based on the type of content. In some cases, the section is divided into sub-sections in order to present the content in a more readable and understandable manner. This section lists these chapters, with a brief description about their content.

Chapter 1: Introduction: The content of this chapter presents the need to conduct this study. After describing the context of the problem, it moves on to justify the importance of the study. The chapter also describes the study's frameworks and presents the research questions.

Chapter 2: Background Information: The aim of this chapter is to describe the usage of technology in Saudi Arabia as it is the context of the research problem. This chapter describes the current use of ICT and its infrastructure in Saudi Arabia.

Chapter 3: Literature Review: This chapter highlights the results of the search for literature related to the study's problem. The findings are presented in six categories. This chapter focuses primarily on the OCSNs

themselves and their relationship to relevant learning theories. It also investigates the processes of change in education, which is one of the study's dimensions. This chapter further presents research findings on the use of OCSNs in higher education in Saudi Arabia and other countries.

Chapter 4: Research Methodology: In order to select the appropriate method and tools to examine the identified problem, this chapter describes a number of methods. It then illustrates the reasons for selecting the Delphi method. Finally, this chapter describes the SNTPCK model and its role in this study.

Chapter 5: Results: The findings of this study are presented in this chapter under three main sections. After describing the characteristics of the expert panel, this chapter presents the potential use of OCSNs in Saudi Arabia's higher education system. It then illustrates a number of factors that might affect OCSN use in education.

Chapter 6: Discussion: The findings of this study are discussed in this chapter and the results reported in three sections. The first part focuses on enhancing learning and teaching by using OCSNs. The second part reports on the OCSN model that can be used in Saudi Arabia's higher education system. Finally, this chapter discusses the factors that might affect OCSN use in the Saudi context.

Chapter 7: Conclusion: In this chapter, the study's limitations and implications are described in detail. This chapter also concludes this work and provides recommendations for further research.

1.7 Summary

Using a new concept or technology in the educational environment requires changing educational processes and policy in that context. In 2004, and as part of ICT development, a new concept. The Web 2.0 concept represents the second generation of the web, which mainly includes the web applications and services that enable users to build an online network using two-way communication between its nodes (users, content, service, etc.).

Based on the Web 2.0 concept, other concepts have been developed, such as social networks, online social networks, and online collaborative social networks (OCSN).

As the literature review demonstrated, OCSN use in higher education still needs more investigation. In addition, studying the use of technology for educational purposes requires applying these studies in the same societal context. Thus, the main purpose of this study is to define the potential uses of OCSNs in Saudi Arabia's higher education.

The study focuses on identifying the possibility of using OCSNs to enhance teaching and learning processes in Saudi Arabia's higher education by

answering the main question: Can learning and teaching in Saudi Arabia's higher education be enhanced by using OCSNs?

In order to identify the parameters of the research problem, this study developed two frameworks. One of them identifying the general educational concept was used to differentiate between formal and informal education context, which was important in the early stages of this research, especially for illustrating the use of OCSN in education. The second framework is the SNTPCK framework, which was used to organise the study's fieldwork and ensure that the study targeted its four dimensions (i.e., social network, technology, pedagogy, and content) in a well-balanced way.

The main purpose of this chapter has been to illustrate the significance of the study and the importance of the problem under investigation. The next chapter focuses on the context of the study's problem by providing background information about Saudi Arabia and its education system as well as other relevant subjects for using OCSN in education.

CHAPTER 2: BACKGROUND INFORMATION

The study targets the use of OCSNs in higher education in Saudi Arabia; to this end, describing the context of the research problem is an important step. Given the number of factors that could be included as part of the study context, this chapter combines the most relevant factors into two groups. The first group focuses on Saudi Arabia itself, with more attention focused on the educational system and brief information about its history. The second group comprises a number of factors related mainly to the use of ICT in Saudi Arabia.

2.1 Background of Saudi Arabia

In order to obtain a broad understanding of this study's context, a number of factors expected to be closely related to the study context are covered in this section. This section illustrates information about some of these factors such as general information about Saudi Arabia's history, demographic data, education system, and other relevant subjects.

2.1.1 Historical and Economic Information

In 1902, Abdul-Aziz bin Saud (later King Abdul-Aziz) started his efforts to regain his father's kingdom by recapturing the capital of the Al-Sauds' state (Riyadh) for the first time since the first Saudi state (1744). In 1932, he achieved his goal by establishing the third Al-Saud state, today known as the Kingdom of Saudi Arabia (Ministry of Education, 2003a).

Saudi Arabia is one of the largest countries on the Arabian Peninsula, covering approximately 830,000 square miles (2,150,000 square kilometres). It is bordered by Jordan and Iraq to the north, the Red Sea to the west, Yemen and Oman to the south, and the United Arab Emirates, Bahrain, Qatar and Kuwait to the east (Ministry of Economy and Planning, 2014).

Saudi Arabia is the largest petroleum exporter in the world. Its production capacity is approximately 9.5 million barrels a day, and the proven crude oil reserves amount to 260.2 billion barrels (Saudi Aramco, 2014). In 2015, a budget surplus of approximately £36 billion (SR217 billion) of the government's £183.3 billion (SR1,100 billion) budget was earmarked for education (Ministry of Finance, 2015).

2.1.2 Demographics of Saudi Arabia

According to the General Authority for Statistics (2015), the Saudi population in 2015 amounted to 31.02 million, with 67% of the population (approximately 20.8 million) being Saudi citizens. The 2015 census estimated that males accounted for 50.9% of the population, compared to 49.1% for females; approximately 27.3% of the Saudi population was younger than 15 years old at the time. Addressing the educational needs of this large, young population, especially in terms of higher education, is challenging and has led to alternative solutions, such as scholarships for undergraduate and postgraduate students to study outside the country.

Saudi citizens follow Islam as a religion, although large numbers of non-Muslims work or visit Saudi Arabia. In fact, the Islamic law protects the rights of Muslims and non-Muslims to the same extent.

The formal language in Saudi Arabia is Arabic, and it is in the main interest of the government as it is the language of the Holy Koran (the Muslims' holy book). However, this does not mean that other languages are ignored—quite the contrary, in fact. For example, English is widely used in the business sector and, consequently, is included in education curricula as a core subject starting in year four in primary school stage (9 years of age, which is equivalent to Key stage 2 year 5 in the UK).

In fact, the diversity of ethnic groups in Saudi Arabia has affected the country's education system. In order to provide education that meets each ethnic group's needs, the education policies allow these groups to open private schools with more flexibility.

2.1.3 Saudi Arabia's Education System

In Saudi Arabia, the formal education system was established in 1926 as a mosques (Muslim houses of prayer). In 1953, the government established the Ministry of Education and made it responsible for males' education (Ministry of Education, 2003c).

Females' education, including the cultural perspective regarding formal education for women, was first addressed in 1960, when the General Presidency for Girls' Education was established to educate female (youth

and adults) students (AL-Moqaidy, 2004). In 2002, girls' education became part of the Ministry of Education's responsibilities instead of the General Presidency for Girls' Education, which merged with the ministry. Females' schools in Saudi Arabia continue to be independent from males' schools, and there is no mixed gender in Saudi general education, even in higher education (one notable exception is some medical programs). The main reason behind this type of education is religious and cultural perspectives. In fact, applying such a system led the government to investment more in the educational infrastructure to ensure that all male and female students receive an acceptable level of high quality education.
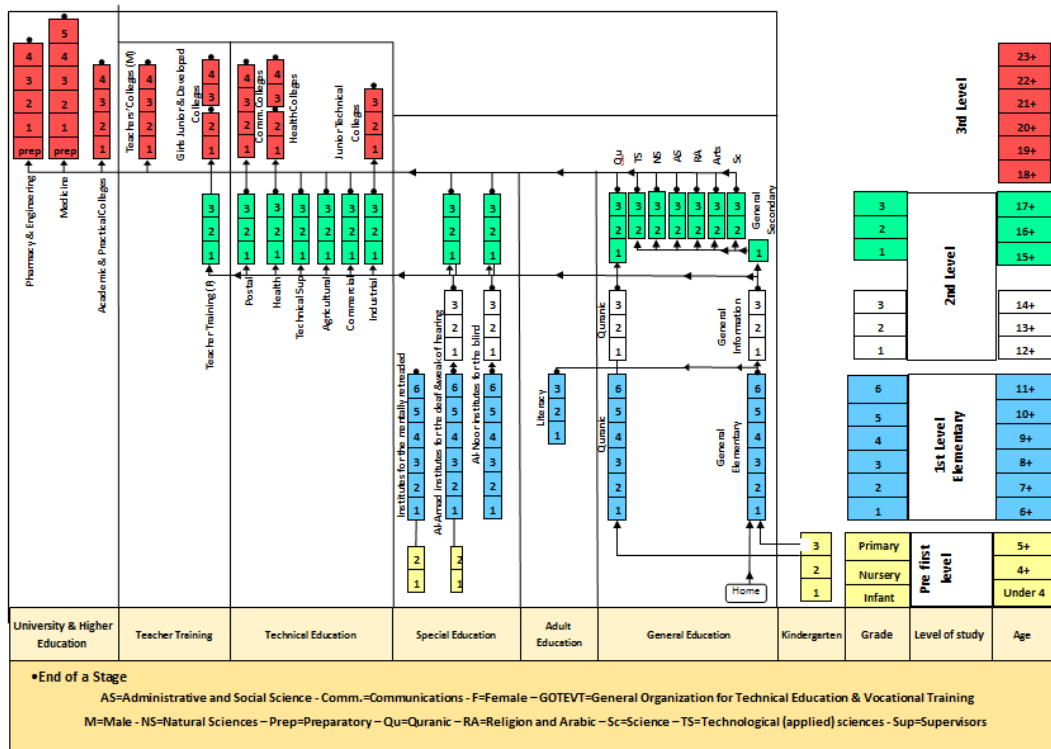
Figure 2-1: Structure of the Saudi educational system (UNESCO, (2007).

The education system ladder consists primarily of five stages: kindergarten (3–5) elementary (6–11), intermediate (12–14), secondary (15–18), and higher education (19–24). The types of education can be divided into four main sectors: general education, special education, higher education, and technical education and vocational training.

The Ministry of Education in Saudi Arabia is mostly responsible for general education, although a significant number of schools fall under other governmental departments (e.g., Technical and Vocational Training Corporation, Imam Muhammad Bin Saud Islamic University, and Ministry of Social Affairs). The Ministry of Higher Education was established in 1975; however, higher education in Saudi Arabia started before that. King Saud University was established as the first university in Saudi Arabia in 1957, followed by Islamic University in 1961 and King Fahd University for Petroleum and Minerals in 1963 (Alamri, 2011). In 2015, a royal decree in Saudi Arabia made the Ministry of Education responsible for higher education in addition to its responsibility for general education.

Vocational education is generally moderated or at least supervised by the Technical and Vocational Training Corporation in Saudi Arabia, which was established in 1980. Thirty-six colleges for males and nine for females, spread across the country, award diplomas and bachelor's degrees in a number of disciplines, such as administrative technology, electrical technology, and travel and tourism technology (Technical and Vocational Training Corporation, 2015). The number of womens' colleges reflect the

late start in providing a higher level of vocational education for females compared to males.

In order to control the quality of education, in 1968, the Ministry of Education published the Education Policy of the Kingdom of Saudi Arabia, identifying 236 goals establishing the parameters of the education system in Saudi Arabia (Al-Ghamdi and Abduljawwad, 2005). Although defined early, some goals indicated that education should benefit from technologies to enhance educational outcomes. Education has received great attention from the Saudi government, as it perceives education to be the key to improving society and has made efforts to create an educated and productive society.

2.1.4 Traditional and Modern Education

The development of our daily life activities is something obvious based on a short look into their history. Education is one of these activities that has benefited from development in other life aspects, such as pedagogies, communication, and technologies, although this development seems to be faster in some countries and slower in others, as it depends on a number of factors that influence this development.

As previously mentioned, the formal education system in Saudi Arabia was established in 1953. Since then, the education system undoubtedly developed because of improvements in government incomes and the increase in experiences. In fact, the wide range of changes in Saudi

Arabia's educational environment makes it difficult to match all schools' and universities' same level of improvement. This difficulty mainly stemmed from the number of factors, such as a lack of experience, geographic challenges, and economic challenges.

Consequently, it is common to find two types of education in Saudi Arabia's classrooms today. One of these types of education still uses traditional learning methods and tools used in the early stages of educational implementations in Saudi Arabia. The other one moved beyond that to use more modern methods and tools in the learning setting. The next part discusses the two types and some of their relative issues.

2.1.4(i) Traditional education

Traditional education—from its early stages, when a boy learns from his father and a girl learns from her mother, until the establishment of schools with their buildings and educational system—is based on three elements: teacher, student, and information (Mansor, 2015). Before formal education in Saudi Arabia, traditional education started with what was called 'Al-Katateeb' to teach students Islamic religion and Arabic language. This type of education does not require academically qualified teachers or special places for teaching.

This does not mean that whatever improvements are made in technologies this type of education loses its power because of its valuable advantages, which cannot be achieved elsewhere. An obvious example of that is the

importance of face-to-face learning, which allows using a combination of pictures, sounds, feelings, and emotions (Mansor, 2015). This combination of tools affects and effects the educational setting and allows modification of the message to change students' behaviours representing the core of learning (Mansor, 2015).

Traditional education is mainly designed based on the behaviourism learning theory. According to this theory, traditional education is centralized around the teacher while students play a passive role in the learning. Students receive knowledge without making any effort, which is known as indoctrination (Mansor, 2015).

A number of factors make this type of education still common in Saudi Arabia's educational classrooms. In fact, the education system is designed based on traditional educational requirements, which allow classrooms to be used for a large number of students. This could be the reason behind the shortage of educational places and teachers. In addition, shifting from traditional education requires changing the educational policy to allow technologies to become part of the educational process and provide the right requirements and resources (Al-Jarf, 2001).

2.1.4(ii) Modern education

Believing that not all students have the same ability and mentality to learn using the same method, the modern educational style emerged and changed the concept of learning. This type of education changed the roles

of teachers and learners based on changes in the learning theories used to design the learning environment. Learners became more active and work to build or extract knowledge rather than just receive it.

Using technologies play an important role in modern education. In Saudi Arabia's higher education, this type of education was initiated in 1993, when King Fahd University of Petroleum & Minerals (KFUPM) became the first Saudi educational institution to connect to the Internet (Hussein, 2016).

Currently, two types of learning methods are mainly used in modern education. These methods depend on the degree of using technologies and are known as electronic learning (e-learning) or blended learning. The next part discusses these two types and their current usage in Saudi Arabia's higher education.

E-learning

The term e-learning become known in the mid-1990s when the World Wide Web was developed and defined as "electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge" (Garrison, 2011,p. 2). Based on the use of Web 2.0 appellations, the term developed to follow this trend and e-learning 2.0 emerged (Ebner, 2007).

In 2005, the National Centre for E-Learning and Distance Learning (NCeL) was established to support Saudi Arabia's universities to move forward in

using e-learing (Hussein, 2016). The National Centre for E-Learning and Distance Learning (2013) vision was:

> We believe in the establishment of a holistic educational system based on the best applications and techniques of e-Learning, as well as the achievement of progress and excellence in both learning and teaching. We seek to become a prominent think tank and a national reference for e-Learning (par. 3).

The Saudi Digital Library (SDL), one of NCeL's projects, currently holds 310,000 e-books on different subjects and from 300 international publishers (Saudi Digital Library, 2016).

Blended learning

According to Garrison and Kanuka (2004), blended learning is the integration of face-to-face and online learning experiences in the classroom.

Despite the considerable intuitive appeal to the concept of blended learning and the integration of synchronous (face-to-face) and asynchronous (online content) learning activities, there are challenges in designing the possibilities and applicability of this type of learning (Garrison and Kanuka, 2004).

Blended learning is a common way for using online tools in Saudi Arabia's higher education. For example, the Saudi Electronic University requires attending at least 30% of each course's face-to-face meetings (Saudi Electronic University, 2016).

2.1.5 Saudi Education in Numbers

Statistical data can provide a good indicator about education in Saudi Arabia and, in some cases, the challenges facing efforts to enhance the quality of educational outcomes. In 2014, approximately 7 million students (46.5% female and 53.5% male students 4 to 18 years old) studied in 35,397 general education schools in all four stages (kindergarten, elementary, intermediate, and secondary). More than 500,000 teachers and educational staff in these schools teach a number of subjects, such as religion, Arabic language, math, science, and ICT (Ministry of Education, 2015).

Meanwhile, approximately 1.52 million students were enrolled in higher education in Saudi Arabia in 2015. These students attend 75 universities and colleges across the country offering 4462 programs at different levels(Ministry of Education, 2015). According to the Ministry of Education (2015), 1386 higher educational programs are available for male students only, compared to 829 for female students; 2247 programs are available for both genders. These programs cover a number of higher educational fields, such as education, humanity studies, social science and business, science, engineering and industrial science, and health and social care. The difference between the number of higher educational programs for females and of males reflect the number of available work fields for both genders. The labour market demands have recently increased as the government is encouraging female workers to participate in new fields, such as nursing, online distance work, and electronics device maintenance.

2.1.6 Women in Higher Education

In 1962, Women's Higher Education was established in Saudi Arabia as a special program allowing female students to study off campus except for exams which needed to be taken face to face. In that time, no female staff were available to teach them, so this was the only way for women to study in a higher educational level program. In fact, this type of education is available for men and women in most Saudi universities today.

One of the pioneer universities for women's higher education was King Abdul Aziz University which was established as a college (school) for girls in 1967 in Makah (Alhareth et al., 2015).

In 2006, a royal order was issued for the establishment of the first university in Saudi Arabia for women, called Princess Nourah bint Abdulrahman University (PNU). In fact, it started as 102 colleges (schools) spread throughout the Riyadh area since 1970. Currently, more than 40,000 female students are enrolled in its 14 schools on its new campus in Riyadh (Princess Nourah bint Abdulrahman University, 2015).

In general, the numbers show that women's higher education has exceeded males' education despite the former's late starting. According to the Ministry of Education (2015) statistics at the bachelor's degree level, 630 programs are for female students only, 616 programs are for male students only, and 1182 programs are available for both genders. As previously mentioned, in Saudi Arabia, females' schools are independent, and there are no mixed-gender schools in any Saudi educational

institutions except for certain medical programs. Such independence enables institutes to provide education in a more private environment following students' cultural perspectives.

2.1.7 Saudi Universities on the International Map

Due to the late start of higher education in Saudi Arabia, Saudi universities have worked to catch up with leading universities around the world. Since 2012, a number of Saudi universities have achieved an acceptable position according to various rankings of international higher educational. For example, in 2015, three universities ranked within the top 400 universities of the world according to QS World University Rankings: King Fahd University of Petroleum & Minerals ranked at 199, King Saud University ranked at 237, and King Abdul Aziz University ranked at 303 (Ministry of Higher Education, 2013b, QS World University Rankings, 2015). King Abdul Aziz University ranked in the 251–300 group in the Times Higher Education World University Rankings for 2015–2016 (Times Higher Education, 2015). Furthermore, Shanghai's 2015 rankings placed King Abdul Aziz University and King Saud University in the 51–200 group on the international map. King Abdul Aziz University ranked sixth in the world in mathematics—an improvement from tenth place in 2014 (Shanghai Ranking, 2015).

This brief introduction to Saudi Arabia and its educational system will help estimate the efforts required to manage and support education. The Saudi government chose the technology option as a key factor for improving

education and other government services, leading it to initiate the building of a strong ICT infrastructure. This is clear from the vision of the National Communications and Information Technology Plan (NCITP) of Saudi Arabia for ICT, which is described as:

> The transformation into an information society and digital economy so as to increase productivity and provide communications and IT services for all sectors of the society in all parts of the country and build a solid information industry that becomes a major source of income. (Ministry of Communications and Information Technology, 2006, p. 4)

The next section will describe the use of ICT in education in detail, including the ICT infrastructure in Saudi Arabia.

2.2 ICT in Education in Saudi Arabia

Before discussing ICT in education in depth, it is important to illustrate the current situation of ICT use in the Arab world in general and particularly in Saudi Arabia.

According to Salem et al. (2014a), nearly 135 million Internet users live in the 22 countries in the Arab world, with a 36% penetration rate in Saudi Arabia (compared to 40% for the whole world).Users employed nearly 400 million mobile devices and millions of landline connections to access the Internet. Regarding OCSN usage, Salem et al. estimated that approximately 71 million active accounts on these networks exist in Arab

countries. Yet a gap exists among these countries in ICT usage based on economic levels.

In order to investigate the use of ICT in Saudi education, it is important to look at the ICT infrastructure in Saudi Arabia as it is the basis of any use of these technologies in education. Thus, the rest of this chapter covers four main areas: ICT infrastructure, ICT in general education, ICT in higher education, and current OCSN usage in Saudi Arabia.

2.2.1 ICT Infrastructure

As previously mentioned, Saudi Arabia covers 2.15 million square kilometres and includes a diversity of terrains, from mountains (2600 metres high in some places) in the west to deserts (more than half the area of Saudi Arabia) in the south and east. Approximately 27 million people live in Saudi Arabia in hundreds of cities and thousands of villages. Based on this information, it is obvious that the government and private ICT sectors have faced massive challenges in developing the ICT infrastructure in the country. In fact, they have invested huge efforts in building a strong ICT infrastructure in order to improve the quality of services for those in all walks of life. For example, mobile networks cover most urban areas with 3G networks while most cities have 4G networks.

Despite the use of the ICT in both the government sector and the private sector, a gap exists between these sectors, making it more beneficial to discuss the ICT infrastructure in each sector separately. Furthermore,

discussing Internet usage as a separate topic will allow for highlighting a number of relevant issues in both sectors.

2.2.1(i) ICT in Government Sectors

From a historical perspective, in 1926, the government installed 22 wireless telegraph stations to connect major towns and villages; eight years later (1934), 854 manually operated telephones lines were operated in five cities (i.e., Riyadh, Makkah, Madinah, Taif and Jeddah) (Ministry of Communications and Information Technology, 2014). This marked the beginning of using communication technologies in Saudi Arabia. According to the Saudi e-Government Program (2013), the first use of computers occurred in 1962, when the General Statistics Department used them to carry out some of its tasks. Since then, the use of ICT has increased and been disseminated to most government sectors.

In 2002, the National Information Technology Plan (NITP) was formulated to focus government efforts in this sector. It started with the Urgent IT Action Plan (UITAP) which consists of 21 recommendations distributed over the following axes, as summarised in ESCWA (2003):

- *Reorganizing the IT Sector*
- *Building ICT Capability*
- *Building ICT Infrastructure*
- *Utilizing IT to Support Development*
- *Enhancing the Digitized Arabic and Islamic Content*
- *Supporting the Implementation of e-Government (p. 2)*

In the same year (2002), the government added an information sector under the responsibility of the Saudi Communications Commission and changed its name to the Communications and Information Technology Commission (CITC). The CITC's vision is defined as providing "universally available, high quality and affordable communications and information technology services" (Communications and Information Technology Commission, 2014b, par. 1). The commission is an independent team which works to encourage the private sector to invest in the ICT sector by "provid[ing] a fair, clear and transparent regulatory environment to promote competition, and safeguard public interest and stakeholder rights" (Communications and Information Technology Commission, 2014b, par. 2).

In order to encourage all government departments to move towards the digital age, the government established the Ministry of Communication and Information Technology in 2003. It was made responsible for ICT in the public sector. It defined the vision for ICT in the Kingdom of Saudi Arabia as:

> The transformation into an information society and digital economy so as to increase productivity and provide communications and IT services for all sectors of the society in all parts of the country and build a solid information industry that becomes a major source of income. (Ministry of Communications and Information Technology, 2005, p. 4)

The e-government programme YESSER is one of the ministry's main projects and aims to translate the Saudi government's attention toward the e-government (Saudi e-Government Program, 2014).

According to the Communications and Information Technology Commission (2014a) report, the ICT field's current capital investment in Saudi Arabia is around 30 billion riyals (£5 billion). Most of it has targeted the ICT infrastructure, such as mobile and broadband networks, data and information management security, and third platform technologies (IDC (2015, sec. 6) defined the third platform as a platform "built on 4 pillar technologies": mobility, cloud, social business, and big data and its analytics). Consequently, the report estimates the ICT sectors' contribution to the national gross domestic product (GDP) as 8.7% in 2014. Spending in the ICT field in Saudi Arabia, including hardware, software, and services, increased to 111 billion riyals (£18.5 billion) in 2014, from 102.56 billion riyals (£17 billion) in 2013.

Analysing the existing research on the ICT in the government sector will help acquire a deeper understanding of the inherent challenges in this field. In 2012, Saudi Arabia ranked first in ICT usage among 18 Arab countries, with an ICT use index value of 2.82 (Madar Research and Development, 2012). However, existing efforts seem insufficient, and this sector needs further investment.

Studies have shown Saudis' positive attitude towards using ICT. Al-Zahrani and Al-ghtani's (2006) study targeted workers in the government sector

(Civil Defence) and industrial sector in Saudi Arabia. It found that workers "are positive (even excited) about the benefits of ICT" and believe "information network is necessary nowadays" (p. 1). Other studies have focused more on the kind of technology being used. Al-Gahtani (2003) studied five of the perceived attributes of computer technology (relative advantage, compatibility, complexity, trialability, and observability). He found that "each attribute was hypothesized to positively correlate significantly with computer adoption and use, except complexity" (p. 65).

On a larger scale, studies have focused mainly on e-government and its applications. Al-Fakhri et al. (2008) studied several Saudi government agency websites in order to collect information from 57 respondents by using questionnaires to "measure the awareness of Saudi government employees regarding the e-government program" . Based on the findings, the researchers made several recommendations, such as:

> "increasing the awareness of its e-government programme among its employees and the public at-large; making Internet access more available across the full spectrum of society" and "providing IT training to government employees". (p. 1)

Al-Shehry et al. (2006) studied the motivations for change towards e-government and noted that no unique model fitted all countries:

> because each country has its own circumstances, which reflects its environment, including factors such as the economic, political, cultural and social systems, which might influence the adoption of e-government. (p. 17)

2.2.1(ii) ICT in the Private Sector

As previously mentioned, the communication service was established in 1962. This service moved from the telegraph to VSTA, mobile and WiMax connections within 50 years. The communication sector fell under the responsibility of the Ministry of Posts, Telegraphs and Telephones, established in 1975 (Ministry of Communications and Information Technology, 2014). During the last ten years, when it opened to the private sector, the ministry has grown. In 1998, the first communication company was established based on the Council of Ministers' Decree No. 213 under the name the Saudi Telecom Company (STC) (Communications and Information Technology Commission, 2014b).

The number of licences given to companies to provide communication or information services increased from 309 in 2013 to 350 in 2016. These licences cover 13 types of services, such as fixed telecom, mobile, Internet, and VSAT (Communications and Information Technology Commission, 2016a, Communications and Information Technology Commission, 2014a).

Another indicator of ICT usage in the private sector is mobile service usage. In 2016, the number of mobile subscriptions in Saudi Arabia reached 49 million, with a penetration rate of approximately 153% — a decrease from the 2011 penetration rate of 188%. Meanwhile, the fixed telephone market's penetration rate dropped from 64% in 2013 to 31.4% in 2016. This decrease is arguably due to the increase of mobile services'

quality and coverage (Communications and Information Technology Commission, 2016b).

2.2.1(iii) The Internet

In 1998, the Internet service started in Saudi Arabia, based on the Council of Ministers' decision number 163 of 4 March 1997, which made the Internet Unit at King Abdul Aziz City for Science and Technology (KACST) responsible for managing, operating, and supervising it (Ministry of Communications and Information Technology, 2003).

This includes filtering the Internet content to protect users from unsuitable content from religious and cultural perspectives.

Users can connect to the Internet in different ways. Using fixed telephone lines (dial-up connections) was the initial way and is still used in some areas. These lines are owned by CTS, a unique company in Saudi Arabia in this area until 2009, when a second company was established. Using these lines, 47 Internet service providers (ISP) provide Internet services to users (Communications and Information Technology Commission, 2015a).

According to the Communications and Information Technology Commission's (2015a) report, at the end of 2015 the number of fixed broadband subscriptions — digital subscriber line (DSL), fixed wireless (WiMAX), fiber to x (FTTx), and others — was approximately 3.56 million. In addition, mobile broadband had become more popular in Saudi Arabia,

with the penetration rate growing from 47.6% in 2013 to 105.9% in 2015. Thus, approximately 33.4 million mobile broadband subscriptions currently exist in Saudi Arabia.

Several types of communication technologies exist in Saudi Arabia and can be used to connect to the Internet through, for example, satellite Internet, Wi-Fi and WiMax. In 2009, all three mobile companies (STC, Mobily, and Zain) provided high-speed (up to 200 Mbps) connections to the Internet (Zain, 2013, Mobily, 2014, STC, 2014). In addition, the second fixed telephone line company (named Etihad Atheeb Telecom (GO), established in 2009) provides Internet services using a WiMax network in two cities (Atheeb, 2008).

In the last decade, Internet penetration in Saudi Arabia increased considerably. In 2005, Internet usage was 13%; it rose to 68.5% in 2015. In general, international Internet connectivity's total capacity in 2015 was about 1484 Gigabits per second (Gbits/s), compared to just 318 Gbits/s in 2010 (Communications and Information Technology Commission, 2015a).

This increase was "due to high usage of social networking applications, video downloading and gaming" (Communications and Information Technology Commission, 2014a, par. 2). The commission expects a greater demand for Internet services over the next few years as a result of the availability and reliability of Internet connections.

Furthermore, statistics about using social networks in Saudi Arabia underscore the growth of Internet use. For example, 25% of the Saudi population have a Facebook account and 20% have a Twitter account (Statista, 2016). Globally, Saudi Arabia ranked fifth in Snapchat use among teenagers and second in Twitter use in 2015 (GlobalWebIndex, 2016).

2.2.1(iv) ICT Workforce in Saudi Arabia

In the first half of 2015, the General Department of Statistics and Information data showed that the economically active population in Saudi Arabia included 11.9 million workers, or 53.6% of the population (15 years old or older; (General Department of Statistics and Information, 2015). In 2014, the estimated number of ICT professionals was approximately 165,000 (1.5% of the Saudi workforce). In 2017, this number expected to increase to 213,000 ICT professionals, although still there is a gap between demand and supply in this field. For example, according to the General Department of Statistics and Information (2015) statistics, in 2014, approximately 5,400 professionals worked in the ICT field, although 13,800 positions needed to be fulfilled.

The gap is expected to be more than 37,000 ICT professionals by 2017, and in order to bridge this gap, more efforts are needed, especially from universities and technical and vocational colleges in Saudi Arabia, as they are the main source of specialists in the ICT field (Communications and Information Technology Commission, 2015b).

2.2.2 ICT in General Education

In 1985, general education in Saudi Arabia started to benefit from ICT when a new subject, computers, was added to boys' secondary schooling and, 10 years later, girls' secondary schooling (3 years) (Al-Mohaissin, 2003, Fodah, 2005). The subject focuses on using computer hardware and a few software applications, such as operating systems (Microsoft Windows) and office applications (Microsoft Office).

Since that time, the Ministry of Education has offered schools thousands of PCs each year to increase the rate of PC use in schools and allow more time for students to use them. In 2011, 10,779 ICT labs were connected by LAN and supported by teachers' specialising in ICT (Alwahaiby, 2011). However, the number is still very low according to the total number of schools (i.e., 30,464 schools) (Ministry of Education, 2013b). The ministry also provides annual training for ICT teachers and other teachers to benefit from such equipment (Ministry of Education, 2008).

Based on the General Project for Curriculum Development, in 2004, an ICT course was included in intermediate schools as a core subject and in primary schools by integrating it into other subjects. In 2007, the Saudi government established a national project called the King Abdullah Project for General Education Development (TATWEER), with a £1.5 billion (SR 9 billion) budget, to develop education (Ministry of Education, 2013a). Its work focuses on enhancing education by targeting four factors:

- Curriculum development

- Teacher preparation and training

- Improved learning environment

- Support for extra-curricular activities (Ministry of Education, 2013a)

The project focuses on using ICT in each part of its main areas, starting by establishing an e-training portal and video conference training centre and moving towards in-depth integration of ICT in each subject (TATWEER, 2014).

The use of ICT in general education requires setting up several studies in order to find the best methods of application and the most effective solutions for problems associated with its application. Fodah (2005) evaluated the computer curriculum in girls' high schools, finding a similarity between teachers across the country in terms of the type of difficulties they faced when teaching the computer curriculum. The study reported that, as the computer subject is not a core subject, students did not take it seriously, which was the main problem. In order to determine if computer education in Saudi Arabia can be used as a starting point for e-learning, Hassana and Woodcock (2006) analysed the current status of computer education in Saudi Arabia, noting that public schools are less developed compared with private schools in terms of computer usage as an educational tool. The study concluded with a description of the advanced use of ICT in education.

On the other hand, integrating ICT into curriculum has also attracted attention from researchers. Almaghlouth (2008) studied science teachers' perceptions in Saudi secondary schools towards the use of ICT in teaching and learning. The study found that providing hardware and software to schools is not enough to guarantee significant developments in the use of ICT in education in Saudi science classrooms. Almaghlouth mentioned that most teachers had a personal computer, but other tools such as digital microscopes, digital cameras, and interactive whiteboards are less accessible or in some cases unavailable for science teachers.

Al-Mohaissin's (2003) study compared the reality of computer education in Saudi Arabia, the United Kingdom (UK), Japan, and the United States (US). The findings indicated that the US ranked first in terms of the number of computers available in schools, computer labs, and total number of ICT classes in a year. Furthermore, the study mentioned that the content of computer curriculum (now called ICT) was not up-to-date and the software available on PCs was not appropriate to the curriculum.

2.2.3 ICT in Higher Education

Higher education in Saudi Arabia started in 1957, when King Saud University was established in Riyadh. Four years later, in 1961, the Islamic University in Madina opened as the second university. On the other hand, King Abdul Aziz University is the first private university in Saudi Arabia in 1967, but it was converted to a public university four years later (AL-Hammed, 2007). By 2013, there were 25 government universities and 9

private universities as well as 18 private colleges — most hosting several disciplines that are not exclusively academic (Ministry of Higher Education, 2010).

In order to train ICT specialists, most universities have specific schools or departments that work towards achieving this target. For example, the School (called *college* in Saudi Arabia) of Computer and Information Sciences at King Saud University (established in 1982) works to prepare students specialising in four areas: computer engineering, computer science, information systems, and information technology (King Saud University, 2013). Meanwhile, the Education College in the same university has a department called the Department of Education Technology, which prepares students as teachers of ICT and supports other departments to train students in ICT (King Saud University, 2011).

Looking at the ICT infrastructure in Saudi higher education, it is clear that Saudi Arabia invests in equipment as well as the other ICT infrastructure factors, such as training, policies, and education. Most universities link their colleges and department offices and classrooms through a computer network, allowing access to the Internet in addition to the university portal and administration system. This facility is also used to deliver e-learning services in some universities, such as King Saud University, King Faisal University, and King Khalid University (King Khalid University, 2014, King Saud University, 2009, King Faisal University, 2014).

The National Centre for E-Learning and Distance Learning was established to save efforts and share experiences among Saudi universities in this field. It provides content and services to 14 universities. The centre's mission is as follows:

> •*Deliver higher education to all in an effective way through e-learning*
> •*Deliver quality higher education through e-learning*
>
> • *Promote education via technology*
>
> • *Ensure quality standards for e-learning*
>
> • *Bridge the gap of education and technology*
>
> (National Centre for E-Learning and Distance Learning, 2013, para 6)*.*

2.3 Summary

This background information chapter has investigated the context of the study's problem. The following paragraphs highlight some issues discussed in this chapter.

 Saudi Arabia is one of the largest countries on the Arabian Peninsula, with its 23.98 million people (32.5% of whom are under 15 years of age) covering approximately 830,000 square miles (2,150,000 square kilometres). Looking from economic side, Saudi Arabia is the largest petroleum exporter in the world, producing approximately 9.5 million barrels a day from proven crude oil reserves totalling 260.2 billion barrels.

The formal education system in Saudi Arabia was established in 1926 as a department of the Ministry of Interior called the Directorate of Education. In

2014, around 7 million students (46.5% female and 53.5% male students 4 to 18 years old) studied in 35,397 schools. More than 500,000 teachers and educational staff in these schools teach a number of subjects, such as religion, Arabic language, math, science, and ICT (Ministry of Education, 2015).

In 1985, Saudi Arabia's general education started to benefit from ICT when a new subject, computers, was included in boys' secondary schools. The number of ICT labs totalled 10,779 labs in 2011, each one connected by LAN and supported by teachers specialising in ICT. Higher education in Saudi Arabia started in 1957, when King Saud University was established in Riyadh. By 2013, 25 universities and 9 private universities had been established, including King Saud University, King Faisal University, and King Khalid University.

In general, the first use of computers occurred in 1962, when the General Statistics Department used them for some of its tasks. In 1998, the first communication company, Saudi Telecom Company, was established. A few years later, in 2002, the National Information Technology Plan (NITP) was established to formulate government efforts in the ICT sector.

In 2012, the number of licences given to companies to provide communication or information services reached 292. Despite its late start, Internet services appeared in Saudi Arabia in 1998 and, by 2012, there were 40 Internet service providers in Saudi Arabia. Based on the development of the ICT sector, in 2012, Saudi Arabia ranked first among

18 Arab countries, with an ICT use index value of 2.82 because of the 53,700,000 mobile phone subscriptions and 13,600,000 Internet users.

This development in the ICT sector has affected other sectors, such as education, health, and trade. Saudi Arabia's higher education accompanied the evolution of the ICT sector. Most Saudi universities provide e-learning services for their students, and the government established the National Centre for E-Learning and Distance Learning to save efforts and share experiences among Saudi universities in this field.

Now that this study has provided background information about the research context, the relevant literature needs to be reviewed in order to benefit from the previous efforts on this subject. Thus, the next chapter reports the findings from the literature review in four main areas: OCSN usage in education, OCSNs and learning theories, educational change theory, and quality control in education.

CHAPTER 3:   LITERATURE REVIEW

This is the second part of the study's theoretical content as previously described in Figure 1-3 in Chapter 1 Section 1.5. Despite its strong link to other elements described in Chapter 2, the theoretical content is expected to be more readable by being split into a separate chapter.

While keeping the aims of the study in mind, the literature review was conducted to achieve two main goals: to investigate the previous efforts of researchers in this field, whether locally or internationally, and to explore factors related to how OCSNs are used in higher education. In order to identify the areas of literature that strongly relate to the study and have been integrated with other theoretical parts described in Chapter 2, the study targeted the four factors shown in Figure 3.1.
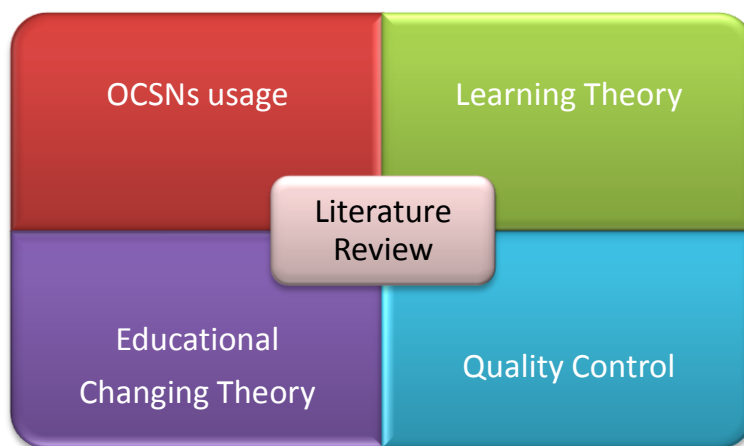
Figure 3-1: Literature Review Factors

These factors are expected to be the four main factors needing to be investigated in order to build a strong theoretical base for the study. In fact,

a strong link exists among these four factors and can be summarized as follows: Implementing OCSNs in education (OCSNs Usage) require adapting the learning process (Learning Theory) which requires changing the educational environment (Educational Changing Theory) under educational quality control (Quality Control).

Originality of the OCSN term and review of the literature

The term OCSN is original in this study. As previously mentioned (see Chapter 1 Section 1.2), the term was derived based on the study's characteristics; thus, it has not been used before for this meaning. Therefore, for the search strategy, terms such as "Web 2.0", "social media", "social network", and "online collaborative social network" were used because of their common use in studies in this field. In some cases, other words were added to limit the search results. Direct terms such as "Facebook", "connectivism theory", and "social-cultural" were also used.

In order to review the literature, online search engines were used to locate resources related to the four factors under study. In addition, the search engines used provided links to electronic copies of research available in journal articles, reports, and some books. The researcher benefited from facilities and services at Leeds University, which allowed for accessing libraries and online databases of journals and other electronic resources. In addition, the Ministry of Higher Education in Saudi Arabia allows students to use the Saudi Digital Library to access some Arabic databases and even international resources. These two main resources were used for the

literature review, in addition to the Internet, to access information not available from these databases. The findings from this stage are reported in the next five sections.

3.1 Online Collaborative Social Networks (OCSNs)

3.1.1 Introduction

Despite the other aspects related to using ICT in education, such as high cost, need for training, and a negative impact in some cases, education has benefited from the use of ICT in many ways. Currently, ICT plays an important role in every modern education system. For example, it is common nowadays for a university or school to have its own website. In addition, schools need to use several Web applications to support their daily operations, such as administration management, communication, and content management tools.

One challenge facing the education sector today is the rapid changes in ICT sector. For example, the quality and speed of communication technologies are rapidly improved which allow for new services, such as video conferencing to be used.

The improvement in communication technologies has enabled users to work online together in many web environments. These websites, known as 'Social Software', allow users to work collectively with others in a friendly environment (Mejias, 2005). More recently, the concept of social software

has come to be known as social networks or online social networks. In fact, the principle of social networks is similar to computer networks and power grids, as all of them consist of nodes connected to each other. In social networks, people, system and group nodes can be connected to form networks (Siemens, 2005).

Mejias (2005) listed 10 categories of social software (online social network): multiplayer gaming environments, discourse facilitation systems, content management systems, product development systems, selling and purchasing management systems, peer-to-peer file-sharing systems, learning management systems, relationship management systems, distributed classification systems, and syndication systems.

The social software (online social network) concept has become a key characteristic of the second generation of the Web, often called Web 2.0. The Web 2.0 concept was born in a conference brainstorming session between O'Reilly and MediaLive International and was further refined during the Web 2.0 conference in 2004. Web 2.0 is thought of as a new breed of Internet websites that encourage teamwork, responsive interfaces and the dissemination of information (McLoughlin and Lee, 2007, p. 665).

Other researchers believe that Web 2.0 does not involve a fundamental change in the way the Internet is built or constructed (Davies and Merchant, 2009). In order to define criteria to identify which applications (also called 'services' or 'spaces') are related to this concept and which are

not, O'Reilly (2005) identified the following seven characteristics of Web 2.0:

1. **The Web as a platform:** This characteristic is the key principle used to describe the Web 2.0 concept.

2. **Harnessing collective intelligence:** O'Reilly (2005, par. 9) equated the success of *"the giants born in the Web 1.0 era"* to the fact "that they have embraced the power of the Web to harness collective intelligence*"*, which led to Web 2.0. For example, he noted a combination between some Web 2.0 applications such as eBay, Amazon, and Wikipedia with other traditional providers of the same services.

3. **Data are the next Intel inside:** Significant applications such as eBay, Amazon, and Google function based on specialized databases. According to O'Reilly (2005), the ability to handle the large volume of information using databases resulting from dealing with millions of users is an essential and crucial skill that can control a company's market share. .

4. **End of the software release cycle:** O'Reilly (2005) mentioned that software is currently used as a service, not as a final product.

5. **Lightweight programming models:** O'Reilly (2005) emphasised the use of lightweight programming models and provided evidence of successful technologies, such as Really Simple Syndication (RSS) and Google Maps.

6. Software **above the level of a single device:** A particular Web 2.0 feature is that it is not used exclusively on PCs. As an example of the Web 2.0 principles, O'Reilly (2005) indicated that the simplest Web 2.0 application needs at least two PCs, with one of them working as a server. According to O'Reilly, iTunes and TiVo are good examples of the Web 2.0 principal; they are not practical Web applications, but they benefit from the advantages of the Web. These two applications allow Web users to connect from mobile devices, changing the trend of bringing the Web content to the user's device to bringing the users to the content.

7. **Rich user experiences:** O'Reilly (2005) referred to using such technologies as a way to gain experience because it is a rich environment with new application and tools.

8. He noted that JavaScript and DHTML design goals aim to enrich the final user's interface beyond the simple text and graphics offered by HTML. O'Reilly offered another example of this point—namely, the use of the term *"rich Internet applications"* by Macromedia to market their new way of building user interfaces

that transform the way Web content is delivered to and consumed by users.

Meanwhile, Davies and Merchant (2009) examine Web 2.0 characteristics from the users' side. They define four characteristics of Web 2.0 applications:

1. **Presence:** Web 2.0 applications encourage users to build up an active presence using an online profile, identity or personal images.

2. **Modification:** A degree of personalization exists for users of Web 2.0 applications, such as home page design and personal links.

3. **User-generated content:** The content of Web 2.0 applications is built through users' cooperation rather than coming from the site owner.

4. **Social participation:** Based on the previous three points, it is clear that participation is a key characteristic for Web 2.0 applications. In addition to participating, users can rank, rate, and comment on applications, ultimately sending and receiving feedback (Davies and Merchant, 2009).

Today, based on these characteristics, thousands of websites use Web 2.0 applications. Looking closely at one of the Web 2.0 statistics indicates the

extent to which these applications are being used. According to Facebook (2016), approximately 1.79 billion users actively use Facebook, and 1.66 billion people access Facebook through their mobile devices.

The importance of discussing Web 2.0 in this study is to clarify the relationship between Web 2.0 and the term *social network* (SN) as used in this study. In fact, the term *Web 2.0* has attracted attention from a number of researchers and is now widely used, based on the findings of the literature review. SN will be discussed in detail in the following section.

3.1.2 Social Network (SN)

The first sign of design change on the Web was the high popularity of a website called Friendster, which later became known as a *social networking site* (Downes, 2005). The idea of social networks actually began in the 1960s, when JCR Licklider thought to use computer networks to enable people to communicate and share their knowledge and learning skills (Alexander, 2006a). According to Boyd and Ellison (2007), Social Networks(SNs) are those Web technologies that enable people to (1) list their profiles for others in a designated field of interest, (2) know and connect with others in that field who share some similar interests, and (3) see to whom their connections are connected.

Based on these characteristics, it is now common for websites to provide most of these services. For example, Facebook, Friendster and MySpace are all social network websites that allow users to share images, videos,

and personal information. They also allow users to comment on written text and communicate in real time.

3.1.3 OCSN Characteristics

This study added the words *collaborative* and *online* to the term *social network* for two reasons: to emphasise the importance of collaboration in these networks and to illustrate the context of these networks, which is online (i.e., as Internet services). The reason for emphasising collaboration in these networks stems from the importance of teamwork in the educational environment.

The characteristics of OCSNs differ from website to website, although these types of Web applications share some common characteristics. Mason and Rennie (2008) used Boyd and Ellison's (2007) characteristics, as previously mentioned, to define the following three characteristics:

1. **Profile:** Usually a profile includes information about the person, such as name (or nickname), age, sex, interests and location. In addition, it might include photographs and contact information. In fact, profiles now allow users to share multimedia such as text, images, audio, and video files.

2. **Traversable social network**: Users have the ability to view information on other profiles, such as friends' lists and contact information. This capability generates a thriving social network,

but sometimes requires acceptance from the other user to build a friendship link, which allows individuals to traverse from one profile to the next.

3. **Collaboration:** Users can comment on each other's profile content via tools such as messages and testimonials. Therefore, a profile contains the person's information and experiences as well as comments from other friends or visitors on the profile content.

These three characteristics of OCSNs are more important in the current study because it uses selective criteria to determine which kinds of OCSNs to include in this study. Moreover, participation in OCSNs is motivated by various purposes, such as sharing files, exchanging experiences, and sharing knowledge (Cachia et al., 2007).

Based on the discussion thus far, it can be concluded that Web 2.0, SNs, and OCSNs share common characteristics; in fact, these terms could even be synonymous in some cases. One of these common characteristics is that the content of these networks is user generated, which will be discussed in the following part.

3.1.4 User-generated Content on OCSNs

OCSNs enable users to collaborate in order to generate and develop content. In fact, using the power of users is one of the key successes of

any social networking website; doing so will increase traffic when users use it more (Ullrich et al., 2008).
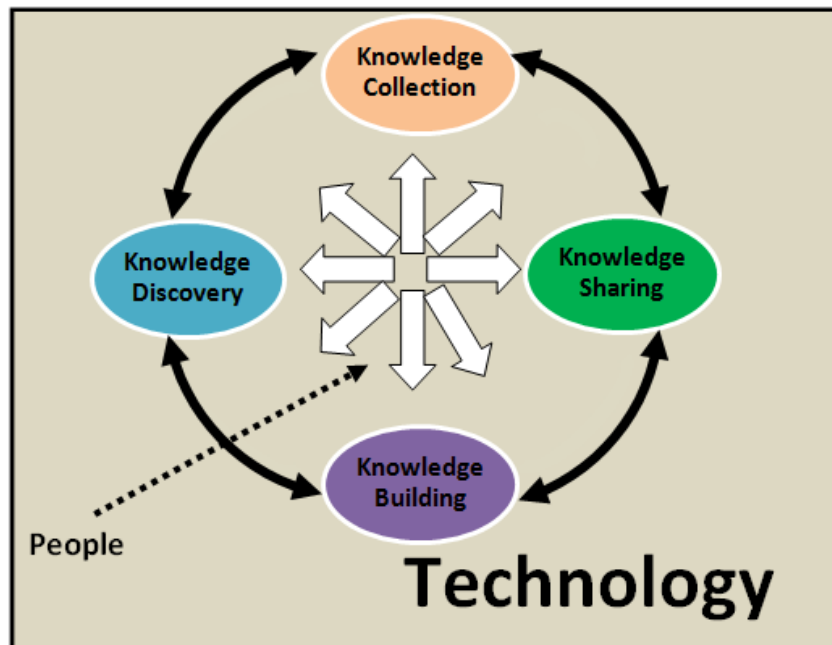
Figure 3-2: The Web 2.0 Watermill (Yarmosh, 2005)

In this context, Yarmosh (2005)described the process of building knowledge as a watermill. The waterwheel in this model, as shown in Figure 1-2, consists of four areas: knowledge collection, knowledge discovery, knowledge building, and knowledge sharing. In this model, Yarmosh described people as a power source, like water in a watermill, which emphasises the importance of users in the process of building knowledge.

Knowledge in these networks can be seen as a product that can be managed and sold as well as social activitys which leads to knowledge flows when people share and shape ideas (Bell, 2010). However Romero-

Frías and Montaño (2010) argue that the main focus of these networks is not to build the content, but moves beyond that to the development of users' identities and the collaboration between users.

Currently, the growth of OCSNs' applications and services has made two-way communication or read/write websites more notable, with users becoming information producers during their comments, tagging of objects, remix of content, or production of original content (Bell, 2010). Such growth and improvement on OCSNs allows users on thousands of websites to participate in the building of content and can be classified by type (e.g., wikis, blogs and podcasts).

From an educational perspective, some of these applications are used more often than others. For example, Boulos et al. (2006) highlighted the potential of using wikis, blogs and podcasts to transform the use of the Web in medical and health education. Richardson (2008) describes blogs, wikis, podcasts and other applications as power tools that can be used in education. With that in mind, and based on their widespread use within OCSNs as tools for generating content, it is worth defining these three tools:

Wiki: A wiki is an application that allows users to add, modify and classify its content (Mitchell, 2008). This application was first developed by Ward Cunningham in 1995 for the Portland Pattern Repository and was initially named the *Wiki Wiki Web* (Leuf and Cunningham, 2004). *Wiki* is a

Hawaiian word that means "fast" (Bean and Hott, 2005). Today, this term describes the practice of quickly building and modifying content online.

Wikis can be used for educational purposes in various ways. For instance, they can be used as an information platform. One obvious example is Wikipedia, a *"*free encyclopaedia that anyone can edit*"* which contains more than three million articles in English (Wikipedia, 2016,sec. 2). Duffy and Bruns (2009) identified eight ways to use wikis for educational purposes, including developing research projects, adding summaries, publishing course resources, and conducting course evaluations.

Blogs: This term is a short form of the term *Weblogs,* first coined by Jorn Barger in 1997 to describe a new kind of website (Blood, 2000) Blogs are HTML applications that order items of content like text, images and others in the order they were created by the users (Winer, 2003). The technical infrastructure of this application is based on three categories: tools to write, tools to read, and tools to find or connect blogs (Efimova and Fiedler, 2004).

Blogs can be used for educational purposes in different ways. For example, Bryant (2006) mentioned that they can be used to allow students share and organise their extracurricular activities with their schoolmates and the public. Williams and Jacobs' (2004) study explored the use of blogs as learning spaces in higher education. In their estimation, most students agree that blogs can be used as a medium for facilitating learning, student interactivity and reflection.

Podcast: This term comes from combining *iPod* (an electronic device developed by Apple Computer, Inc.) and *broadcasting.* Podcasts provide a form of Web radio that audiences can access at any time (Borja and Arlington, 2005). Geoghegan and Klass (2005) defined podcasts as audio files that can be used online via personal devices such as computers and mobile devices. Ractham and Zhang (2006) added that podcasts can deliver text, image, and video content and are particularly successful when they benefit from RSS technology. For example, YouTube users utilize podcasting to share videos; in fact, YouTube has become one of the most successful OCSN applications to date. According to YouTube statistics, more than 1 billion users visit the website, and more than 6 billion hours of video are watched each month (YouTube, 2014).

It is easy to find an OCSN website that provides these tools and more, such as Facebook. It allows users to share their information, experiences and documents as well as comment upon each other's profile content. Despite that, "new features should be added into the networking service a bit by bit" because a more complicated system will be considered difficult to use based on its initial use (Silius et al., 2010, p. 140).

Despite the wide variety of OCSN tools, users in these networks tend to use existing content rather than create new content (Selwyn, 2012). Moreover, Palmer et al. (2013) mentioned a group of students who complained that they did not see the benefit of sharing their efforts with others who did not contribute to such efforts. Indeed, the challenge of new

OCSN is how to motivate users to participate in content creation (Silius et al., 2010).

3.1.5 OCSN Usage Opportunities and Challenges

> Social networking presents a wealth of opportunities for users within a social, educational and business setting. Unfortunately, they [SNs] simultaneously also demonstrate a number of weaknesses and can be a threat to organisations and users. Guidelines for good use of SNSs are necessary and span a wide variety of areas of concern. (Schlenkrich and Sewry, 2012, p. 15)

Higher educational institutions need to be conscious of the educational threats and strengths associated with using OCSNs (Palmer et al., 2013). Based on the nature of OCSNs and their characteristics, a number of opportunities exist to support their usage. Flexibility of learning on these networks is one of their strong advantages, as learners are able to access the learning materials and activities at any time and any place (Zaidieh, 2012). This becomes obvious in flexible learning courses, such as in part-time and distance learning programmes, when students feel it difficult to become part of the educational community (Osborne, 2011). In addition, Osborne (2011) mentioned that using social networks can enhance traditional learning by engaging students and teachers in a collaborative learning environment.

Despite these opportunities to use OCSNs practically for educational purposes, using such networks involves some challenges which need to be

taken into consideration during planning for implementation. Zaidieh (2012) identified the following four challenges:

Privacy: Registration on these networks requires personal information, which leads to users' concerns about the privacy in these networks. Users need to be well informed about their right on these networks and have the right to access their information.

Taking up time: Individuals spend a long time browsing these social networks, which could affect their health and social skills and, for some, extend to their motivation for learning because of the long time involved in using these networks (Zaidieh, 2012, Asad et al., 2012).

Real friendship: The number of friends on OCSNs does not necessarily indicate true friendships. In fact, personal information on OCSNs is not one hundred percent reliable.

Miscommunication: Some users find it more difficult to express their ideas and opinions on these networks. This may be a result of using traditional learning methods for so long; they prefer using face-to-face methods to benefit from physical clues such as tone and body language.

Moreover, there are number of concerns about using OCSNs in education. Losing control over these networks, such as on a blog's comments, could be used in negative way (Reuben, 2008). Looking more closely at the learning context, students can move from an environment controlled by a

tutor to an open environment where they control their own learning (Kop and Hill, 2008).

The students' confidence in using technologies and university support of this usage influence the students' intention to use this technology (Al-Harbi, 2011). In some cases, there are differences in students' intention toward using technologies for learning purposes based on their gender, faculty, and the study programme (Al-Harbi, 2011).

Reuben further highlighted a serious issue for these networks: the lack of verification of personal data. For example, anyone can set up an official account for a university. This issue has been resolved for most of the popular social networks nowadays. For example, Twitter provides a type of account that is verified and has an indicator stating that it is a reliable account.

After this introduction about OSNs (and the new term OCSNs), which has illustrated the foundation and characteristics of these networks, the next section mainly focuses on using OCSNs for educational purposes.

To sum up this topic, opportunities come from the potential benefits of using these technologies in higher education, and the challenges mainly come from the lack of experience in using these networks (Hamid et al., 2010).

3.2 OCSN Usage in Education

This principle has great merit in the notion of serendipity, innovation, and creativity. Connections between disparate ideas and fields can create new innovations. (Siemens, 2005, p. 4)

Using OCSNs for educational purposes seems to be a promising field, although implementing such technologies needs to be a well-planned process. As previously mentioned, using OCSNs presents a number of opportunities and can be used to enhance learning, but many threads exist and need to be overcome by higher educational institutions in order to maximize the benefit of using these networks (Schlenkrich and Sewry, 2012).

OCSNs could play different roles to support and enhance higher education. Hend and Regina (2013) listed the following roles:

- *A medium for collaboration and sharing of ideas and opinions.*
- *A facilitator of learning.*
- *An act to reach out the students.*
- *An enhancement of the learning abilities of faculty and students.*
- *An open-minded learning system where freedom of speech is encouraged.*
- *A tool to increase civic awareness and youth engagement in public affairs.*
- *A tool to assist the handicapped. (pp. 66-67)*

Higher education can benefit from the use of OCSN applications to enhance the level of its services in general and educational services in particular. The use of OCSNs in education is still in its early stages in some countries, indicating the need to share experiences in this field. As a result

of the rapid technological development and improvement, many higher education institutions find that they need to catch up with this trend of using OCSNs (Selwyn, 2012).

However, using OCSNs for educational purposes does not mean that the use of these networks comes with no disadvantages. Grosseck (2009) listed a number of the advantages and disadvantages of using Web 2.0 (or OCSNs based on the study's definition) in education, as shown in Table3.1.

Table 3.1: Web 2.0 Advantages and Disadvantages

Advantages	Disadvantages
Reduction of costs	*An Internet connection is required (especially a broadband connection)*
Flexibility, as far as the possibility of choosing technologies is concerned	*It hides behind it a sum of technologies and concepts which are still insufficiently defined*
Easier and faster access to information when and where it is needed	*It is based on Ajax, which depends on JavaScript and, therefore, a user without activated JavaScript will not be able to use the respective page*
Integration of a variety of Web 2.0 technologies in the teaching–learning activities	
Extensive opportunities for information sharing and collaboration through social bookmarking services	*It determines variations of interpretation between types of browsers*
Capability to control access to resources by authenticating users	*It offers free things, in open-source structures, with rather vague significance*
Sharing accumulated experiences (blogs, microblogs, wikis, Flickr, YouTube) and resources	*It leads to a low quality of the actual content, causing sites to struggle in deep informational mediocrity*
Independence from the platform (i.e., a computer, with browser and Internet connection is enough)	*It promotes amateurishness through low-value content generated by users*
Compatibility with the elements of the	*It gives everyone the opportunity to*

Advantages	Disadvantages
educational field and the existing contextual dynamics	*complain, thus creating a community without rules*
Low level of complexity needed for use (minimum skills in using the Internet)	*It has monetary quantification (the Internet as a business; e.g., Google)*
Reliability in continuous usage, over an extended period of time	*It has limited security*
Redistribution of effort, so that less and less time and energy are spent during search and information management	*It is a kind of second-hand Web, a medium for persons with low digital abilities*
Increase in number of modalities of use and the heterogeneity of didactic practices and types of formation	*The speed of programmes is incomparably slower than that of desktop programmes*
Due to the diversity of the new technologies, the ability to test the existing didactic practices, without making great changes to the current modus operandi	*It does not mean anything per se, it is just electronic junk; the actual selection process is made difficult by the extremely diversified offerings of technologies which can be used and which exist on the market at the moment*
Major focus on didactic innovation, and not on the technology per se	
Creating digital content (especially media, podcasting, videocasting)	*The time and knowledge invested in ...Web 2.0 technologies*

Source: Grosseck (2009, p. 480)

This part of the literature review aims to investigate certain aspects related to the use of OCSNs in education, starting with the complexity of their implementation. The discussion then moves to the current usage and experience at the national and international levels.

3.2.1 OCSN integration in education as a complex change

Using OCSNs in education is not an easy task. A review of the literature identified a number of issues regarding the use of technologies for educational purposes. One such issue is the complexity of implementing these technologies in teaching and learning processes, which becomes evident with the implementation of OCSNs in education because of the complicated factures that influence their usage. Mishra and Koehler (2007) argued that the integration of technoloies has become more complex due to the kinds of social networks and the context of the learing environments.

In fact, the integration of OCSNs in education can be seen as what Rittel and Webber (1973) described as a "wicked problem" (p.160). They described the meaning of the term *wicked* as:

> akin to that of "malignant" (in contrast to "benign") or "vicious" (like a circle) or "tricky" (like a leprechaun) or "aggressive" (like a lion, in contrast to the docility of a lamb). (p.160)

In order to clarify the meaning of this term, Rittel and Webber (1973) mentioned that they "do not mean to personify these properties of social systems by implying malicious intent" (p.160), but "to treat a wicked problem as though it were a tame one" (p.161).

In the case of the integration new technology in education, "wicked problems always occur in social contexts" (Mishra and Koehler, 2007, p.3). Thus, the integration of OCSNs in education needs more attention because of the complexity of their context.

It can be concluded that using OCSNs in education requires a complex change because of their intersection among four major components in the educational environment. These components, as previously mentioned, are technology, pedagogy, content, and social networks.

3.2.2 Background of OCSNs usage in Saudi Arabia

Seeking the opportunity to use OCSNs in higher education is the main target of this study. In order to investigate this point, it is important to obtain a broad picture of using OCSNs in Saudi Arabia in general.

At the beginning, comparing the use of OCSNs in Saudi Arabia and other Arab countries will give us an indicator about the level of use, as there are some factors in common between these countries.

Looking more closely at the finding of Salem et al.'s (2014a) research among Arab counties in 2014, which received around 3000 responses, approximately 52% of Internet users use the Internet from three to seven hours daily and 4% use it far less than one hour a day. Facebook ranks first among respondents' social networks, with around 91% having an account, followed by Google+, YouTube, and Twitter (70%, 60%, and 57%, respectively). Around 27% of respondents used these social networks to get news, information and advice and, at almost the same ratio, to stay in touch with families and friends.

The use of social networks has increased rapidly during the last few years. According to Salem et al. (2014b), Facebook users have increased by 49% in Arab countries since 2013, and for Twitter the number of users has increased by 54%. According to the data, Saudi Arabia ranks first in number of Facebook users (8,400,000 users), which is 49% of Facebook users, in the Arab states of the Arabian Gulf, followed by the United Arab Emirates with 4,800,000 users. The study also found that the number of Twitter users in Saudi Arabia (2,414,000 users) was the highest among the Arab countries, followed by Egypt with 1,090,000 users. Furthermore, an estimated 40% of tweets (213,900,000 tweets) in the Arab world came from the 3,600,000 Twitter accounts registered in Saudi Arabia. However, this is not always the situation. For example, Saudi Arabia ranks eighth in the Arab Gulf region for using LinkedIn, as only 4.79% of the population have a LinkedIn account, compared to the United Arab Emirates (UAE), which ranks first with 22.73%. It seems to be there is a relationship between social and cultural factors as well as the use of these social networks.

At the international level, according to the networked readiness index in 2014, Saudi Arabia ranked 32 among 144 counties from all over the world (World Economic Forum, 2014). It ranked slightly better in 2013, at 31. This does not mean that the level and quality of ICT services in Saudi Arabia in 2013 were particularly better than in 2014, but it could mean that other countries have moved faster in this field than Saudi Arabia.

In the field of education, Alsurehi and Al-Youbi (2014) studied the usage of the most popular social networks, such as Facebook, Flickr, Instagram, and WhatsApp, in Saudi higher education. These authors conducted surveys with students in a number of the major universities in Saudi Arabia. The study provided useful information about students' opinions regarding the use of these social networks. The researchers summarized the study findings as follows:

> The findings of this research indicate that the use of social networking applications is quite prevalent among major universities in Saudi Arabia, although the usage and awareness seem to be limited to major and popular applications like Facebook. Also, the potential of social networking applications as powerful collaboration and educational tools seems to remain under-utilised by Saudi students. (Alsurehi and Al-Youbi, 2014, p. 11)

The future of technology use in Saudi Arabia is promising, as raising ICT promotion and awareness—especially in education—has become a national strategy (Al-Asmari and Rabb Khan, 2014).

The next two sections focus on the use of OCSNs in higher education at two levels. The discussion starts by exploring international experiences with OCSN use in higher education and then examines its use at the local level (i.e., Saudi Arabia's higher education).

3.2.3 International Experiences with OCSNs Usage

Using OCSNs in international educational institutions is an important issue for this study. Previous experiences of leading universities all over the

world will add more value for any local experiment regarding the use of OCSNs in education. Studies have shown a general increase in the use of OCSNs in educational contexts and have illuminated important issues regarding the implementation of these networks. The following discussion offers a few examples of these efforts.

In a study funded by JISC, Franklin and van Harmelen (2007) reported on the use of Web 2.0 applications at four universities in the UK (i.e., University of Warwick, University of Leeds, University of Brighton, University of Edinburgh). The report showed that the University of Warwick was one of the first universities to offer Web 2.0 applications services, starting in October 2004 with personal blogs for all of its students. Meanwhile, the University of Leeds was the first university to use a virtual learning environment (VLE) when it built an open-source system called Bodington in 2005.

Subrahmanyam et al. (2008) compared social networking sites, instant messaging, and face-to-face usage among college students (n=110) at a large urban university in Los Angeles. Participants answered both online and laboratory survey questions. The results showed that students often used the social networking sites to communicate with friends and family members. On the day of the study, 91% of students reported having gone online and 63% reported having spent some time visiting social network sites. The study also found that 78% of students had a profile on a social

network site and 88% reported that the most frequently updated profile was on MySpace.

Roblyer et al. (2010) conducted a study to compare college faculty members' and students' uses and perceptions of social networking sites. They compared Facebook usage (for personal or educational purposes) among higher education faculty (n=62) and students (n=120) via an online survey administered at a mid-sized American southern university. The study found that 95% of students had an account whereas only around 73% of faculty had one. It also found that 92.5% of students used their accounts to keep in touch with friends, whereas 62.9% of faculty used them for the same purpose. In contrast, the study found only 4.2% and 6.5% of students and faculty, respectively, used Facebook to communicate on class projects. This might be an indication of the need for more research efforts in this area.

The JISC (2009) report showed that a small number of universities in the United Kingdom have consciously decided to use Web 2.0 in learning and teaching. The report mentioned that the limitations of experts in this area accounted for one of the difficulties facing these universities. Moreover, the report noted that Web 2.0 usage must be integrated into the curriculum of certain courses, such as computing and media courses.

Armstrong and Franklin (2008), commissioned by the Committee of Inquiry into the Changing Learner Experience, studied the use of Web 2.0 social networks in higher education in five countries: the United Kingdom,

Australia, the Netherlands, South Africa, and the United States. The report mentioned that OCSNs used almost all of the higher education processes and services. It emphasised the importance of technical infrastructure in enabling students to use technologies such as wikis, blogs, media sharing, and social networking. The study also reported the limitations of the drivers in the use of these technologies.

Westera (2008) reported that, in the Netherlands, despite the lack of large-scale implementations, *"the trend of increased popularity is unmistakable"* (p. 62). His report listed several examples of OCSN use in higher education, including the TelematicaWiki in Tilburg University and Hyves social networking in Utrecht University.

The impact of any innovation in the educational context is always an important point. Romero-Frías and Montaño (2010, p. 12) reported that more than 95% of students participating in their study agreed that the use of social networks "was useful for learning of the subject content", indicating a positive effect, although only 58% of students agreed that using these networks motivated them to work hard, and nearly as many (53%) agreed that it "increased their interest in the subject".

In an observation study conducted at Southampton Solent University (SSU) in United Kingdom, Palmer et al. (2013) compared the use of Facebook and another social networks available through the university's VLE system.

With 6200 users (around 40% of all students in the university) on the university's social networks and around 150 groups, they noticed:

> Observing the day to day postings of students shows that the vast majority are positive postings relating to social and other events. Evidence indicates that students are using Facebook primarily to maintain a satisfactory social life and to be part of the University community, which likely contributes to enhancement of their learning experience. (Palmer et al., 2013, p. 4)

Dunn (2013) studied the impact of using social media networks on students' experiences at Glasgow University. The findings indicated that undergraduate students engage in these networks more than postgraduate students (65% and 35%, respectively). In addition, students believe their interactions with teachers had improved because of using these networks. Almost all of the students stated that using social networks led to improved learning experiences.

In the light of this combination of international experiences, the next section investigates the use of OCSNs in higher education at the national level (namely, in Saudi Arabia's higher education).

3.2.4 OCSNs Use in Saudi Arabia's Higher Education

The use of OCSNs is still in its early stages, although numerous Saudi Arabian universities have started providing such services for their faculty members and students. Despite the early stage of use, researchers have already started to focus on this area. Almohaya's (2008) study aimed to measure the effect of eLearning 2.0 (electronic learning based on Web 2.0 applications) on collaborative learning skills with students of the teaching college at King Khalid University. The study used the experimental method and divided the sample into two groups (26 and 25 students): One group used traditional eLearning based on the learning management system (LMS) while the other used eLearning 2.0 based mainly on wikis and blogs. The study found no significant difference between the two groups in collaborative learning skills; both groups mostly used the first level (88.5% of students in the control group and 84.07% in the experimental group). One of Almohaya's recommendations was to provide usage guidelines for users (learners and teachers) in order to increase the level of collaboration.

More recently, Al-Khalifa and Garcia (2013) studied the state of social media use in Saudi Arabia's higher education. The study used Facebook, Twitter, YouTube, and LinkedIn users' activities as indicators of the use of these social networks in Saudi Arabia's higher education. Based on their findings, the Facebook page of King Abdulaziz University (KAU) came out ahead of seven Saudi universities, with 24,102 likes. King Abdullah University of Science and Technology (KAUST) came in second with

23,825 likes. On Twitter, King Saud University (KSU) came in first with 26,272 followers, and KAU came in second with 13,180. On YouTube, the KAUST page ranked first with 232,291 views, followed by Umm AlQura University (UQU) with 142,139 views. On LinkedIn, KSU ranked first with 4,458 followers and KAUST ranked second with 3,328 followers.

According to the literature, some barriers to using social media networks exist in certain universities. For example, some participants believed that they were not useful, and some were concerned about privacy in these networks (Al-Khalifa and Garcia, 2013).

Alwagait et al. (2014) studied the impact of using social media networks on Saudi students' academic performance. The study linked the uses of social networks such as Twitter, Facebook, Instagram, and others with the students' performance from the students' results in the last eight semesters (four years). One hundred and eight students from a Saudi university responded to the survey. The result showed that Twitter was the most popular, as 100 students (90%) had a Twitter account. Facebook ranked second with 44%, and Instagram was the least popular at around 10%. Furthermore, 16% of students had accounts with all three social networks. The study found no relationship between using these social networks and students' performance during the four years studied (i.e., between 2010 and 2013).

Ahmad et al. (2013) explored 32 Saudi universities' (24 government universities and 8 private universities) websites, seeking links to today's

most popular social networks—namely, Facebook, Twitter, YouTube, RSS, Flicker, LinkedIn, Google+, Blogs, Tumblr, Scribd, and Vimeo. The finding of this study highlighted the popularity of Facebook, Twitter, and YouTube across these universities, as 30 of the 32 universities studied had Facebook and Twitter accounts and 25 universities had a YouTube account. RSS ranked fourth, with 15 links, followed by LinkedIn (only 8 universities). The remaining networks were not popular as fewer than 2% of universities linked their websites to these networks (Flickr, Google+, Blogs, Tumblr, Scribd, and Vimeo).

Aljasir et al. (2014) looked in depth to understand why people have more than one Facebook account. The most common reasons for using a second Facebook account were for romantic relationships and to have freedom in revealing opinions (18.3% and 16.7%, respectively).

Another study mentioned that Saudi students believe that using mobile devices for learning gave them more flexibility to access online resources which allow them to work and learn more independently compared to the traditional method of learning (Al-Fahad, 2009).

To conclude this topic, it seems that most studies at the national level focused on the use of popular networks such as Facebook, YouTube, and Twitter. These networks play an important role in our lives nowadays, but these networks need to be used effectively.

Moving more closely to the learning context, the next section explores the use of OCSNs with learning theories. The content mainly focuses on two points: a brief introduction of learning theories and using OCSNs with these theories.

3.3 OCSNs and Learning Theories

> Many theories have been proposed over the years to explain the developmental changes that people undergo over the course of their lives. These theories differ in the conceptions of human nature they adopt and in what they regard to be the basic causes and mechanisms of human motivation and behaviour(Bandura, 1989, p. 2).

In reviewing the literature regarding learning contexts, it is evident that this field has benefitted from researchers' efforts. In fact, studying how learners learn has highlighted different points of view, leading to a large variety of learning theories being adapted based on theorists' opinions and beliefs.

Huertas et al. (2007) argued that we are now moving towards an evolutionary stage in our lives, as the Web has become a social environment that impacts all social activities; education is not exempt from this effect. In this context, it is important to study the possibility of applying OCSNs in an educational context design based on each learning theory; however, time constraints resulted in space limitations.

After studying the majority of learning theories, it was found that the connectivism learning theory was more relevant in supporting the use of OCSNs in education. However, there are number of opportunities to implement such networks in teaching and learning processes designed based on other learning theorises. Millwood (2016) designed a helpful map for most well-known learning theories, which made the selection of learning theories to include in this part of the literature review more challenging.

Ultimately, it was decided to focus on five learning theories selected based on popularity; these include behaviourism, cognitivism, and constructivism, which Siemens (2005) described as often being used to design learning environments. In addition, the socio-cultural theory is sued because of its emphasis on the role of social dimension in learning activities. The fifth learning theory included in this part is connectivism theory, which is believed to be the most relevant learning theory for using OCSNs to enhance teaching and learning.

3.3.1 Behaviourism

The theory of behaviourism is regarded as the oldest and most well-known of the main educational theories. Its most recognised proponents are Ivan Pavlov, Edward Lee Thorndike, Burrhus Frederic Skinner and John Broadus Watson (Holmes and Gardner, 2006). In 1913, Watson published his famous paper <u>Psychology as the Behaviorist Views It</u>, which established this theory and made it well-known (Schnaitter, 1999).

The American Anthropological Association (2007)defined behaviourism as a school of psychological belief in the importance of behaviour responses in order to understand human social activities. Based on this theory, human behaviour is understood from its physiological responses to exterior aspects (McPherson and Nunes, 2004). Behaviourism theory "states that learning is largely unknowable, that is, we can't possibly understand what goes on inside a person (the 'black box theory')" (Siemens, 2005, par. 8).

3.3.1(i)Types of Behaviourism

Kimble (2000) noted that behaviourism is not a rigid ideology; it branches into two major types: one based on stimuli (S) and responses (R) and another based on the relationships between them (S-R).

Classical Conditioning (Classical Behaviourism): This type limits itself to the previously mentioned three elements (i.e., S, R and S-R) while rejecting mental states, ignoring theory, and cautioning against physiological opinions (Kimble, 2000).

Operant Conditioning (Methodological Behaviourism): In contrast to the classical approach, methodological behaviourism accepts mental cases if there is a suitable definition, supports theory, and accepts physiological hypotheses about the theoretical concepts (Kimble, 2000). Skinner (1965) described the operant reinforcement as an independent process needing independent analysis to make the response more frequent.

The key proponents of this theory began by experimenting on animals; these theorists included Pavlov (1849–1936), Thorndike (1874–1949), Watson (1878–1958), and Skinner (1904–1990). For example, Pavlov conducted an experiment involving a dog, its food, and a bell. The dog did not respond to the sound of the bell before conditioning, but began salivating whenever food was placed in front of it. During conditioning, the bell rang for a few seconds before the food was presented to the dog.

Pavlov found that, after conditioning, salivation was produced after the ringing of the bell (Mergel, 1998).

The behaviourist theory views learning as a significant change in behaviour and neglects mental activities. Shavelson (2009, p. 9) defined learning as "a permanent change in observable behaviour over time". According to this theory, the role of the learner is mainly to respond to stimuli whereas the roles of the teacher are to (a) design the learning environment, (b) shape students' behaviour, and (c) present information (Keesee, 2009).

There have been many criticisms of behaviourist approaches because of the way they approach the learning process as a non-interactive one (Holmes and Gardner, 2006). Naik (1998, par. 20) also criticised the theory, highlighting its "failure to show adequate generalizability in human behaviour" and its "inability to explain the development of human language".

Some of the behaviourist approaches still play important roles in the learning context in general and in eLearning in particular. Drills and practice, as behaviourist approaches, are used especially with some aspects of mathematics and in reviewing for exams (Holmes and Gardner, 2006). In addition, tutorials are regarded as one of the common behaviourist approaches as they use a presentation followed by an assessment to teach content (Holmes and Gardner, 2006). Moreover, simulation applications have become widely used in online learning and are in some cases designed based on behaviourist approaches (Juhary, 2006).

3.3.1(ii) Behaviourism and OCSNs

According to Crook et al. (2009), although the concepts of behaviourism might be far from the OCSN concept, the networks still contain potential sources of assistance which can help shape the learning processes instead of traditional guidelines. Siemens (2005) argued that the behaviourist theory developed when technology was not used in learning, which limits its ability to describe learning through technology.

Using ICT in the education field led to the designing of a number of models to guide this use. One of the most common models used to study the acceptance of using ICT is the unified theory of acceptance and use of technology (UTAUT) model developed by Venkatesh et al. (2003). Subsequently, in 2012, this model was adapted by Venkatesh et al. (2012) as the UTAUT2 model. This model has been widely used in studies related to using technologies in education. For example, Nassuora (2013) used this model to determine the acceptance of using mobile learning (m-Learning) in higher education in Saudi Arabia, concluding that "a positive attitude leads to the behavioral intention to use m-Learning" (p.7).

Davis (1989), a pioneer in this field, developed the technology acceptance model (TAM) to illustrate how users accept technology (see Figure 1–3).
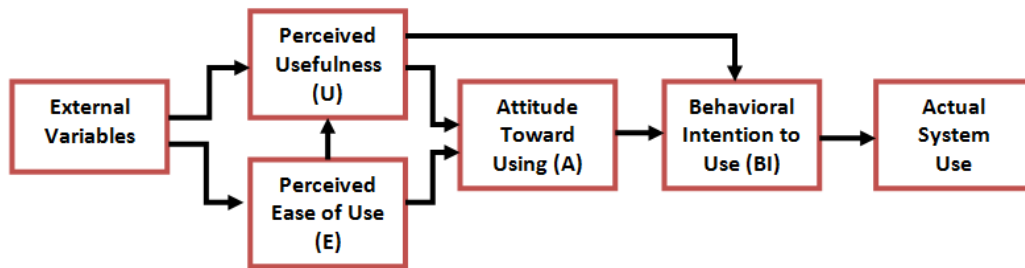
Figure 3-3: Technology acceptance model (TAM) (Davis et al., 1989)

Based on TAM, acceptance of using a new technology is based on two issues.

- **Perceived usefulness (U):** Davis et al. (1989) defined this as:

  "The prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context." (p. 983)

- **Perceived ease of use (EOU):** Davis et al. (1989) defined this as "the degree to which the prospective user expects the target system to be free of effort". (p. 983)

For example, the acceptance of using computers according to TAM is determined by behavioural intention to use (BI) which is a combination of the user's attitude toward using the system (A) and perceived usefulness (U) based on this regression: BI=A+U (Davis et al., 1989).

In this field, Poore (2012) explained that a learning environment designed based on behaviourist theory can be used in a social media network (i.e., another use of OCSN). Naismith et al. (2004) further mentioned that using tools that interact with the user during and after delivery of the educational

content is within the behaviourist methodology. Yet Ebner (2007) argued that traditional teaching is mostly designed based on behaviourist theory: Teachers deliver the content, and students receive it. He believed that the concepts of collaboration, which form the backbone of OCSN, are not understood by students and teachers in the traditional learning system.

3.3.2 Cognitivism

Jean Piaget, Lev Vygotsky and Jerome Bruner were the most famous theorists involved in the development of cognitive approaches. These approaches are antithetical to behaviourism as they focus on the mind (Wortham, 2003, Holmes and Gardner, 2006). People's actions in cognitivist theory are based on mental models that they have already developed through their engagement in the world, not simply in response to external stimuli (Wortham, 2003).

3.3.2(i) Stages of Development

Piaget (1896–1980) was a biologist who mainly studied molluscs and started to publish his findings while still in high school; he subsequently began to study the development of children's knowledge (Boeree, 1999). Piaget (2003) identified the stages of development in 1964, emphasising the importance of differentiating between two concepts in order to gain a clear understanding of the theory. The first concept, development of knowledge, is defined by Piaget (2003) as an unprompted process linked to the embryogenesis of the child knowledge development. The second

concept, learning, is defined as being encouraged by the learning environment, psychological experiences, or the teacher's reaction towards some educational aspects or by outside factors (Piaget, 2003).

According to Piaget (2003), children's development of knowledge occurs in four stages. These stages were summarised by Atherton (2011) as follows:

Sensory-motor (Birth–2 years): Children can recognize the self from objects by, for example, shaking a rattle to make noise.

Pre-operational (2–7 years): Children in this stage start to learn language, then use this language to represent objects. In addition, in this stage children are able to describe objects using images.

Concrete operational (7–11 years): In this stage, children can think logically, so they classify objects according to one dimension, such as size.

Formal operational (11+ years): Children in this stage are able to illustrate suggestions and test hypotheses logically (Atherton, 2011).

3.3.2(ii) Zone of Proximal Development

Vygotsky (1896–1934) is commonly regarded as the most important of the cognitive theorists. In his study, he focused on the gap between a student's current achievement level and what lies beyond the student's reach (Holmes and Gardner, 2006). Vygotsky (1978) called this gap the zone of proximal development (ZPD), which he defined as the gap between the

actual level of development as a result of solving problems independently and the potential level of development as a result of problem solving with the support of an adult or in collaboration with more skilled learners. Vygotsky believed that, when a learner has reached the ZPD, providing him/her with suitable support will help him/her achieve the target (Hussin, 2008).

3.3.2(iii) Cognitivism and OCSNs

Within the context of education, in order to achieve learning objectives, students need to develop more than a new behaviour; they also need to develop a deeper understanding (Wortham, 2003). According to Wortham (2003), the roles of teachers in cognitive education are:

- To build learning environments that contain puzzles designed to encourage students to reflect and build their own models;

- To redirect students towards areas that they have not considered and to allow them to explore;

- To explain new aspects and encourage students to use them in order to engage in new experiences; and

- To assess students by examining how students obtained their answers.

Cognitivism works to describe the processes of thinking and reasoning, which include "acquiring reflective insight into the strategic nature of managing that processing demand as an important aspiration" (Crook et

al., 2009, p. 32). In fact, OCSN tools such as blogs and wikis allow learners to be conscious about how they think about planning their interactions and deciding what, how and when to adopt a certain action on the network (Crook et al., 2009).

In fact, using social dimensions in the learning context leads to adapting the cognitivism learning theory. New types of cognitivism, such as social cognitive learning theory and co-cognitivism, have an obvious relationship for learning on OCSNs.

The social part of this theory "acknowledges the social origin of much human thought and action" while the second part of the title (cognitive) "recognizes the influential contribution of cognitive processes to human motivation, affect, and action" (Bandura, 2011, p. 350). The social cognitive theory describes human behaviour as a model of "reciprocal causation, behavior, cognition and other personal factors, and environmental influences" which interact and influence each other in two directions (Bandura, 1989, p. 2).

Social cognitive learning theory states that learners can learn from observing learning materials and even from observing a model (Braaksma et al., 2001, Hurst, 2015). Using OCSNs to support the learning environment that are designed based on social cognitive learning theory will provide useful tools to the learning setting. For example, YouTube could supply a number of experiments for learning subjects.

3.3.3 Constructivism

Constructivist theory stems from the works of Piaget, Vygotsky, Howard Gardner, Bruner and Nelson Goodman in the field of cognitive science (McPherson and Nunes, 2004). Applefield, Huber and Moallem (2001) described constructivism as "an epistemological view of knowledge" which emphasises the building of knowledge instead of knowledge transfer(p. 6). The most well-known theorists of social constructivism are Vygotsky and Bruner (Holmes and Gardner, 2006).

Constructivism views the development of knowledge as the building up of a consistent body of facts about a certain subject and the surroundings in which that occurs (McPherson and Nunes, 2004). Based on constructivist conceptions of learning, Jonassen (1999) assumed that knowledge is influenced by the learner's own perceptions of the environment. In the learning context, this theoretical approach changes the learning and teaching concept from searching for the *"objective truth"* to searching for *"valid perspectives"* (Cooner, 2005, p. 378). This, in turn, changes the role of the learner to building and transferring knowledge (Applefield et al., 2001).

In general, it can be said that there are two important notions about constructed knowledge: learners use what they know to construct new knowledge, and learning is active (Hoover, 1996). According to Kruse(2010), these notions lead to the basic tenets of constructivism, which are:

- Experience is the source of knowledge;

- Students are responsible for their learning and need to be active;

- Students are required to collaborate with peers in order to learn and to use different aspects to make new knowledge;

- Learning needs to occur in real situations;

- Students have the right to select learning activities and the curriculum; and

- The design of the curriculum needs to be one piece, not divided into small tasks.

Doolittle and Camp (1999) described three broad categories of constructivism that stem from the reality of the theory as a continuum and not a single theoretical position. These three categories are discussed next.

3.3.3(i) Types of Constructivism

The literature review found several types of constructivism, including trivial constructivism, cultural constructivism, critical constructivism, interactive constructivism, and human constructivism. This section discusses the three areas covered by Doolittle and Camp (1999).

3.3.3(i)-A) Cognitive Constructivism

Cognitive constructivism is a theory engaged with the meaning of learning. Based on the concepts of this theory, it is mainly the responsibility of the

learner to *"construct meaning actively"* by thinking about it him or herself in addition to thinking about it with other learners (Garrison, 1993, p. 201). The theory is built upon the work of Piaget—mainly, his well-known theory about learning. From the cognitive constructivist position, knowledge is the result of the accurate internalization, construction and reconstruction process of external reality (Doolittle and Camp, 1999). Based on this theory, learning is defined as the activities of building high-accuracy models representing the real situation in the learner's mind (Doolittle, 1999).

3.3.3(i)-B) Radical Constructivism

Ernst von Glasersfeld (2001) described the development of radical theory as being based in large part on Piaget's research. The radical constructivism theory provides a pragmatic approach about truth, reality, language and human understanding (von Glasersfeld, 1996a). Radical constructivism "refers to an orientation that breaks with the Western epistemological tradition" (von Glasersfeld, 1996b, p. 307). The "radical difference concerns the relation of knowledge and reality"(Von Glasersfeld, 1984, p. 7).

3.3.3(i)-C) Social Constructivism

Social constructivist pedagogy, with its root in the work of Vygotsky and carrying influences from Dewey and progressivism, views social interactions as the source of all learning. (Romero-Frías and Montaño, 2010, p. 5)

Social constructivism falls somewhere between the cognitive constructivist concept of transferring the actuality of knowledge and the radical constructivist concept of the personal reality (Doolittle, 1999). In other words, it emphasises all four epistemological tenets of Doolittle's criteria. In its view of learning, both teachers and learners are active. In a social constructivist view of education, the teacher acts as an expert consultant of the taught activity and provides the learning tools, whereas the students act as beginners (Wortham, 2003).

3.3.3(ii) Constructivism and OCSNs

The model of learning based on this theory consists of three dimensions: learners, the environment and other people (Holmes and Gardner, 2006). Doolittle (1999) made several pedagogical recommendations based on this theory, such as (a) the learning setting should be in a real place; (b) social activities such conciliation and arbitration should be used in learning; (c) the learning curriculum needs to be suitable for learners; (d) the learning curriculum needs to be understood by learners based on their knowledge; (e) learners' achievements need to be assisted in order to inform the next experience; (f) students need to be dependent on themselves; (g) the teacher's role is to guide learners to learn, not as the main source of knowledge; and (h) teachers are responsible for obtaining a wide diversity of learning content.

A common criticism of constructivism is its neglect of the social dimension of learning (Crook et al., 2009). Yet modern approaches of constructivism

such as social constructivism have included the social dimension in the learning process. Crook et al. (2009) assumed that social networks can be a strong medium for constructive learning due to the richness of the exchange possible in these environments. According to Poore (2012), OCSNs support constructivist approaches more than other theories because these networks support collaboration and interactive activities. In the same vein, Armstrong and Franklin (2008, p. 97) argued that learning activities such as collaboration and participation in constructivism and other learning theories are similar to aspects of OCSN services, such as *"community, creativity, participation, and reflexivity"*.

According to Rennie and Morrison (2013), researchers generally believe that courses designed based on the theory of constructivism are highly compatible with OCSNs. The characteristics of OCSNs, such as collaborative aspects, make it possible to change the way of using the Web from a one-directional (i.e., where users only receive knowledge) to two-directional (i.e., where users participate in building the knowledge) approach and fit with the concepts of constructivism (Ullrich et al., 2008). According to Yang and Tang (2003), constructivism views learning as a social process requiring communication between learners. In this setting, learners work to construct knowledge which in turn shapes their ideas and responses. Thus, Yang and Tang described the relationship between collaborative learning and constructivism as a key learning process.

One problem encountered in the use and design of constructivist learning activities is the limited amount of practical guidance on how to use the new learning technology systems that display constructivist principles (e.g., OCSNs) (Chieu, 2007). Some educational designers have argued that using OCSNs will alter the tenets of well-known theories on teaching and learning, such as cognitivism, behaviourism and constructivism (Wankel et al., 2010). Wang et al. (2014, p125) described the result of the interaction of using OCSNs and other technologies as an "increased the capacity and varieties while decreasing the costs of interaction for social learning".

3.3.4 Socio-cultural

Socio-cultural theory was initially introduced by Vygotsky as a human learning theory, depicting learning as a social activity (UNESCO, 2003). This approach is known by many different names, including neo-Vygotskian theory, cultural psychology and communicative learning theory, but its most common name is socio-cultural theory (Jones and Mercer, 1993). According to Turuk (2008), Vygotsky emphasised the importance of socio-cultural settings for the development of human mental activities, such as logical thinking, problem solving and planning.

The basic concept of socio-cultural theory is that the human mind is mediated (Lantolf, 2000). According to Lantolf, Vygotsky argued that we always use other tools to interact with surroundings rather than engage in immediate physical responses. These tools allow us to change the world in

which we live. We use other "symbolic tools" (p.1) to mediate our relationships as well.

The role of teachers based on the socio-cultural theory is to bring existing knowledge to learners by collaborating with them to construct it in socio-cultural applications such as cooperative learning, co-participation, and joint discovery (John-Steiner and Mahn, 1996).

Despite the wide applicability of this theory in the field of learning, it has some limitations. One such limitation comes from the definition of critical thinking, which is central to learning and which varies from one discipline to the next (Peer and McClendon, 2002). Peer and McClendon emphasised the importance of differences in definitions between disciplines, especially as critical thinking involves elaboration, synthesis of information and analysis. In addition, socio-cultural theory uses non-traditional tools to instruct and assess learning (Peer and McClendon, 2002).

The literature review revealed some of socio-cultural theory's disadvantages as well. Wals (2007, p. 192) described social learning as a sort of "spider web" consisting of different components that affect social acts and stated that such an environment could lead to risks in society as a result of the strong relationships among people in social networks.

3.3.4(i) Socio-cultural Theory and OCSNs

With the increase of using technologies in education, researchers have worked from a socio-cultural perspective to develop concepts such as

distributed cognition, expanding it to include the technology dimension with "people and artefacts" dimensions (Scott and Palincsar, 2015, p. 6).

As previously mentioned, logical thought, problem solving and planning are all common activities of learning based on socio-cultural theory. OCSNs provide opportunities for learners to use self-reflection to participate in the construction of knowledge (Crook et al., 2009).

3.3.5 Connectivism

Behaviourism, cognitivism and constructivism are the learning theories most commonly used to create instructional environments. These theories were initially developed when technologies were not used in learning (Siemens, 2005). Siemens noted the shortage of theories to account for learning taking place outside of human minds, such as learning that is constructed and maintained by technologies. The limitations of learning theories led Siemens (2005) to develop the theory of connectivism, which he described as the digital era learning theory. The key principles of this theory, as expressed by its creator (Siemens, 2005) and in his words, are as follows:

> Learning and knowledge rest in a diversity of opinions;
>
> Learning is a process of connecting specialized nodes or information sources;
>
> Learning may reside in non-human appliances;
>
> The capacity to know more is more critical than what is currently known;
>
> Nurturing and maintaining connections are needed to facilitate continual learning;
>
> Ability to see connections between fields, ideas, and concepts is a core skill;
>
> Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities; and
>
> Decision-making is itself a learning process.

Based on the theory, the learning process is a continuous loop in that students connect to a network to share and search for new information that

will adapt their beliefs based on new learning experiments, then they will connect to a network to share the new information and so on (Kop and Hill, 2008). In this context, Wang et al. (2014) mentioned that connectivism, as a learning theory, "stresses the development and nurturing of networks to be a major component of learning" (p. 125).

3.3.5 i) Connectivism Theory and OCSNs

Following Siemens' (2005) view of learning theories and the use of technologies in an educational context, Fumero et al. (2006) argued that the new generation of education based on OCSNs does not need to resemble old techniques, but rather innovate new learning models and a new breed of technology to support its usage. To this end, learning based on connectivism theory is more flexible and can benefit from the use of OCSNs. Downes (2005) noted that Siemens' (2005) connectivism is well-suited to learning based on these network services. Siemens (2005) argued that learning activities started to move learning theories towards a digital age. He believed that "we derive our competence from forming connections" instead of personal experiences (p.4).

Including technology and connection making as learning activities begins to move learning theories into a digital age. We can no longer personally experience and acquire learning that we need to act. We derive our competence from forming connections.

Flynn et al.(2015) examined the implementation of a framework for medical educators using social media. The scholars recommended using connectivism, social development theory or communities of practice learning theories with social media networks in education.

In summary, regarding learning theories and OCSNs, the literature review indicated the richness of OCSNs which allow them to be used with learning activities and processes designed based on a variety of learning theories. Indeed, using OCSNs requires changing the educational environment in order to accommodate this new equipment. To this end, exploring the educational change theory will tie strongly to the previous two dimensions (OCSNs and learning theories).

3.4 Educational Change Theory

> Sustained improvement in student outcomes requires a sustained effort to change teaching and learning practices in thousands and thousands of classrooms, and this requires focused and sustained effort by all parts of the education system and its partners. (Levin and Fullan, 2008, p. 289)

In the past, educational organisations were described as static, especially higher educational organisations, as they were insulated from the major developments influencing other sectors of education. However, currently the changing concept has been the top interest at all educational levels, but "it is only more recently that theories of organisational change have begun to offer a way of analysing and understanding such major change" (Parsons and Fidler, 2005, p.448).

Looking at education as a societal activity can be affected by various factors, including the economy, knowledge development and technology development. This leads in some cases to the emergence of new educational problems, which need to be solved in light of social variables. However, "today's problems come from yesterday's solutions" (Senge, 1990, p.57). In fact, Senge this issue as the first low of his five fifth discipline. This requires changing the educational environment to adopt the solutions or limit problematic efforts.

In some cases, the changing decisions made in reaction to stress affect educational sectors. For example, in 1983, after the publication of "A Nation at Risk" in the United States, actions were taken to reform education

all over the country and this wave of reforming education was extended to cover other countries such as Canada (Waks, 2007).

3.4.1 The Meaning of Educational Change

Education is a part of society, and change is a typical trend that all societies relentlessly pursue (Morrison, 1998). The meaning of the expression "educational change" in literature has been formed by unspoken assumptions similar to the meaning of the term "the city" used by people in New York City to refer to Manhattan (Waks, 2007, p. 280).

Educational change is defined as being influenced by a combination of knowledge and experiences. Morrison defined change as "a dynamic and continuous process of development and growth that involves a reorganization in response to felt needs" (Morrison, 1998, p. 13). Fullan (2007) argued that the definition of change is problematic and stressed the importance of including moral and intellectual dimensions in its meaning. It is worth mentioning that educational change does not appear to occur in the classroom exactly as policymakers have written, but more as a result of what people understand and how they behave towards the written policy document (Wedell, 2009). Fullan (2007, p.20) stressed that "the crux of change is how individuals come to grips with this reality".

Changing in education needs to take into consideration aspects such as:

> how knowledge is taught, learnt and assessed; how the process of learning and teaching impacts on producing and reproducing social difference; on the nature of the pedagogic relationship; and on how the nature of the relationship between teachers and learners impacts on the differential distribution of knowledge to different groups of students. (Jaffer, 2010, p.284)

In the formal education context, the teaching concept assumes there is a web among schools, teachers, students, and learning content and changing teaching requires changing the translations that formed this web (Nespor, 2011, p. 19). Nespor recommended making changes to a single component, such as developing better curricula or providing teachers with a good training programme.

Conducting educational change requires an investment of money, effort and time. Wedell (2009) asked why policymakers went to the trouble of implementing change in education, despite the fact that they know that planning and implementing educational change are such difficult processes. In order to answer this question, he listed four reasons: (a) the technological and economic effects of globalization; (b) the need to standardise and measure the educational outcome; (c) the need to increase the equality of opportunity in society; and (d) the fact that such an educational change announcement is attractive for announcing people. Judging from these reasons, it becomes clear that the implementation of new technologies and the enhanced quality of educational outcomes are strong reasons to develop or change the educational system. Two of these

reasons will be discussed in more detail because of their strong relation to the current study.

3.4.1(i) Economic and Technological Effects of Globalization

The saying "the world has become a small village with regard to information exchange" by Zhou(2000, p.66) did not come out of nowhere. In fact, information and communication technologies have played a significant role in achieving this result by linking the world and providing massive amounts of information about people and activities all over the world. This has linked many national contexts with the special effects of globalization in terms of technology and the economy, which pressure governments to make educational changes in order to prepare students to deal with the changing state of their involvement with the rest of the world (Wedell, 2009). Carnoy and Rhoten (2007) assumed that educational changes are dependent upon "regional, national, and even social, economic, and political conditions that mediate the implementation of responses to global pressures for reform" (p. 6).

Looking at the economic perspective, House (2000) listed four ways in which an economy affects educational policies: (a) economic conditions strongly influence educational policies; (b) educational policies are frequently formulated in order to reduce educational costs; (c) economic and educational development are closely linked (i.e., developing one of them leads to the development of the other); and (d) economic concepts

permeate educational thinking (e.g., using concepts and imaginary markets in schools).

Yet, in reality, the picture of the relationship between the economy and education is not always bright. MacDonald (2000) worked to find an answer to an important question: How did education become nobody's business? He carried out a comparative study between the United Kingdom and the United States, and his results showed that schooling was a victim of political manipulation such as central control in the UK or regional control in the US. In fact, educational institutions need to respond to environmental constraints. For example, schools that depend more on government funding seem to have fewer administrative structures than which schools have more funding resources (Hanson, 2001).

Another aspect of this topic is the effect of globalization on the use of technology in education. Carnoy and Rhoten (2002) described globalization as economic tools that change the world as people increasingly depend on intellectual capital to sustain growth. The effects of globalization have led governments to develop policies to maintain their national competitiveness (Wedell, 2009). In the Saudi context, as well as in other countries, the educational systems benefit from the effects of globalization because they encourage governments to invest more in technologies for education. For example, most Saudi universities, including King Saud University, King Faisal University, and King Khalid University, have established eLearning departments and invested in their

infrastructure (King Faisal University, 2014, King Khalid University, 2014, King Saud University, 2009).

Simultaneous with the government's increase in attention to technology use in education, researchers have also targeted these cases of educational change; accordingly, it is worth mentioning some examples of these efforts in online learning. Redecker et al. (2009) studied the usage of OCSNs in learning in Europe and found that these networks allowed learners to develop and support a number of skills, such as digital literacy, e-skills, and social skills. Another example from the Saudi context is the study conducted by Almohaya (2008), which aimed to measure the effect of eLearning 2.0 (electronic learning using Web 2.0) on collaborative learning skills in the teaching of college students at King Khalid University. Based on the findings, the researcher recommended using guidelines for users (both learners and teachers).

3.4.1(ii) Quality in Education and Educational Change

Standardising and measuring educational outcomes is a key factor of quality in educational approaches. Carnoy and Rhoten (2002) argued that one effect of globalization is that it allows regional educational organisations to be benchmarked against their global peers. Nowadays, as a result of economic pressure, some educational changes are carried out in order to increase the returns on investment in educational establishments (Wedell, 2009).

Globalization does not mean that an educational change that is successful in one society will necessarily be successful in another. Beatty et al. (2009) studied the impact of culture on the quality of educational change in the Middle East. They emphasised the importance of cultural dimensions of quality assurance to avoid huge, ineffective investments in adopting foreign educational systems as-is, without any regard as to how cultures will interact with them.

One of the main tools for measuring the quality of education services and outcomes is developing standards. In 2003, the Ministry of Higher Education in Saudi Arabia established the National Commission for Academic Accreditation and Assessment (NCAAA), which aims to raise the quality of governmental higher education and provide standards to measure academic performance (Ministry of Higher Education, 2013a).

3.4.2 Change Process

The literature review shows that different models of educational change are available. Hanson argued that educational institutions have a memory which they use to save problems and solutions; when the problem cannot be resolved by solutions in the organisational memory, they start to learn how to solve similar problems based on those from the past (Hanson, 2001).

Fullan (2007) presented a three-phase model of the change process (shown in Figure 4).

- The first phase (initiation or adoption) consists of all the processes that lead to change, including the decision to adopt a change;

- The second phase (implementation or initial use) starts with putting the change into practice and involves the first two or three years of use; and

- The third phase (continuation or institutionalization) refers to whether the change becomes part of the system or fails due to rejection.
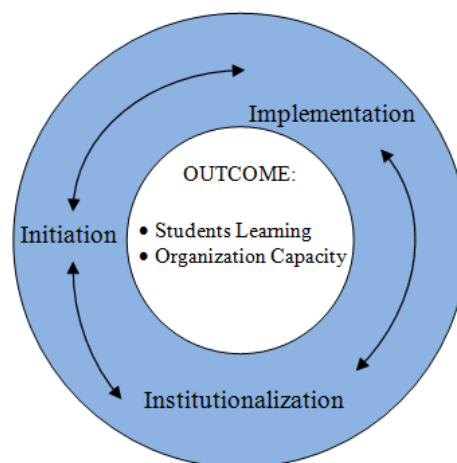
Figure 3-4: Simplified Overview of the Change Process (Fullan, (2007, p66)

Morrison (1998), based on Fullan's (2007) model, adapted another model of change consisting of seven stages: (a) invention, (b) development, (c)

diffusion/dissemination, (d) adoption, (e) implementation, (f) institutionalization and (g) recommendation.

In addition, the problem-solving approach is considered to be an educational change model (Morrison, 1998, p20). The model consists of five steps: (a) identifying a real problem; (b) generating solutions; (c) deciding the best approach or solution; (d) implementing the approach; and (e) evaluating the solution (Morrison, 1998, p20). This model seems more appropriate for the current study, because of its popularity and familiarity among educationalists and because it strikes a good compromise between being detailed and concise at the same time.

3.4.3 Factors Affecting Educational Change

> Large-scale, sustained improvement in student outcomes requires a sustained effort to change school and classroom practices, not just structures such as governance and accountability. The heart of improvement lies in changing teaching and learning practices in thousands and thousands of classrooms, and this requires focused and sustained effort by all parts of the education system and its partners. (Levin and Fullan, 2008, p.291)

Educational change, as described at the previous citation, is a complex issue. The complexity of this issue stems from the complexity of the educational environment and its components. In fact, educational change is not an easy task, but at least nowadays there are some successful examples leading to useful approaches (Levin and Fullan, 2008). This is, in fact, changing in educational environment, especially as its processes require more attention for a number of factors during each phase of the educational change process.

In light of this, this section highlights some important factors that need to be considered in any educational change plan. These factors can be divided into three main subjects. The first part investigates factors during the initiating phase of the educational change. The second part focuses on the implementation phase of educational change. The third section discusses the final phase of the educational change process and its relative factors.

3.4.3 (i) Factors during the initiating phase

The first phase of any educational change is the initiating phase. According to Wedell (2009), this phases emphasises the importance of thinking about the following three factors. In this context, Wedell (2003) argued that, in order to achieve the targeted outcome of educational change, "key players" need to adjust their existing beliefs and behaviours (p. 443).

- **Starting from people's beliefs**

Change in an educational environment will affect most of its components to some extent. Students, teachers, educators, parents, and others represent some of these components, and their beliefs need to be considered as input for any educational change decision. Wedell (2009, p.23) emphasised this point and suggested a way for seeking their thoughts and hopes about change "by talking to them and closely observing their reality!" In addition, Wedell advised decision makers not to limit their consultations to experts only; they must hear from everyone who will be affected. In this context, Fullan (2007) mentioned three roles that people could play: (1) put pressure on them to make the change to solve their problems, (2) oppose educational change "of which they become aware" (p.76), or (3) simply do nothing. In this context, Wedell (2003) argued that, in order to achieve the targeted outcome of educational change, "key players" need to adjust their existing beliefs and behaviours (p. 443).

- **Raising the need for change**

Educational changes are usually expensive and impact people's lives (Wedell, 2009). In this context, another factor that needs to be considered in the initiating stage of educational change is raising the need to make the targeted change. The importance of identifying the need for change stems from the importance of their perceptions. In order for people to accept educational change, "they need to meet a clearly visible educational need"; thus, it is important to communicate with all those affected by this change (Wedell, 2009, p.26). Fullan (2007) argued that many educational changes "are attempted without a careful examination of whether or not they address what are perceived to be priority needs"; for example, he said that teachers usually "do not see the need for an advocated change" (p.88). Moreover, Hargreaves (2014) mentioned that any change beginning with poor conceptualization will result in less engagement with the change. This means not starting with a negative message about the current education system, such as educators are not doing well or are not trusted to do the work, which is (unfortunately) the case for many governments' change efforts (Levin and Fullan, 2008).

- **Making a long-term commitment**

Educational change usually requires a long time to carry out given its three change phases (initiation, implementation, and continuation). One factor that has a great impact on the success of any educational change is the availability of long-term funding. Wedell (2009) suggested that a large-scale educational change could take up to five years to reach the end of

the third phase of the change process (continuation or institutionalization). He raised one of the funding limitation impacts on any educational change as it will make the implementation phase more complicated and could lead to directly "abandon[ing] part of the implementation effort or simply giv[ing] up completely" (p.27). Change needs to take resources into consideration, and the change does not need to be "built on the backs of teachers" (Hargreaves, 2014, p.281).

On other hand, funding could be another factor leading to educational change failure. In some cases, districts welcome such educational change as it provides extra funds they can use to obtain extra resources or solve local problems (Fullan, 2007).

3.4.3 (ii) Factors during the implementation phase

Other factors to be considered are mainly related to the implementation phase of educational change. Wedell (2009, p.29) argued that "educational change depends on what a whole range of people who are more or less directly involved actually do". In addition, Wedell highlighted three factors to be considered during the implementation phase.

- **Matching educational change to local conditions**

A common character of any educational change is its spread through a wide geographic area as a result of the spread of the education system. In fact, a local educational system represents "one major set of situational

constraints or opportunities for effective change" (Fullan, 2007, p.93). Even if policymakers used consultations and communication during the first phase of change, it is important to match change to the realities of the targeted area (Wedell, 2009). In this context, Wedell raised an important question: "how then can a national change be adjusted to 'match' a local reality?"(p.31) He suggested consulting and communicating with local representatives during the initiation phase and then base the adjustments to the local conditions on the existing resources and teaching skills to allow educational change to take place. In order to make any communication effective, they need to use the three secrets: "repetition, repetition, and repetition" (Levin and Fullan, 2008, p.299).

- **Support for understanding the educational change**

Another factor to consider during the second phase of educational change is supporting those affected by the change for understanding the educational change. Fullan (2007) described the clarity of educational change goals and means as "a perennial problem in the change process" (p.89). In this context, Wedell (2009, p.32) mentioned that most "educational change involves a degree of personal/professional 'reculturing' for many of those affected by the process". He referred the meaning of the term *culture* in education systems as they have strong and sharp opinion about the meaning of rearms such as education, knowledge, teaching, and learning. Providing safe and supportive settings for discussions between those involved in educational changes will encourage

them to participate and gain a deeper understanding of the changes (Whitcomb et al., 2009). In this context, Wedell (2009, p.32) emphasised the importance of providing support to all of those involved in the change in order to enable them to change their culture (reculture). He suggested that one way for learning the "what and how of change" by helping participants is to recognize the benefit from the change by comparing some existing practises before and after the change.

- **Local authority leading change**

During the implementation phase, an important factor affects the success of educational change: roles of local leaders in educational change. Wedell (2009, p.38) argued that their roles are "the most difficult of all", and they are responsible for leading and supporting others. He suggested that local leaders should have a deep understanding of their local educational culture in order to be able to adjust the national or large educational change to fit local conditions.

3.4.3 (iii) Factors during the continuation phase

Implementation phase is "the big hurdle at the level of practice", but continuation has its own right to be considered (Fullan, 2007, p.100). Wedell (2009, p.21) described the continuation phase as "refer[ring] to the point at which the change is no longer seen to be 'new' and 'different'", which means the change has become part of the education system. In general, the factors beyond the lack of continuation are the same factors

affecting the implementation except they become more defined (Fullan, 2007). For example, a lack of interest or inability to fund any educational change in its continuation phase or funding development and staff support has signalled the end of many educational changes (Fullan, 2007).

In this context, it is important to build a collaborative community for staff to inquire and reflect on their practise (Whitcomb et al., 2009). In addition, turnover of staff and administrative resources is another factor that needs to be considered. Fullan (2007) argued that few educational change programs plan for support for new members.

In general and from the previous analytical synthesis of different views, it can be seen how critical it is to make changes in the education field. Wedell (2009) suggested three reasons for the failure of educational change: (a) misunderstanding of what change means, (b) inattention to the existing educational approaches and conditions of teaching and learning, and (c) assumptions about change, which become clear with people mimicking the external representation of change without embracing its essence. Furthermore, Fullan (2007) highlighted the failure of many educational changes due to the implementation without a thorough understanding of the difficulties inherent in the educational change process. Moreover, unawareness about the cultural shift that teachers are required to make during the planning stage could lead to less engagement in the educational change (Wedell, 2003).

Summarising this part of the literature review on educational change theory, this section highlighted the importance of educational change theory as a basis for any change in education. In addition, this section discussed the change process and some factors which may affect the success of change. The next section focuses on the final part of the literature review—namely, quality control in education.

3.5 Quality Control in Education

Quality, "like freedom or justice, is an elusive concept" (Green, 1994, p.22), as it can mean different things to different people based on its targeted quality outcomes and the methods used to assess it (Tam, 2001). In higher education, quality focuses primarily on producing graduates to meet society's human resource needs in various sectors (e.g., service, business, and industrial sectors) and expanding the frontiers of knowledge through research (Green, 1994).

As a result of the diversity in views and approaches to assessing quality in higher education, a vast number of systems and approaches have been developed, including quality control, quality audit, quality assessment, and quality assurance (Tam, 2001). Tam (2001) defined quality control as a designated technique of ensuring that the intended final deliverables have been achieved at the levels of quality promised. As this study focuses on the quality of teaching and learning, it is important to clarify the difference between quality assurance and quality assessment.

3.5.1 Quality Assurance versus Quality Assessment

Governments spend a great deal of resources on higher education. Consequently, communities have placed great pressure on governments to ensure the quality of the services provided in this field. This aspect has received much attention from researchers developing approaches and tools to assess and verify the quality of these services. The most common

approaches used to ensure quality in higher education are quality assurance and quality assessment. Quality assurance differs from quality assessment in terms of "the perspectives of purpose, methodology and institutional responsibility" (Green, 1994, p. 22). According to Nielsen (1997), the quality assurance approach was developed to maintain a uniform enhancement in the programme conditions and results whereas quality assessment was developed to show the programme's positive results on teaching outcomes.

3.6 Summary

This chapter reported the findings of the literature review related to the use of OCSNs to enhance teaching and learning in Saudi Arabia's higher education. With that focus, the Library of Leeds University, Saudi Digital Library, and Internet were used to review the literature. The findings of this stage were reported in five sections.

3.1 Online Collaborative Social Networks (OCSNs)

One of the greatest challenges facing the education sector today is the rapid change taking place in ICT, which has led to the new concept of Web 2.0. Discussing Web 2.0 in this study aimed to clarify the relationship between Web 2.0 and social networks, the term used in this study. The characteristics of OCSNs differ from website to website, although some characteristics are common among these types of Web applications, such as profiles, traversable social networks, and collaboration.

3.2 OCSN Usage in Education

The use of OCSNs in education is still in its early stages. JISC (2009) found that a small number of universities in the United Kingdom have consciously decided to use OCSNs in learning and teaching. Saudi Arabia's higher education started using OCSNs relatively later, although the literature included a number of experiments in Saudi Arabia's universities.

3.3 OCSNs and Learning Theories

It is important to study the possibility of using OCSN applications in educational contexts based on each learning theory, but due to time constraints, this chapter focused on just five of the most well recognised learning theories: behaviourism, cognitivism, constructivism, socio-cultural theory, and connectivism.

The literature review indicated that OCSNs can be used in an educational environment designed based on these learning theories.

3.4 Educational Change Theory

Education is a part of society, and *"change is a fact of life"* that *"is irresistible and unstoppable"* (Morrison, 1998, p1). It becomes clear that the implementation of new technologies is a strong reason to develop or change the educational system. As the literature review showed, many different models of educational change exist. Fullan (2007) developed a

three-phase model of the process of change in education. These phases are initiation or adoption, implementation or initial use, and continuation or institutionalization.

3.5 Quality Control in Education

Quality in higher education focuses mainly on producing graduates to meet the human resource needs of society in various sectors (e.g., service, business, and industrial sectors) and expanding the frontiers of knowledge through research (Green, 1994). The most common approaches used to ensure quality in higher education are quality assurance and quality assessment. According to Nielsen (1997), the quality assurance approach was developed to maintain a uniform enhancement in the programme conditions and results whereas quality assessment was developed to show the programme's positive results on teaching outcomes.

Chapter 3 covers the theoretical part of this study by investigating four factors: OCSN usage, learning theory, educational change theory, and quality control. Chapter 4 will focus on the action part, which is solving the study's problem, the research methodology, and its relevant aspects.

CHAPTER 4: RESEARCH METHODOLOGY

Research methodology in the social sciences reflects a way of thinking and investigating   social reality (Strauss and Corbin, 1990). Several factors influence a research methodology, such as the research aims and objectives, research questions, study context, and limitations in time and resources.

The research methodology chapter outlines the research methodology and the components of the fieldwork. As shown in figure 4-1, the methodology discussion begins with the theoretical perspective of the study. The qualitative and quantitative approaches are then described and compared. This section also investigates the possibility of combining them into a single study.

The research methods section begins with describing and evaluating three methods that have the potential for use in this study, given its setting and objectives.

The third section describes the SNTPCK model. It explains the types of knowledge used in this model and its implications for educational planning and decision-making, educational design, and teaching and learning.

Part 4 covers the methods used in this study. It begins with the Delphi method, then describes the interview method and its role in this study. The procedure used for data analysis is also described in this section.
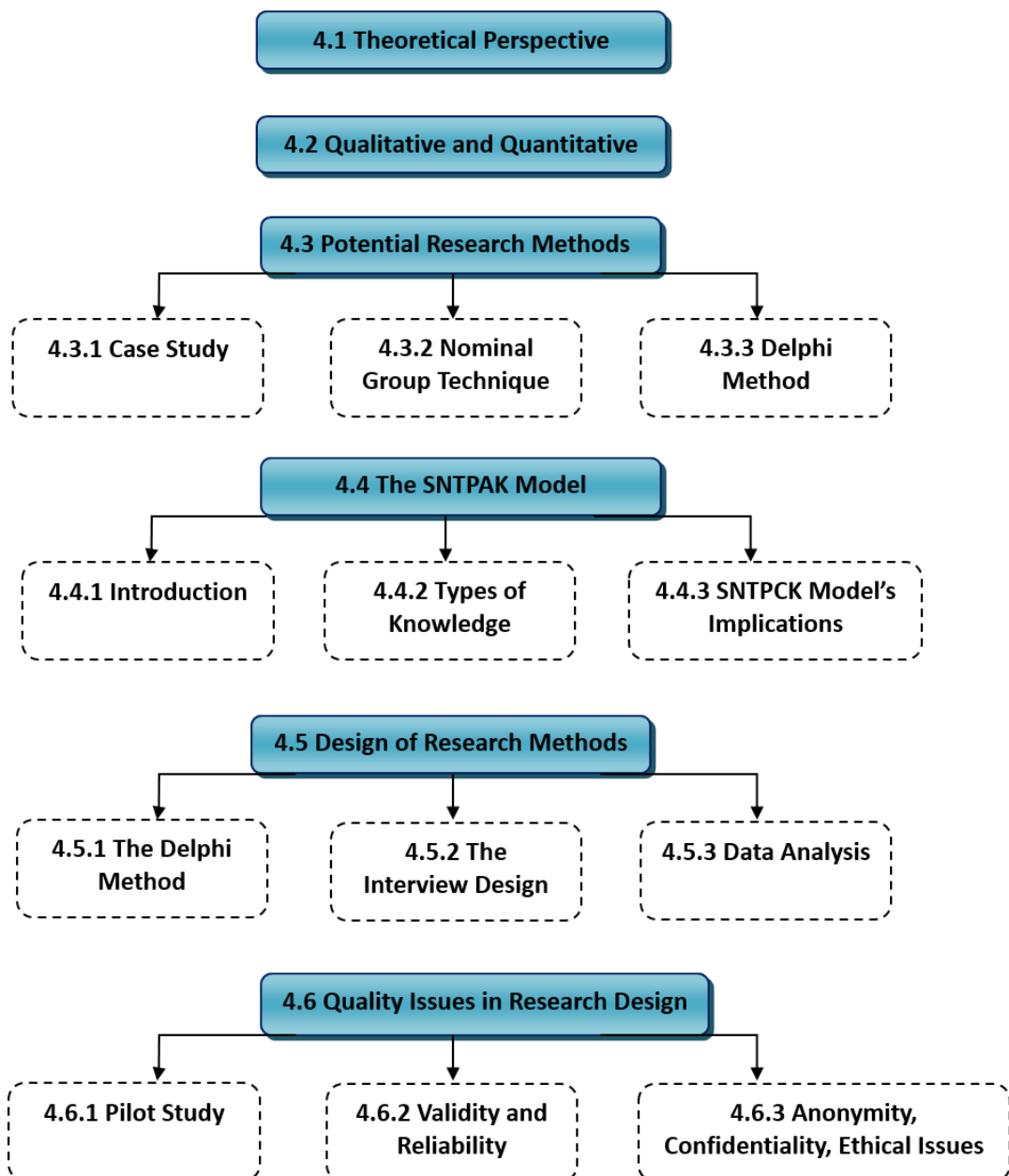
Figure 4-1:Structure of Chapter 4

The final part of this chapter explores the quality of the research methods and process. It describes piloting the research method, the validity and reliability of the research findings, and some ethical issues related to the research process.

4.1 Theoretical Perspective

The study's objective is to research the use of OCSN and its implications. It then constructs a model that can be used in the Saudi higher education context. No such model in practice was found in the literature review. This is an inductive study. A review of the literature shows two types of research reasoning: deductive and inductive (Simon, 1996).

This study is considered inductive since it "[moves] from specific observations to broader generalizations and theories." It is the opposite of a deductive study(Trochim, 2006, par. 3) Trochim describe the inductive approach as "more open-ended and exploratory, especially at the beginning" (par. 4). Figure 4-2 depicts the inductive approach.
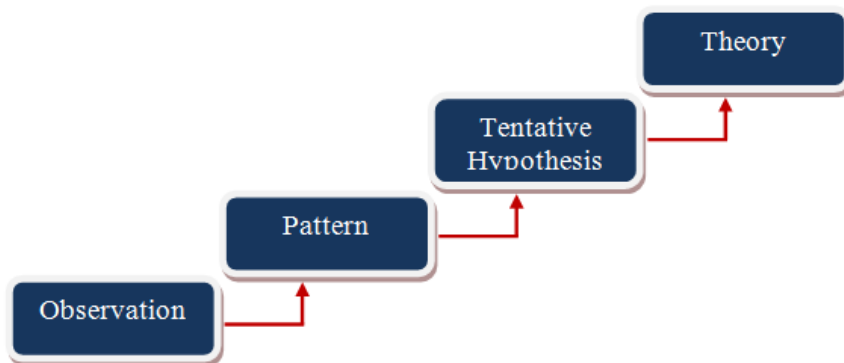
Figure 4-2: Inductive Approach

Source: adapted from Trochim (2006)

The inductive approach starts with specific observations then moves to generalizations and the extraction of theories, which is mainly the opposite of the deductive approach (Wilson, 2008). Wilson describes the inductive approach as "more open-ended and exploratory, especially at the beginning" (p. 44).

4.2 Qualitative and Quantitative Research

The debate about qualitative and quantitative research and their strategies and assumptions started in the 1980s "as though one or the other should eventually emerge as superior" (Newman and Benz, 1998, p. xi). Newman and Benz state that this debate reflects differences in assumptions about the meaning of reality in the social field and whether it can be measured.

Finding a satisfactory definition of qualitative research has been difficult. It has built its own identity and is "no longer just simply [not quantitative research]" (Flick, 2008, p. ix)

According to Jones:

> The essence of qualitative work is described, including its natural concerns with issues such as meaning, truth, purpose and the significance of things. The poignancy and natural ability for issues of ethnicity and diversity to be investigated through a qualitative approach is elaborated. (Jones, 2004, p.108)

According to Sale et al. (2002), quantitative research is based on positivism, in which phenomena can be tested based on indicators that show the unique truth about these phenomena. In contrast to quantitative

research, qualitative research is mainly based on constructivism (Lincoln, 1989, Johnson and Onwuegbuzie, 2004).

Qualitative research usually "is used when observing and interpreting reality with the aim of developing theory that will explain what was experienced" (Newman and Benz, 1998, p. 3). Quantitative research measures representative phenomena by collecting numerical data (Gray, 2009). In contrast, qualitative research uses the participants' acts as sources of information for hypotheses, which helps to scale the construction (Robson, 2002).

Miles and Huberman (1994) describe the qualitative approach as the best way to discover a new field; they cite other strong points, such as the focus on people's experiences and the provision of wide descriptions (p. 10). Trochim (2006) suggests that the quantitative approach helps to create attractive new and important theories and hypotheses. Miles and Huberman (1994) reported that Fred Kerlinger (quantitative researcher) said that "there's no such thing as qualitative data, everything is either 1 or 0" (p.40).

Moreover, the combination of qualitative and quantitative research (mixed method) in a single study is debatable. Newman and Benz (1998) argue that almost any study uses both qualitative and quantitative strategies. Bryman (2006) claims that several writers have said that they use both qualitative and quantitative research in the "formulation of research questions; sampling; data collection; and data analysis" (p. 101).

Tashakkori and Creswell (2007) define the mixed method as:

> …a research, in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry.(p .4).

Despite the growing popularity of mixed methods research, Tapio et al. argued that "the practice of integrating qualitative and quantitative methods has been far from unproblematic" (Tapio et al., 2011, p.1617).

From the previous debate, the link between the study's problem, aims, objectives, and questions and the research approach selection is clear. Given the literature and the aims of the research, the mixed method approach is more appropriate for this study.

The selection of research tools and instruments is no less important than the choice of research methodology. In fact, selecting the appropriate method for this research was a major challenge. Several methods can be used in mixed methods research, such as case studies, ethnographic studies, grounded theory (Robson, 2002), observation, interviews, focus group discussions, nominal group techniques, the Delphi method and projective techniques (Ehigie and Ehigie, 2005).

In fact, this variety of views and opinions about the research methods and tools makes it more flexible for researchers to select from these tools and methods, but it is critical to find the most relevant ones for the particular study.

4.3 Potential Research Methods

After evaluating the strengths and weaknesses of the various methods, and based on the aims of this study, it was found that three methods were possible candidates for use in this study:

4.3.1 Case Study

The meaning of a 'case' is different in qualitative and quantitative research. In quantitative research, it means the collection of comparable data from an individual member of a group; in qualitative research, a case can apply to a individuals, roles, organizations, groups of people or societies the researcher has identified (Robson, 2002, Miles and Huberman, 1994).

Case study is a research method using different kinds of evidence to investigate specific phenomena within their context (Robson, 2002). Eisenhardt (1989) defined it as a research method that aims to understand the changeable present in its context by using data collected through instruments such as interviews, questionnaires, and observations.

According to Yin (2009) there are three types of case study. The exploratory type is used to answer a *what* question, such as *what* can be learnt from a study using OCSNs in the classroom.

 The descriptive case study is also used to answer *what* questions also, but when the question requires a descriptive answer, such as what is the benefit of using OCSNs in education.

The explanatory case study answers questions such as *how* and *why*. Usually this type of case study is used for historical research.

Despite the number of advantages for using the case study method, such as finding real information about the issue under investigation, it also has disadvantages. One of its main disadvantages, according to Yin (1984), is:

> too many times, the case study investigator has been sloppy, and has allowed equivocal evidence or biased views to influence the direction of the findings and conclusions. (p. 21)

Another debatable point, which in some cases can be considered a disadvantage, is the generalization of the finding results based on the case study method. For example, Stake (1978) believed that, "since single members poorly represent whole populations, the case study is seen to be poor basis for generalization" (p. 7).

Based on the research problem, which is a complex problem, and the need to generalize the findings, this method was found to be inappropriate for the current study.

4.3.2 Nominal Group Technique (NGT)

The nominal group technique was developed by Delbecq and Van de Ven (1971, p466) and is described as "a group process approach useful for

practising administrators charged with a program development task" (p. 466). The NGT is used to obtain information about phenomena such as opinions, concerns, and attitudes and to sort the findings based on a scale of priorities (Knight, 2002).

The purpose of using the NGT is to collect information from individuals about issues which can be arranged based on group opinions (Potter et al., 2004).

The NGT process was described by Sample (1984) as follows:

- Use small groups of five or six members.

- Ask them to answer an open-ended question.

- Allow each member to brainstorm for a few minutes and to write all the ideas down.

- Let the members in each group share their ideas with others in the group and write them down as key terms.

- Each member should have time to think about these ideas and sort them based on a scale.

- Each group presents the ranking of the ideas in a table, using the members' answers.

- Each group has time to make a short presentation about its findings.

MacPhail (2001) listed the following advantages of the NGT:

- There is balanced participation among members in each group.

- Members judge the importance of statements, so there is no need for respondent validation.

- The researcher's confidence about using this method can be limited if the researcher avoids taking notes and recording interviews.

Sample (1984) also mentioned some disadvantages of using the NGT. The use of a voting process might cause a divergence of opinions, sharing ideas may be controlled, and the NGT process seems very mechanical.

The NGT offers the benefit of individuals' and groups' opinions, which is what this research was looking for. However, it was inappropriate for this study because the technique is based on face-to-face group work, which was difficult to achieve because the targeted sample was distributed over a wide geographical area.

4.3.3 Delphi Method

This method took its name from a study called *Project DELPHI.* The study, which used experts' opinions, was conducted by the RAND Corporation and sponsored by the United States Air Force (Dalkey and Helmer, 1963). Linstone and Turoff (1975) define the Delphi method as one that manages communication among a group of individuals, enabling them to participate as individuals and as a group to solve a complex problem. The importance of the Delphi method comes from the recognition that decision makers should base their decisions on individual expectations rather than deep-

rooted theory (Helmer, 1967). Ehigie and Ehigie (2005) assumed that the experiences of educated individuals enable them to predict the future better than extrapolated theories and trends do.

Delphi consists of four phases, according to Linstone and Turoff (1975). The phases are listed below.

- The first phase characterizes the issue under investigation by exploring all the individual members' knowledge about it.

- The second phase focuses on the group's point of view about an issue.

- The third phase is used if there is significant disagreement among the group; the group then explores the issues relating to the disagreements to clarify and understand the reasons behind them.

- The fourth phase is a final evaluation of the analysis of the data gathered from the previous phases, which were sent to individuals for consideration.

The Delphi method is used in different research areas, which has led to the emergence of different variations of this method. Hanafin (2004) listed three types of Delphi.

- **Classical Delphi:** This type is characterised by anonymity, repeatability, controlled responses, numerical response and constancy in experts' opinion about the issue under research.

- **Policy Delphi:** The aim of this type is not to achieve consensus in responses, but to create as many policy alternatives as possible. Its characteristics are optional anonymity, repeatability, contradictory group responses and prearranged disagreement.

- **Decision Delphi:** This method is used for making decisions about social issues. The key characteristic of this method is its quasi anonymity because decision makers participate to solve a problem and are known to everyone, but their responses to the questionnaires are anonymous.

The Delphi method was found to be appropriate for answering research questions because it has the characteristics that are missing in the other two methods. It provides a deep understanding of the problem and allows the benefits of group opinions without face-to-face meetings. Furthermore, using mixed qualitative and quantitative data within the Delphi method will add more value to the validity and reliability of the study.

4.4 The SNTPAK Model

4.4.1 Introduction

Understanding an issue is part of understanding its context. To accomplish this, investigating how knowledge builds was part of the literature review(Chapter 3, Section 3.1.5).

Koehler and Mishra (2008) developed a model to illustrate teachers' understanding of the relation between technology and pedagogical content knowledge. This model is known as the Technology and Pedagogical Content Knowledge (TPCK) model. The name was later changed to TPACK. Thompson and Mishra (2007) explained the difference between TPCK and TPACK: "the new name does much more than just buy a vowel for TPCK" (p.38). During the 9th Annual National Technology Leadership Summit, they asked their audiences to create "a new, friendly terminology for TPCK", and they came up with TPACK, pronounced as "tee pack" (Thompson and Mishra, 2007, p.38).

This model is one of the well-known models related to using technologies in educational contexts. According to Voogt et al. (2012), this concept was discussed in 14 studies based on their database.

Based on the study's problem, four dimensions involve building knowledge in any online social network environment. The new existing dimension

(social network) makes the TPACK unable to cover all types of knowledge in these networks.
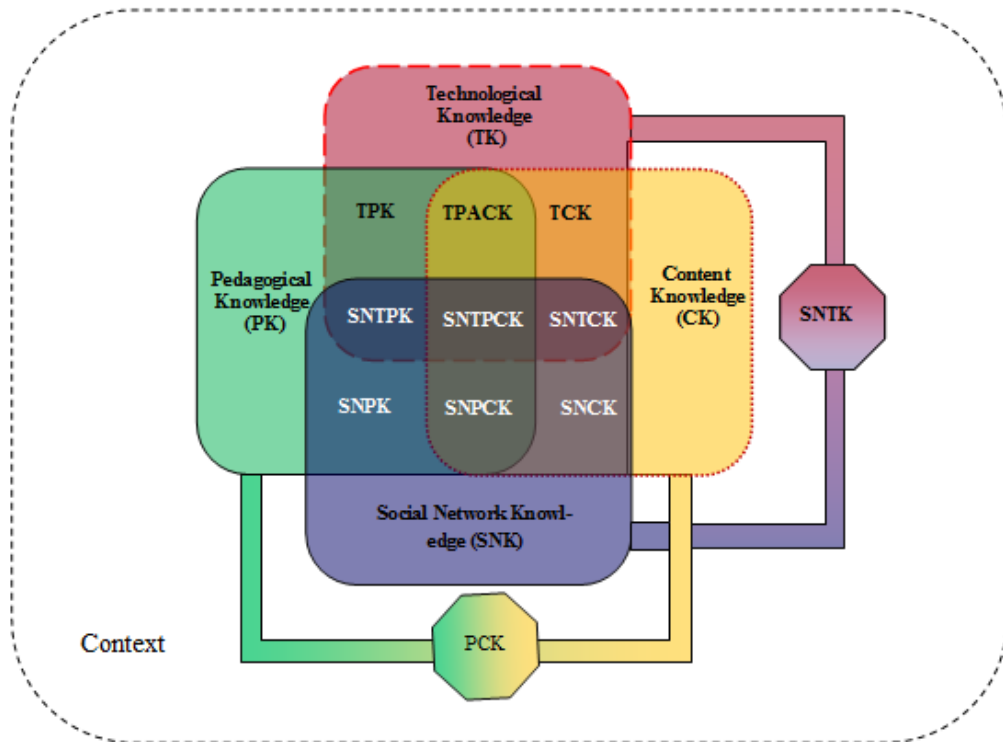
Figure 4-3: The SNTPCK Model Framework

This issue led to the development of a new model called SNTPCK to describe the building of knowledge based on the integration of the four dimensions of knowledge. The name of this model stands for Social Network and Technological, Pedagogical and Content Knowledge (SNTPCK).

This model consists of 15 types of knowledge because of its four components. The intersection and framework of the SNTPCK model is shown in figure 4-1.

4.4.2 Types of Knowledge in the SNTPCK Model

In addition to the seven types of knowledge mentioned in Koehler and Mishra's (2008) TPACK model, the SNTPCK model added an eighth type.

Koehler and Mishra (2008) described the first seven types of knowledge. :

Technological Knowledge (TK): This is similar to the definition of the Fluency of Information Technology (FITness) by the Committee of Information Technology Literacy of the National Research Council. They described FITness as "go[ing] beyond traditional notions of computer literacy" to understand technology to be able to apply it effectively (National Research Council, 1999, p.15).

Pedagogical Knowledge (PK): The set of knowledge about teaching and learning methods processes. These can be extended to include the education environment in general.

Content Knowledge (CK): This is knowledge about the taught subject, which requires building according to the age of the learners. Koehler and Mishra emphasised the importance of content knowledge for teachers.

Technological Pedagogical Knowledge (TPK): Koehler and Mishra (2008) defined this as understanding how teaching and learning can be effective when technology is used.

Technological Content Knowledge (TCK): This is the knowledge required to understand how technology and content affect and restrict one another. In this case, teachers need to understand how technology can be used in the subjects they teach.

Pedagogical Content Knowledge (PCK): This type of knowledge covers the relation between pedagogy and content such as curriculum, assessment and the teaching and learning process.

Technological Pedagogical Content Knowledge (TPCK): This consists of all knowledge that cannot fit under the three main types of knowledge (technology, pedagogy and content), because of the interaction of these three types.

The next eight types of knowledge are what the SNTPCK model added to describe the dimensions of the research problem.

Social Network Knowledge (SNK): This is necessary to understand the social network and its uses, and includes knowledge of its types, weakness, strengths, advantages and disadvantages.

Social Network Pedagogical Knowledge (SNPK): This is the knowledge required to understand how to use pedagogical processes and elements

such as collaboration, communication and assessments via social networks.

Social Network Technological Knowledge (SNTK): This type of knowledge is defined as the set of knowledge about social networks and the technologies required to use them. This knowledge includes a deep understanding of the available technologies and their application in support of social network usages.

Social Network Content Knowledge (SNCK): Understanding how content is built in the social network is key to the knowledge of this model. In practical terms, that includes the process of building the social network content and its related aspects.

Social Network Technological Pedagogical Knowledge (SNTPK): This type of knowledge is at the intersection of the social network, technology and pedagogy. It focuses on the pedagogy of using technology to set up and support social networks such as the educational policy of the technologies used in social networks. Such technology covers the Internet, email and mobile phones.

Social Network Pedagogical Content Knowledge (SNPCK): This type of knowledge illustrates the knowledge involved in designing educational content in social networks. It is important, as specific content design is required for each educational setting in teaching and learning activities.

Knowledge of the age effect on educational content design of the social network is another important aspect of SNPCK

Social Network Technological Content Knowledge (SNTCK): This includes all information and skills concerning the use of technology to build the general content of a social network. For example, the knowledge of using a computer keyboard to send a message (or a tweet) falls under SNTCK.

Social Network Technological Pedagogical Content Knowledge (SNTPCK): This is the heart of the model, and is the result of the intersection of all four dimensions of knowledge (social network, technology, pedagogy and content). This type pertains to the ability to use technology to create educational content in social networks.

Using social networks successfully in education requires all of these knowledge types, which reflect the strong relation between the use of social networks and their context. According to Koehler and Mishra (2008), each dimension has its own task and tasks in concert with the others.

4.4.3 The SNTPCK Model's Implications

The SNTPCK model has different implications for the use of OCSN for teaching and learning. The next section highlights these implications at three levels of the education system.

4.2.3(i) Planning and Decision making

There is no doubt about the importance of knowledge in planning and decision-making. The SNTPCK model presents the types of knowledge required before planning or making decisions about using OCSN in education.

This model can be used as a framework for collecting data about or educational issues or phenomena. The uses of the SNTPCK model were applied here in the design of the first round of the Delphi method questionnaire. It facilitated an understanding of research problem factors and ensured that the instruments used covered all these factors.

4.2.3(ii) Educational Design

The SNTPCK model reflects the complexity of using social networks in education since it requires the possession of different types of knowledge and understanding the relation between them. In the design of the educational content or processes, these types of knowledge in the SNTPCK model need to be considered in more detail. Designing educational content or activities to be used in OCSN requires a deep understanding of the four dimensions of knowledge (social network, technology, pedagogy and content). For example, educational designers must know what to use, how to use, and when to use OCSNs for educational purposes.

4.4.3(iii) Teaching and Learning

The SNTPCK model can be used in most teaching and learning processes to support the selection and use of OCSNs as educational tools. This model, for example, will help teachers determine whether or not their learners have the required knowledge for using OCSNs, which is extremely important prior to implementation.

When a student is aware of his or her weakness in relation to the different types of knowledge, he or she will be able to invest time and effort to develop his or her knowledge in an efficient way.

Providing training programmes for teachers is another educational process that can benefit from using the SNTPCK model. Finding out which knowledge needs to be enhanced is key to the success of any training programme.

4.5 Design of Research Methods

Using the Delphi method to illustrate a model's structure is one of its wide areas of application(Linstone and Turoff, 1975). In this study, the Policy Delphi method was found to be appropriate for generating ideas and opinions about the positional use of OCSNs in learning and teaching processes in Saudi higher education. According to Trochim(2006), research design is the glue that unifies the research.

The design of research methods in this study focuses on three issues. The design of the Delphi method's procedure and its instruments are first discussed in detail. The second part explains the design of the interview stage. The final part describes the data analysis procedure used in the study.

4.5.1 The Delphi Method

The backbone of the Delphi method design is the number of rounds required. Although the number of rounds usually ranges from two to ten (Lang, 1994), Gottschalk (2000) used only one round in his study.

According to Linstone and Turoff (1975), sufficient stability in the experts' responses can be achieved in three rounds; the fourth round will add little and is therefore unnecessary. Applying three rounds of the Delphi method requires three to four months, which includes all the processes, such as preparation and data analysis (Gordon, 1994).

The design of the Delphi method in this study consisted of two rounds. The experts, however, agreed to participate in three rounds if necessary to achieve the needed degree of stability.

As shown in figure 4-4 , the procedure started with a literature review regarding to the Delphi method and its requirements. The finding of this stage helped provide more understanding about the Delphi method and

gather advices and recommendations about applying it, which helped during the fieldwork.

One of the key steps in this study was the selection of the experts' panel. This step will be discussed in Chapter 4, Section 4.5.1(iv).

The first fieldwork for this study started with a pilot study to test the Delphi method and the data collection tools. The findings of the pilot study suggested that the Delphi method's first-round questionnaire needed little modification.

The main study was planned for three rounds, because it is important for experts to know how long this method will take. However, after the second round, it was found that the rate of consensus was high and the third round would add little to the study, so the Delphi rounds were limited to two.
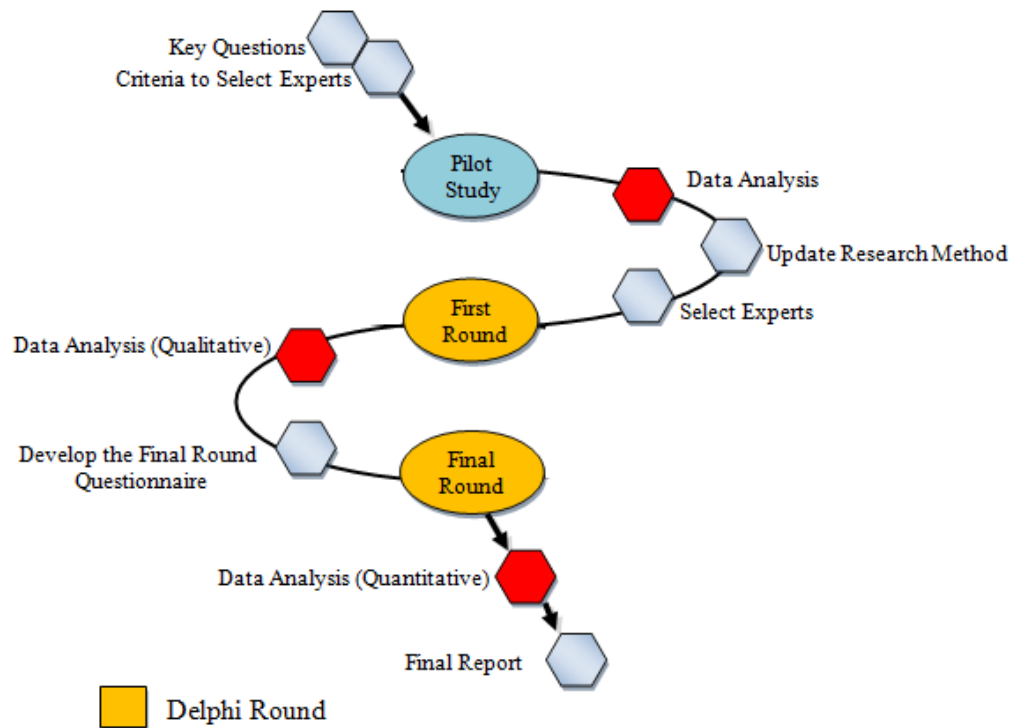
Figure 4-4: Delphi Method

After each round, the collected data is analysed; then the findings are used to develop the next round questionnaire. Each round needed five weeks (two to participate and three to collect and analyse data). Usually the time needed for each round is based on the findings of the previous round.

The fieldwork for this study consisted of four phases: the selection of the experts' panel, the first round of the Delphi method, the final round of the Delphi method and finally the interview method.

The rest of this section describes the first three phases.

4.5.1 (i) Research Experts Panel

The process of designing and preparing for this study started in 2009. The population for the study consisted of a group of faculty experts from 21 government universities in Saudi Arabia, a number that increased to 26 by 2015.

The availability of faculty web pages on the university website was used as a condition to select which universities to include in this study. After analysing all 21 universities, six were found to meet the requirement condition.

In order to obtain each university's approval for applying the research with its faculty members, six requests were issued by the Ministry of Higher Education on behalf of the researcher to these universities. Five of them agreed to participate and sent written approval.

The next step was selecting the experts' panel for the Delphi method. That step required defining the sample size and selection criteria.

Skulmoski, Hartman and Krahn (2007 ,p10) assumed that sample size is "a practical consideration facing the researcher" and that no specific rules can be used. They listed 35 PhD dissertations that used the Delphi method, with samples ranging in size from 8 to 345 experts; 27 had fewer than 50 experts. Some studies used three or four (Skulmoski et al., 2007). Okoli and Pawlowski (2004) reported that, according to the literature review, a Delphi panel of between 10 and 18 is recommended.

Using large sample has its impact on the collected data. Sandelowski (1995) states that:

> While qualitative studies may involve what are considered large sample sizes (over 50), qualitative analysis is generically about maximizing understanding of the one in all of its diversity. (Sandelowski, 1995, p.180)

Adler and Ziglio (1996) listed the following criteria for selecting the Delphi experts panel:

> a) expert with the issues under investigation; b) the capacity and willingness to look into the problem under study; c) have a sufficient time to participate in the Delphi rounds; d) have skills in written communication and in expressing priorities(p.14).

The experts do not necessarily need to have academic qualifications (Adler and Ziglio, 1996).

In light of the Adler and Ziglio criteria, the study developed the following criteria for selecting the experts' panel:

- a) A staff member in a school of education, specialist in ICT or educational technologies, or an individual with knowledge and experience in OCSNs;

- b) Interested in using OCSNs' learning pedagogies in higher education;

- c) A person who has time to participate in a three-round Delphi study; and

- d) Have an email address and an Internet connection.

Based on the type of problems investigated, time limitations and the size of the study population, the study appointed a panel consisting of 60 experts. Each university sent 12 experts (6 male, 6 female).

The final step in this phase was analysing the five university websites and searching for potential experts who were interested in this topic. The study information sheet (Appendix I in English) and Appendix VIII in Arabic) and an invitation letter were sent to 140 faculty members and 23 departments. Seventy-five experts agreed to participate and sent in their consent forms (Appendix II in English and Appendix IX in Arabic form).

The first round of the Delphi method started with the panel of experts.

4.5.1(ii) First Round of the Delphi Method

The first round of the Delphi method started with a questionnaire being sent to 75 experts (43 males and 32 females), who agreed to participate in this study by email.

The first-round Delphi method questionnaire (English translation available in appendix III and appendix X for Arabic) includes questions eliciting demographic information in addition to the following ten questions:

1- In which ways do you think OCSNs can be used by teachers for designing and planning courses?

2- In which ways do you think OCSNs can be used as part of courses to support the learning and teaching process?

3- In which way do you think OCSNs can be used as part of the assessment of student work?

4- In what way can OCSNs assist with the process of gaining and responding to students' feedback on the quality of the learning experiences on the courses?

5- Describe the OCSN(s) that you think suitable to use in Saudi higher education, giving more attention to the level of applications (e.g., for students' enrolment in a course, local level, national level) and the policies of use?

6- What requirements are needed for successful implementation of OCSNs in Saudi higher education?

7- Which educational policies do you think need to be developed in order to maximize the benefits from using OCSNs?

8- From your point of view, what are the advantages and disadvantages of using OCSNs in higher education in Saudi Arabia?

9- In which ways do you think OCSNs usage can help to obtain international academic accreditation for Saudi higher educational projects?

10- From your point of view, what is the benefit to Saudi society from using OCSNs in higher education?

In order to ensure that the investigation of the research problem covered most of its main related areas, the first step was to determine which educational processes are involved in this issue.

As shown in figure 4-5, these questions were distributed across educational processes to achieve inclusiveness and balanced coverage of the study problem's dimensions.
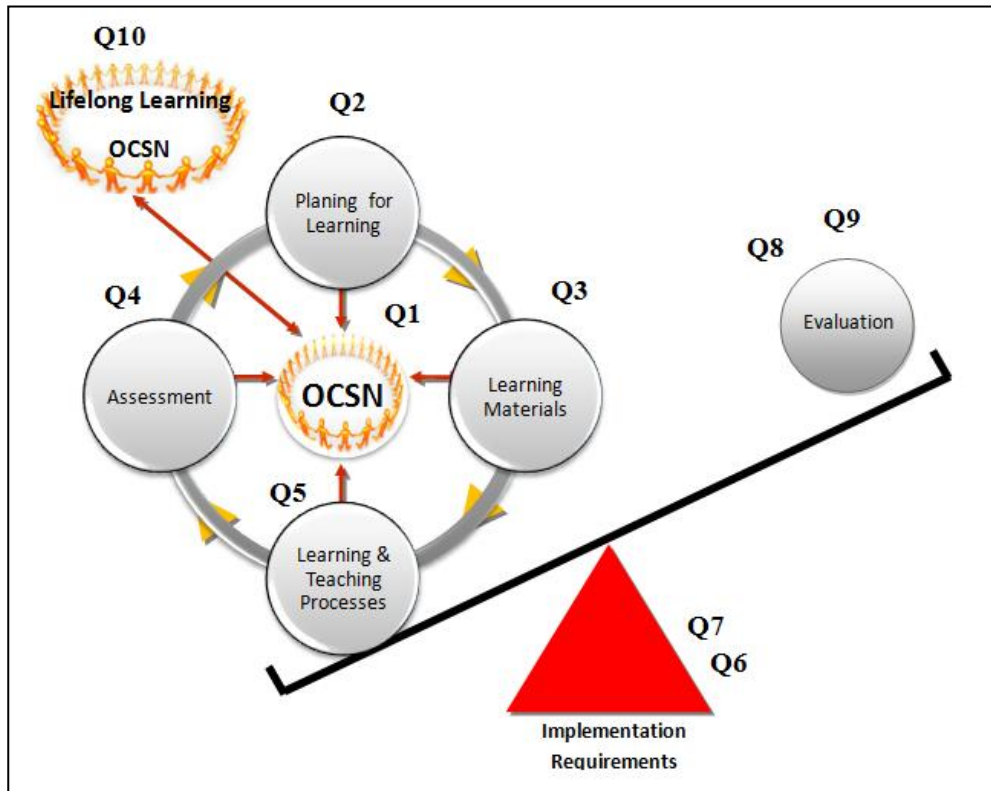
Figure 4-5: Main Questions' Distribution on the Educational Processes

These ten questions were formulated after the pilot study (see chapter 4.6.1) and sent to three educational experts in Saudi Arabia who evaluated their inclusiveness, the wording and the language.

The first round of the Delphi method procedure included sending the first reminder to experts who had not replied. In fact, several experts suggested extending the deadline by one week to improve the quality and quantity of

feedback. This suggestion was accepted. Three days before the deadline, the second and final reminder was emailed to the rest of the participants.

At the cut-off time for collecting data, 62 experts (37 males and 25 females) had completed and returned their questionnaires. The next step in this phase was analysing the collected data and developing a questionnaire for the next round. The data analysis procedure will discuss in Chapter 4, Section 4.5.3. The next section describes the final round of the Delphi method.

4.5.1(iii) final Round of the Delphi Method

Turoff and Hiltz (1995) described scaling as a measurement tool used for judgement. In some cases it was easy to adapt scaling to provide feedback to the Delphi experts' panel on the judgements of individuals. The advantage of this ranking system is its simplicity, which increases compliance, but it cannot discover unseen factors that affect a group's decision making (Kell, 2006). Turoff and Hiltz (1995) note that using other scales, such as standard averaging approaches, may lead to inconsistencies among the experts.

The findings from the first round were used to design the final round questionnaire (see appendix IV, and for the Arabic version see appendix XI). The questionnaire consists of 106 items, most of which used a five-point Likert scale.

In the final round of the Delphi method, the Bristol Online Survey (BOS) website was used (as an available student service at the University of Leeds) to manage the data collection. The final round questionnaire link and a unique code for participants was sent by email to all 62 experts, who had three weeks to complete and return the questionnaire.

The first reminder was sent after two weeks; then, after a further five days, the last reminder was sent to those who had not yet replied. At the end of this phase, 48 experts (31 males and 17 females) had participated in this study.

After examining the findings of this round, it was decided that an acceptable level of consensus had been reached and there was no need for a third round. The second round's findings were treated as the final findings.

Twelve experts agreed to discuss the findings of the final round individually in telephone interviews.

4.5.2 The Interview Design

> There is also much value in combining qualitative data from different methods. For example, focus groups or social media analysis might be used as an initial stage to raise and begin to explore relevant issues which will then be taken forward through in-depth interview.(Lewis and Nicholls, 2013, p.58)

The interview is a useful and flexible instrument for collecting qualitative data such as spoken and unspoken communication (Cohen et al., 2007). Interviews can be structured, semi-structured and unstructured (Robson, 2002).

The unstructured interview is like a conversation, and it is usually used to collect data during observations (DiCicco-Bloom and Crabtree, 2006). The use of structured interviews leads to data that is not as rich or deep as that which is acquired through unstructured interviews, and it requires a large number of interviewees (Gubrium and Holstein, 2002). However, structured interviews are easy to duplicate and the collected data are easier to analyse than that of unstructured interviews (Gubrium and Holstein, 2002).

The semi-structured interview falls between the structured and the unstructured interview. According to DiCicco-Bloom and Crabtree (2006), it is one of the most familiar tools used in qualitative research's general design based on open-ended questions and other questions which emerge during the interview dialogue. As they explain, it might take thirty minutes to several hours to conduct a semi-structured interview.

The research question is typically used as guide to determine which type of interview is most appropriate (Gubrium and Holstein, 2002). In general, semi-structured interviews are used in policy studies (Walford, 2011).

Based on the findings of a pilot study, it was decided that, an in-depth discussion of the findings with a group of experts from the same Delphi method experts' panel would add more value to the findings of the study and would help to draw implications from them. For that purpose, the interview instrument was added as a follow-up step to Delphi method.

The literature review found that semi-structured interviews would be most appropriate for this study. The first step in the interview procedure was to obtain the approval of the Faculty Research Ethics Committee at Leeds University. Next, an invitation letter and interview information sheet (Appendix V) were sent by email to members of the expert panel. In response, sixteen members agreed to participate in interviews. Then, the interview consent form (Appendix VI) was sent to them along with the semi-structured interview guidelines (Appendix VII).

Each expert interview takes from thirty-five minutes to an hour by phone or Skype. Ultimately, the interview was completed by twelve experts (3 female and 9 male).

The data collected from this step was subjected to qualitative analysis procedure.

4.5.3 Data Analysis

> This approach [Delphi] combines two methods – cluster analysis to group quantitative material and qualitative content analysis to identify and interpret themes in the qualitative material(Tapio et al., 2011, p.1618).

Qualitative research usually produces a mass of words that need to be analysed before they can be summarised and described (Lacey and Luff, 2001). The meaning of data analysis is "making sense of relevant data" collected using different tools such as observations, interviews, and documents analysis (Caudle, 2004, p. 417).

Analyzing qualitative data is a problematic task , especially if it has been collected from people in powerful positions (Walford, 2011). There is no single correct approach for qualitative data analysis; the researcher needs to choose among several options, including framework analysis and grounded theory (Lacey and Luff, 2001).

The data obtained in the implementation of Delphi method procured as Tapio et al. (2011, p.1618) described, is a combination of quantitative and qualitative data. Each type of data must be analysed with the appropriate technique.

Based on the literature review and research method used in this study, grounded theory was found to be more appropriate to analyze qualitative data collected in the first round of Delphi method and in the interviews

stage. Grounded theory use three types of coding: open, axial, and selective (Corbin and Strauss, 1990).

Qualitative data in this study was collected using the first-round Delphi method and interviews. Using these tools generated more than 400 pages in the first-round Delphi method and 15,000 words in the interview stage.

As the qualitative data analysis procedure for this study illustrated (figure 4-6), there are four phases in this procedure. This procedure was used three times in this study. The first use was with the pilot study data, the second with the data collected from the first round in Delphi method, and the third with the interview data.

Based on grounded theory, the first phase identified open codes. The second phase used the SNTPCK Model to generate the second step of for the grounded theory procedure (Axial Codes).

The third phase was used to arrive at a Selective code for the items and to group them under these codes. The fourth and final phase prepared the output of the previous phases for the next step, whether the final round questionnaire of Delphi method or the report of the interview data analysis. .
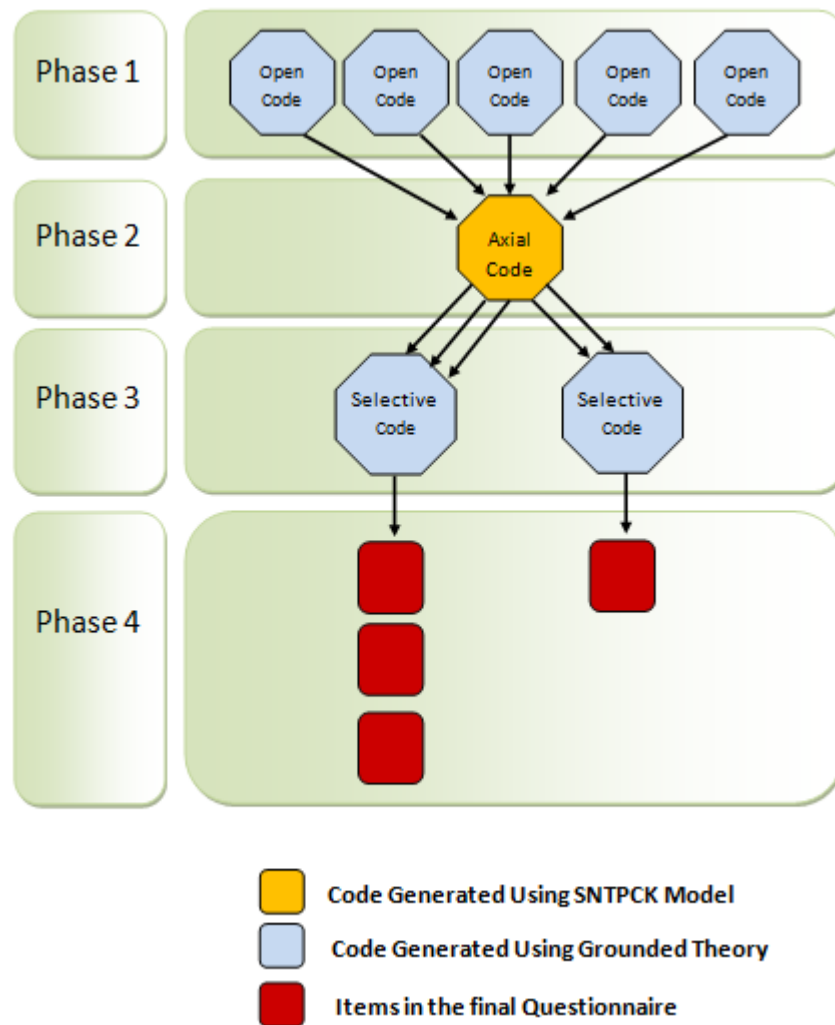
Figure 4-6: Qualitative Data Analysis Procedure

In order to analyse this huge amount of qualitative data, computer software was required. The best-known software program in this field is NVivo, but unfortunately, it does not support Arabic language (or any other right-to-left language). The alternative software program was Atlas.ti, which supported Arabic language and offered the tools and features that were needed.

The final round of the Delphi method was applied on the Bristol Online Survey (BOS) website. The BOS made it possible to transfer the collected data into data analysis software programs, such as SPSS and Microsoft Excel. SPSS was used in this study to analyse the quantitative data collected from the final round of the Delphi method by calculating some statistical variables such as means, frequencies, and standard deviations.

In fact, the SNTPCK Model (for more detail, see Section 4.4) played an important role in this study. It is worth mentioning the number of events of the SNTPCK Model from finding to reporting the findings.

This model was integrated with the grounded theory as code generator in order to analyse the qualitative data from the first round Delphi method. In addition, this model was used to analyse the interview data. The combination of the findings from the interview phase and the final round of Delphi method are described in Chapter 5.

4.6 Quality Issues in Research Design

During the design of the research method, numerous of issues needed to be taken into consideration. One of the most important was the familiarity of the researcher with the methods. Moreover, testing the research instruments and procedures was important. It was decided that issues could be resolved by conducting a pilot study. In addition, other issues considered in the design of the study would add quality to the research and to data collection.

The next part discusses three issues that affect the quality of the research design.

4.6.1 Pilot Study

A pilot study was conducted to test and correct the seed questions(listed in Section 4.5.1) in order to "improve comprehension, and to work out any procedural problems" (Skulmoski et al., 2007, p4). The use of a pilot study may highlight in advance the possible causes of failure in the main study: the complexity of the method, the use of inappropriate tools, or the failure to follow the research procedure as planned (van Teijlingen and Hundley, 2001).

The seed questions of the first-round Delphi method were tested with a small group of Saudi PhD students in the United Kingdom in a pilot study. The same procedure was used as described in Chapter 4, Section 4.5.1. Eight students (experts) participated in the first round, and six in the final round.

Based on the pilot study, the first-round questionnaire for the main study was developed; however, this was not the only benefit of conducting a pilot study. The pilot study enables the researcher to gain experience, skills and confidence in conducting research fieldwork. In addition, the findings of the final round illustrate the appropriateness of the Delphi method to answer the research questions.

4.6.2 Research Design Validity and Reliability

Research validity and reliability are widely debated in the literature. Miller (1986) argued against borrowing tools that were developed for science and applying them in the social sciences. This view is supported by Long and Johnson (2000), who argued that any qualitative research must be open for critique in addition to evaluation, which is based on the validity and reliability of the tools used.

The Delphi method is based on the literature about expert panel section, questionnaire development and application, and the availability of guidelines for researchers and experts – all of which lead to a high level of validity and reliability (Landeta, 2006).

According to Bolger and Wright (1992) "valid judgments must be reliable, but reliable judgments not necessary valid"(p. 48), and assessing the validity of experts' judgments requires the use of an exterior "gold standard" which is not always available. An alternative way they suggest to use several types of reliability: "intrajudge reliability over time (consistency), interjudge reliability (consensus), or logical consistency (coherence)"(p.48).

Therefore, the research method (Delphi) procedure allows the achievement of an acceptable level of validity and reliability.

4.6.3 Anonymity, Confidentiality, and Ethical Issues

Ethics play an important role in life actions. Kizza (2007) emphasises that ethics "helps us not only in distinguishing between right and wrong, but also in knowing why and on what grounds our judgment of human actions is justified"(p. 39).

Organizations such as the British Educational Research Association (BERA) and the American Educational Research Association (AERA) have set ethical guidelines for research.

In this study, the research methodology was checked and approved by the Faculty Research Ethics Committee at Leeds University. In addition, experts received all the required information about the research and methods and could request any additional information at any time. Moreover, they were informed that their participation was optional and they could withdraw at any time without any reprisals.

Anonymity and confidentiality were guaranteed for all participants. The names of all experts were replaced with a unique code which was used in all subsequent documentation (Delphi questionnaire and interview documents). The Delphi method allows for greater anonymity because it does not require face-to-face meetings. The key sheet of these codes was kept in a safe place separate from the study documents. In addition, the data was saved on the university server for more security and the personal laptop was protected by updated security software.

The ethical risks mainly emerged from losing anonymity and confidentiality. In this study, most of the experts on the panel held a higher position in their universities, thereby increasing the importance of providing a high level of anonymity and confidentiality.

4.7 Summary

This chapter consists of six sections; each one discuses part of the research methodology and some related issues. The following part highlights some points included in the content of these six sections.

4.1 Theoretical Perspective

This study is considered inductive as it moves "from specific observations to broader generalizations and theories" (Trochim, 2006, par. 3). It is the opposite of a deductive study Trochim described the inductive approach as "more open-ended and exploratory, especially at the beginning" (par. 5).

4.2 Qualitative and Quantitative Research

The debate about qualitative and quantitative research and their strategies and assumptions started in the 1980s "as though one or the other should eventually emerge as superior" (Newman and Benz, 1998, p. xi).

Moreover, the combination of qualitative and quantitative research (mixed method) in a single study is also debatable. Newman and Benz (1998) argued that almost any study uses both qualitative and quantitative strategies. It is clear that a link exists between the research problem, aims, objectives, and questions and the research approach selection. Given the literature and aims of the research, the mixed method approach is more appropriate for this study.

4.3 Potential Research Methods

After evaluating the strengths and weaknesses of the various methods, and based on the aims of this study, it was found that three methods were possible candidates for use in this study: case study, nominal group technique (NGT), and the Delphi method.

The Delphi method was found to be appropriate for answering research questions because it has the characteristics that are missing in the other two methods. It provides a deep understanding of the problem and allows the benefits of group opinions without face-to-face meetings. In addition, using mixed qualitative and quantitative data within the Delphi method will add more value to the validity and reliability of the study.

4.4 The SNTPAK Model

Koehler and Mishra (2008) developed the TPACK model to illustrate teachers' understanding of the relationship among technology, pedagogical, and content knowledge.

As this study involved four dimensions instead of three dimensions included in the TPACK model, the SNTPCK model was developed based on the need to find the relationship among four dimensions of knowledge (i.e., social network, technology, pedagogy, and content).

The SNTPCK model consists of 15 types of knowledge because of the intersection among the four dimensions of knowledge. This model has implications for the education environment and for the research design. The implications of the SNTPCK model in three areas (planning and

decision-making, educational design, and teaching and learning) are discussed in this section.

4.5 Design of Research Methods

According to Trochim (2006)., research design is the glue that unifies the research. The design of research methods in this study focuses on three issues. The design of the Delphi method's procedure and its instruments are first discussed in detail. This included the selection of the expert panel and the design of first and final rounds of the Delphi method. The second part explains the design of the interview stage. The final part describes the data analysis procedure used in the study.

4.6 Quality Issues in Research Design

During the design of the research method, numerous issues needed to be addressed in order to improve the research quality. One of the most important consideration was the familiarity of the researcher with the research methods. It was decided that issues could be resolved by conducting a pilot study. Other aspects needing more attention are the validity and reliability of the research. All of these aspects are discussed in this section in addition to others, such as anonymity, confidentiality, and ethical Issues.

Chapter 4 provides the fundamental information for the research results, which will be discussed in the next chapter.

CHAPTER 5:   RESULTS

This chapter illustrates the descriptive study findings from the final round using the Delphi method and interviews conducted as an additional investigation step. These findings stem from an analysis of data collected from 48 questionnaires and 12 interviews. The second and final round questionnaire responses were analysed based on the standard deviation (std. deviation) and the two ends of the Likert scale or the rank of items according to the measurement tool. Consent was considered to have been achieved if the standard deviation value was less than one and the value of one end of the Likert scale frequency (disagree + strongly disagree/agree + strongly agree) was more than or equal to 80%. The data analysis procedure is further detailed in Chapter 4.5.3.

The findings reported herein focus primarily on four major factors. The first factor is experts' experience with OCSN usage. The second part describes the potential use of OCSNs and related components. The third part investigates the factors that can affect OCSN usage. Finally, the fourth part describes the use of the SNTPCK model as an analysis tool.

5.1 Experts and OCSNs

As mentioned in the methodology chapter (Chapter 4.5.1), 48 experts completed the final round of the Delphi method; 31 (64.6%) of these experts were males and 17 (35.4%) females.

The sample was drawn from five Saudi universities; two of these universities were founded before 1995 (old universities) and three (new universities) were established more recently. Experts currently work in these universities as faculty members and have different areas of expertise and academic levels. In the sample, 19 experts (39.6%) were from old universities and 29 experts (60.4%) were from new universities. As shown in Table 5.1, the experts have different academic ranks. The majority of them are assistant professors (41.7%) and less than 10% are either a professor or teaching assistant (6.3% and 8.3%, respectively).

Table 5.1: Experts' Academic Rank

Academic ranks	Count	N %
Professor	3	6.3%
Associate Professor	9	18.8%
Assistant Professor	20	41.7%
Lecturer	12	25.0%
Teaching Assistant	4	8.3%

As the ICT skills are an important element in the study criteria for selecting the study panel of experts, experts were asked about ways to acquire these skills. Twenty-three (47.9%) of the experts have academic degrees related to ICT. As shown in Table 5.2, this proportion corresponds with the ratio of those who had experience of training courses. On the other hand, self-training was a common source of ICT skills among experts: 81.3% of them used this source to obtain ICT skills.

Table 5.2: Sources of ICT Skills

Sources of ICT skills	Responses		Per cent of Cases
	N	Per cent	
Academic degree	23	27.1%	47.9%
Training courses	23	27.1%	47.9%
Self-training	39	45.9%	81.3%
Total	85	100.0%	177.1%

Having experiences with OCSNs was an important factor in the study and when selecting the expert panel. Regarding the experts' experiences about the OCSNs, they were asked to indicate which of the social networks listed in Table 5.3 they had expertise in. Facebook showed the highest participation rate as 41 out of 48 experts (85.4%) have a Facebook account. YouTube ranks second with a ratio of 45.8%. Twitter ranks third at around 42%.

Table 5.3: OCSNs Participation

	Responses		Per cent of Cases
	N	Per cent	
Facebook	41	36.3%	85.4%
Twitter	20	17.7%	41.7%
LinkedIn	16	14.2%	33.3%
MySpace	2	1.8%	4.2%
YouTube	22	19.5%	45.8%
Classmates	2	1.8%	4.2%
MyLife	1	.9%	2.1%
LiveJournal	1	.9%	2.1%
Others	8	7.1%	16.7%
Total	113	100.0%	235.4%

Moreover, experts were asked about their experience in teaching online courses. Approximately one-quarter of the experts had taught 0 to 1 online

courses (10.78% [N=5] and 13.04% [N=6], respectively). More than half of the sample had taught at least two or three online courses. Table 5.4 shows the distribution of online course teaching experience across the five groups.

Table 5.4 Online Teaching Experiences

Online Courses	Count (N=46)	N %
0 to 1	11	23.9%
2 to 3	25	54.3%
4 to 5	6	13.0%
6 to 7	3	6.5%
8 to 9	1	2.2%

Looking at the broad picture of using OCSNs, experts described the use of OCSNs in three types of schools based on their experiences. In this question, six categories were used as specific answer options. Table 5.5 describes experts' opinions about OCSN usage. As the table indicates, the standard deviations (std. deviation) of all items are more than one, so consensus is not achieved.

Table 5.5: OSCNs Use in Three Types of Schools

N=48	Std. Deviation	Very Low	Low	Moderate	High	Very High	I Don't Know
OSCN use in humanities schools	2.056	22.9%	12.5%	16.7%	8.3%	2.1%	37.5%
		11	6	8	4	1	18
OSCN use in science schools	1.839	14.6%	20.8%	14.6%	10.4%	14.6%	25.0%
		7	10	7	5	7	12
OSCN use in medical schools	1.857	10.4%	8.3%	14.6%	8.3%	4.2%	54.2%
		5	4	7	4	2	26

However, it is obvious that there is a gap between schools that can be seen from the percentages of the last category in the table (I Don't Know). For example, 54.2% of the experts did not know about the use of OCSNs in medical schools.

5.2 Potential Use of OCSNs

In order to investigate the potential use of OCSNs in Saudi higher education, eight factors were included in the final round of the Delphi method. The findings related to these factors are described in this part. In addition, experts' opinion related to some of the issues are addressed in this part.

5.2.1 Purpose of a New Network

Based on the first-round questionnaire, experts indicated that five potential purposes could benefit from OCSNs in the education sector. As Table 5.6 indicates, training tops the list, with a mean of 3.55 and a standard deviation of less than one.

Table 5.6: Purpose of a New Network

	Mean (N=42)	Std. Deviation	Rank
Educational	2.02	1.239	5
Cultural	2.76	1.144	4
Social	3.31	1.660	3
Training	3.55	.993	1
Lifelong learning	3.36	1.445	2

The remaining items do not achieve the required consensus level. Despite that, it is worth mentioning here that establishing a new social network for educational purposes comes at the end of the list.

To further investigate this point, during the interviews experts were asked about the purposes of a new network; social communication was frequently mentioned. For example, one expert mentioned that we need to increase awareness about social networks before they can be used for educational purposes.

> I think that in the beginning, it is possible to use a new network—not networks like Facebook and Twitter, but I mean social networks moderated by university. For example, each university has its own network and after increasing the awareness we can extend social networks' use. (E7)

Another expert mentioned that the main purpose for using OCSNs in education could be communication.

> Based on my observation during the last two years, youth have widely used social networks. And I think there is an opportunity to use it mainly for direct communication. (E3)

In reality, it seems that practical steps need to be taken. One expert mentioned two Saudi universities' interest in using OCSNs for educational purposes.

> I cannot talk about all Saudi universities, but [...] university and [...] university are interested in using social networks in both teaching and learning fields.(E6)

In fact, what E3 and E6 mentioned early is reflecting the use of social networks in Saudi Arabia as it states in the literature review (chapter 3

section 3.2.3). From their quotes, it can be seen how limited the use of the OCSNTs specialty is in education, despite the acceptance among higher educational institutions.

5.2.2 New Network Users' Authority

Experts were asked their opinions about three levels of users' authority for a new OCSN. As shown in Table 5.7, 91.7% of experts (std. deviation= 0.707) agreed that faculty members have a higher authority level than students do.

Table 5.7: New Network Users' Authority

	Mean (N=48)	Std. Deviation	Neutral	Disagree+ Strongly Disagree	Agree+ Strongly Agree
Everyone has the same level of authority	2.63	1.231	12.5%	58.3%	29.2%
			6	28	14
Faculty members have a higher level of authority than students	4.40	.707	6.3%	2.1%	91.7%
			3	1	44
Non-members can browse the network content	3.29	1.184	10.4%	31.3%	58.3%
			5	15	28

Despite the lack of consensus at the other two levels, more than half of the experts agreed that non-members should be able to browse the network content. Conversely, experts disagreed—with the same frequency (58.3%)—that everyone should have the same level of authority.

Experts seem to have information security concerns about members' data on OCSNs. One expert emphasised this:

As a kind of privacy and, to be more specific, only students enrolled in a particular course or in a certain university can access this network in order to maintain privacy and confidentiality. (E7)

Another expert did not see this as a concern. She recommended using a different tool to achieve an acceptable level of privacy.

Why do we not make it more free and allow all students to access it? Is the reason because it contains students' marks? We can send these to them by email. (E12)

5.2.3 New Network Moderators

As mentioned in Chapter 4, the Policy Delphi method still has value even if consensus is not obtained because it mainly seeks alternative options to support the decision maker. Regarding the new network moderator issue, as shown in Table 5.8, there is no consensus based on the judgment method used in the study. Yet the table indicates that the university prevails, followed by the Ministry of Higher Education, in moderating this network (63.4% and 46.3%, respectively). On the other hand, 39% of the expert panel ranked the use of a private company as the moderator for this network at the lowest appropriate level.

Table 5.8: New Network Moderators

	Mean (N=41)	Std. Deviation	Extremely Appropriate	Very Appropriate	Moderately Appropriate	Slightly Appropriate	Least Appropriate	Rank
			1	2	3	4	5	
Ministry of Higher Education	2.76	1.593	36.6%	9.8%	14.6%	19.5%	19.5%	3
			15	4	6	8	8	
Private company (non-governmental)	3.78	1.370	12.2%	7.3%	9.8%	31.7%	39.0%	5
			5	3	4	13	16	
University	2.29	.814	14.6%	48.8%	29.3%	7.3%	0.0%	1
			6	20	12	3	0	
College	2.63	1.157	22.0%	19.5%	36.6%	17.1%	4.9%	2
			9	8	15	7	2	
Group of specialists	3.54	1.485	14.6%	14.6%	9.8%	24.4%	36.6%	4
			6	6	4	10	15	

The same picture emerged during the interview stage. There was diversity in the opinions about the network moderator. One expert preferred that the university moderate the networks, especially in the beginning stages.

> At the beginning, it would be better if there was a kind of monitoring. Each university is responsible for its special social network. That is better than using Facebook. (E7)

Another expert went further about how the university should moderate its social network.

> The university must establish a special committee or committees and it could benefit from experts from neighbouring countries or internationally. This committee is responsible only for using social network in education. (E1)

Table 5.8 indicated that more than one-quarter of the experts think it is appropriate for a non-governmental organization to moderate the networks.

> I prefer a non-governmental organization to be easier to develop it. I suggest that [the network] be moderated by a committee of experts or those interested in social networks. And they can be assigned for one or two years in order to have more creativity. (E5)

Debating about a new OCSN's moderator here highlights the importance of having a guideline and models for using OCSNs in education. It seems the experts formed their opinions about moderators from their own experiences which led to the widely spread range of options about this issue (most of the items have Std. Deviation more than one).

5.2.4 OCSN Advantages

Regarding OCSN advantages, Table 5.9 shows the most commonly listed advantages that achieved consensus. Almost all experts (97.9%) think networks help build cooperative education and almost the same ratio agreed that they provide an opportunity for some students to express their views without shame. More than 90% of experts believe networks contribute to the improvement and development of teaching methods. In addition, they agreed that networks enable the greatest number of students to access education and training at an appropriate time and place and to benefit from outstanding teachers.

Table 5.9: OCSN Advantages

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Contributes to the improvement and development of teaching methods	4.15	.545	8.3%	0.0%	91.7%
			4	0	44
Contributes to the building of cooperative education	4.23	.472	2.1%	0.0%	97.9%
			1	0	47
Changes teachers' role from a source of knowledge to directors of the educational process	3.98	.863	18.8%	6.3%	75.0%
			9	3	36
Reduces costs of education and training	3.83	.753	25.0%	4.2%	70.8%
			12	2	34
Allows students to access education and training at an appropriate time and place	4.23	.592	8.3%	0.0%	91.7%
			4	0	44
Largest number of students benefit from the outstanding teachers	4.21	.544	6.3%	0.0%	93.8%
			3	0	45
Provides opportunity for some students to express their views without shame	4.40	.610	0.0%	2.1%	97.9%
			0	1	47
Enriches educational process	4.33	.595	6.3%	0.0%	93.8%
			3	0	45

Despite the positive attitude toward using OCSNs that is exhibited in the data shown in the table 5.9,, two items do not achieve the required consensus level: reduces costs of education and training (70.8% agreement) and changes teachers' role from a source of knowledge to directors of the educational process (70%).

In addition to the advantages listed in Table 5.9, experts mentioned some special cases based on their experience.

It can be used to break up the monotony. Nowadays, students, especially youth's students, use Facebook and Twitter as

communication social networks. When I ask them to do something on these network, they do what they are interested in, so they enjoy it. (E2)

Students with special needs or who have health problems will have a great opportunity to increase their interaction and participation; it is also an easy way to access teachers and peers. (E7)

Social networks will ease the communication between teachers, especially when they work with experts from international universities. (E8)

The greatest use of social networks is the ability to communicate freely in an appropriate time and place, which is missing in face-to-face classes. We need to consider many things when we speak face to face, such as facial expressions. Sometimes, students seem unwilling to hear me which makes me unable to teach them. (E12)

In order to benefit from these advantages, the interviewees mentioned a number of requirements. For example, one expert mentioned that students usually access the Internet from outside the campus, which will add extra costs in the short term.

Most students access their courses from outside the campus. They use their home connection or an Internet café, not the university network.(E9)

More than one expert emphasised the need for training courses, resulting in additional costs—at least in the short term. The application requirements will be discussed later in more details.

On the other hand, some experts were more optimistic regarding the use of OCSNs.

I think these networks will add more value to our education. Especially nowadays, technologies are attractive to the new generation of students. (E10)

5.2.5 OCSN Disadvantages

Unlike the advantages of OCSN, no disadvantages achieved a consensus. As shown in Table 5.10, experts' opinions about these disadvantages are quite diverse. Most experts (77.1%) agreed that OCSNs "can be misused". Similarly, approximately 70% agreed that it "requires more effort to manage the educational process".

Table 5.10: OCSN Disadvantages

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Can be misused	4.04	.922	14.6%	8.3%	77.1%
			7	4	37
Could lead to inequality of opportunity in education	2.81	.982	27.1%	31.3%	41.7%
			13	15	20
May lead to a form of isolation	3.00	1.149	27.1%	41.7%	31.3%
			13	20	15
Waste of time	2.69	1.095	22.9%	54.2%	22.9%
			11	26	11
Additional cost to students	3.04	1.051	35.4%	31.3%	33.3%
			17	15	16
Not suitable for some scientific topics	2.52	1.111	25.0%	22.9%	52.1%
			12	11	25
Represents an unsafe environment	2.96	1.031	27.1%	41.7%	31.3%
			13	20	15
Requires more efforts to manage the educational process	3.69	1.114	6.3%	22.9%	70.8%
			3	11	34

In contrast, more than half of the experts disagreed that using OCSNs is a "waste of time". Another item that showed a high level of agreement (52.1%) that when OCSNs is "not suitable for some scientific topics"

One expert attributed the lack of clarity about the disadvantages of OCSNs to their limited use in education.

> These networks are not widely used in education, so we cannot judge their disadvantages. (E2)

Another expert pointed out a different reason:

> What we missed in this context is raising awareness about these networks. This is the case on the home level or between students or colleges. Until now, we had not learned how to get information through social networks. (E1)

What E1 mentioned is an important point related to the social factor of successful implementation of OCSNs. Implementation needs to be in phases and each phase has its specific aims. For example E1 raises a concern about awareness that should be part of the first phase of any implementation plan of using OCSNs in education.

During the interviews, additional disadvantages were mentioned. One expert mentioned that a correlation exists between users' age and their attitude toward social networks.

> They [social networks] are more fitting for youth than for others. The older generation who rely on traditional methods have a hard time changing. But if an individual developed a tool him or herself, he will be able to use it well. (E2)

As the English language is widely used across the Internet, one expert raised it as an issue that needs to be solved and thus could be considered a disadvantage.

> In my university the main problem toward using technologies is the English language. The students' English language level is very low which makes some of them withdraw from the university. (E8)

In fact, due to the importance of English language in our life nowadays especially in the education field, using OCSNs may help solve such problem by groping students from deferent countries to learn languages. Another important point that can be raised here is the importance of Arabic content on these networks.

The deficiency in students' ICT skills affects OCSN use in the educational context. One expert mentioned that he had difficulty dealing with the wide gap in ICT skills between two groups of students.

> Students' ICT skills need to be improved during the pre-university stage. For example, in one class you will find students who have a provisional level and in contrast, you will find students need to learn how to operate the personal computer (PC). (E9)

Another expert believed that society's attitude towards these networks might affect their uses.

> Most of the Saudi society looks to these networks as entertainment tools. I think this might limit their usage in the educational sector. (E6)

Including society as a factor that can influence the implementation of OCSNs is an important issue. As E6 mention, this is a common concern in

Saudi Arabia because of the absence of the formal use of such tool in education for example.

Changing the educational model will face challenges that need to be addressed during the planning and design stage of the new social network. One of these challenges is teachers who reject change. One expert addressed this issue when she said:

> Regarding teachers, there are three generations of teachers: the older generation who have experiences, the middle-aged teachers and new teachers. Each group has its own interest; for example some of the first group do not recognize the Internet at all... . (E12)

There is a concern about changes in education. One expert said that he is against changes but agrees to developing education.

> I cannot dispense with the traditional method of teaching; perhaps I could develop it, but not change it because it is something important. (E2)

This emphasizes how the study looked at the use of OCSNs in education. As mentioned previously, the study believes that utilizing OCSNs requires changes in the educational environment.

5.2.6 Educational Institutions Benefitting from OCSN Use

In terms of opportunities to benefit educational institutions in higher education, experts agreed to all items listed in Table 5.11, with a standard deviation of less than one and with an agreement level greater than or equal to 80%.

Almost all experts agreed that OCSNs are used to "exchange experiences among university employees". With a similar high level of agreement (95.8%), experts believe OCSNs could be used to promote cooperation between national and international educational institutions, announce academic achievements, and disseminate opportunities and possibilities in the educational institution.

Table 5.11: Educational Institutions Benefits from OCSN Use

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
To cooperate between national and international educational institutions	4.27	.536	4.2%	0.0%	95.8%
			2	0	46
To disseminate opportunities and possibilities in the educational institution	4.27	.536	4.2%	0.0%	95.8%
			2	0	46
To promote research projects	4.27	.676	12.5%	0.0%	87.5%
			6	0	42
To announce academic achievements	4.29	.544	4.2%	0.0%	95.8%
			2	0	46
To raise students' academic level	4.00	.684	10.4%	4.2%	85.4%
			5	2	41
To exchange experiences among university employees	4.35	.526	2.1%	0.0%	97.9%
			1	0	47

Experts also think that OCSNs are useful for promoting research projects (87.5%) and raising students' academic level (85.4%).

At the educational institutions' level, experts emphasise the role of OCSNs as a communication tool to support faculty and students in educational institutions.

Yes, it will help universities announce new rules or policies and communicate between students and teachers. Also; it allows benefiting from experts in other universities. (E5)

If there were a private social network for teachers, it would help exchange experiences with colleagues and update their research projects. (E3)

Of course, no doubt. It could be used to share thoughts and teaching methods on some social networks sites, such as Twitter and Facebook. Also, it could be used to deliver distance training courses from other universities or international developers. (E11)

This is a good sign as it shows teachers are thinking of new ways of using OCSNs. In fact, this reflects their appreciation of the benefits of using these networks to support their work.

Developing teaching and enhancing educational outcomes are important for any educational institutions. An expert reported these efforts and mentioned the role that OCSNs can play.

I think it [the social network] is important. Nowadays, we have course training about the impotence of collaborative learning, interactive learning, and modern teaching methods. So it is important to have a social network, as it will help implement such methods, or we will remain in the traditional education loop. It is difficult to use modern teaching methods in only 45 minutes. (E7)

Again, this is another opinion about the importance of making changes in the education system in order to fit this new concept.

More specifically, one expert discussed the benefit of using OCSNs in libraries. In addition to their use as a communication tool, she stated some other possibilities:

It is necessary to look forward to the world and which tools they use. And what the benefits are from it. We should benefit from the experiences of other [schools] and universities. I noted for example that libraries use social networks; they have a page on Facebook for advertising new books and communicating with readers. (E7)

Another expert noted the success of his colleague in using a social network instead of meeting students face to face during office hours. He described this experiment as a success.

One of my colleagues used these networks for office hours instead of meeting students face to face. He found a good acceptance from students and attendance. (E10)

Believing in the usefulness of OCSNs usage in education is an important factor for success. Providing teachers with models of usage will help to change their attitude toward these networks.

Beyond that, one expert mentioned the possibility of using social networks to solve the private lessons problem, which is not common in higher education in Saudi Arabia.

Something I noticed and it is common between students is relying entirely on private lessons. These networks will help to limit the need for private lessons. (E1)

5.2.7 Society's Benefits from OCSN Use

As it shown in Table 5.12, experts agreed to all opportunities for society to benefit from using OCSNs. With a standard deviation of less than one and an agreement ratio over 95%, experts believe they will increase awareness

about the beneficial uses of these networks and open broad prospects for

knowledge and self-learning.

Table 5.12: Society's Benefits from OCSNs Use

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Allows students to learn at a time and place that suit them	4.27	.574	6.3%	0.0%	93.8%
			3	0	45
Increases awareness about the beneficial uses of these networks	4.23	.515	4.2%	0.0%	95.8%
			2	0	46
Increases improvement and development of educational environment	4.13	.606	6.3%	2.1%	91.7%
			3	1	44
Used as a communication tool between universities and civilian society	4.19	.673	14.6%	0.0%	85.4%
			7	0	41
Develops the level of technical knowledge and skills	4.19	.571	8.3%	0.0%	91.7%
			4	0	44
Opens broad prospects for knowledge and self-learning	4.27	.536	4.2%	0.0%	95.8%
			2	0	46

Regarding the use of OCSNs to develop society, 91.7% of the experts

agreed it will increase improvement and develop the educational

environment as well as help develop technical knowledge and skills. Forty-

five experts (93.8%) agreed to the item "allow students to learn at a time

and place that suits them".

Despite the widely mentioned use of OCSNs as a communication tool,

there seems to be a concern about communication between universities

and society as 14.6% of experts were not sure about using them for this

purpose.

E12 highlighted a negative perception about using the Internet among Saudi society which can be clarified if social networks are used in education.

> I believe that the greatest influences on the use of the Internet are society's customs and traditions. Because most people seem to be Internet users; even if they study, they use the Internet passively. This point of view is rooted in most segments of society, whether educated or uneducated. (E12)

Of course, E12 undoubtedly emphasized the importance of the social factor on OCSN implementation. In addition, E12 stated the Internet usage type among Saudi society, as mentioned in the literature review (Chapter 3). This manifests the difficulty of changes in educational environments as its impact extends to society and vice versa.

E12 further mentioned that the use of social networks to communicate with people has become widespread nowadays compared to face-to-face communication.

> It is a society's orientation, whether Saudi or other communities. I mean using technologies and communicating via social networks are more common than communicating face to face. If we use it in education I expect they'll learn better and will accept information better (E12)

E1 mentioned the needs of educating and training society about information-searching skills. He mentioned that OCSNs could play a role in developing such skills. In his answer about society's benefit from using OCSNs, he said:

This is an important point …. The spread of awareness is something lacking among family members of students and even among teachers […]. To date, there has been a shortage of information about how to use social communication to search for information. Anyone now can educate him or herself without needing to come to classes or lectures.(E1)

E1 stated his concern over the shortage of awareness about OCSNs usage. This issue has been mentioned more the once during the interviews stage. This lead to estimate that the current use of OCSNs could be individual experiments because it is not able to educate society about these networks.

Another expert mentioned that Saudi society could benefit from OCSN use to support students in small cities and villages, as a number of universities provide distance-learning courses.

Saudi society might benefit from networks to support learning management systems, which enable the citizen in small villages and cities where there are no universities to enrol in higher education programs. (E6)

5.2.8 Need to Develop OCSN Usage Policies

OCSN usage policies were one of the study main questions investigated using the Delphi method and interviews. The final results of the Delphi method are listed in Table 5.13. The table shows that 87.5% of experts on the panel agreed that online social network use regulations need to be developed; the same percentage of experts agreed that higher education legislation needs to be developed to promote OCSN use.

Two additional items showed consensus: "develop online social network usage policies" (83.3%) and "develop distance learning and e-learning policies" (85.4%).

Despite the high percentage of agreement (79.2%) and based on the study's consent roles (see page 171), experts' beliefs about the need to develop intellectual property right policies are considered to show disagreement.

Table 5.13: OCSN Usage Policies Need to be Developed

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Develop online social network usage regulations	4.15	.618	12.5%	0.0%	87.5%
			6	0	42
Develop online social network usage policies	4.08	.647	16.7%	0.0%	83.3%
			8	0	40
Develop intellectual property right policies	4.19	.816	18.8%	2.1%	79.2%
			9	1	38
Develop distance learning and e-learning policies	4.23	.692	14.6%	0.0%	85.4%
			7	0	41
Develop higher education legislation to promote OCSN use	4.19	.704	10.4%	2.1%	87.5%
			5	1	42
I know about social network usage policies in higher education	2.52	.945	33.3%	52.1%	14.6%
			16	25	7

Finally, the results showed a wide distribution of experts' answers in terms of whether they know about social network usage policies in higher education. Approximately 15% said that they know about them and 52.1% did not. For the same item, one-third of the experts selected "Neutral" as their answer.

With the same variation of opinion about this aspect, experts' opinions during interviews were also definite. One expert linked the need to develop any system to three main factors: internal factors, international factors, and research results. He argued that Saudi society is part of the world and any change in the world will reflect on it sooner or later. He disagreed with the phrase "speciality of Saudi society" and believed there is no difference between Saudi educational requirements and those of any another societies.

> I summarise it in three main factors and under each one there are a number of sub factors. These are internal needs, international changes, and research results. [...] The international factor—because we cannot isolate ourselves from the rest of the world, we cannot. Usually they say the speciality of Saudi society; there is nothing called a speciality nowadays. As evidence of that, cities now have melded together. I mean what happens internationally will have effects—it might be a slow effect, but it occurs. I am talking about education only; I repeat, education only. (E1)

In fact, the link between these networks and society as mentioned by other experts is remarkable. Despite that, E1 believed that the world is a small village, as mentioned in Section 3.4.1, and argued that OCSN implementation can be separated from the social context.

Another expert shared a different opinion. E11 believes that OCSN usage policies exist as well as on the speciality of the Saudi society and others related to usage aspects.

> I believe there are a number of policies. Some of them are related to the Saudi students' speciality; I think it is important if it relates to young students. There must be policies to protect their privacy.(E11)

Expert E11 emphasised the importance of other policies, such as use time and the minimum requirement for implementation of OCSNs in education.

> We needs to develop policies to manage time use and the minimum requirement needed to be in the university in order to implement these social networks and allow students to benefit from their use.(E11)

As previously mentioned, some experts did not know about the existence of OCSNs' usage policies in their universities. One expert questioned the existence of OCSN usage policies.

> Regarding your question about which policies need to be developed, I do not know—are there usage policies in Saudi higher education? I do not have any idea. (E7)

One expert mentioned that the needed policies exist, but have not been applied.

> At the moment, I do not see that we need to develop new policies or even to change them. The policies exist, but we need to encourage people to apply them. (E6)

Sometimes small things could cause serious problems. Failing to pay attention to the important parts, however small they may be, could undermine the whole effort no matter how much resources are devoted to it. What E7 and E6 mentioned is important, it could be that policies do not exist or even the worst scenario that they exist but are not reaching the target audiences.

Another expert disagrees with the use of polices to monitor the use of OCSNs. He argued that today's students have skills to break any barrier that stands in their way.

> That is true, we need to provide help and support, not inspection. Polices to encourage students to use these networks and how to use them. Policies become weak; youth can do anything. I mean if there is a content filter on a website, they can bypass it. (E2)

There could be a misunderstanding about the meaning of policies and technical control. This highlights the need of training and awareness programs as part of the implementation plan. Another point raised, as mentioned in Section 2.2.1, is filtering Internet content in Saudi Arabia in order to protect users from unsuitable content (from religious and cultural perspectives).

Furthermore, one expert mentioned that developing polices is not enough to achieve successful implementation of OCSNs. He emphasised the importance of higher leaders focusing attention on these technologies.

> Of course it is necessary to develop usage policies. They need to be issued from government departments such as the Ministry of Higher Education of Universities. If the rector of a university is interested in OCSNs, for example, this will affect others and make them cooperate and pay more attention to this subject. But if higher management is not interested in this implementation, then the implementation of social networks become useless and just for ISO or quality assurance certificates. (E8)

The policy dimension for promoting OCSNs usage is important and should be included as the main part of any implementation model. As E8

suggested, the position of the decision-maker who issues the usage policies will affect the acceptance of their implementation. In this study, a framework of OCSNs educational usage policy was developed and discussed in chapter 6.

5. 3 Factors which Might Affect OCSN Use

The previous part of this result report that mainly focused on social networks and their use. The final Delphi method questionnaire, as mentioned in Chapter 4, grouped the items into four categories—technologies, pedagogy, social network, and content—despite the difficulty of distinguishing among them. This part examines factors that might affect the use of social networks in Saudi higher education in terms of positive or negative impacts or potential employment opportunities. These factors can be divided into three categories: technological issues, pedagogical issues, and content issues.

5.3.1 Technological Issues

The experts raised several items related to technological issues in OCSN use.

5.3.1(i) Equipment

During the final round of the Delphi method, experts were asked to rate the five items listed in Table 5.14. As the table indicates in the summation of

the last two columns (very important and important), all items showed more

than 80% agreement and a standard deviation of less than one.

Table 5.14: Technological Issues: Equipment

	Mean (N=48)	Std. Deviation	Unimportant	Of low importance	Moderately Important	Important	Very Important	Rank
Provide required software for networks usage	4.33	.694	0.0%	2.1%	6.3%	47.9%	43.8%	3
			0	1	3	23	21	
Provide Internet infrastructure in areas where not available	4.73	.494	0.0%	0.0%	2.1%	22.9%	75.0%	1
			0	0	1	11	36	
Provide computer labs that are necessary for communication	4.31	.854	0.0%	6.3%	6.3%	37.5%	50.0%	4
			0	3	3	18	24	
Update management system to suit use requirements	4.44	.649	0.0%	2.1%	2.1%	45.8%	50.0%	2
			0	1	1	22	24	
Use e-learning management systems to support such applications	4.31	.657	0.0%	0.0%	10.4%	47.9%	41.7%	4
			0	0	5	23	20	
Provide multi-language applications	4.21	.683	0.0%	0.0%	14.6%	50.0%	35.4%	5
			0	0	7	24	17	

The results indicate the importance of providing an Internet infrastructure in

areas where it is not currently available, which ranked at the top for

importance. In a close second, experts agreed that updating the university

management system to suit use requirements is important. Based on the

items' mean, a slightly difference occurred between items ranked third and

fourth (4.33 and 4.31 respectively), but it is worth mentioning that three

experts (6.3%) rated "provide computer labs that are necessary for

communication" as having low importance. Providing multi-language applications ranked fifth, with a mean of 4.21 and a standard deviation of 0.683, although no one rated it as unimportant.

This issue was comprehensively investigated during the interview stage. The experts on the panel represented five universities; some of them have a good infrastructure and others do not. This is reflected in their answers and opinions about the issues.

In this context, one expert emphasised the importance of conducting research before applying these technologies. These studies aim to research the infrastructure in these schools.

> First of all, we need to conduct comprehensive research to study schools. We need to know the ability to implement such networks. For example, maybe it needs an Internet connection or information technical specialist. (E1)

Regarding the technological infrastructure issue in Saudi universities, experts noted mainly two points of view. Some mentioned that their universities have a good infrastructure.

> I expect that now Saudi universities (thank God) have jumped substantially in infrastructure and in the use of technologies and the Internet, and I did not believe these networks needed a complicated infrastructure. I expect that most Saudi universities can use social networks easily as part of the educational process. I mean, all that is needed are a high-speed Internet connection and computers which are available. (E7)

> I think the technological level in Saudi Arabia, compared with many countries, is a positive factor because technologies are available for everyone. This is a positive point and we need to benefit from it. (E9)

Communications networks within the university are excellent when using the internal network to browse the Internet. (E5)

The Internet connection available at the university campus is wireless; and at the same time everyone have/has a username and password so we can access to the university website from home. The infrastructure in the university is excellent. (E8)

Other experts mainly emphasised the need to develop their universities' infrastructure in order to implement such applications.

I will talk about [...] University. The university infrastructure needs to be developed. It is available, but needs to be developed. We have problems in computer labs and a limitation of computer availability for students. (E2)

Computer labs are often available and open as well as the library, where a number of computers can be used. It is true these labs might be busy during lectures and something needs to be developed. In the past we needed to use classrooms more than computer labs, but today the opposite is true. (E5)

If my university had computer labs like [...] University—it has computer labs available 24 hours a day, 7 days a week—I would not accept any dereliction from any student. Now in [...] University, we have new computer labs and a good infrastructure, but there is no flexible access to it. Students are not allowed to use it when they need it. (E3)

This diversity of opinions about technological infrastructure among the five universities emerges from the diversity of the study's targeted universities. The variation of capacity, location, and charter causes the richness in opinions.

Another expert suggested a solution for the limitation of ability to access to the Internet in general. He argued that increasing the number of personal computers or providing students with laptops with access to a high-speed wireless network will solve this problem.

> Yes, the computer labs are insufficient and it will be even more insufficient if the university expands the use of social networks and the Internet. Each student must have access to a computer or we need to provide students with laptops and provide a strong wireless network within the university. (E5)

Communication networks, including landline and mobile networks, were mentioned more than once during the interview stage. One expert believed that the communication network is not suitable for implementing OCSNs.

> This is an important point; the idea of using social networks is a great idea. Really, it is the starting point for increasing the quality of Saudi education if it applied, but this ultimately depends on the communication infrastructure. Do we have the communication infrastructure that supports this trend? We are now in 2012 and suffer from slow communication. How do they implement such networks? (E12)

Other experts mentioned that communication infrastructure differs from area to area.

> In some areas there is a good connection to some extent, while in other areas it is difficult to browse the Internet in an acceptable way. (E5)

> Without the availability of high-speed and reliable communication networks, these applications will stop. […] For example, when we enter the campus, the mobile network disconnects or sometimes become very slow.(E12)

It seems to be challenging to implement OCSNs, at least in some universities as it can be seen from the previous five quotes that the technological infrastructure in Saudi universities is debatable even among experts from the same university. Major reasons for these infrastructure issues is due to the expertise level of ICT skills in their IT department or inconsistent access to good technical equipments between colleges (schools).

Despite its availability at all five universities, the wireless network at universities is not always reliable.

> The network [wireless communication network] exists, but I think it is not able to accommodate a large number of students using mobile devices and laptops instead of computer labs. (E5)

Another expert mentioned that most of the students access the Internet from outside the university campus.

> Mostly, students use the Internet from outside the university campus. They access their modules via their personal computers at home or Internet cafés, and not from the university.(E9)

One expert compared the ratio of using the Internet among Saudi Arabia, the United Kingdom and the United States. He mentioned the need to educate society on how to use these technologies in order to maximize their benefits.

> The biggest problem we have in Saudi Arabia is not the lack of an adequate infrastructure. The latest statistic I came across illustrated that Saudi Arabia has 10 million Internet users; almost one-third of the Saudi population uses the Internet compared to 83% in the United Kingdom and 79% in the United States. In addition, users did

not have computer skills to help them use social networks and the Internet in an appropriate way.(E11)

Furthermore, this expert (E11) believed that the wide use of smart phones in Saudi society will lead to an increase in the use of social networks.

> One thing[that is] entirely positive …[regarding] the use of social networks is the spread of smart phones like iPhones and Android phones in Saudi society, as all of these phones support social networks and have social network apps such as Twitter and Facebook. (E11)

As mentioned in the literature review (chapter 3 section 3.2.1), Saudi Arabia has one of the highest number of social networks user in the Arab world. Using mobile phones could be the reason behind this result, as E11 indicated.

From a practical perspective, one of the experts illustrated her implementation of a social network. She started using a private social network, but because of communication and technical support difficulties, she decided to use Facebook instead of the private social network.

> I had an experience with my students before […]. We agreed to create a website on the Internet and use it to communicate between us, but we faced communication and technical problems. As you know […], the Internet connection in Saudi Arabia is very weak. I solved this problem by using Facebook; as you know, Facebook is easy to use and has support. (E12)

Specialized IT hardware plays an important role for the successful implementation of OCSNs in education. It is, however, not enough to provide such equipment without long-term plan for its use and support.

5.3.1(ii) Training

As previously mentioned, training was one of the OSCN requirements. The final round questionnaire included four items related to training. These items are listed in Table 5.15, along with experts' ratings. Only one item did not achieve the consensus level based on the study judgment method. With a 72.92% agreement ratio, thirty-five experts agreed that training is important because of the lack of computer education.

Providing training on technology use to faculty members achieved the highest level (93.75%) of agreement in this area, as shown in the table. In the same context, training students to deal with these types of sites also met the consensus level, as 43 experts (89.58%) agreed that it is required.

Table 5.15: Technological Issues: Training

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Training faculty members on technology usage	4.54	.617	6.3%	0.00%	93.75%
			3	0	45
Training students to deal with these types of sites	4.35	.863	6.3%	4.17%	89.58%
			3	2	43
Include OCSN use skills in computer modules	4.02	.887	12.5%	6.25%	81.25%
			6	3	39
Training is important because of the lack of computer education	3.92	1.028	18.8%	8.33%	72.92%
			9	4	35

Similarly, most experts (81.25%) agreed to include OCSN usage skills in computer modules. It is also worth mentioning that six experts (12.5%) disagreed with this action.

During the interviews, experts raised a number of issues relating to the current situation of training in their universities. They also described their thoughts about the need for training programs and other issues related to this aspect.

One expert emphasised the importance of training and the urgent need to provide training programs. She argued that it is more important and simple than providing universities with computers and high technologies.

> Higher education in Saudi Arabia needs something simpler than supplying universities with computers and high technology. There is a lack of technical preparation and curriculum design among faculty. In our current situation, I believe that using social networks will add little to higher education. (E7)

In fact, this is what the SNTPCK model illustrates: the implementation of OCSNs need to cover the four dimensions (social network, pedagogy, technology, and content knowledge).

Another expert from a different university described his university's efforts in this field, although he disagreed with focusing training programs on faculty members only. He indicated that students should have training also as using these technologies is a combined work between teachers and students.

> There is a new vice rectorate established recently called vice rectorate for development and quality. It runs training programs for faculty members on how to design electronic courses content and how to use technologies to enhance educational outcomes, but these training programs are for faculty members only. What is the

benefit of training faculty alone? We need to train all students because this is a joint effort between teachers and students. (E8)

Students' need for training was noted by another expert as well. Despite his teaching in a computer engineering department, he noted his students' skills level as evidence of the need for student training programs.

> Unfortunately we need a lot of development. Our students have basic skills for using social networks such as Twitter and Facebook; they gain it from self-learning, not from formal education. […] I think this issue needs more attention because even within our department, computer engineering, where students are supposed to be distinct in this field, I see a lot of weakness. (E11)

Implementation of OCSNs in education requires involving different levels of users such as teachers, students, and others. Each level of users has its own training needs. Ignoring any level will affect the success of adapting of OCSNs in education.

Regarding the need for training on the use of social networks or the Internet in general, E7 believed that the need differs from school to school. This need extends to include scientific schools, such as a school of computer science.

> I will talk about the school that I am working with currently, which is the School of Computer and Information. Students are easily able to use the Internet, but that does not mean limiting the training courses. [...] As we mentioned before, students need to increase their awareness about security and privacy, especially in social networks. I think other schools need more training because they do not use the Internet continuously. (E7)

This emphasizes the importance of analysing the training needs before implementing OCSNs in education. Obtaining information about the training needs will be very useful as a solid base for planning and designing part of the OCSNs implementation process.

This is not the same case in all universities. An expert from a new university mentioned that his university has an excellent technical infrastructure. He argued that faculty members have the required skills from training in their previous universities as most of them came from international universities.

> Regarding […] University, there is plan to be an electronic university but in sequential phases. In my opinion, the university has a very, very good infrastructure from the technical side. Faculty members are trained in using technologies because they came from international universities. (E8)

Sharing experiences between faculty members in Saudi higher education and other experts from international universes could be one of the OCSNs usages in education. From the E8 quote, it can be expected that, there is a gap between faculty members in ICT skills, especially those who graduated from Saudi universities, which indicate the level of ICT skills in these universities.

In general, challenges are always encountered during any change in the education sector, and training is a part of that. E12 classified teachers into three generations and he quoted an experiment to indicate that the older generation resists changes.

> Teachers can be categorised into three generations. The older generation are the owners of the experience in the university and are valuable to any university; the other categories are middle-aged members and new members. Each generation has its own goals. For example, the first category does not recognize the Internet at all. I asked a group of them to encourage students to use the Internet, but they rejected the idea. How will they communicate with students via social networks if the idea of using the Internet is not acceptable to them? (E12)

Resisting change is something expected, as mentioned in the educational change theory (Chapter 3, Section 3.4); it needs to be well planned and should take the required amount of time.

One expert stated that students would learn how to use the social networks faster than teachers, which could cause a gap regarding the use of OCSN skills between students and teachers.

> Students could learn how to use social networks faster than their teachers. This might lead to a gap between them in their skills and ability to use social networks. (E4)

E4 suggested using encouragement in addition to training programs to change the students' attitude toward using social networks. He believed in providing real examples or models for using social networks in education to encourage teachers to use them, especially if these examples come from their educational environment.

> The other important thing is stimulating faculty members by prizes such as scholarship or research funds from the university. […] For example, I remember a successful experiment in […] University when we encouraged designing educational content for our courses. We came up with very useful models, which encourage other faculty

to think about using technologies. If they believe in using social networks and easily find models for its usage, they will encourage their use.(E4)

This is another indicator for the need of a model to guide and support the usages of OCSNs in education.

In terms of student training, one expert recommended extending training to cover students in the early stage of education. He suggested integrating these technologies in secondary school (high school) curricula to avoid technological shock among students.

The use of technology needs to be started from early age rather than leaving it until the university stage and shocking students with its usage. I suggest implementing these technologies in secondary school, especially as they now have a curricula development project. (E8)

The integration between currently conducted projects in education is an important point. If careful planning was not exercised, some or all of these projects might be subjected to failure.

5.3.1(iii) Support

During the first round of the Delphi method, experts pointed out a number of OCSN support requirements. These requirements are listed in Table 5.16, along with the voting result from the final round of the Delphi method.

Approximately half (54.2%) of the experts agreed to the importance of providing a computer club in each facility, with a standard deviation of more

than one (1.027); thus, this item does not achieve the required consensus conditions.

Almost all the experts (46 out of 48) agreed that providing technical support for users is required to succeed in OCSN use. Similarly, 91.7% of the experts believed that faculty members' attention is important in the success of use.

Table 5.16: Technological Issues: Support

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Provide a computer club in each facility	3.50	1.072	25.0%	20.8%	54.2%
			12	10	26
Provide incentive programs to encourage the use of technology	4.06	.598	8.3%	2.1%	89.6%
			4	1	43
Provide technical support for users	4.46	.582	4.2%	0.0%	95.8%
			2	0	46
Develop educational programs about the use of new technologies	4.21	.617	10.4%	0.0%	89.6%
			5	0	43
Set up a national strategy to take advantage of new technologies	4.17	.781	10.4%	4.2%	85.4%
			5	2	41
Faculty members' attention is important to the success of use	4.35	.785	6.3%	2.1%	91.7%
			3	1	44
Reduce the cost of Internet connections to encourage the use of OCSN	4.31	.903	16.7%	2.1%	81.3%
			8	1	39

Moreover, and with a similar ratio of agreement (89.6%), experts agreed that providing incentive programs to encourage the use of technology and developing educational programs about the use of new technologies are

necessary to achieve the aimed success level of OCSN use. Regarding the development of a national strategy to take advantage of new technologies, 41 of the experts (85.4%) agreed that it is important for application success.

Last but not least, reducing the cost of Internet connections to encourage the use of OCSN also achieved consensus, based on the study judgment method as 39 experts (81.3%) think it is important. It is worth mentioning that 8 experts (16.7%) remained neutral.

In the same context, during the interviews, experts mentioned a number of aspects related to technological support issues. Raising awareness about the use of social networks was the most important aspect of the support issue for one expert, who assumed that social networks will become useless if faculty members do not believe in the benefit of this kind of network.

> It depends on the vision of the faculty members towards these networks. If they look at it for communication and fun only, the benefits will be limited. We must enlighten faculty members about the benefits from using these networks for educational purposes. This is important to encourage them in training programs. (E7)

Another expert also mentioned this situation.

> A number of difficulties might be faced in this project [the use of OCSNs], such as communication networks and the desire of teachers and students to use it. (E5)

Not all experts agreed. For example, one expert mentioned that her students usually enjoy educational activities on social networks, although

she emphasised the importance of providing support to both teachers and students.

> I always think of these aspects. Students usually prefer the Internet and social network activities. I find them more active and creative compared to using pen and paper. But if the teacher and student did not receive the appropriate support, I think it would be difficult. (E12)

The gap between students and teachers in the ICT skills may cause some kind of resistance to the use of OCSNs in education. This point needs to be kept in mind when planning for implementation. In fact, implementation needs to be a very comprehensive project.

These considerations were supported by another expert, who argued that developing the technical support team's skills on these networks, is more important than providing hardware.

> This needs to develop the technical support team on how to use these networks and then make them responsible for educating and training teachers and students. I think we need to spread awareness of these networks among teachers and students more than anything else, such as tools and equipment. (E11)

Providing tools and equipment is important and raising awareness is important too. That is means that both components in any project have almost the same contribution to the project overall success.

One example of how to raise students' awareness about using social networks was an expert's method to encourage students: he starts by announcing the benefit of using social networks between students and the appropriate method.

> If I decided to use Facebook, for example, with my students for educational purposes, I would start to talk about its benefit and how to use it. We have a problem advertising such things; this is something common in all Arab countries. (E2)

Another expert moved beyond this way of advertising the uses of these social networks. She thought that the participation of the director of the university or the minister of the Ministry of Higher Education would attract students to use the networks, although she questioned the possibility of their implementation.

> These networks must be have something attractive for students, such as having discussion with the director of the university or the minister of the Ministry of Higher Education. Do you expect they will give part of their time for these networks? (E12)

This is a critical question. No doubt, participating teachers and even higher position staff will encourage students to participate. Indeed, this is a recommendation from a study mentioned in Chapter 3.

Another expert had no concerns about the acceptance of OCSNs in Saudi society.

> The Saudi society is open to technologies in general. Even in small villages, students are able to use these networks. (E10)

Another expert noted that there are students who need financial support in order to access the Internet from off campus.

> Students' income level is something we need to consider because using these networks requires an Internet connection. (E12)

Implementing OCSNs in education requires doing so through a comprehensive project that considers all the factors mentioned previously.

5.3.2 Pedagogical Issues

This part illustrates the second category of factors that can affect OCSN use. As found in this study, using social networks requires changing and using new concepts. This part of the study's results will focus on pedagogical issues related to using OCSN's in Saudi higher education and partially on the teaching and learning process. In general, the experts discussed these issues from four dimensions: teaching model, evaluation, assessment, and pedagogical support.

5.3.2(i) Teaching Model

The final round questionnaire included seven items related to the appropriate teaching model dimension. These items covered aspects connected to OCSN use support or as a requirement of this use. In addition, experts included a number of factors regarding the change in the teaching model.

As shown in Table 5.17, four of the seven items achieved consensus, although less than 11% disagreed with any item. With the highest agreement ratio on this side, 42 experts (87.5%) agreed that using OCSNs will contribute to making education collaborative between students and will allow students to learn from their peers. In addition, 83.3% of the experts believed that OCSNs can be used as part of the learning environment and require special assessment methods.

Table 5.17: Pedagogical Issues: Teaching model

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Requires changing the learning environment to an interactive learning environment	3.94	.861	14.6%	6.3%	79.2%
			7	3	38
Can be used as part of the learning environment	3.94	.810	10.4%	6.3%	83.3%
			5	3	40
Requires special assessment methods	4.10	.778	12.5%	4.2%	83.3%
			6	2	40
Requires special teaching strategies such as programmed instruction	3.83	.883	10.4%	10.4%	79.2%
			5	5	38
Allows students to learn from their peers	4.15	.618	12.5%	0	87.5%
			6	0	42
Requires adding its usage skills as a module requirement	3.81	.915	20.8%	8.3%	70.8%
			10	4	34
Contributes to making education collaborative between students	4.13	.672	10.4%	2.1%	87.5%
			5	1	42

Meanwhile, two items did not achieve the required consensus level: requires special teaching strategies such as programmed instruction and requires changing the learning environment to an interactive learning environment, despite its high agreement ratio (79.2%). With the lowest ratio of agreement (70.8%), experts believe that using OCSNs require adding usage skills as a module requirement.

These issues were discussed with experts during the interviews. Experts had a variety of opinions about the need to change the teaching model as a requirement for using OCSNs in Saudi higher education. One expert mentioned that her university provided training programs on new teaching

methods, such as cooperative learning and interactive learning, as well as other methods. She believed that these methods are not executable with the current teaching method (traditional teaching method).

> As faculty members, we currently have training programs on the importance of cooperative learning and interactive learning methods as well as other modern teaching methods. Therefore, the existence of social networks will ease the use of these methods. It is impossible to use these methods during 45 minutes as it is in the traditional method. (E7)

Similarly, one expert argued the importance of using OCSNs as a platform for modern teaching methods. He described an example of using OCSNs to apply the problem-solving teaching method.

> As you know, problem solving is an important learning style. For example, I set up a discussion topic with my students about a scientific problem. Students discuss this problem and try to find a solution. For me, it is important to communicate with them via the social network and comment on their participation. (E2)

E7 and E2 pointed out the possibility of changing the learning theory or developing tools that can accommodate the use of OCSNs in education. Indeed, this is shown in the strong relationship between the four types of knowledge described in the SNTPCK model.

Related to the teaching method, E1 mentioned that using social networks will help change traditional education as he described it through indoctrination, a term used in Saudi Arabia to describe the traditional education, especially if the person has a negative attitude toward this type of education (for more detail about traditional education in Saudi Arabia, see Section 2.4.1). Teachers are no longer required to finish the module

content during class time as these networks allow students to learn in a

flexible time by using smart phones, for example.

> Perhaps we can get rid of the traditional education—I mean
> indoctrination. As you know, teachers are required to cover certain
> chapters within a limited time. If we use social networks, students
> have a chance to learn without such limitations, especially with
> existing smart phones. (E1)

Not all experts are against traditional education. One expert emphasised

the importance of the traditional education style and illustrated that the

main reason for using OCSNs is to improve this type of education, not

change it.

> That does not mean using social networks instead of traditional
> education. These are tools to develop and to improve education.
> From my point of view, using social networks is useful in education,
> especially with the young generation—the university generation.
> (E2)

In order to clarify his idea, he added the following example:

> I cannot refuse the use of traditional tools in education. I could work
> to improve the traditional education, but not to deny it. I cannot ask
> faculty members to teach without a blackboard, but I can ask them
> to use blackboards and social networks. (E2)

Implementing technologies in education is a debatable topic. Expert E2

specified the role of OCSNs in education. He pointed out it will not lead to

ignoring the traditional education methodologies but will rather support it.

Another expert had the same point of view regarding the use of OCSNs as an assisting tool. She suggested using these networks to support traditional education, not replace it.

> I think [social networks] can be used as assisting tools—as part of the traditional education, not a substitute for it. Teachers could complete the lecture via the social networks. It is difficult to refuse traditional education. (E7)

Another expert argued that the type of the subject is important for deciding which method or tool to use. Based on his experiences, he noted that a white smart board is not useful to teach subjects like equation derivatives. He believes his module is more suitable for using social networks as it is mainly about theoretical concepts.

> The smart board for example has a problem when it is used to teach mathematics. Because mathematics is mainly equations and derivatives, I think the correct way to teach it is using a blackboard. My module is mainly theoretical concepts, so I can teach it via social networks. (E4)

The last two quotations from E7 and E4 raise an important point. No doubt, using OCSNs in education does not need to be a super size jacket that can fit every one. On the contrary, it should be flexible enough to allow using it in certain situations and in the light and control of the others dimensions such as pedagogy, technology, and content.

Another expert mentioned that using OCSNs will allow students to study part time, as this type of education usually uses social networks to support teaching and learning.

Nowadays, learning time is extended to include home and even work time. This type of education is widely applied in the USA and Europe. During break time, students can access their courses and participate in discussion topics. (E1)

5.3.2(ii) Evaluation

Evaluation is the second dimension discussed from a pedagogical context of using OCSNs to enhance higher education in Saudi Arabia. Experts focused primarily on the possibility of using OCSNs in the evaluation process. In addition, the possibility of using OCSNs in the evaluation focused mainly on content. These uses are described in detail in Chapter 5.3.3-c.

Table 5.18 indicated that experts agreed with all the items listed. Forty-five (93.8%) agreed to use students' participation to access their opinions about the module. Another possibility for using OCSNs for evaluation purposes is to set up discussions about the module evaluation. Forty-four of the experts (91.7%) agreed on this usage. Using OCSNs to distribute questionnaires for evaluation purposes is also a potential use according to 44 of the experts (91.7%).

Table 5.18: Pedagogical Issues: Evaluation

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Using students' participation to access their opinions about the module	4.17	.519	6.3%	0.0%	93.8%
			3	0	45
Set up discussions about the module evaluation	4.25	.601	8.3%	0.0%	91.7%
			4	0	44
Distribute questionnaires for evaluation purposes	4.21	.743	6.3%	2.1%	91.7%
			3	1	44

In general, using OCSNs in the evaluation process was discussed during the interviews. In addition to what was listed in the table, experts raised other ideas related to this issue. For example, one expert mentioned that OCSNs could be used to evaluate modules' content and teaching process from students' and other teachers' points of view.

> Yes, of course there is no doubt these networks can used to receive feedback from my colleagues and my students about the course. This can extend to include equipment available in the school. (E11)

Another expert agreed with E11's point of view. He believed that it is possible to use OCSNs to evaluate teacher performance. They could also be used to evaluate plans and teaching methods.

> There is an important point which is the teacher evaluation. Moreover, we can use them [social networks] to evaluate a content development plan and teaching method. (E12)

OCSNs will open a window for society and other experts outside the educational institutions to participate in evaluation processes. Indeed, one expert quoted his experience from sharing his published works online and receiving feedback from different countries.

> The existence of these technologies and networks allow us to share our experiences with others outside the university. I will give you an example about myself. I published one of my papers online and I received comments and questions from the United Kingdom and the United States. (E1)

These networks can also be used to provide feedback about students' assessment results. One expert suggested using social networks to share students' works and provide them with feedback about the assessment results. He emphasised the importance of continuous feedback to the students in order to enhance their level instead of receiving this feedback as a result at the end of the semester.

> A student needs to follow up on his assessment and receive feedback about the result. I mean, when you receive feedback about your test or homework on the same day or in a short time, this will encourage you to work harder next time. The problem is when a student does not receive any feedback until nearly the end of the semester. At that time, the student is unable to enhance his level (E12).

He further suggested funding small projects like a group of students cooperating to author a book. These projects could involve international universities in order to participate in or evaluate the final work.

> It can also support this use by funding small projects via these networks, such as support a group of students to write a small book by using social networks to communicate and share their work between them. This project could involve international universities to participate in or evaluate the work. (E12)

E12 mentioned useful tips for changing students' attitudes toward using OCSNs. In fact, if students do not have a positive attitude about using these networks, this will adversely affect their usage.

5.3.2(iii) Assessment

Assessing students' achievement level is the third pedagogical dimension addressed by this study. As shown in Table 5.19, this dimension included the fewest items to achieve the consensus level. Only two items achieved this level.

In general, only 17 experts (35.4%) agreed that OCSNs are valid for student assessment; the same percentage has the opposite opinion about this issue. Experts accepted the use of the quality of posts and using students' cooperation as part of student assessment, with agreement ratios of 87.5% and 85.4%, respectively. Yet only 31 experts (64.6%) agreed to use the number of discussion posts as part of student assessment. The table also shows that around half (52.1%) of the experts agreed to use peer assessment as part of the student assessment.

In terms of the type of information or skills that can be measured via OCSNs, 72.9% of the experts believe that they can be used to measure students' understanding. Another possibility of using OCSNs to support assessment process as quoted by experts and included in the final round questionnaire is as a test platform. Three-quarters of experts agreed to this use, but eight experts remained neutral, meaning that this item did not achieve the required level of consensus.

Table 5.19: Pedagogical Issues: Assessment

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Using the number of discussion posts as part of students' assessment	3.56	1.009	18.8%	16.7%	64.6%
			9	8	31
Using the quality of posts as part of students' assessment	4.23	.778	8.3%	4.2%	87.5%
			4	2	42
Using students' cooperation as part of students' assessment	4.13	.703	12.5%	2.1%	85.4%
			6	1	41
Using peer assessment as part of students' assessment	3.46	1.110	27.1%	20.8%	52.1%
			13	10	25
Allows measurement of understanding	3.83	.724	22.9%	4.2%	72.9%
			11	2	35
Can be used as a test platform	3.79	.988	16.7%	8.3%	75.0%
			8	4	36
OCSNs valid for student assessment (R)	3.04	1.051	35.4%	29.2%	35.4%
			17	14	17

Note: (R) is a reversed item

Experts discussed this issue during the interviews and came up with additional ideas related to the use of OCSNs in students' assessment process. These ideas varied to include the diversity of participants' opinions in the previous table.

One expert reported that using these networks requires using different assessment tools. He believed that developing teaching methods also requires developing assessment tools to suit these methods.

> Developing education requires new assessment tools; if we used social networks for example I can't assess their work by using traditional assessment tools such as tests. I need to develop new assessment methods able to measure their performance. (E2)

Experts mentioned a number of ways to use OCSNs to assess students'

achievement. One expert mentioned announcing homework, assignments,

and discussion topics.

> I can use it as an official communication tool between me and my
> students. I can use it to announce homework, assignments, and
> discussion topics and to update related things, such as changing
> times or places. […] This is something that exists in international
> universities. (E3)

Cooperative research and discussions in OCSNs can be used as

assessment tools. One expert suggested these uses and emphasised the

importance of quick feedback for students' achievement.

> Yes, we can use it in education, for example to talk about a topic
> and then assess the students based on their participation. In
> addition, we can activate scientific research by using these [OCSN]
> networks. Students can collaborate in researching a problem as part
> of their assessment. Students receive feedback immediately when
> they finish their assessment. I think this is an attractive way to
> encourage students to participate. (E12)

However, it seems that there is a concern about the validity of using

OCSNs as assessment tools. One expert cautioned that these networks

should be moderated by the university or Ministry of Higher Education

when used as assessment tools.

> If the social network is moderated by the university or Ministry of
> Higher Education, we can use it for more than communication. We
> can use it for assessment; I can use students' discussions as part of
> their assessment. (E3)

OCSNs' reliability was another point raised in this context. One expert indicated that these networks are invalid for conducting asynchronous assessments such as tests. He based this concern on the reliability of the communication network.

> I think it is very convenient to use at [...] University and, I expect, at most Saudi universities. I think there is a risk to use these networks for exams. You do not know—maybe after ten minutes students lose their connection to the Internet. [...] How can the teacher prove that the Internet connection was lost? (E4)

In the previous two quotes, expert E3 and expert E4 indicate the difference between formal and informal use of OCSN in education. Using these networks in formal education settings will allow for more applications.

Yet others believed that the OCSNs were not a suitable tool for assessing students' achievement. One expert even argued that using OSCNs as an assessment tool will negatively affect students' attitudes towards the use of these networks.

> Students enjoy the use of the Internet and social networks in an unofficial way of their study. They like to use them for discussions and to have a fun time with their colleagues. If we start to use them for homework and assessments, students will become bored and will not accept the idea of using social networks in education. (E12)

This is does not mean accepting the current assessment method from all experts. Despite his opinion against the use of test results as a major value of students' assessment results, one expert reported that this is the situation in most Saudi and American universities. He believed that the reason for this is the ease of proving and reporting students' results.

> I still see universities in Saudi Arabia and USA using final examinations worth 40% or 50% of the overall grade. With the midterm exams, 90% of students' assessments are exams. Sometimes there is a small project, research, or presentation. It is unfair to assess students' work during the semester in one or two hours. (E4)

Something important emerged from the last two quotes. E12 and E4 point out an issue about the reliability of the data in these networks, potentially questioning the validity of using OCSNs as a platform for assessment. It could so be because of the absence of real experiments in this field.

5.3.2(iv) Pedagogical Support

As mentioned at the beginning of this section, pedagogical support is the fourth dimension of the pedagogical issues related to OCSN usage in Saudi higher education. From their perspectives, experts listed six uses for OCSNs as pedagogical support tools. These possibilities of usage are listed in Table 5.20. As shown in the table, almost all the items achieved the study judgment conditions. Only one item did not achieve these conditions, as 79.2% of the experts agreed to use OCSNs to change the negative perception of social networks. It is worth mentioning that only one expert disagreed with this usage.

Yet all experts (100%) believed that these networks can be used to publish educational experiences. In addition, 47 experts (97.9%) agreed to using OCSNs as communication tools. Without any disagreement, 95.8% of experts agreed that using OCSNs will provide a cooperative environment

between students while only 43 experts (89.6%) accepted the possibility of using OCSNs as a media tool between the educational institution and students. Finally, experts decided that OCSNs will allow students to share samples from previous works and projects (91.7%, N=44).

Table 5.20: Pedagogical Issues: Support

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Used as a communication tool	4.46	.544	2.1%	0.0%	97.9%
			1	0	47
Used to publish educational experiences	4.42	.498	0.0%	0.0%	100.0%
			0	0	48
Allows for sharing samples from previous works and projects	4.23	.660	6.3%	2.1%	91.7%
			3	1	44
Provides a cooperative environment between students	4.40	.574	4.2%	0.0%	95.8%
			2	0	46
Used as a media tool between the educational institution and students	4.29	.651	10.4%	0.0%	89.6%
			5	0	43
Used to change the negative perception of social networks	4.04	.824	18.8%	2.1%	79.2%
			9	1	38

These results were further discussed with some of the experts. During the interviews, experts maintained a positive attitude towards using OCSNs to support teaching and learning processes. One expert believed that using these networks will work to link students with education, even in their homes. He noticed a gap between students' skills and knowledge and argued that these networks will help students learn and share their experiences with their peers.

> They [OCSNs] will tie students with education, because they do not limit education to classrooms. Students can learn in their preferred time and place. […] It is possible that a student does not have a background in the discussed topic while another student does have a strong background in it. I mean, students can share their knowledge together. Now I see a gap between students. The level of some students is weak because the weakness of their background, but some of them feel the discussions are boring because they already know the topic. (E1)

Not all the students have the same ICT skills and this issue need to be taken into consideration when planning for using OCSNs in education.

Looking at the possibility of using these networks to support education in more detail from the interviewees' point of view, experts mentioned a number of these uses. One expert emphasised the role of OCSNs in communication between students and faculty members and among students themselves.

> I mean, if a student cannot attend class because of illness, for example, these networks will allow him [/her] to communicate with his teachers and colleagues. It is a communication link between them. (E1)

Another expert added discussion as another use of these networks to support teaching and learning.

> Of course it will be very useful for many things. It will allow students and teachers to communicate with each other. I mean, at any time teachers and students access their accounts and communicate with anyone. We can set up a group of discussions and everyone will benefit from others' experiences. (E8)

The flexibility of OCSNs could play an important role for encouraging students and teachers to use them.

One expert went even further, stating that using OCSNs allows his students to express their opinions online more freely than in face-to-face discussions in classrooms. The expert reported that these networks help students cope with their shyness.

> I created a Facebook page under the name for one of my modules. Students started to communicate via this page. Later, we used it to discuss homework and I found that students became more active and able to express their opinion freely. In the classroom, some students are too shy to talk in front of their colleagues. They think their opinion is incorrect. (E12)

This is a good example to give when arguing the importance of implementing OCSNs gradually. The first step in the experiment adapted by E12 is using this network with what the students are already familiar with. Then move in more depth for using OCSNs for other learning activities.

Another expert limited the benefit from these networks to supporting the educational process; he believed that they add little to the educational content.

> I did not think these networks will allow students to achieve a high level of success alone, but I think they will help remove some of the barriers facing teachers and students. (E10)

The use of OSCNs could extend to cover other departments and services in the university. One expert believed that departments and services such

as the university administration, libraries, and academic advising department could benefit from using these networks. She suggested viewing the national universities' experiences in this field and benefitting from them.

> We need to look forward to the world that they use and the benefits from social networks. We should benefit from the experiences of other international universities. Social networks are not used for communication between students only; I noticed them being used in national universities in other departments, such as the university administration, libraries and academic advising department. (E7)

Despite the importance of communication and discussion as two main uses of OCSNs, one expert assumed that these uses are important for encouraging students to use these networks. She believed that the acceptance of these networks would be very low if we used them for formal education only. In order to solve this problem, she suggested encouraging faculty members and university leaders to participate in these networks.

> I don't say the ratio of using these networks is zero. I mean it will be not the desired ratio. Imagine the amount of fatigue that students face after a long school day. Do you think they will participate in these networks unless they have something of interest for them? If these networks contain challenging competitions or an open discussion with one of the university administration, then I can say it will succeed. (E12)

This trend is also supported by another expert's view. He argued that these networks can be used to facilitate the learning process. Moreover, he believed that these networks can support students in learning and becoming more competent, especially in scientific specializations which will increase their motivation to learn.

> Now, education has improved, especially due to using technologies. I mean these networks facilitate education and because of that, they are a tool for increasing students' motivation towards learning. (E1)

Motivation for learning was a concern of one of the study's expert. Based on his experience, he referred to the high income and the prosperity of the Saudi society as the main reasons for the currently low motivation towards learning among Saudi students.

> Motivation toward learning is low among Saudi students. This is something I noticed. In other places students work hard to increase their level because they live in a competitive environment with limited opportunities. I think the high income and the prosperity of the Saudi society are the main reasons for the drop in motivation towards learning. (E9)

These quotations highlighted the importance of the pedagogic dimension on planning and designing for using OCSNs in education. In this study, this dimension is one of the four dimensions shaping most of all its models and frameworks.

5.3.3 Content Issues

The third and last category related to the factors that can affect OCSN usage is the content issues category. The study's experts in the first round of the Delphi method mentioned a number of issues related to the content and use of OCSNs. Later, in the final round, the experts voted on these issues. This part of the study presents the findings and categorises

interview discussions under four sub categories: pre-application stage, application stage, post-application stage, and content type.

5.3.3(i) Pre-Application Stage

The experts identified four issues related to the pre-application of the content, as shown in Table 5.21. Almost all experts (97.9%) believed that OCSNs can be used to share experiences with specialists in the same field. They similarly agreed that these networks can be used to explore students' opinions about their interests. In addition, 44 experts (91.7%) agreed that OCSNs can be used to discuss module topics. These three uses relate to the planning, designing, and building processes of any educational content.

Despite the high level of agreement on other items in the table, the key item (i.e., can be used in the pre-application stage) did not achieve consensus based on the study judgment method. Only 22 (45.8%) experts indicated it can be used in this stage.

In addition to the findings from the Delphi method, experts during the interviews emphasised the importance of these issues and mentioned additional issues related to the use of OCSNs and educational content. In this context, one expert suggested that the first step of OCSNs is to redesign the curricula, given the ease of accessing information nowadays.

> Using social networks requires many steps. In my opinion, the first thing we need to focus on is designing our curricula to suit these

networks. Today, it is very easy to search for any information, and you can access thousands of online resources. (E1)

Table 5.21: Content Issues: Pre-application stage

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Share experiences with specialists in the same field	4.33	.519	2.1%	0.0%	97.9%
			1	0	47
Explore students' opinions about their interests	4.31	.512	2.1%	0.0%	97.9%
			1	0	47
Discuss module topics	4.25	.601	8.3%	0.0%	91.7%
			4	0	44
Can be used in the pre-application stage (R)	3.08	1.235	18.8%	35.4%	45.8%
			9	17	22

The expert E1 illustrated the importance of the content on these networks. Undoubtedly the study makes it a main dimension for using OCSNs in education and state its relationship with other dimensions.

The development of curricula requires many steps. One expert mentioned that OCSNs could be used to benefit from experts' experiences in other universities in these steps. She further suggested using these networks to discuss the first draft of modules' contents or even decisions before actually taking any action.

> In this stage, we must benefit from experts in other universities; in Saudi Arabia, or from all over the world, especially with the shortage of experts in some specialties. We can discuss draft works and decisions with experts and students to get their feedback about them. (E5)

One expert indicated the need to develop faculty members' skills and knowledge in the pre-application of content stage. He argued that the Internet enables students to develop a high level of knowledge and skills if they wish. Moreover, he believed that OCSNs could play a role in this case.

> The development of faculty members' or even researchers' skills and knowledge in their specialization becomes important. Students if they wish can have information about any tiny issue related to a subject. As you know, in the past you needed to go to the library or one of your colleagues might tell you about the new information and articles. It's become very easy now; you need to register with a group in your specialty and you will receive updated information in this field. (E1)

5.3.3(ii) Application Stage

Looking to the actual application stage of the content, experts raised nine potential uses, as shown in Table 5.22. All experts (100%) agreed that OCSNs can be used to communicate between students and faculty members.

In close second, 47 experts (97.7%) agreed with the use of these networks to exchange experiences. Using OCSNs to support the process of teaching and learning (in general) and to support educational content as a source of knowledge was also identified. Using the study judgment method, these two uses achieved consensus with similar ratio (93.8%) and a standard deviation equal to 0.544 and 0.505, respectively. Finally, 91.7% of experts accepted these networks as an environment for self-learning and for learning from peers.

Table 5.22: Content Issues: Application stage

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
To exchange experiences	4.25	.484	2.1%	0.0%	97.9%
			1	0	47
To communicate between students and faculty members	4.42	.498	0.0%	0.0%	100.0%
			0	0	48
To create discussion boards about educational content	4.17	.595	10.4%	0.0%	89.6%
			5	0	43
To support the process of teaching and learning	4.21	.544	6.3%	0.0%	93.8%
			3	0	45
To support the educational content as a source of knowledge	4.15	.505	6.3%	0.0%	93.8%
			3	0	45
To assess students' achievement	3.73	.818	31.3%	6.3%	62.5%
			15	3	30
As an environment for self-learning	4.10	.592	6.3%	2.1%	91.7%
			3	1	44
As an environment for learning from peers	4.19	.571	8.3%	0.0%	91.7%
			4	0	44
As a meeting point between students for everything related to the module	4.35	.565	4.2%	0.0%	95.8%

In general, all the items in the table achieved the required consensus level except for one item related to using OCSNs to assess students' achievement (62.5% of the experts agreed to this use and 31.3% were neutral).

Despite the wide coverage of the application stage issues in the final-round questionnaire of the Delphi method, the experts also mentioned other issues linked to the use of OCSNs and content in this stage. E2 mentioned that the level of OCSN use depends on the module matter, although he

believed that these networks can be used on all modules, such as computer science, religion, and art.

> I can use them [OCSNs] to present the module content, teach the module, and assist students. I mean, I can use them in the entire educational process, but it depends on the subject that I teach. If I teach computer science, for example, I can use them at a rate of 80%, but in the religion and Arabic language modules, the rate will be less. (E2)

The decrease in the OCSN usage ratio in modules such Arabic language and religion, as E2 stated, might refer to the teaching method used in these modules. These modules are often taught using traditional methods, where the teacher is the provider of knowledge.

Another expert believed these networks could limit the effect of absence from or tardiness to class.

> Also these [OCSN] uses will reduce the impact of students' absence from and tardiness to class. Today, I had a lecture from 8 to 9; some students arrived after ten minutes. I did not need to repeat the lesson for them since we could discuss it later in the module's forum. (E1)

Again, could the solution for our problem today be our problem tomorrow, as Senge (1990) suggested (see Chapter 3, Section 3.4)?

Another expert discussed an experiment with his students about the use of OCSNs. In addition to providing content online, he used these networks to discuss students' works using the Blackboard learning management system features.

I used Blackboard to set up the forum for my module. This forum contains the module content, and students can access it at any time. […] Another thing, I asked students to submit their works in this forum, so all students can see each other's works. Instead of me assessing their works alone, students can also participate in this assessment. […] Students can now see 15 projects in addition to their own project. This is the benefit of using such technology. (E4)

5.3.3(iii) Post-Application Stage

Experts indicated five ways to use the OCSNs to support the post-application stage of the educational content, as shown in Table 5.23. The experts agreed to all items, with a close rate of agreement. Indeed, 47 experts (97.9%) agreed that these networks can be used to encourage students to share their experiences.

Although using OCSNs to support evaluation processes was mentioned previously in this report, experts indicated other possibilities for these networks in the evaluation process, specifically related to the educational content. As shown in the table, three items related to the content evaluation issues were included in this part of the final-round questionnaire. Experts agreed that these networks can be used to distribute opinion polls about content (91.7%) and to hold discussions to evaluate content (87.5%). Another way to evaluate the content raised by experts is by using students' participation as an indicator to evaluate content, which also achieved a consensus level with a standard deviation equal to 0.710 and 89.6% agreement.

The experts also agreed (93.8%) that OCSNs can be used to provide students with feedback in the post-application of the educational content process. In fact, during the interviews, experts emphasised the previous uses of OCSNs in the post-application of content stage. One expert indicated that these networks can be used to provide students with additional and optional resources.

Table 5.23: Content Issues: Post-application stage

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Can be used to hold discussions to evaluate content	4.06	.727	10.4%	2.1%	87.5%
			5	1	42
Students' participation can be used as an indicator to evaluate content	4.08	.710	8.3%	2.1%	89.6%
			4	1	43
Can be used to distribute opinion polls about content	4.19	.734	6.3%	2.1%	91.7%
			3	1	44
Can be used by teachers to provide students with feedback	4.19	.704	4.2%	2.1%	93.8%
			2	1	45
Can be used to encourage students to share their experiences	4.25	.668	0.0%	2.1%	97.9%
			0	1	47

> It is possible to use them to support self-learning. The teacher can provide students with external links and content if they want to learn more, for example. (E3)

5.3.3(iv) Content Type

The type of content is the final category covered in this study regarding to OCSN use and content issues. As shown in Table 5.24, two items were

included in the final-round questionnaire, and experts agreed with both of them. Forty-four experts (91.7%) agreed that content should be commensurate with OCSNs' potential. They similarly agreed that interactive content can be used on OCSNs.

Table 5.24: Content Issues: Content type

	Mean (N=48)	Std. Deviation	Neutral	Disagree + Strongly Disagree	Agree + Strongly Agree
Interactive content can be used on OCSNs	4.13	.703	6.3%	2.1%	91.7%
			3	1	44
Content should be designed to be commensurate with OCSNs' potential	4.21	.874	4.2%	4.2%	91.7%
			2	2	44

Experts mentioned a number of issues related to the content type. One expert recommended changing curricula from books to digital content. He argued that this step will allow students to access this content easily and make it possible to use it on these networks.

> Changing curricula to digital content is very important in higher education or general education. It must be the first step. It is easy for students to use the digital content and even access it online. In fact, we need it in these networks and other applications. This will help change our students' learning role which is mainly receiving information. (E1)

More than one expert mentioned their concerns about the language used on these networks. They suggested two solutions. One expert believed that the solution is to translate the content.

> There still remains an important point. [...] It is not in Saudi Arabia only; it is in all Arab countries. It is the language used on these networks. It is our problem now, by the way; the Japanese have experience about how to solve it. As you know, most social networks use the English language. We need to employ a team to translate the content. This is one of our recommendations in our department. (E1)

The second solution was suggested by another expert. He described his students' English language level as "very, very bad" and suggested improving students' knowledge of English before the higher education stage. He also referred to this problem as the main reason for students' withdrawal from higher education.

> The problem we face regarding the use of technology is the English language. The English language level of students in the university is very, very, bad. This creates a problem for us in our school and, because of that, students withdraw from the university. This is not a problem in higher education; this is a problem in the early stages of education. We need to develop students' learning of English language in primary, intermediate, and secondary stages. (E8)

It seems that the language is a big concern for the success of using OCSNs in education.

5.4 Summary

This chapter described the findings of the Delphi method and interviews by linking the data collected through both methods. This includes the experts' experience with OCSN usage, the potential use of OCSNs and related components, and the factors that can affect OCSN usage.

In addition, it was found that the use of the SNTPCK model as a tool for data analysis has promise.

In general, the findings can be summarised as follows:

- There are differences in the infrastructure of these universities;

- They have different purposes for using OCSNs;

- Their uses ranged from social to educational activities;

- There is a need to increase awareness about the use of these networks; and

- Policies for the use of OCSNs in education have a direct impact on the purpose of use and the number of users.

In summary, this part demonstrated experts' feedback about OCSNs and their implementation in Saudi higher education. It focused on potential uses and their requirements, including the advantages and disadvantages of the OCSN use. It also covered the benefit of such use for educational institutions and Saudi society. The study experts raised a number of factors

that can affect the use of OCSNs to enhance Saudi higher education, which will be described in the next chapter.

CHAPTER 6:   DISCUSSION

The previous chapter reported the study's fieldwork findings—namely, the findings from the final round of the Delphi method described at the beginning, followed by some experts' opinions about such findings.

In fact, the research methods helped explore experts' opinions about the research problem. Yes, the Delphi method procedure requires a bit more time compared to other research methods, but it provides useful information about the problem under investigation. As described in the research methodology section (Chapter 4, Section 4.5.1), the Delphi method procedure consists of a sequence of steps, including gathering and analysing data and designing measurement tools.

This chapter presents the discussion about the findings and explains them in the context of the literature review. For more detail, the design of this chapter has a clear link to the research questions and its titles are mainly derived from these questions. This discussion consists of four sections, starting with investigating the possibility of enhancing learning and teaching in Saudi Arabia's higher education by using OCSNs. It then highlights an appropriate model for using OCSNs to support learning and teaching in the Saudi context. The third part of this chapter illustrates some of the factors that might affect the use of OCSNs in this context. The last part discusses some issues related to designing and planning for OCSN use in education.

6.1 Enhancing Learning and Teaching in Saudi Arabia's Higher Education by Using OCSNs

The main aim of this study was to investigate the possibility of enhancing learning and teaching in Saudi Arabia's higher education by using OCSNs. As mentioned in the literature review (Chapter 3, Section 3.2.3) and based on the findings, experiments in this field are sporadic. In order to answer the study's main question about the possibility of enhancing higher education in Saudi Arabia by using OCSNs, this part explores four dimensions: the ability of Saudi Arabia's higher education to change, the roles that OCSNs can play in enhancing learning and teaching in this context, current efforts and experiments, and the expected outcome of using OCSNs in higher education.

6.1.1 Saudi Arabia's Higher Education and Changing Educational Context

According to Morrison (1998), change is a part of society and "a fact of life" which "is irresistible and unstoppable" (p.1). During the last fifteen years, Saudi Arabia has witnessed dramatic changes, especially in the higher education and communication sectors, as described in the background information (Chapter 2). Consequently, the rate of changing the number of Saudi government universities increased from seven in 1998 to twenty-five universities in 2014 (Ministry of Higher Education, 2014). In this context, the findings also showed a high degree of acceptance of change among

the expert panel, as indicated in their answers to a number of the final round questions during the Delphi method process. In some cases these findings were supported by experts' opinions during the interview stage.

Based on Fullan's (2007) model of changing process, mentioned in the literature review (Chapter 3 section 3.4), I think it acceptable to use expert opinions about items related to the change processes as indicators. In this context, Table 5.15 shows that 93.75% of experts agree with the need to train faculty members in technology usage and 89.58% of experts believe that students must be included in these training programmes.

Another example of the acceptance of changing indicators was shown in Table 5.14, which demonstrated that experts ranked the item "update management system to suit use requirements" second in terms of requirements for using OCSNs to enhance teaching and learning.

Wedell (2009) demonstrated that a number of factors could lead to failure in educational changes if they are not addressed (see Chapter 3, Section 3.4.3). One of these factors was described as follows by one of the study's experts.

> Teachers can be categorised into three generations. The older generation are the owners of the experience in the university and are valuable to any university; the other categories are middle-aged members and new members. Each generation has its own goals. For example, the first category does not recognise the Internet at all. I asked a group of them to encourage students to use the Internet, but they rejected the idea. How will they communicate with students

via social networks if the idea of using the Internet is not acceptable by them? (E12)

In fact, E12 concluded the need for two types of education (traditional and modern education) in Saudi Arabia, as mentioned in Chapter 2, Section 2.1.4.

The study's findings also show that 93.8% of the experts' panel believed that OCSN use could enrich the educational process (Table 5.9). However, 79.2% of the experts agreed it requires changing the learning environment to an interactive learning environment (although this item does not achieve the required consensus conditions, it gives a good indication that most of the panel agrees with it).

When experts were asked about using OCSNs to change the negative perception of social networks, 79.2% agreed that it fulfils this role. Although this item was not counted as a consented item, two interesting points are made about this item as shown in Table 5.20. First, only one expert disagreed with this item. Second, nine experts (18.8%) indicated that they neither supported nor were against this use of OCSNs, which in my opinion reflects the lack of practical information about OCSNs and their uses. Indeed, this emphasised the importance of applying changes using scientific methods, such as Fullan's (2007) model, while following Wedell's (2009) advice and paying more attention to the factors he mentioned for success in educational change (see Chapter 3, Section 3.4).

The experts mentioned a number of OCSN uses to enhance the teaching and learning environment. These are discusses in the next section.

6.1.2 Uses of OCSNs to Enhance Learning and Teaching

As the literature review (Chapter 3 section 3.3) showed, regardless of the learning theory used, OCSNs have the flexibility to play a role in teaching and learning processes. In this context, the expert panel discussed uses of OCSNs to enhance learning and teaching, based on their experiences, in more detail.
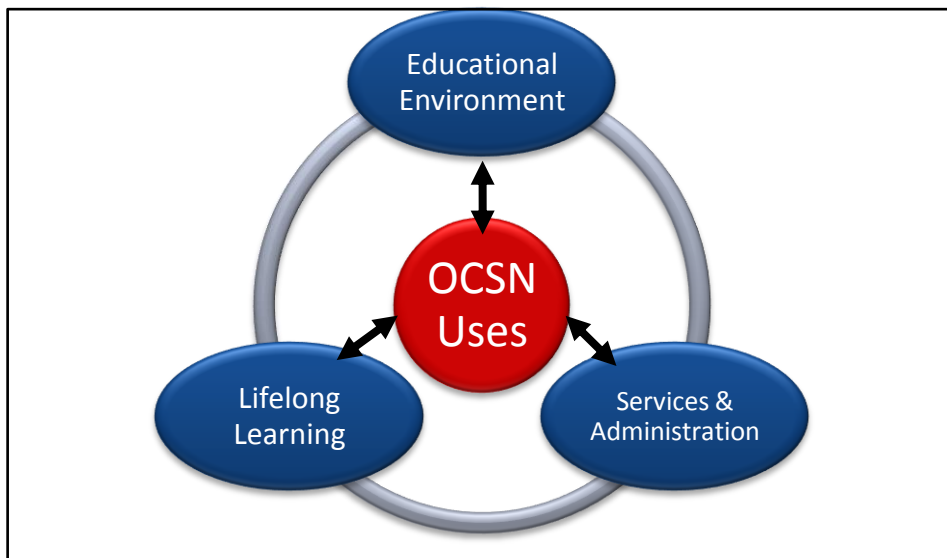
Figure 6-1: OCSN Uses

Without diminishing the importance of other parts, the longest section of the questionnaire focused on OCSN uses in the educational field and other uses of these networks.

In general, these uses can be categorised into three main categories as shown in Figure 6-1. As the picture indicates, it is difficult to draw a clear line between these three categories of uses. The next part will discuss these three categories to provide more explanation.

6.1.2(i) OCSN Uses in Educational Environment

The study's findings showed that OCSNs can be used in most educational settings. In fact, experts during the first round of the Delphi method paid more attention to the uses of these networks in educational processes. Perhaps the focus on educational uses of OCSNs draws their importance from the case under investigation.

In general and as it mentioned before, forty experts (83.3%) agreed that OCSNs can be used as part of the learning environment (Table 5.17). This higher level of agreement reflects their opinion about their uses in the five main components of the educational environment described in Figure 4-5 namely, planning for learning, learning and teaching processes, learning materials, assessment, and evaluation. The next part of this report will discuss the uses of OCSNs in each component in more detail.

6.1.2(i)-A) Planning for Learning

The literature review demonstrated that the learning theory used in any learning environment has a clear impact on the learning processes (Chapter 3, Section 3.3). In this context, the findings illustrated that the

experts agreed about using OCSNs in some cases of the planning for learning processes.

As mentioned in the results chapter, 97.9% of the panel of experts agreed with using OCSNs to explore students' opinions about their interests (Table 5.21). In addition, 91.7% of the experts believed that they can be used to discuss the module topics before putting them into action. One of the study's experts emphasised this step.

> In this stage, we must benefit from experts in other universities; in Saudi Arabia, or from all over the world, especially with the shortage of experts in some specialties. We can discuss draft works and decisions with experts and students to get their feedback about them. (E5)

Despite the limitation of the number (i.e., five) of universities included in this study, the finding showed differences between these universes. As shown in the previous quotation, E5 highlighted the lack of experience as one of these differences. This point of view reflects the high level of agreement (97.9%) with using OCSNs to share experiences with specialists in the same field.

Yet experts did not agree about using OCSNs in the pre-application of educational content, including planning processes (Table 5.21). I believe the reason behind this answer refers to the absence of a practical model for using OCSNs.

6.1.2(i)-B) Learning and Teaching Processes

Using OCSNs in learning and teaching processes was mentioned in the literature review part (Chapter 3, Section 3.2 and Section 3.3). The experts listed a number of the OCSN uses in the learning and teaching processes including for communication purposes, which was mentioned more than once during the fieldwork. In fact, this usage was one of the few items that achieved the highest level of agreement (100%). Another frequently mentioned use was creating discussion boards on OCSNs as part of the learning and teaching processes. There is no doubt about experts' agreement about this use (Table 5.22). Experts also agreed to use these networks as an environment for self-learning and as an environment for learning from peers, which leads to another use of these networks: exchanging experiences.

As mentioned in the results chapter, one of the study experts summarised the positional uses of the OCSNs in the learning and teaching processes:

> I can use them [OCSNs] to present the module content, teach the module, and assist students. I mean, I can use them in the entire educational process, but it depends on the subject that I teach. If I teach computer science, for example, I can use them at a rate of 80%, but in the religion and Arabic language modules, the rate will be less. (E2)

Yet this opinion about the differences in using OCSNs was questioned by another expert:

> The smart board, for example, has a problem when it is used to teach mathematics. Because mathematics is mainly equations and derivatives, I think the correct way to teach it is using a blackboard.

My module is mainly theoretical concepts, so I can teach it via social networks. (E4)

E2 and E4 in the previous quotations emphasised the importance of the teacher's beliefs about these networks and the need for training programs to raise awareness about using OCSNs. Their opinions stem from their experiences in the educational field and the literature review's (see Chapter 3, Section 3.4) recommendation as a key element in any educational change.

6.1.2(i)-C) Learning Materials

In general, experts agreed that these networks can be used as educational assistance tools to support teaching and learning processes (Table 5.22). This agreement was reflected in another item in this context.

As mentioned in the literature review (Chapter 3, Section 3.1.4), Yarmosh (2005) described the process of building knowledge as a watermill powered by people. The four main processes in his model—discovery, collection, building, and sharing the knowledge—can be applied via OCSNs. Thus, OCSNs have remarkable uses related to learning materials, such as using them when planning and designing educational content, as mentioned in the planning for learning section. Hosting (at least) part of the learning content on these networks also highlighted other uses that were mentioned more than once such as discussion posts. Experts highly agreed (93.8%) with using OCSNs to support educational content as a source of knowledge (Table 5.22).

In general, using the OCSNs as a communication tool or for building and presenting the educational content represents a number of their uses in this category. In fact, the following quote highlighted some of these networks' uses based on Yarmosh's (2005) watermill:

> As you know, problem solving is an important learning style. For example, I set up a discussion topic with my students about a scientific problem. Students discuss this problem and try to find a solution. For me, it is important to communicate with them via the social network and comment on their participation. (E2)

E2 described a real experience of applying a kind of modern style of education with the support of OCSNs, although this is not the only teaching and learning style used in Saudi Arabia's higher education (for more detail, see Chapter 2, Section 2.1.4).

6.1.2(i)-D) Assessment

Using OCSNs to assess students' achievement was one factor of the study's that drew a sharp contrast among experts, as evident in their perspectives about using OCSNs for assessment purposes. The findings indicated a close ratio among experts who believed that OCSNs are valid for student assessment, not valid, or undecided (35.4%, 29.2%, and 35.4% respectively). Yet experts agreed that using quality posts and students' cooperation on these networks should be part of students' assessment (Table 5.19). The findings in Table 5.19 also illustrated remarkable hesitation among experts regarding these four uses, as a significant percentage remained undecided:

- Using the number of discussion posts as part of students' assessment

- Using peer assessment as part of students' assessment

- Allows measurement of understanding

- Possbily using as a test platform

Experts seem to be concerned about the reliability of the OCSNs as an assessment tool.

> I think it is very convenient to use at [...] University and, I expect, at most Saudi universities. I think there is a risk to use these networks for exams. You do not know—maybe after ten minutes students lose their connection to the Internet. […] How can the teacher prove that the Internet connection was lost? (E4)

This fear reflects the complexity of change required in order to use OCSNs to enhance teaching and learning in Saudi Arabia. In fact, in these few lines, E4 highlighted the need for a complex change covering all the four parts in the SNTPAK model (Chapter 4, Section 4.4).

6.1.2(i)-E) Evaluation

Evaluation is an important part of any teaching and learning process. As previously discussed, OCSNs can be used to evaluate the learning planning process. The study's experts also agreed with using these networks to evaluate the educational content, suggesting four uses (Table 5.23):

- Used to hold discussions to evaluate content

- Use students' participation as an indicator to evaluate content

- Used to distribute opinion polls about content

- Used by teachers to provide students with feedback.

Another use of OCSNs in evaluations is to evaluate a module as an integrated unit. In this context, the findings highlighted other uses of OCSNs for evaluation purposes. Experts agreed with using students' participation to access their opinions about the module and engage in discussions about the module's evaluation (Table 5.18). In addition, forty-four experts (91.7%) believed that these networks can be used to distribute questionnaires for the same purposes.

Teachers' evaluations can be done via the OCSNs, as one expert explained:

> There is an important point which is the teacher evaluation. Moreover, we can use them [social networks] to evaluate a content development plan and teaching method. (E12)

This positive attitude toward using OCSNs in education will support its implementation. This point, as mentioned before in Chapter 3, Section 3.4.1, indicated that one of the key factors leading to successful educational change is when the change has a strong link to society's need.

6.1.2(ii) Uses of OCSNs for Lifelong Learning

Sharing experiences with specialists in the same field, as mentioned previously, is one of the OCSN uses for lifelong learning. Actually, it is one

of the OCSNs' power tools, as mentioned in the literature review (Chapter 3, Section 3.1.4). Using these networks to share experiences among university employees achieved a high level of agreement (97.9%) (Table 5.11).

Using the OCSNs as publishing platform was one of the few uses that achieved 100% agreement (Table 5.20). In the same context, using these networks to share samples from students' works and projects is possible, according to the findings.

In addition to sharing knowledge and experiences, one expert believed they can be used to deliver training courses.

> Of course, no doubt. It[OCSNs] could be used to share thoughts and teaching methods on some social networks sites, such as Twitter and Facebook. Also, it could be used to deliver distance training courses from other universities or international developers. (E11)

The previous quote is a good example of the flexibility of using OCSNs for educational purposes. With the availability of the requirements and the acceptance of these networks among users, it could add great value for the educational environment.

6.1.2(iii) OCSN Uses in Administration and Services Fields

The findings described a number of OCSN uses in the administration and services fields. They can be used as a media tool between educational institutions and students (Table 5.20) or even with other national or international educational institutions (Table 5.11).

E7 (one of the study's experts) noted that these networks are used in different departments of international universities and she believed that Saudi universities should benefit from these experiences.

> We need to look forward to the world that they use and the benefits from social networks. We should benefit from the experiences of other international universities. Social networks are not used for communication between students only; I noticed them being used in national universities in other departments, such as the university administration, libraries and academic advising department. (E7)

Despite the importance of what E7 mentioned here, any educational change needs to be linked with local conditions, as Wedell (2009) suggested (Chapter 3, Section 3.1.4).

The study's experts also agreed with using OCSNs to promote research projects and announce academic achievements. In addition, they agreed with using them to disseminate opportunities and possibilities in the educational institution (Table 5.11).

6.1.3 Current Experiences in Using OCSNs

With the absence of governmental social networks for higher education in Saudi Arabia, experts described their experiences using well-known social networks such as Facebook, Twitter, and YouTube. The findings indicated that all experts used at least one social network, and all of the experts used a combined total of 113 social networks (Table 5.3). Facebook ranked highest, with 85.4%, as 41 experts mentioned having a Facebook account. Twitter ranked second with 41.7%.

When experts were asked to evaluate the spread of OCSN use among three categories of schools, the findings showed an unclear vision of their usage (Table 5.5). As previously mentioned, 54.2% of the experts did not know about the use of OCSNs in medical schools and eighteen experts (37.5%) did not know about the use of OCSNs in humanities schools. In general, the highest level of OCSN use was in science schools: Twelve experts (25%) believed such use to be more than moderate.

Experts mentioned a number of personal experiences using these networks for educational purposes. For example, one expert described an experience using a private social network:

> I had an experience with my students before […]. We agreed to create a website on the Internet and use it to communicate between us, but we faced communication and technical problems. As you know […], the Internet connection in Saudi Arabia is very weak. I solved this problem by using Facebook; as you know, Facebook is easy to use and has support. (E12)

In this context, the theoretical part of this study (Chapter 2, Section 2.2) highlighted the increasing number of Internet users in Saudi Arabia, which puts pressure on the ICT infrastructures. Consequently, Internet connections (as E12 mentioned) have become unreliable in a number of places, even in the capital city.

6.1.4 Expected Benefits of Using OCSNs

The literature review demonstrated that OCSNs have been used for educational purposes (Chapter 3 Section 3.2). The findings also showed

that these networks can be used to enhance teaching and learning processes. As a result, experts expected OCSN use in higher education to achieve a number of benefits for individuals, society, and educational institutions. In addition to previously mentioned benefits, such as those in communication, evaluation, and assessment processes, experts also believed they would lead to the following benefits:

- Contribute to the improvement and development of teaching methods (Table 5.9)

- Contribute to building cooperative education

- Allow students to access education and training at an appropriate time and place

- Ensure that the largest number of students benefit from outstanding teachers

- Raise students' academic level (Table 5.11)

- Increase awareness about beneficial uses of these networks (Table 5.12)

- Increase improvement and development of the educational environment

- Serve as a communication tool between universities and civilian society

- Develop individuals' level of technical knowledge and skills

- Open broad prospects for knowledge and self-learning.

One expert mentioned another benefit of using OCSNs: to change society's point of view towards Internet use in general:

> I believe that the greatest influences on the use of the Internet are society's customs and traditions. Because most people seem to be Internet users, even if they study, they use the Internet passively. This point of view is rooted in most segments of society, whether educated or uneducated. (E12)

This point has great impact on OCSNs' integration in education. Thus, it is strongly recommended to take real information about the culture and society as key inputs for educational change, such as OCSNs' integration in education. As previously mentioned (Chapter 3, Section 3.4.3), any educational change needs to take society's conditions into consideration.

Another expert went further to state that today using OCSNs has become a requirement for success.

> I think it [the social network] is important. Nowadays, we have course training about the importance of collaborative learning, interactive learning, and modern teaching methods. So it is important to have a social network, as it will help implement such methods, or we will remain in the traditional education loop. It is difficult to use modern teaching methods in only forty-five minutes. (E7)

In this quote, E7 drew a picture of most educational changes (unfortunately). Changes in the educational environment are complex tasks that need to be well planned and designed. For example, whatever efforts are spent on training teachers about "the importance of collaborative learning, interactive learning, and modern teaching methods", the change

may not include providing the right tool to "help implement such methods" (E7).

After studying the potential uses of OCSNs to enhance teaching and learning processes, the next step is to investigate the appropriate model for using OCSNs in the Saudi context. For that, the next section will describe a potential model developed based on the findings and in light of the literature review.

6.2 OCSN Model to Enhance Learning and Teaching

One of this study's aims was to suggest a way to use OCSNs that could enhance Saudi Arabia's higher education. In order to archive this target, the study explores experts' opinions about a number of aspects related to the OCSN model of use in higher education. The findings illustrated the reasons for using OCSNs in Saudi Arabia's higher education context and then investigated the appropriate moderator and authority for such use. Using the findings, the study developed a model for OCSN use to enhance teaching and learning in Saudi Arabia's higher education. The next sections discuss these findings in more detail.

6.2.1 OCSN Purposes

Experts in the first round of the Delphi method suggested five purposes for OCSN use in Saudi Arabia's higher education context: educational, cultural, social, training, and lifelong learning. Despite the differences

among them in terms of generality, speciality, and practicality, these five purposes were used, as is, in the final round.

The findings reflected promising success for using OCSNs in Saudi Arabia's higher education, as evident from experts' opinions and experiences reported in this study.

> I cannot talk about all Saudi universities, but [...] university and [...] university are interested in using social networks in both teaching and learning fields. (E6)

As previously mentioned, experts ranked training as the most important purpose. The findings showed that this purpose has the minimum value of the standard deviation, indicating a high level of consensus among the experts (Table 5.6).

An unexpected result for me was the rank of educational purposes, which placed at the end of the list. I further investigated this point with experts during the interviews. One referred to the popularity of using such networks among youth, mostly for communication.

> Based on my observation during the last two years, youth have widely used social networks. And I think there is an opportunity to use them mainly for direct communication. (E3)

The previously mentioned statistics support this opinion as a wide range of users participating in these networks are young people (see Chapter 2, Section 2.2).

Another expert suggested using these networks to increase awareness initially, then change the purpose once the target is achieved.

> I think that in the beginning, it is possible to use a new network—not networks like Facebook and Twitter, but I mean social networks moderated by university. For example, each university has its own network and after increasing the awareness we can extend social networks' use. (E7)

What E7 asked for in this quote was to make changes in phases. In fact, this suggestion has a strong link to the findings of the literature review. Fullan (2007) presented a three-phase model of the change process discussed in the literature review of this study (Chapter 3, Section 3.4.2).

The findings illustrated wide divergence between experts about this point according to the standard deviation values (Table 5.6). Experts in this study represent different universities with different infrastructures, which influenced their answers. Thus, we can conclude that the purpose of using OCSNs to enhance Saudi Arabia's higher education depends on the individual needs of each university or school. This result is one of the factors that needs to be considered in any large-scale educational change, such as the integration of OCSNs in an education system.

6.2.2 Moderation and Authority

Moderation and authority are two other aspects related to the potential model of OCSN use in Saudi Arabia's higher education, as researched in this study.

Regarding the OCSNs' moderation, the findings showed that experts preferred a private company to moderate the proposed OCSN; they further ranked the university as moderator at the lowest level (Table 5.8). The reason behind this result, according to one expert, was the flexibility of a non-governmental organisation:

> I prefer a non-governmental organisation to be easier to develop it. I suggest that [the network] be moderated by a committee of experts or those interested in social networks. And they can be assigned for one or two years in order to have more creativity. (E5)

This is not a unique picture. Other experts have different preferences for moderators, such as a university and group of specialists.

> At the beginning, it would be better if there was a kind of monitoring. Each university is responsible for its special social network. That is better than using Facebook. (E7)

> The university must establish a special committee or committees and it could benefit from experts from neighbouring countries or internationally. This committee is responsible only for using social network in education. (E1)

From the last three quotes, the importance of communicating with all people is clear as it could affect the implementation of OCSNs in order to clarify the aims and requirements of the new change in their work environment. This will help bridge the gap between them, creating a strong foundation for the integration of OCSNs into education. In order to achieve that, it is important to use the effective communication's three secrets: "repetition, repetition, and repetition"(Levin and Fullan, 2008, p. 299).

The authority of users of the potential OCSNs was also considered in this study. Experts agreed that faculty members should have a higher level of authority than students (Table 5.7).

Despite its failure to achieve the required consensus level, 58% of the experts agreed with the question about whether that non-members should be able to browse the network content. Each group has its reason for making the policy for using these networks more strict or flexible.

> Why do we not make it more free and allow all students to access it? Is the reason because it contains students' marks? We can send these to them by email. (E12)

> As a kind of privacy and, to be more specific, only students enrolled in a particular course or in a certain university can access this network in order to maintain privacy and confidentiality. (E7)

Despite its difficulty, the educational change becomes easier if it stems from society's needs and becomes more acceptable if the solution is suggested from society. This was recommended as a key success factor (Chapter 3, Section 3.4.3).

From the last two quotes, it seems that an inverse relationship exists between the policy strictness used in the OCSNs and the number of users.

6.2.3 Model for Using OCSNs in Education

The findings in this study described a number of factors that shaped a potential model for using OCSNs in Saudi Arabia's higher education. These

factors were discussed previously and can be summarised in five main points:

- There is difference in the infrastructure in these universities.

- There is variation in the purpose for using OCSNs.

- Most of the uses mentioned ranged between social activities and educational activities.

- There is a need to increase awareness about using these networks.

- The policy for using OCSNs in education has a direct impact on the purpose for use and the number of users.

Thus, the study concluded by suggesting a model for using OCSNs in Saudi Arabia's higher education as shown in Figure 6-2. The model consists of three phases inspired to some extent by Fullan's (2007) model of change processes in education (Chapter 3, Section 3.4).

The following three subsections describe the model by looking to it from three angles. The first part discusses the differing emphases between the model's phases. The second part describes the transition between phases. The final part focuses on the three phases and requirements.

6.2.3(i) Differing Emphases between Phases

As shown in Figure 6-2, each phase has its own requirements from the four dimensions according to the SNTPCK model. The required amount of

efforts and equipment are different not only from one phase to another but also within the same phase. There are many factors, which identify the requirement from each dimension of knowledge such as ICT infrastructure, OCSNs usage skills, educational environment, and the aims of the phase. For example, phase one requires technical equipment more than phase three or phase two, and in phase three most of the efforts focus in pedagogy and building the content.

It is worth mentioning here that the three phases are separated from each other. In fact, efforts and resources of any phase become a key part of the whole project. In other words, each phase uses the previous phase/phases as a base for its specific requirements.

6.2.3(ii) Transition between Phases

The model of using OCSNs in education is illustrated as three gears that indicate the important of each gear (phase) on the system. The movement of each phase is required for the movement of the other phases as soon as it becomes part of the implementation project.

Moreover, the model shows the importance of continuity in the implementation phases. This interlocked dependency indicates that the implementation of OCSNs in education is not an easy task. It requires continuous efforts, equipments, and support for a long time. In fact, this presents one of the challenges that could lead to the failure of such a change in education.

In fact, the term "wicked problem" used in the literature review (Chapter 3, Section 3.2.1) to describe a complex change is not far from the integration of OCSNs in education. This requires looking at this integration with more attention equivalent to its widely affected area.
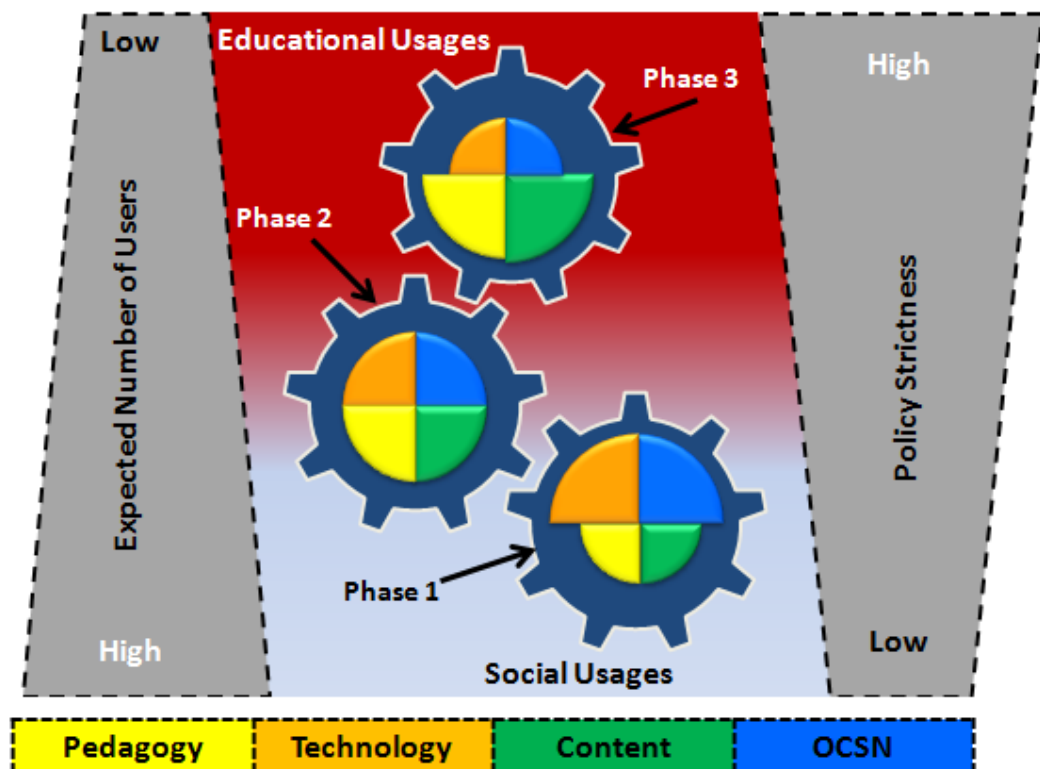
Figure 6-2: Model for using OCSN in education

6.2.3(iii) Phases of the Mode

The following section describes the three phases (i.e., dissemination, encouragement, and integration) and their characteristics. This phase aims to spread awareness about the OCSNs by providing the required training programs and support. In addition, it requires more efforts and equipment

in all four areas (social network, technology, pedagogy, and content) mentioned in the SNTPCK model (Chapter 4, Section 4.4).

The design of these three phases reflects the finding of the study regarding great valuable recommendations about using OCSNs to enhance teaching and learning in Saudi Arabia. In addition, the design attempts to involve the findings from the literature review regarding conducting such complex educational changes.

Phase 1: Dissemination

Figure 6-2 shows that the majority of OCSN uses in this phase are for social activities, such as communication and exchanging experiences and lifelong learning, although some educational uses of OCSNs might be included in this phase.

In the dissemination phase, a high number of users is expected for the uses provided in this phase and the required policy is expected to have a low level of strictness. This requires that the infrastructure is capable of fitting this number of users.

Phase 2: Encouragement

When users become familiar with using the OCSNs, the implementation of OCSNs moves to the second phase to encourage users to use these networks for educational purposes. This phase requires providing users

with practical models for using these networks in education and incentive programmes in order to ensure more engagement.

The diagram shows that the success of implementing the first phase is the gateway to starting the second phase or failure will continue. This does not mean that the activities and process of the first phase are applied for period of time and then stopped. As the diagram indicates, the movement of the first phase will power the second phase.

The encouragement phase also requires additional efforts and equipment in all four dimensions of the SNTPCK model.

Phase 3: Integration

The final phase aims to integrate OCSN uses to be part of the educational system. This requires successful implementation of the first two phases and additional equipment.

Uses in the integration phase need specific requirements. For example and according to the findings, using OCSNs for assessment requires a high-speed and reliable Internet connection. The diagram shows that the success of implementing the integration phase is based on the success of the other two phases; if a failure happens in any phase, it will affect at least the next phase or phases.

Benefitting from OCSN use requires protecting this model of use from the effects of a number of factors. Some factors are related to OCSNs and other factors are related to educational environments.

The next section will discuss these factors and highlight their importance and impact on the use of OCSNs to enhance teaching and learning in Saudi Arabia's higher education system.

6.3 Factors Potentially Affecting OCSN Use in Saudi Arabia's Higher Education System
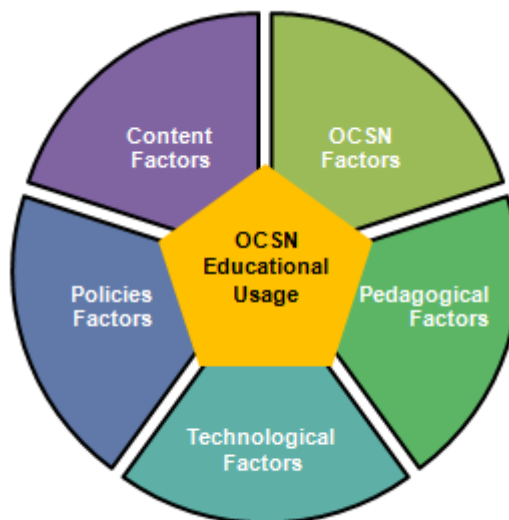
Figure 6-3: Factors May Affect the OCSN Usage

The findings of this study showed a positive attitude towards OCSN use among the experts as none of the disadvantage items listed in the final round questionnaire of the Delphi method achieved the required consensus level (Table 5.10). Yet using OCSNs in higher education requires changing

the educational environment. According to Fullan (2007), each phase of educational change can be affected by a number of factors which will affect the success of the change process. More details about these phases and potentially affected factors can be found in the literature review (Chapter 3, Section 3.4).

Thus, studying these factors was the main thrust of this study, as previously mentioned. The findings showed that using OCSNs in Saudi Arabia's higher education system for teaching and learning purposes can be affected by five main factors, as shown in Figure 6-2, which will be described in more detail in the following section.

6.3.1 OCSN Factors

The nature of the OCSNs is that one of the main factors can affect their use, especially for teaching and learning. The literature review showed the newest uses for OCSNs in the education sector and the need for more studies and experiments in order to maximise the benefits from these uses (Chapter 3, Section 3.2). In fact, the effect of this limitation in experiments has also been found in this study's findings.

> These networks are not widely used in education, so we cannot judge their disadvantages. (E2)

This is not reflected in all the study's expert opinions, but this represents another point of view that needs to be considered when planning for the use of OCSNs in education.

Other OCSN factors might limit the benefits from their use as raised in this study, including the language used in these networks.

> In my university the main problem towards using technologies is the English language. The students' English language level is very low which makes some of them withdraw from the university. (E8)

 Peter Senge's (1990, p.57) first law of the fifth discipline ("today's problems come from yesterday's solutions") is applicable in this case (see Chapter 3, Section 3.4). This could be the case for our solution (using OCSNs in education), but this is the tune of life.

The findings showed a link between age and users. One expert believed OCSNs were more attractive to youth than to other age groups.

> They [social networks] are more fitting for youth than for others. The older generation who rely on traditional methods have a hard time changing. But if an individual developed a tool him or herself, he will be able to use it well. (E2)

E2 highlighted the relationship between the acceptance of OCSNs and users' age. This is an important point, and statistics support this conclusion (see Chapter 2, Section 2.2).

Finally, yet importantly, the wide uses of OCSNs as entertainment tools were mentioned as one factor that might affect their use in teaching and learning in Saudi Arabia's higher education. As one expert explained:

> Most of the Saudi society looks to these networks as entertainment tools. I think this might limit their usage in the educational sector. (E6)

Despite E6's concern about the wide use of OCSNs for entertainment, this could be a useful way to raise awareness about these networks.

6.3.2 Pedagogical Factors

Pedagogy is a key factor which shapes the uses of OCSNs for teaching and learning. The experts in this study emphasised the importance of pedagogical factors for ensuring the success of these networks' use.

Experts in this study highlighted a number of pedagogical factors and argued that they are important for the successful implementation of OCSNs in Saudi Arabia's higher education system. They believed that using these networks requires (Table 5.17):

- Special assessment methods;

- Special teaching strategies such as programmed instruction; and

- Adding its usage skills as a module requirement.

Yet the item "requires changing the learning environment to an interactive learning environment" did not achieve the required consensus level as 79.2% agreed and 6.3% disagree with it.

The literature review described new pedagogy as a requirement for using OCSNs for teaching and learning. McLoughlin and Lee (2007) called it

Pedagogy 2.0, which mainly uses Web 2.0 as a platform for teaching and learning or part of it (see Chapter 3, Section 3.1).

As an example of the importance of pedagogy to OCSN use, the following two quotes illustrated two opinions about the relationship between the OCSNs and traditional education:

> Perhaps we can get rid of the traditional education—I mean indoctrination. As you know, teachers are required to cover certain chapters within a limited time. If we use social networks, students have a chance to learn without such limitations, especially with existing smart phones. (E1)

> That does not mean using social networks instead of traditional education. These are tools to develop and to improve education. From my point of view, using social networks is useful in education, especially with the young generation—the university generation. (E2)

The two types of education mentioned by E1 and E2 were discussed previously (Chapter 2, Section 2.1.4). In addition, some quotes point to the complex change required for OCSN integration in education.

The following quote is another example of the importance of the pedagogical factors for the success of using OCSNs:

> The smart board, for example, has a problem when it is used to teach mathematics. Because mathematics is mainly equations and derivatives, I think the correct way to teach it is using a blackboard. My module is mainly theoretical concepts, so I can teach it via social networks. (E4)

E4 also drew attention to the negative impact of unsuccessful educational change on future changes. This reflects how critical it is to make any

educational changes because the effects of failure will be extended to future projects.

The study's findings also indicated different opinions about using these networks for assessment purposes (as discussed in Chapter 6, Section 6.1.2(i)-D). These opinions will shape the teachers' uses of OCSNs. In this context, the findings of the Delphi method showed a high level of agreement on the importance of faculty members' attention towards these networks for the success of use (Table 5.16).

6.3.3 Technological Factors

There is undoubtedly a strong relationship between OCSN uses in teaching and learning processes and technologies. In this study, technology is one of the main part of the SNTPCK model and has been a part of the attention during the study design and application. The study's findings regarding this factor can be categorised into three categories: equipment, training, and support. The following parts describe each category in detail.

6.3.3(i) Equipment

The availability of the required equipment is also a key factor, which has a direct impact on OCSN use. The ICT infrastructure in Saudi Arabia seems to be acceptable from most of the study's experts.

> I think the technological level in Saudi Arabia, compared with many countries, is a positive factor because technologies are available for everyone. This is a positive point and we need to benefit from it. (E9)

However, the findings showed that these are lacking in some of the ICT infrastructure aspects.

> I will talk about [...] University. The university infrastructure needs to be developed. It is available, but needs to be developed. We have problems in computer labs and a limitation of computer availability for students. (E2)

Even if the ICT infrastructure is currently acceptable, one expert believes it needs to be developed before using OCSNs as this use will increase the number of users and traffic significantly.

> Yes, the computer labs are insufficient and they will be even more insufficient if the university expands the use of social networks and the Internet. Each student must have access to a computer or [the university must] provide students with laptops and provide a strong wireless network within the university. (E5)

The last three quotes (E9, E2, and E5) make a sequence about the current setting of ICT infrastructure in Saudi universities. The sequence of ICT infrastructure consists of three levels: sufficient, needs development to fit OCSN usage, and needs development in the future as a result of OCSN usage. All of these suggested actions should be considered during the design of the model for using OCSNs in education (Chapter 6, Section 6.2.3).

The importance of communication for the success of OCSN use was frequently emphasised in the findings.

> This is an important point; the idea of using social networks is a great idea. Really, it is the starting point for increasing the quality of Saudi education if it applied, but this ultimately depends on the communication infrastructure. Do we have the communication

infrastructure that supports this trend? We are now in 2012 and suffer from slow communication. How do they implement such networks? (E12)

The [wireless communication] network exists, but I think it is not able to accommodate a large number of students using mobile devices and laptops instead of computer labs. (E5)

The literature review highlighted great efforts to enhance the ICT infrastructure in Saudi Arabia (Chapter 2, Section 2.2). Despite these efforts, the quality of communication is still not acceptable by most users, and more efforts are needed to improve the ICT infrastructure.

The findings from the final round of the Delphi method reflected the importance of what has been mentioned thus far. The experts ranked the need to provide an Internet infrastructure in areas where not available as the most important requirement for the success of using OCSNs (Table 5.14).

In general, the experts mentioned other equipment elements required for using OCSNs in teaching and learning processes. These requirements include (Table 5.14):

- Updating the management system to suit use requirements;

- Providing required software for network usage;

- Providing the computer labs necessary for communication;

- Using e-learning management systems to support such applications and

- Providing multi-language applications.

The findings showed that using this equipment requires training students and teachers on how and when to use it. The following section will discuss training as an important factor of the successful implementation of OCSNs.

6.3.3(ii) Training

As previously mentioned, training on using OCSNs is one of the important elements related to the technological factors and its effects, as clearly reported in the study's findings. In this context, the findings showed the need for training programmes for students and faculty. Experts agreed that training faculty members on technology use and training students to deal with these types of sites are requirements for the successful implementation of OCSNs (Table 5.15).

By exploring experts' answers in Table 5.15 it seems that they are not happy with the current students' level of ICT skills. This was obvious, as 72.92% of them refer to the reason for the need for training as the lack of computer education and only 8.33% disagree (note: this item did not achieve consensus requirements). One expert noted this need in his students:

> Unfortunately we need a lot of development. Our students have basic skills for using social networks such as Twitter and Facebook; they gain it from self-learning, not from formal education. […] I think this issue needs more attention because even within our department, computer engineering, where students are supposed to be distinct in this field, I see a lot of weakness. (E11)

E11's comments reflect the importance of designing and planning for any educational change, such as using OCSNs for educational purposes based on genuine information about the educational system. As previously mentioned, Wedell (2009, p.22) marked the "starting where people are" as a main factor to consider when in the early stage of any educational change. For more detail about this factor and others, see Chapter 3, Section 3.4.3.

As a result, forty-one (85.4%) of the study's experts emphasised the importance of establishing a national strategy to take advantage of new technologies (Table 5.16).

Extending the training programmes to include students was considered an important factor for the successful use of OCSNs. One expert further indicated that there is no benefit from training faculty alone:

> There is a new vice rectorate established recently called vice rectorate for development and quality. It runs training programmes for faculty members on how to design electronic courses content and how to use technologies to enhance educational outcomes, but these training programmes are for faculty members only. What is the benefit of training faculty alone? We need to train all students because this is a joint effort between teachers and students. (E8)

In this context, it is important to extend efforts to include how everyone will be affected by the educational change, as previously mentioned.

Another point in this topic is the need for continuous training programmes as a result of the rapid changes in the technology and communication

sectors. One expert argued that students learn how to use the OCSN faster than their teachers:

> Students could learn how to use social networks faster than their teachers. This might lead to a gap between them in their skills and ability to use social networks. (E4)

E4 raised another challenge that could be faced in the use of OCSNs in education, which is the ability to cope with the rapid development in technologies in general and particularly in OCSN applications. This indicates the complexity of OCSN implementation in education.

Providing training programmes is not enough according to the findings. The study's experts argued that providing support for users is also an important issue. For that, support as a success factor will be explored in the next part.

6.3.3(iii) Support

According to the findings, providing support can take different forms. The study's experts mentioned the following ways to support OCSN users in order to achieve the target aim of the use (Table 5.16):

- Provide incentive programmes to encourage the use of technology

- Provide technical support for users

- Develop educational programmes about the use of new technologies

- Reduce the cost of Internet connections to encourage the use of OCSNs

One expert argued that without supporting users of these networks, their implementation might fail.

> I always think of these aspects. Students usually prefer the Internet and social network activities. I find them more active and creative compared to using pen and paper. But if the teacher and student did not receive the appropriate support, I think it would be difficult. (E12)

Support programmes can be provided for all users or for specific groups of users based on their needs. For example, supporting students with low income needs to be considered when OCSNs are used for teaching and learning.

> Students' income level is something we need to consider because using these networks requires an Internet connection. (E12)

The importance of support for successful implementation of OCSNs in education cannot be doubted, but E12 argued that some individuals need special support. This issue was mentioned before (see Chapter 3, Section 3.4.3.); as an important factor, it must be taken into account.

Based on the three categories discussed (equipment, training and support), the roles of the technological factors in OCSN use in education becomes clear.

6.3.4 Content Factors

One of the OCSNs' key characteristics is user-generated content. In these networks, users collaborate to generate and develop content. Ullrich and others (2008) described this process as "harnessing the power of the crowd" which is a key of any social network success (Chapter 3, Section 3.1).

The findings showed that building OCSN content is not an easy process. The experts indicated that a number of factors could affect this work and emphasised its importance for success. One of these factors is designing content commensurate with OCSNs' potential uses (Table 5.24). To this end, one expert emphasised the importance of this process and described it as "the first step".

> Changing curricula to digital content is very important in higher education or general education. It must be the first step. It is easy for students to use the digital content and even access it online. In fact, we need it in these networks and other applications. This will help change our students' learning role which is mainly receiving information. (E1)

E1's opinion about the importance of developing curricula is not the first step. As mentioned before, the implementation of OCSNs is a complex issue (see Chapter 3, Section 3.2.1) requiring a complex solution.

Another factor mentioned related to the content factors is the language used in these networks. The findings more than once noted the effect of

the language of the OCSN use partially and when using technologies in general.

> There still remains an important point. [...] It is not in Saudi Arabia only; it is in all Arab countries. It is the language used in these networks. It is our problem now, by the way; the Japanese have experience in how to solve it. As you know, most social networks use the English language. We need to employ a team to translate the content. This is one of our recommendations in our department. (E1)

Saudi students' English language level was mentioned more than once. English language is undoubtedly important for surfing the Internet because the majority of content on the Internet is written in English. However, most OCSNs are flexible regarding this point and allow multilanguage content.

After the previous discussion about some factors related to the content on OCSNs, the next part will focus on OCSN use policy factors.

6.3.5 OCSN Use Policy Factors

The literature review highlighted the lack of an OCSN use policy. Al-Khalifa and Garcia (2013) mentioned that not understanding the use policy leads to a barrier to using OCSNs as users become worried about privacy in these networks (Chapter 3, Section 3.2).

The findings from this study found that only seven experts (14.6%) said they knew about the existence of social networks' use policies in Saudi Arabia's higher education. Related to the same issue, one expert reported:

> Regarding your question about which policies need to be developed, I do not know—are there usage policies in Saudi Arabia's higher education? I do not have any idea. (E7)

This also raises an important point related to the OCSN use policies, which needs to be announced widely. In addition, increasing users' awareness about these policies is an important issue for successful OCSN implementation.

> At the moment, I do not see that we need to develop new policies or even to change them. The policies exist, but we need to encourage people to apply them. (E6)

Experts in this study also believe in the need to develop some policy drivers to control and monitor OCSN uses in Saudi Arabia's higher education. The suggested policy drivers are to develop (Table 5.13):

- Online social network usage regulations;

- Online social network usage policies;

- Distance learning and e-learning policies; and

- Higher education legislation to promote OCSN use.

From the interview findings, two additional factors can be extracted. The first one is the inclusion of the OCSN use policy.

> We needs to develop policies to manage time use and the minimum requirement needed to be in the university in order to implement these social networks and allow students to benefit from their use. (E11).

The second factor is the power of these policies.

Of course it is necessary to develop usage policies. They need to be issued from government departments such as the Ministry of Higher Education of Universities. If the rector of a university is interested in OCSNs, for example, this will affect others and make them cooperate and pay more attention to this subject. But if higher management is not interested in this implementation, then the implementation of social networks becomes useless and just for ISO or quality assurance certificates. (E8)

The importance of OCSN use policy factors in their success of use to enhance teaching and learning in Saudi Arabia's higher education is evident, but the question is how to develop these policies. The next section will try to answer this question.

6.3.5(i) OCSN Educational Use Policy Model

... policy is much more than a specific policy document or text. Rather, policy is both process and product. In much a conceptualization, policy involves the production of the text, the text itself, ongoing modifications to the text and processes of implementation into practice. (Rizvi and Lingard, 2009, p.5)

As previously mentioned, the study finding illustrated the importance of the OCSN use policy to guide this implementation towards its aims. To this end, providing a policy model will help dissension makers in Saudi Arabia's higher education to extract and develop the required policies.

The literature review found rich content related to the educational policy, but nothing included the four dimensions of knowledge as described in the SNTPCK model. Kaplan and Baldauf (1997) described a model of

language-in-education policy which was found to be promising for developing a new model of OCSN-in-education policy.

Based on the study findings and the finidings in the literature review, the study developed a framework for illustrating policies for OCSNs usage in education.

The framework represents a strong connection among these seven components and each connection line in the framework represents a two-way connection. Thus, changing one component leads to changing others. For example, changing content policy will lead to change on educational policy, which will affect the users' policy, etc. Changes in policies are essential for driving the implementation of OCSNs toward its aims. This emphasizes the importance of keeping an eye on these policies in order to track the efficiency of any changes in them.
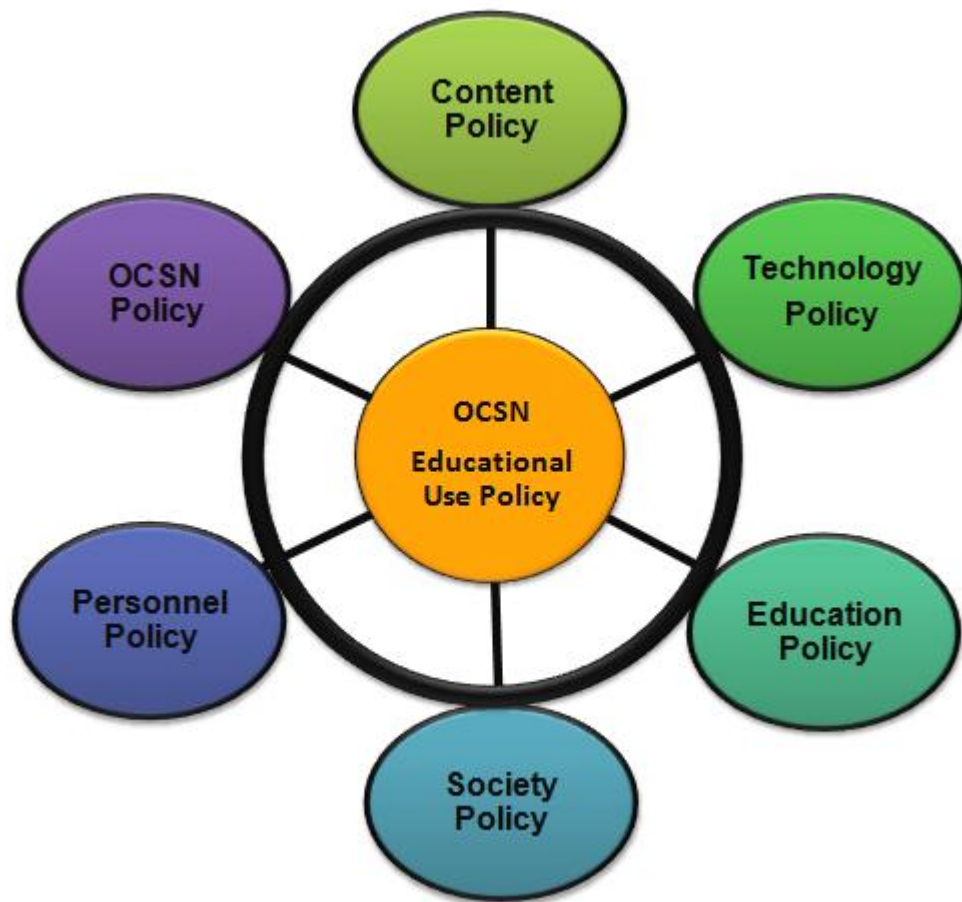
Figure 6-4: OCSN Educational Use Policy Framework

In addition to that, the framework of OCSNs educational use policy consists of the following seven components:

OCSN policy: OCSN has its own policy to manage the relationship among its components. For example, using social networks such as Facebook for educational purposes requires considering that network's policies when the OCSN educational use policy is developed.

Content policy: The content used in these for educational purposes is designed and built based on a specified policy. This policy must be used as an input point for the OCSN educational use policy.

Technology policy: This includes the policies of all the technologies used to support the OCSN implementation in education, such as the Internet, communication networks, and hardware.

Education policy: Education policies consist of all the educational guides that manage the educational processes. These are main factor in the OCSN educational use policy.

Society policy: Education as a social activity needs to be on its social context. To that end, using OCSNs to enhance teaching and learning cannot be isolated from society policy because the social part of these networks is their power and the key of their sources.

Personnel policy: The use of OCSN involves wide groups of people to collaborate with each other in order to achieve the network aims. To that end, individual and group personnel policy needs to be considered.

OCSN educational use policy: This policy is aimed to guide the use of OCSNs in education. It affects and effects change in other policies in this model.

The importance of the educational use policy stems from the rapid changes in the educational environment, such as implementing new technology or

developing new learning methods or tools. The OCSN educational use policy needs to be updated based on changes in the educational environment.

6.4 Planning and Designing OCSN Integration in Education

Previous discussion about OCSNs and their usages in education cannot be completed unless the main stone of this necklace is added: the planning and designing part. Although planning and designing are completely different stages, some comments tied them together.

The study's findings and the literature review indicate that complexity, comprehensiveness, and flexibility are three characteristics of any planning and designing efforts for integrating OCSNs into education. The next sections will discuss these three aspects based on the findings of the study.

6.4.1 Complexity

The SNTPCK model (Chapter 4, Section 4.4) described 15 types of knowledge, representing the background of using OCSNs to enhance teaching and learning. This provides sufficient evidence for the complexity of the required changes to integrate OCSNs in education. In addition, the literature review highlighted the complexity of this change and recommended a complex solution for such a complex problem (see Chapter 3, Section 3.2.1).

One of its complexities is that the planning and designing of such educational changes need to be sustainable and scalable, and these two concepts served as the key determinants of success for any educational change (Whitcomb et al., 2009). The complexity of integrating OCSN in education moved beyond visible aspects such as planning and design to include invisible aspects such as attitudes and beliefs.

The findings showed differences between Saudi universities in many factors related to using OCSNs in education such as ICT infrastructure, acceptance, and experiences. To this end, the planning and designing for integrating OCSNs in education should reflect the complexity of this task and cope with these differences between universities.

6.4.2 Comprehensiveness

Many factors affect OCSN integration in educational environments. The findings extended the list of these factors, as mentioned in Chapter 5. Furthermore, the literature review emphasised the importance of considering other factors (see Chapter 3, Section 3.4.3).

To this end, the planning and designing of using OCSNs in educational environments need to be comprehensive. In order to achieve the target aims when using these networks, all factors that affect the required educational change need to be considered.

6.4.3 Flexibility

The third characteristic of planning and designing for the OCSN integration solution is flexibility. As mentioned before, the processes of changing educational environments to integrate OCSNs require working with a massive number of variables. This makes it difficult to find one solution that can fit all the educational settings in Saudi universities unless it is extremely flexible.

The flexibility of any solution depends on the flexibility of its plan and design, which will allow reshaping it based on each educational setting's conditions and requirements. In addition, flexibility is needed on other levels, including the technical, legislative and attitudinal levels.

For example, to achieve an acceptable level of flexibility and allow local variations, the Ministry of Education needs to prepare local leaders to assume the roles and responsibilities that were previously the remit of the central departments.

This characteristic of planning and designing OCSN integration into education strongly emphasises its importance in the study's findings and the literature review.

This leads to the end of Chapter 6 (the discussion chapter), which discussed the study's findings in light of the theoretical parts of the study.

6.5 Summary

This chapter discussed the findings from the Delphi method and the interviews in light of the literature review. First, the possibility of enhancing teaching and learning processes in Saudi Arabia's higher education by using OCSNs was identified. The finding showed positive feelings among the study's experts towards using these networks and accepting changes in the educational environment.

In general, the findings can be summarised as follows:

- There are differences in the infrastructures in these universities.
- There are variations in the purposes for using OCSNs.
- Most uses mentioned range between social activities and educational activities.
- There is a need to increase awareness about using these networks.
- The policy for OCSN use in education has a direct effect on the purpose for the use and the number of users.

Based on the findings of this study, two models were developed. The first one was the OCSN educational use policy model, which described the dimensions of using OCSNs in education policy. The second model described a suggested model for using OCSNs in Saudi Arabia's higher

education context. Both models developed were based on the findings and literature review.

The discussion extended to identify factors that could affect the use of OCSNs in Saudi Arabia's higher education. These factors were discussed in detail in five main categories: OCSNs, content, policies, technological, and pedagogical factors.

Finally, yet importantly, the planning and designing of OCSN integration in education were discussed in this chapter. Complexity, comprehensive, and flexibility are the three main characteristics of planning and designing highlighted in this chapter.

Based on the study's findings and its discussions, the study's conclusion and recommendations were formed and shaped and will be explored in the next chapter.

CHAPTER 7:   CONCLUSIONS AND

RECOMMENDATIONS

This chapter aims to illustrate the number of conclusions produced by this study and to suggest a number of recommendations based on the findings and the methodology used. The content of this chapter includes linking the research question with the study findings. It then reflects on the research methodology applied. Following that, this chapter investigates the study implications and limitations. In addition, recommendations and further research will also be described in this chapter.

7.1 Review of the research questions

The objective of this study is to answer a number of questions listed clearly in the study introduction, and the study was deemed a successful study if it succeeded to answer its questions (Chapter 1 Section 1.3). This part aims to prove the success of the study by linking the research questions with the study findings.

7.1.1 Can learning and teaching in higher education in Saudi Arabia be enhanced by using online collaborative social networks (OCSNs)?

The simple answer for this question is YES, BUT with a number of conditions. This is the main question for this research and the most difficult question to answer. In fact, the answer to this question can be drawn from

all of the study findings. As was stated in Chapter 6 Section 6.1, the study sought to address this issue from different perspectives. The findings in general suggested that the OCSN is a promising tool to enhance teaching and learning in Saudi higher education. In addition, the findings listed a variety of uses for these networks in higher education.

On the other hand, the implementation of OCSNs in education is not an easy task. It requires a great deal of good planning and massive resources for such a long-term project. Moreover, the study findings point out number of challenges that could lead to the failure in the implementation of OCSNs in education (see Chapter 6, Section 6.3).

7.1.2 What would be an appropriate model to support learning and teaching in the Saudi context?

The study findings revealed a difference between universities' ICT infrastructure, which renders the use of a unique model for all universities not useful (Chapter 6 Section 6.3.3). To address this issue, the study developed a flexible model for using OCSNs in higher education. This model is described in detail in the discussion chapter (Chapter 6, Section 6.2).

7.1.3 What would be the implication of such a model on higher education?

There is a direct and indirect implication for this model in higher education. The direct implication is understanding the possibility and the method of

using OCSN to enhance learning and teaching in Saudi higher education (Chapter 6, Sections 6.2.1 and 6.2.2). The indirect implication of this model is enhancing the education environment including its processes and services as a result of the successful use of OCSNs in higher education. Experts in this study expected additional benefits to the educational environment when the OCSN is used in higher education. Moreover, experts extend the implication of using OCSN to include a number of aspects, such as teaching method, communication, and the development of technical knowledge and skills (Chapter 6, Section 6.1.4).

7.1.4 What are the factors that might affect the success of OCSN usage to improve teaching and learning quality?

The study successfully and clearly answers this question, as it received more attention from the experts. The discussion of the study findings reported these factors in detail (Chapter 6, Section 6.3). The findings show that some factors related to pedagogy, technology, OCSNs, and content may affect the successful usage of OCSN to improve teaching and learning in Saudi higher education.

7.2 Reflection on Research Methodology

The selection and design of the research method was based on the literature and the nature of the research questions. As was mentioned previously (Chapter 7 Section 7.1), this method was applied to answer the

research question. However, it is worth mentioning here some of the issues related to the use of the tools and methods in this study.

7.2.1 Delphi Method

The use of the Delphi method was a good choice. This method provides rich data during the first round, which helps to cover most of the aspects related to the research problem. The advantages of the Delphi methods facilitate the contribution from experts within a wide geographic area without the need to meet face to face. In addition, the experts' panel under the Delphi method helped to shape the findings from the first round during the final round through evaluation.

Admittedly, the implementation of this method takes more time and effort comparing with other methods such as survey distribution, for example, but the results are worth the extra effort. The findings of this method help facilitate a strong base upon which to build the next steps, such as data analysis and discussion.

As mentioned previously, this method helped to answer the research questions, and this is the most important element of any research.

7.2.2 Interview

As a result of the pilot study, it was thought that discussing the findings in-depth from the Delphi method with the same expectations will add more value to the study findings in general.

Adding the interview step to the Delphi method was the correct decision. The interviews helped in the collection of useful data about specific phenomena merged from the Delphi method findings. In fact, applying this method was an easy task for the researcher because of the strong relationship forged between experts and the researcher as a result of using the Delphi method.

The use of phone interviews led to the loss of some useful data, such as non-verbal data. On the other hand, this technique adds more flexibility in terms of time and place for the interviewees and the researcher, which has a great impact on the quality and quantity of the collected data.

7.2.3 SNTPCK Model

The SNTPCK model is applied in this study as the main framework. The model provides a strong base upon which to design the research methodology, specifically Delphi method instruments. This can be seen clearly in the comprehensive findings (found in Chapter 6) of the study.

In addition, the use of this model as an analysis tool seems to be promising for success, which would include obtaining a broad picture about the knowledge of experts in the fifteen types of knowledge presented in the SNTPCK model.

7.2.4 Triangulation

According to Duffy (1987, p130), triangulation refers to applying more than one data source, method, theory, and/or researcher in a study. This approach is used in order to improve the validity of the research. Guion et al. (2011) illustrated five types of triangulation as follows:

Data Triangulation: The use of more the one source of data, such as interviews and observations.

Investigator Triangulation: According to Guion et al., this type refers to targeting the same phenomena with the same method but by different investigators.

Theory Triangulation: This "involves the use of multiple perspectives to interpret a single set of data." An obvious example of that is "bring together people from different disciplines" (Guion et al., 2011, p. 2).

Methodological Triangulation: This type of triangulation involves the use of qualitative and quantitative methods in the same study, such as interviews and survey.

Environmental Triangulation: This type involves the use of "different locations, settings, and other key factors related to the environment" (Guion et al., 2011, p. 2).

The study methodology allows researchers to benefit from three types of triangulation as described by Guion et al.

The Delphi method enables the involvement of experts from different disciplines, which means that the study used theory triangulation, since experts as mentioned came from three major academic areas (humanities schools (39.6%), science schools (50%), and medical schools (10.4%)).

In addition, the use of the Delphi method also makes it possible to apply a study in five different geographical areas, since each university is located in a different city. This leads to environmental triangulation for the data collated in this study.

Finally, the use of data from different sources such as Delphi method, interviews, and documents (literature review) adds more validity to the study. This precisely follows the definition of data triangulation.

7.3 Implications

The study targeted a new area of using OCSN in Saudi higher education, although as it is mentioned in the literature there is still something in common between all societies. The implications of the study in this report focus on two majors areas: the implications of the key findings and the implications of the OCSN model.

7.3.1 Implications of the Key Findings

Without underestimating the value of the all of the findings, the key findings of the study are as follows:

- There are differences in the infrastructures of these universities.

- There is variation in the purpose in using OCSNs.

- Most of the uses mentioned range between social activities and educational activities.

- There is a need to increase awareness about using these networks.

- The policy for using OCSN in education has a direct impact on the purpose of the use and the users' number.

In addition, the study developed two aspects: a) a model for using OCSN in Saudi higher education (Chapter 6, Section 6.2) and b) an OCSN educational policy framework (Chapter 6, Section 6.3.5).

Each one of these outcomes has specific implications of its own, although in this report, only the general implications will be discussed in the following three levels.

7.3.1 (i)Educational Policy Makers

The findings revealed some shortage on this side, which require further efforts in this field. In some cases, the missing policy is the main point, and

in others, access to the policies is the main issue. Highlighting this issue

has strong implications on the level of educational policy makers.

In addition, the study suggested a framework to support policy making

regarding the use of OCSNs in education (Chapter 6, Section 6.3.5). This

framework described the sources that affect the use of OCSNs in

education policy. It also has direct implications on policy-making processes

partially related to the use of OCSN.

7.3.1 (ii)Educational Designers

Implementing a new tool in educational environment will no doubt require a

change in the educational design of its setting and possesses. The study

provides useful information about the use of OCSN to enhance teaching

and learning processes, which are important for the educational designers

in order to design or develop educational processes and material or the

environment in general.

7.3.1 (iii)Teachers

One of the key players in the application of OCSNs within education is

teachers. The study has direct implications on teaching and learning

processes as it investigates this issue in depth (Chapter 6, Section 6.1).

Experts in the study as mentioned before suggested different uses for

these tools for educational purposes, such as teaching, assessment,

evaluation, and collaboration.

On the other hand, these uses require additional equipment, which is also discussed in this study. Using what we have mentioned so far will help teachers to plan and use the OCSNs to support and help their students.

7.3.1(iv) Educational Researchers

On the level of educational researchers, this study has value based on its aims and methodology. The study provides a success example of the used of the Delphi method as a search tool in the education field, especially for new concepts or technology usage.

Moreover, the study developed new dimensions for building knowledge, which are described in detail in the SNTPCK model (Chapter 4, Section 4.2). This model has an impact on the way we look at this issue, as it is applied based on four dimensions instead of three in this area (using OCSN).

The combination of two tools (the Delphi method and interviews) adds greater value to the study findings. Researchers in this field may find it useful in their studies.

7.4 Limitations of the study

The study has a number of limitations based on its aim and methodology and, to some extent, to its context.

First, this study involved time limitation, since it was conducted in 2012. This may limit the value of the study findings because of the changes in the the education environment and the ICT infrastructure in Saudi Arabia. Ph.D. students face a planned procedure to follow during this stage. This procedure presents a specified time limit for the fieldwork, which leads to this limitation.

The second limitation targets the government universities only. In 2009, there were four private universities in Saudi Arabia. The private higher education institutions in Saudi Arabia completely differed from the government-run higher education schools based on the infrastructure and the limitations of numbers of students in the private universities. In addition, the education and management systems are also different. For this reason, these private universities are not included in the study.

The third limitation relates to the study experts' panel. This panel was selected from five government universities in Saudi Arabia. In 2009, when the design of this study started, there were twenty-one universities, but only six of them meet the study criteria for selection of potential universities. These six universities have web pages for its facility members, which was important in the experts' panel selection. One of these six universities did not reply to the request for approval in the appropriate time, so it was excluded from the study sample.

The fourth limitation also involves the experts' panel. Students in these universities were not involved in this study. This is because of the method

used in this study, since the Delphi method requires selection of a panel based on specific criteria, and the successful selection of the right panel will lead to the success of the study. Since there is a gap between teachers and students in knowledge, skills, and experience, the researchers decided not to include students in this study.

7.5 Recommendations and Further Research

The findings of the study, as mentioned previously, revealed potential uses for OCSNs to enhance teaching and learning in Saudi Arabia. In addition, they emphasise the importance of placing more attention on the number of factors that may affect the use of OCSNs in education. Based on that, several recommendations can be provided for those involved in the implementation of these networks. The following are some recommendations for those in the four levels of experts based on their roles in the education system.

7.5.1 Recommendations for Educational Policy Makers

The main role of educational policy makers is to develop a policy used for the OCSNs, which will guide this use to achieve successful implementation to these networks. The key recommendations of the study for educational policy makers are as follows:

- It is recommended that OCSNs be used in Saudi higher education and provide the benefits of such application to enhance teaching and learning processes.

- The educational policies of using OCSNs in Saudi higher education need to be available for all users.

- These policies require continuous development because of the fast changes in its related knowledge.

- It recommended that the developed framework be used to support the making of OCSNs' use policy.

7.5.2 Recommendation for Educational Designers

The study developed a model for using OCSNs in Saudi higher education. This model and other findings in this study provide rich information for educational designers to use in designing educational content and processes. The recommendations for the educational designers are as follows:

- In order to raise awareness about these networks, it is recommended that OCSN implementation be made gradually in education.

- Education designers should apply more attention to the use of OCSN requirements such as training and equipment.

- They should also consider the required knowledge for each level of use.

- It is recommended that the suggested model be used in this study as a guideline for designing the use of OCSNs in education.

7.5.3 Recommendation for Teachers

Teachers are a key factor for success when using OCSNs in education, because they are responsible to carry out the action steps for its use. The recommendations for teachers are as follows:

- Teachers should make sure students have the required skills and knowledge before applying OCSNs.
- It is recommended that teachers place priority on the students' needs in deciding whether to use or not use these networks.
- Teachers should encourage students to use the OCSNs in a correct way by support them with the models of use.

7.5.4 Further Works of Research

This study revealed the need for further research to fulfil different purposes. The recommendations for further research are as follows:

- The same purpose of this study needs to be researched again because of the variability of certain elements such as technologies, ICT infrastructure, and number of universities.
- Further research that focuses on students' point of view about using OCSN in education is highly recommended.

- It is recommended that researchers focus on more universities and wider geographic areas in further researches.

7.6 The Contribution of the study

The main aim of the study is to investigate the potential of enhancing higher education in Saudi Arabia by using OCSNs. The originality of using this concept in education is very clear, since OCSNs were just founded in 2005 when O'Reilly (2005) introduced Web 2.0 concept.

The study used a mixed research approach using the Delphi method with the participation of 48 experts from five Saudi universities. That research was followed up with interviews with 12 experts from the Delphi method's expert panel. The strength of this study comes from its targeted field and the pioneering-use of Delphi method for investigating this phenomenon in Saudi higher education particularly.

Moreover, the study developed two models and a framework related to using OCSNs in education. The first one is the SNTPCK model developed in this study and used as a backbone for its fieldwork. The second model is the guide for implementing OCSNs in education. Finally, the study developed a framework for the usage of OCSNs in education policy.

Using Delphi method allows benefiting from a combination of qualitative and quantitative data. The method was found useful for extracting forty-eight experts' experiences about the potential use of OCSNs in Saudi

higher education. Despite the time-consuming process in conducting Delphi method, it provides rich information benefiting from its data collection during its rounds. In addition to that, using Delphi method with faculty members in higher educational institutions was appropriate. It allows for more flexibility in time and place to participate in this study. Another methodological contribution is the development or SNTPCK model. This model adds more value to the study outcome, since it bridged the gap of the Koehler and Mishra (2008) TPCAK model for understanding of the relation between technology and pedagogical content knowledge. In addition to that, the SNTPCK model used as a code-generation for qualitative data analysis to help organize the final round questionnaire.

One of the study contributions to the knowledge in the education field is developing a model for OCSNs usage in higher education. This model highlights important issues about the implementation processes. It argued the importance of looking to this implementation as a major task. In addition to that, the study developed a framework for the OCSNs educational-use policy. This framework aims to help the use of these networks by determining a group of policies that could affect accelerate such usage.

Finally, the findings of this study and its recommendations will add useful information about using OCSNs in higher education in general and not only in Saudi Arabia. In addition to that, the study indicates a number of issues that need to be targeted in future research.

7.7 Summary

This chapter described the success of this study in identifying and describing an appropriate model for using OCSNs to enhance the quality of teaching and learning in Saudi Arabia's higher education. The study provided evidence that Saudi Arabia's higher education system can be enhanced through the use of OCSNs. In addition, the study highlighted a number of factors that might affect the use of OCSNs in education. These findings extend the knowledge about the expected impact of OCSN usage in the Saudi context.

That results stemmed from using mixed methods, including the Delphi method and semi-structured interviews, which provided rich data and helped answer the research questions.

The findings of the study have many implications for educational policy makers, educational designers, teachers, and educational researchers.

The study has a number of limitations, such as time and the number of the universities involved in this study.

A number of recommendations can be drawn from the study, benefitting educational policymakers, educational designers, teachers, and educational researchers:

- The educational policies for using OCSNs in Saudi higher education need to be available to all users.

- These parties should use the suggested model in this study as a guideline in designing the use of OCSNs in education.

- Educators should make sure students have the required skills and knowledge before using OCSNs.

- The subject of this study should be researched again because of the variability in elements such as technologies, ICT infrastructure, and number of universities.

Finally, the study highlighted some aspects that require further in-depth researches on the use of technology in the Saudi context.

REFERENCES

ADLER, M. & ZIGLIO, E. 1996. *Gazing into the oracle : the Delphi method and its application to social policy and public health / edited by Michael Adler and Erio Ziglio* London Jessica Kingsley Publishers.

AHMAD, P., HUSSAIN, A. & AQIL, M. 2013. Use of web 2.0 in Saudi Arabia Universities. *International Journal of Information Dissemination and Technology,* 3**,** 158-166.

AL-ASMARI, A. M. & RABB KHAN, M. S. 2014. E-learning in Saudi Arabia: Past, present and future. *Near and Middle Eastern Journal of Research in Education***,** 2.

AL-FAHAD, F. N. 2009. Students' Attitudes and Perceptions Towards The Effectiveness of Mobile Learning in King Saud University, Saudi Arabia. *The Turkish Online Journal of Educational Technology – TOJET,* 8**,** Article 10.

AL-FAKHRI, M., CROPF, R., KELLY, P. & HIGGS, G. 2008. E-Government in Saudi Arabia: Between Promise and Reality. *International Journal of Electronic Government Research,* 4**,** 59-85.

AL-GAHTANI, S. 2003. Computer technology adoption in Saudi Arabia: correlates of perceived innovation attributes. *Information Technology for Development,* 10**,** 57-69.

AL-GHAMDI, H. A. & ABDULJAWWAD, N. 2005. *Improvement of Education System in Saudi Arabia,* Riyadh, Alrushed.

AL-HAMMED, M. M. 2007. Higher Education. *In:* AL-HAMMED, M. M., ZEAYADAH, M. A., AL-OTAIBY, B. J. & METWALI, N. A. (eds.) *Education in Kingdom of Saudi Arabia* 4th ed. Riyadh: Alrushed.

AL-HARBI, K. A.-S. 2011. e-Learning in the Saudi tertiary education: Potential and challenges. *Applied Computing and Informatics,* 9**,** 31-46.

AL-JARF, R. S. 2001. The Requirements of The Transition From Traditional Learning to e-Learning. *Educational Curricula and The Major Technological and Information Revolutions.* Cairo.

AL-KHALIFA, H. S. & GARCIA, R. A. 2013. The State of Social Media in Saudi Arabia's Higher Education. *International Journal of Technology and Educational Marketing* 3**,** 65-76.

AL-MOHAISSIN, I. A. 2003. Teaching Informatics in Saudi Arabian Public Schools: National Current Statues, International Prospective, and Future Plan. *King Saud University Digital Library: Educational Sciences & Islamic Studies,* 15.

AL-MOQAIDY, A. M. 2004. *Improvement of Education System in Saudi Arabia,* Riyadh, Alrushed.

AL-SHEHRY, A., ROGERSON, S., FAIRWEATHER, N. B. & PRIOR, M. Year. The Motivations for Change towards E-Government Adoption: Case Studies from Saudi Arabia *In:* eGovernment Workshop '06 2006 Brunel University, West London,UK.

AL-ZAHRANI, S. & AL-GHTANI, Y. 2006. End-users attitudes towards information and communication technology in the civil defence and industrial sector in Saudi Arabia. *the 18th National Computer Conference 2006.* Riyadh, Saudi Arabia.

ALAMRI, M. 2011. Higher Education in Saudi Arabia. *Journal of Higher Education Theory and Practice,* 11**,** 88-91.

ALEXANDER, B. 2006a. Web 2.0: A new wave of innovation for teaching and learning? *Learning,* 41**,** 32-44.

ALHARETH, Y. A., DIGHRIR, I. A. & ALHARETH, Y. A. 2015. Review of Women's Higher Education in Saudi Arabia. *American Journal of Educational Research,* 3**,** 10-15.

ALJASIR, S., WOODCOCK, A. & HARRISON, S. 2014. Usage of social network sites amongst saudis: Why do Saudi university students have multiple Facebook accounts? *International Journal of Social Science and Humanity,* 4**,** 293-297.

ALMAGHLOUTH, O. 2008. *Saudi secondary school science teachers' perceptions of the use of ICT tools to support teaching and learning.* Ph.D, The University of Waikato.

ALMOHAYA, A. 2008. *The effect of eLearning 2.0 on collaborative learning skills at the teachers' college students at King Khalid University in Abha.* PhD, Umm Al-Qura University.

ALSUREHI, H. A. & AL-YOUBI, A. A. 2014. TOWARDS APPLYING SOCIAL NETWORKING IN HIGHER EDUCATION: CASE STUDY OF SAUDI UNIVERSITIES. *International Journal of Academic Research,* 6**,** p217-231.

ALWAGAIT, E., SHAHZAD, B. & ALIM, S. 2014. Impact of social media usage on students academic performance in Saudi Arabia. *Computers in Human Behavior %@ 0747-5632.*

ALWAHAIBY, W. 2011. *New 2000 Computer Lab for Shools* [Online]. Available: http://walhaseb.com/archives/4699 [Accessed 14 January 2014].

APPLEFIELD, J., HUBER, R. & MOALLEM, M. 2001. Constructivism in theory and practice: Toward a better understanding. *High School Journal,* 84**,** 35-53.

ARMSTRONG, J. & FRANKLIN, T. 2008. A review of current and developing international practice in the use of social networking (Web 2.0) in higher education. Manchester: Franklin Consulting.

ASAD, S., AL MAMUN, M. A. & CLEMENT, C. K. 2012. The Effect of Social Networking Sites to the Lifestyles of Teachers and Students in Higher Educational Institutions. *International Journal of Basic and Applied Sciences,* 1**,** 498-510.

ATHEEB. 2008. *Etihad Atheeb Telecom (GO)* [Online]. Available: http://www.atheeb.com/english/viewnews.php?p=4&f=_8&n=46 [Accessed 10 January 2014].

ATHERTON, J. 2011. *Learning and Teaching; Vygotsky* [Online]. Available: http://www.learningandteaching.info/learning/piaget.htm [Accessed 15 January 2014].

BANDURA, A. 1989. Social cognitive theory. *In:* VAST, R. (ed.) *Annals of child development. Vol. 6. Six theories of child development.* Greenwich: CT: JAI Press.

BANDURA, A. 2011. Social cognitive theory. *In:* LANGE, P. A. M. V., KRUGLANSKI, A. W. & HIGGINS, E. T. (eds.) *Handbook of social psychological theories.* SAGE.

BEAN, L. & HOTT, D. D. 2005. Wiki: A Speedy New Tool to Manage Projects. *Journal of Corporate Accounting & Finance,* 16**,** 3-8.

BEATTY, K., BERRELL, M., MARTIN, T. & SCANLAN, P. 2009. Facilitating Tertiary Educational Change in the Middle East: from defining cultures to a culture of quality. *INQAAHE 2009 Conference.* the United Arab Emirates.

BELL, F. 2010. Connectivism: Its place in theory-informed research and innovation in technology-enabled learning. *The International Review of Research in Open and Distributed Learning,* 12**,** 98-118.

BLOOD, R. 2000. *Weblogs: a history and perspective* [Online]. Available: http://www.rebeccablood.net/essays/weblog_history.html [Accessed 27 November 2016].

BOEREE, C. 1999. Jean Piaget. *Personality Theories* [Online]. Available: http://www.pcc.edu/staff/pdf/420/C__DOCUME~1_HERBFR~1_LOCALS~1_TEMP_plugtmp_piaget.pdf [Accessed 28 November 2016].

BOLGER, F. & WRIGHT, G. 1992. Reliability and Validity in Expert Judgment. *Expertise and decision support*, 47-76.

BORJA, R. R. & ARLINGTON, V. 2005. Podcasting craze comes to K-12 schools.

BOULOS, M. N. K., MARAMBA, I. & WHEELER, S. 2006. Wikis, blogs and podcasts: a new generation of Web-based tools for virtual collaborative clinical practice and education. *BMC Medical Education,* 6**,** 41.

BOYD, D. & ELLISON, N. 2007. Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication,* 13**,** article 11.

BRAAKSMA, M. H., VAN DEN BERGH, H., RIJLAARSDAM, G. & COUZIJN, M. 2001. Effective learning activities in observation taks when learning to write and read argumentative texts. *European Journal of Psychology of Education,* 16**,** 33-48.

BRYANT, T. 2006. Social software in academia. *Educause Quarterly,* 29**,** 61.

BRYMAN, A. 2006. Integrating quantitative and qualitative research: how is it done? *Qualitative research,* 6**,** 97-113.

CACHIA, R., COMPAÑÓ, R. & DA COSTA, O. 2007. Grasping the potential of online social networks for foresight. *Technological Forecasting and Social Change,* 74**,** 1179-1203.

CARNOY, M. & RHOTEN, D. 2002. What does globalization mean for educational change? A comparative approach. *Comparative Education Review,* 46**,** pp. 1-9.

CARNOY, M. & RHOTEN, D. 2007. What does globalization mean for educational change? A comparative approach. *Comparative Education Review,* 46.

CAUDLE, S. L. 2004. Qualitative data analysis. *In:* WHOLEY, J. S., HATRY, H. P. & NEWCOME, K. E. (eds.) *Handbook of practical program evaluation.* 2nd ed. San Francisco, USA: Jossey-Bass Inc Pub.

CHIEU, V. M. 2007. An operational approach for building learning environments supporting cognitive flexibility. *Educational Technology & Society,* 10**,** 32-46.

COHEN, L., MANION, L. & MORRISON, K. 2007. *Research methods in education,* London, UK, Routledge.

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION 2014a. Communications and Information Technology Commission: Annual Report 2014.

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION. 2014b. *Vision and Mission* [Online]. Available: http://www.citc.gov.sa/en/AboutUs/Pages/Visionandmission.aspx [Accessed 10 January 2014].

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION. 2014b. *ICT Sector Reforms in Saudi Arabia* [Online]. Available: http://www.citc.gov.sa/English/AboutUs/Pages/citccompl.aspx [Accessed 10 January 2014].

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION 2015a. Annual Report 2015.

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION 2015b. ICT Workforce in The kingdom of Saudi Arabia.

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION. 2016a. *Issued Licenses* [Online]. Available: http://www.citc.gov.sa/en/RulesandSystems/RegulatoryDocuments/Licenses/IssuedLicenses/Pages/default.aspx [Accessed 14 November 2016].

COMMUNICATIONS AND INFORMATION TECHNOLOGY COMMISSION 2016b. KSA ICT Indicators End of Q3 2016.

COONER, T. 2005. Dialectical constructivism: reflections on creating a web-mediated enquiry-based learning environment. *Social Work Education,* 24**,** 375-390.

CORBIN, J. M. & STRAUSS, A. 1990. Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology,* 13**,** 3-21.

CROOK, C., CUMMINGS, J., FISHER, T., GRABER, R., HARRISON, C., LEWIN, C., LOGAN, K., LUCKIN, R., OLIVER, M. & SHARPLES, M. 2009. Web 2.0 technologies for learning: the current landscape–opportunities, challenges and tensions.

DALKEY, N. & HELMER, O. 1963. An experimental application of the Delphi method to the use of experts. *Management science,* 9**,** 458-467.

DAVIES, J. & MERCHANT, G. 2009. *Web 2.0 for schools: Learning and social participation,* New York, Peter Lang Publishing.

DAVIS, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340.

DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. R. 1989. User acceptance of computer technology: a comparison of two theoretical models. *Management science,* 35, 982-1003.

DELBECQ, A. & VANDEVEN, A. 1971. A group process model for problem identification and program planning. *Journal of Applied Behavioral Science,* 7, 466-492.

DICICCO-BLOOM, B. & CRABTREE, B. F. 2006. The qualitative research interview. *Medical education,* 40, 314-321.

DOOLITTLE, P. Year. Constructivism and online education. *In:* Online Conference on Teaching Online in Higher education, 1999 Fort Wayne, USA. Citeseer.

DOOLITTLE, P. & CAMP, W. 1999. Constructivism: The Career and Technical Education Perspective. *Journal of Vocational and Technical Education,* 16.

DOWNES, S. 2005. E-learning 2.0. *eLearn Magazine,* 2005.

DUFFY, M. E. 1987. Methodological triangulation: a vehicle for merging quantitative and qualitative research methods. *Journal of Nursing Scholarship,* 19, 130-133.

DUFFY, P. & BRUNS, D. A. 2009. The use of blogs, wikis and RSS in education: A conversation of possibilities. *The Online Learning and Teaching Conference 2006.* Brisbane,Australia: Queensland University of Technology.

DUNN, L. 2013. Teaching in higher education: can social media enhance the learning experience? *6th Annual University of Glasgow Learning and Teaching Conference.* Glasgow, UK.

EBNER, M. Year. E-Learning 2.0= e-Learning 1.0+ Web 2.0? *In:* Second International Conference on Availability, Reliability and Security (ARES'07), 2007. IEEE, 1235-1239.

EFIMOVA, L. & FIEDLER, S. Year. Learning webs: Learning in weblog networks. *In:* Web-based communities 2004, 2004 Lisbon, Portugal. 490-494.

EHIGIE, B. O. & EHIGIE, R. I. 2005. Applying Qualitative Methods in Organizations: A Note for Industrial/Organizational Psychologists. *The Qualitative Report,* 10**,** 621-638.

EISENHARDT, K. 1989. Building Theories from Case Study Research. *The Academy of Management Review,* 14**,** 532-550.

ESCWA 2003. Profile of The Information Society in The Kingdom of Saudi Arabia. United Nations.

FACEBOOK. 2016. *Facebook NewsRoom:Stats* [Online]. Available: http://newsroom.fb.com/company-info/ [Accessed 2 December 2016].

FLICK, U. 2008. *Designing qualitative research*, Sage.

FLYNN, L., JALALI, A. & MOREAU, K. A. 2015. Learning theory and its application to the use of social media in medical education. *Postgraduate medical journal***,** postgradmedj-2015-133358.

FODAH, O. M. 2005. Evaluating the Computer Curriculum Applied in the High Schools in the Presidency of Girls Education. *King Saud University Digital Library: Educational Sciences & Islamic Studies,* 17.

FRANKLIN, T. & HARMELEN, M. V. 2007. *Web 2.0 for content for learning and teaching in higher education* [Online]. Available: http://jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-content-learning-and-teaching.pdf [Accessed 28 November 2016].

FULLAN, M. 2007. *The new meaning of educational change,* New York, Teachers College Press.

FUMERO, A., AGUIRRE, S., TAPIADOR, A. & SALVACHÚA, J. 2006. Next-Generation Educational Web. *IEEE International Technology Management Conference (ICE)***,** pp. 1-8.

GARRISON, D. 1993. A cognitive constructivist view of distance education: An analysis of teaching-learning assumptions. *Distance Education,* 14.

GARRISON, D. R. 2011. *E-learning in the 21st century: A framework for research and practice*, Taylor & Francis.

GARRISON, D. R. & KANUKA, H. 2004. Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education,* 7**,** 95-105.

GENERAL AUTHORITY FOR STATISTICS. 2015. *Statistical Yearbook of 2015* [Online]. Available: http://www.stats.gov.sa/en/411 [Accessed 20 June 2015].

GENERAL DEPARTMENT OF STATISTICS AND INFORMATION. 2015. *Labour Force surveys* [Online]. Available: http://www.cdsi.gov.sa/English/index.php?option=com_docman&task=doc_download&gid=1932&Itemid=192 [Accessed 20 June 2015].

GEOGHEGAN, M. W. & KLASS, D. 2005. Podcast solutions: The complete guide to podcasting. Friends of Ed.

GLOBALWEBINDEX. 2016. *Trends16* [Online]. Available: http://boletines.prisadigital.com/Trends_16.pdf [Accessed 18 November 2016].

GORDON, T. 1994. The delphi method. *AC/UNU Millennium, Project Futures Research Methodology*.

GOTTSCHALK, P. 2000. Studies of key issues in IS management around the world. *International Journal of Information Management,* 20**,** 169-180.

GOV.UK. 2015. *2010 to 2015 Government Policy: Research and Development* [Online]. Available: https://www.gov.uk/government/publications/2010-to-2015-government-policy-research-and-development/2010-to-2015-government-policy-research-and-development [Accessed 10 August 2015].

GRAY, D. E. 2009. *Doing research in the real world,* Longon, UK, SAGE.

GREEN, D. 1994. *What Is Quality in Higher Education?,* Buckingham, Open University Press.

GROSSECK, G. 2009. To use or not to use web 2.0 in higher education? *Procedia Social and Behavioral Sciences* 1**,** 478–482.

GUBRIUM, J. F. & HOLSTEIN, J. A. 2002. *Handbook of interview research: Context and method,* London, UK, Sage.

GUION, L. A., DIEHL, D. C. & MCDONALD, D. 2011. *Triangulation: Establishing the Validity of Qualitative Studies* [Online]. Available: http://edis.ifas.ufl.edu/pdffiles/FY/FY39400.pdf [Accessed 18 January 2014].

HAMID, S., WAYCOTT, J., KURNIA, S. & CHANG, S. Year. The Use of Online Social Networking for Higher Education from An Activity Theory Perspective. *In:* PACIS, 2010. 135.

HANAFIN, S. 2004. *Review of literature on the Delphi Technique* [Online]. Available: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.521.4998&rep=rep1&type=pdf [Accessed 28 November 2016].

HANSON, M. 2001. Institutional theory and educational change. *Educational Administration Quarterly,* 37, 637-661.

HARGREAVES, A. 2014. Pushing the Boundaries of Educational Change *In:* HARGREAVES, A., LIEBERMAN, A., FULLAN, M. & HOPKINS, D. W. (eds.) *International Handbook of Educational Change: Part Two.* Springer Netherlands.

HASSANA, R. H. A. & WOODCOCK, A. 2006. Characteristics of computer education in Saudi Arabia. *18th National Computer Conference 2006.* Riyadh, Saudi Arabia: Saudi Computer Society.

HELMER, O. 1967. *Analysis of the future: The Delphi method* [Online]. Available: http://www.rand.org/pubs/papers/2008/P3558.pdf [Accessed 28 November 2016].

HEND, S. A.-K. & REGINA, A. G. 2013. The State of Social Media in Saudi Arabia's Higher Education. *International Journal of Technology and Educational Marketing (IJTEM),* 1, 65-76.

HOLMES, B. & GARDNER, J. 2006. *E-learning: Concepts and practice,* London, Sage Publications Ltd.

HOOVER, W. A. 1996. The Practice Implications of Constructivism. *SEDLetter,* 9.

HOUSE, E. R. 2000. Economic change, educational policy formation and the role of the state. *In:* ALTRICHTER, H. & ELLIOTT, J. (eds.) *Images of educational change.* Buckingham: Open University Press.

HUERTAS, M. A., CASADO, C., CÓRCOLES, C., MOR, E. & GUERRERO-ROLDÁN, A.-E. 2007. *Social networks for learning: Wikis, blogs and tagging in education* [Online]. Available: http://personal.uoc.edu/personalonto/files/mhuertass_eden2007.pdf [Accessed 10 January 2014].

HURST, M. 2015. *Social-Cognitive Learning Theory: Definition and Examples* [Online]. Available: http://study.com/academy/lesson/social-cognitive-learning-theory-definition-and-examples.html [Accessed 18 October 2015].

HUSSEIN, E. T. 2016. The Effectiveness of Using Blackboard in Improving the English Listening and Speaking Skills of the Female Students at the University of Hail. *Advances in Social Sciences Research Journal,* 3, 81-93.

HUSSIN, S. Year. Creating A Bigger ZPD For ESL Learners Via Online Forum. *In:* Teaching & Learning Conference, 2008 Orlando, Florida, USA.

IDC. 2015. *Explore 3rd Platform Transformation* [Online]. Available: http://www.idc.com/prodserv/3rd-platform/ [Accessed 23 June 2015].

JAFFER, S. 2010. Educational technology pedagogy: A looseness of fit between learning theories and pedagogy. *Education As Change,* 14**,** 273-287.

JISC. 2009. *Higher Education in a Web 2.0 World: Report of an independent Committee of Inquiry into the impact on higher education of students' widespread use of Web 2.0 technologies* [Online].   Available: http://www.jisc.ac.uk/media/documents/publications/heweb20rptv1.pdf [Accessed 10 January 2014].

JOHN-STEINER, V. & MAHN, H. 1996. Sociocultural approaches to learning and development: A Vygotskian framework. *Educational psychologist,* 31**,** 191-206.

JOHNSON, R. B. & ONWUEGBUZIE, A. J. 2004. Mixed methods research: A research paradigm whose time has come. *Educational researcher,* 33**,** 14-26.

JONASSEN, D. 1999. Designing constructivist learning environments. *In:* REIGELUTH, C. M. (ed.) *Instructional design theories and models: A new paradigm of instructional theory.* Mahwah, N.J: Lawrence Eribaum Associates. Inc.

JONES, A. & MERCER, N. 1993. Theories of learning and information technology. *In:* SCRIMSHAW, P. (ed.) *Language, classrooms and computers.* Routledge.

JONES, K. 2004. Mission drift in qualitative research, or moving toward a systematic review of qualitative studies, moving back to a more systematic narrative review. *Qualitative Report,* 9**,** 95-112.

JUHARY, J. B. 2006. Simulation Technologies And Learning Theories. *SimTecT 2006.* Melbourne.

KAPLAN, R. B. & RICHARD B. BALDAUF, J. 1997. *Language Planning: From Practice to Theory,* Clevedon, Multilingual Matters.

KEESEE, G. S. 2009. *Learning Theory* [Online]. Available: http://teachinglearningresources.pbworks.com/Learning-Theories [Accessed 25 November 2016].

KELL, C. 2006. *Continuing Professional Development for General Practitioners: is eLearning an Option?* Master of Philosophy, The University of Sheffield.

KIMBLE, G. 2000. Behaviorism and unity in psychology. *Current Directions in Psychological Science,* 9**,** 208-212.

KING FAISAL UNIVERSITY. 2014. *Higher education development: E-Learning Unit* [Online]. Available: http://www.kfu.edu.sa/en/deans/development/e-learningunit/pages/home.aspx [Accessed 10 January 2014].

KING KHALID UNIVERSITY. 2014. *eLearning Center: eLearning at KKU* [Online]. Available: http://elc.kku.edu.sa/en [Accessed 10 January 2014].

KING SAUD UNIVERSITY. 2009. *Deanship of e-learning and distance education: Vision, Mission and Objectives* [Online]. Available: http://ksu.edu.sa/sites/KSUArabic/Deanships/Elearn/Pages/Introduction.aspx [Accessed 10 January 2014].

KING SAUD UNIVERSITY. 2011. *Department of Educational Technology:Vision of the department* [Online]. Available: http://colleges.ksu.edu.sa/education/EducationalTechnology/default.aspx [Accessed 10 January 2014].

KING SAUD UNIVERSITY. 2013. *About the College of Computer and Information Sciences* [Online]. Available: http://ccis.ksu.edu.sa/en/ccis-history [Accessed 10 January 2014].

KIZZA, J. 2007. *Ethical and social issues in the information age,* London, Springer.

KNIGHT, P. 2002. *Small-scale research: pragmatic inquiry in social science and the caring professions,* London, Sage Publications Ltd.

KOEHLER, M. J. & MISHRA, P. 2008. Introducing TPCK. *In:* AACTE COMMITTEE ON INNOVATION AND TECHNOLOGY (ED.) (ed.) *The handbook of technological pedagogical content knowledge (TPCK) for educators* London: Routledge

KOP, R. & HILL, A. 2008. Connectivism: Learning theory of the future or vestige of the past? *The International Review of Research in Open and Distributed Learning,* 9.

KRUSE, K. 2010. *Constructivism and Discovery Learning* [Online]. Available: http://uzetassurecphd.wikispaces.com/file/view/05+general+readings+on+instruction.doc [Accessed 28 November 2016].

LACEY, A. & LUFF, D. 2001. *Qualitative Data Analysis* [Online]. Available: http://rds.epi-ucsf.org/ticr/syllabus/courses/86/2012/11/01/Lecture/readings/Qualitative%20Data%20Analysis%20Lacey%20Luff.pdf [Accessed 18 January 2014].

LANDETA, J. 2006. Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change,* 73**,** 467-482.

LANG, T. 1994. *An Overview of Four Futures Methodologies* [Online]. Available: http://www.futures.hawaii.edu/publications/half-fried-ideas/j7/lang.pdf [Accessed 10 January 2014].

LANTOLF, J. 2000. Introducing sociocultural theory. *Sociocultural theory and second language learning***,** 1-26.

LEUF, B. & CUNNINGHAM, W. 2004. *What Is Wiki* [Online]. Available: http://www.wiki.org/wiki.cgi?WhatIsWiki [Accessed 28 November 2016].

LEVIN, B. & FULLAN, M. 2008. Learning about system renewal. *Educational management administration & leadership,* 36**,** 289-303.

LEWIS, J. & NICHOLLS, C. M. 2013. Design Issues. *In:* RITCHIE, J., LEWIS, J., NICHOLLS, C. M. & ORMSTON, R. (eds.) *Qualitative research practice: A guide for social science students and researchers.* London: Sage.

LINCOLN, Y. S. 1989. *Fourth generation evaluation,* London, UK, Sage.

LINSTONE, H. & TUROFF, M. 1975. *The Delphi method: Techniques and applications* [Online]. Available: http://is.njit.edu/pubs/delphibook/delphibook.pdf [Accessed 15 January 2014].

LONG, T. & JOHNSON, M. 2000. Rigour, reliability and validity in qualitative research. *Clinical effectiveness in nursing,* 4**,** 30-37.

MACDONALD, B. 2000. How education became nobody's business. *In:* ALTRICHTER, H. & ELLIOTT, J. (eds.) *Images of educational change.* Buckingham: Open University Press.

MACPHAIL, A. 2001. Nominal group technique: a useful method for working with young people. *British Educational Research Journal,* 27**,** 161-170.

MADAR RESEARCH AND DEVELOPMENT 2012. Arab ICT Use and Social Networks Adoption Report. Dubai.

MANSOR, A. 2015. *Educational Technologies,* Amman, Dar Aljanadria

MASON, R. & RENNIE, F. 2008. *E-learning and social networking handbook: resources for higher education*, Routledge.

MCLOUGHLIN, C. & LEE, M. Year. Social software and participatory learning: Pedagogical choices with technology affordances in the Web 2.0 era. *In:* ascilite Singapore 2007, 2007 Singapore 664-675.

MCPHERSON, M. & NUNES, M. 2004. *Developing innovation in online learning: An action research framework,* London, Routledge.

MEJIAS, U. 2005. A Nomad's Guide to Learning and Social Software. *The Knowledge tree: An e-journal of learning innovation.*

MERGEL, B. 1998. *Instructional design & learning theory* [Online]. Available: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.645.7122&rep=rep1&type=pdf [Accessed 28 November 2016].

MILES, M. & HUBERMAN, A. 1994. *Qualitative Data Analysis: An Expanded Sourcebook,* London, UK, Sage Publ.

MILLER, M. L. 1986. *Reliability and Validity in Qualitative Research,* London, UK, Sage.

MILLWOOD, R. 2016. *Learning Theories Map* [Online]. Available: http://hotel-project.eu/content/learning-theories-map-richard-millwood [Accessed 10 October 2016].

MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY 2003. Information and Telecommunication Technology in Saudi Arabia.

MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY 2005. The National Communications and Information Technology Plan.

MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY. 2006. *The National Communications and Information Technology Plan:The Vision Towards the Information Society* [Online]. Available: http://www.mcit.gov.sa/Ar/MediaCenter/Download/2NICTPEng.pdf [Accessed 22 November 2016].

MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY. 2014. *About Ministry of Communications and Information Technology : Brief History* [Online]. Available: http://www.mcit.gov.sa/english/AboutMCIT/BriefHistory/ [Accessed 10 January 2014].

MINISTRY OF ECONOMY AND PLANNING. 2014. *About Saudi Arabia:Land and People* [Online]. Available: http://www.mep.gov.sa/ [Accessed 8 January 2014].

MINISTRY OF EDUCATION 2003a. Introduction: Kingdom of Saudi Arabia *Encyclopedia of education history in Saudi Arabia.* 2nd ed. Riyadh: Ministry of Education

MINISTRY OF EDUCATION 2003c. Education in the third Saudi country *Encyclopedia of education history in Saudi Arabia.* 2nd ed. Riyadh: Ministry of Education

MINISTRY OF EDUCATION 2008. e-Training project handbook.

MINISTRY OF EDUCATION. 2013a. *King Abdullah Project for General Education Development* [Online]. Available: http://www.tatweer.edu.sa/ [Accessed 5 December 2016].

MINISTRY OF EDUCATION. 2013b. *Statistical Reports* [Online]. Available: https://www.moe.gov.sa/Arabic/Ministry/Pages/Statistical-reports.aspx [Accessed 15 January 2014].

MINISTRY OF EDUCATION 2015. *Education in Kingdom of Saudi Arabia: National Indicator and International comparisons,* Riyahd, Ministry of Education.

MINISTRY OF FINANCE. 2015. *Ministry's of Finance statment about the national budget for 2015* [Online]. Available: https://www.mof.gov.sa/English/DownloadsCenter/Budget/Ministry's%20of%20Finance%20statment%20about%20the%20national%20budget%20for%202015.pdf [Accessed 23 June 2015].

MINISTRY OF HIGHER EDUCATION. 2010. *Higher Education in Saudi Arabia* [Online]. Available: http://www.mohe.gov.sa/en/studyinside/pages/default.aspx [Accessed 6 January 2014].

MINISTRY OF HIGHER EDUCATION. 2013a. *Commission for Academic Accreditation and Assessment* [Online]. Available: http://www.mohe.gov.sa/en/aboutus/Institutions/Pages/academic-accreditation.aspx [Accessed 10 January 2014].

MINISTRY OF HIGHER EDUCATION. 2013b. *Saudi Universities on the World Map* [Online]. Available: http://www.moe.gov.sa/ar/Ministry/Deputy-Ministry-for-Planning-and-Information-affairs/The-General-Administration-of-Planning/Documents/1111.pdf [Accessed 25 August 2015].

MINISTRY OF HIGHER EDUCATION. 2014. *Higher Education in Saudi Arabia* [Online]. Available:

http://www.mohe.gov.sa/en/studyinside/pages/default.aspx
[Accessed 6 January 2014].

MISHRA, P. & KOEHLER, M. J. 2007. Technological pedagogical content knowledge (TPCK): Confronting the wicked problems of teaching with technology. Available: http://digitalwritingresources.pbworks.com/f/TPCK%20-%20mishra-2007.doc [Accessed 15 November 2016].

MITCHELL, S. 2008. Easy wiki hosting, Scott Hanselman's blog, snagging screens. *MSDN Magazine-Louisville,* 11-16.

MOBILY. 2014. *eLife Internet* [Online]. Available: http://www.mobily.com.sa/portalu/wps/portal/personal/products/Internet-solutions/eLife-connect/!ut/p/a1/hdFRb8IgEADgX9NHe9dp1rq3Rg22c1GXRisvC12wklBoANfs3w-bLZnZtLxcjvvgAgcUSqCKfYiaOaEVk5ecPr4lUzJb5s-Yk8UGMZ3Mi9dVmkUYxR4cfgOc7hCzHZkV60UcFQSHzu-BXpPrG5Lt-D4g6_g-wJeHAbAdAP0reoA3VoqQA62lrvovO6SqGic1UMOP3HATno3fPjnXPgUYYNd1YaMrIT_Dd92ElgXYauOYPPtaa38yH7mxlykEyKU48u8wEspxo7jzQDJl_2t40tZB-acRtE2JlhObZp_YL1CCccU!/dl5/d5/L2dBISEvZ0FBIS9nQSEh/ [Accessed 10 January 2014].

MORRISON, K. 1998. *Management theories for educational change*, Sage Publications Ltd.

NAIK, P. 1998. *Behaviorism as a Theory of Personality: A Critical Look* [Online]. Available: http://www.personalityresearch.org/papers/naik.html [Accessed 20 November 2016].

NAISMITH, L., SHARPLES, M., VAVOULA, G. & LONSDALE, P. 2004. *Literature review in mobile technologies and learning* [Online]. Futurelab. Available: http://telearn.archives-ouvertes.fr/docs/00/19/01/43/PDF/Naismith_2004.pdf [Accessed 15 January 2014].

NASSUORA, A. B. 2013. Students Acceptance of Mobile Learning for Higher Education in Saudi Arabia. *International Journal of Learning Management Systems* 1*,* 1-9.

NATIONAL CENTRE FOR E-LEARNING AND DISTANCE LEARNING. 2013. *National Center for e-Learning and Distance Learning: About Us: The Mission* [Online]. Available: http://elc.edu.sa/?q=en/aboutus [Accessed 10 November 2016].

NATIONAL RESEARCH COUNCIL 1999. *Being fluent with information technology*, National Academies Press.

NESPOR, J. 2011. Devices and educational change. *Educational Philosophy and Theory,* 43**,** 15-37.

NEWMAN, I. & BENZ, C. R. 1998. *Qualitative-quantitative research methodology: Exploring the interactive continuum*, SIU Press.

NIELSEN, H. D. 1997. Quality assessment and quality assurance in distance teacher education. *Distance Education,* 18**,** 284 - 317.

O'REILLY, T. 2005. *What Is Web 2.0* [Online]. Available: http://oreilly.com/web2/archive/what-is-web-20.html#mememap [Accessed 28 November 2016].

OKOLI, C. & PAWLOWSKI, S. D. 2004. The Delphi method as a research tool: an example, design considerations and applications. *Information & Management,* 42**,** 15–29.

OSBORNE, N. 2011. *Using social media in education, part 1: Opportunity, risk, and policy* [Online]. Available: http://www.ibm.com/developerworks/library/wa-ind-educ-social-media1/wa-ind-educ-social-media1-pdf.pdf [Accessed 20 October 2015].

PALMER, N., BATOLA, J., JONES, M. & BARON, S. 2013. Social networking sites within Higher Education–threat or opportunity? *the 2008 Engineering Conference - Innovation, Good Practice and Research in Engineering Education.* Loughborough,UK.

PARSONS, C. & FIDLER, B. 2005. A new theory of educational change–punctuated equilibrium: The case of the internationalisation of higher education institutions. *British Journal of Educational Studies,* 53**,** 447-465.

PEER, K. & MCCLENDON, R. 2002. Sociocultural learning theory in practice: Implications for athletic training educators. *Journal of Athletic Training,* 37.

PIAGET, J. 2003. Development and learning. *Journal of research in science teaching,* 40**,** 18-28.

POORE, M. 2012. *Using Social Media in the Classroom: A Best Practice Guide*, SAGE Publications.

POTTER, M., GORDON, S. & HAMER, P. 2004. The nominal group technique: a useful consensus methodology in physiotherapy research. *New Zealand Journal of Physiotherapy,* 32**,** 126-130.

PRINCESS NOURAH BINT ABDULRAHMAN UNIVERSITY. 2015. *About Princess Nourah bint Abdulrahman University* [Online]. Available:

http://www.pnu.edu.sa/en/University/Pages/Intro.aspx [Accessed 20 Augest 2015].

QS WORLD UNIVERSITY RANKINGS. 2015. *World University Rankings 2015/16* [Online]. Available: http://www.topuniversities.com/university-rankings/world-university-rankings/2015#sorting=rank+region=+country=77+faculty=+stars=false+search= [Accessed 15 November 2015].

RACTHAM, P. & ZHANG, X. Year. Podcasting in academia: a new knowledge management paradigm within academic settings. *In:* SIGMIS-CPR'06, 2006 California, USA. ACM, 314 - 317

REDECKER, C., ALA-MUTKA, K., BACIGALUPO, M., FERRARI, A. & PUNIE, Y. 2009. Learning 2.0: A Study on the Impact of Web 2.0 Innovations on Education and Training in Europe. European Commission.

RENNIE, F. & MORRISON, T. 2013. *e-Learning and Social Networking Handbook: Resources for Higher Education*, Taylor & Francis.

REUBEN, R. 2008. *The use of social media in higher education for marketing and communications: A guide for professionals in higher education* [Online]. Available: http://www.fullerton.edu/technologyservices/_resources/pdfs/social-media-in-higher-education.pdf [Accessed 20 September 2015].

RICHARDSON, W. 2008. *Blogs, wikis, podcasts, and other powerful web tools for classrooms,* London, SAGE Ltd.

RITTEL, H. W. & WEBBER, M. M. 1973. Dilemmas in a general theory of planning. *Policy sciences,* 4**,** 155-169.

RIZVI, F. & LINGARD, B. 2009. *Globalizing education policy*, Routledge.

ROBLYER, M. D., MCDANIEL, M., WEBB, M., HERMAN, J. & WITTY, J. V. 2010. Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and Higher Education,* 13**,** 134-140.

ROBSON, C. 2002. *Real world research: A resource for social scientists and practitioner-researchers,* Oxford, UK, Blackwell Pub.

ROMERO-FRÍAS, E. & MONTAÑO, J. L. A. 2010. *Exploring the use of social network sites on accounting education: A social constructivist approach* [Online]. Available: http://www.asepuc.org/banco/25.pdf [Accessed 15 September 2015].

SALE, J. E., LOHFELD, L. H. & BRAZIL, K. 2002. Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality and quantity,* 36**,** 43-53.

SALEM, F., MOURTADA, R. & ALSHAER, S. 2014a. *The Arab World Online 2014:Trends in Internet and Mobile Usage in the Arab Region* [Online]. Available: http://www.mbrsg.ae/getattachment/ff70c2c5-0fce-405d-b23f-93c198d4ca44/The-Arab-World-Online-2014-Trends-in-Internet-and.aspx [Accessed 12 December 2015].

SALEM, F., MOURTADA, R. & ALSHAER, S. 2014b. *Citizen Engagement and Public Services in the Arab World: The Potential of Social Media* [Online]. Available: http://www.mbrsg.ae/getattachment/e9ea2ac8-13dd-4cd7-9104-b8f1f405cab3/Citizen-Engagement-and-Public-Services-in-the-Arab.aspx [Accessed 12 December 2015].

SAMPLE, J. 1984. Nominal group technique: An alternative to brainstorming. *Journal of Extension* [Online], 22. Available: http://www.joe.org/joe/1984march/iw2.php [Accessed 28 November 2016].

SANDELOWSKI, M. 1995. Sample size in qualitative research. *Research in nursing & health,* 18**,** 179-183.

SAUDI ARAMCO. 2014. *Our Production- Oil* [Online]. Available: http://www.saudiaramco.com/en/home.html#our-operations%257C%252Fen%252Fhome%252Four-operations%252Foil.baseajax.html [Accessed 10 January 2014].

SAUDI DIGITAL LIBRARY. 2016. *Saudi Digital Library* [Online]. Available: http://portal.sdl.edu.sa/english/ [Accessed 25 November 2016].

SAUDI E-GOVERNMENT PROGRAM. 2013. *National Initiatives and Projects Overview* [Online]. Available: http://www.yesser.gov.sa/en/NationalInitiatives/Pages/default.aspx [Accessed 6 January 2014].

SAUDI E-GOVERNMENT PROGRAM. 2014. *National Initiatives and Projects Overview* [Online]. Available: http://www.yesser.gov.sa/en/NationalInitiatives/Pages/default.aspx [Accessed 6 January 2014].

SAUDI ELECTRONIC UNIVERSITY. 2016. *Saudi Electronic University: FAQs* [Online]. Available: https://www.seu.edu.sa/sites/ar/deanships/gs/Pages/FAQs.aspx [Accessed 25 November 2016].

SCHLENKRICH, L. & SEWRY, D. 2012. Factors for successful use of social networking sites in higher education. *South African Computer Journal,* 49**,** 12-24.

SCHNAITTER, R. (ed.) 1999. *Some criticisms of behaviorism,* Dordrecht the Netherlands: Kluwer Academic Pub.

SCOTT, S. & PALINCSAR, A. 2015. *Sociocultural theory* [Online]. Available: http://dr-hatfield.com/theorists/resources/sociocultural_theory.pdf [Accessed 18 October 2015].

SELWYN, N. 2012. Social Media in Higher Education. *The Europa world of learning.*

SENGE, P. 1990. *The Fifth Discipline: The Art and Practice of the Learning Organization,* New York, Currency Doubleday.

SHANGHAI RANKING. 2015. *The 2015 Academic Ranking of World Universities* [Online]. Available: http://www.shanghairanking.com/ARWU2015.html [Accessed 15 November 2015].

SHAVELSON, R. 2009. *Measuring College Learning Responsibly: Accountability in a New Era*, Stanford Univ Pr.

SIEMENS, G. 2005. Connectivism: A learning theory for the digital age. Available: http://www.edtechpolicy.org/AAASGW/Session2/siemens_article.pdf [Accessed 28 November 2016].

SILIUS, K., MIILUMAKI, T., HUHTAMAKI, J., TEBEST, T., MERILAINEN, J. & POHJOLAINEN, S. Year. Social media enhanced studying and learning in higher education. *In:* Education Engineering (EDUCON), 2010 IEEE, 2010. IEEE, 137-143.

SIMON, M. A. 1996. Beyond inductive and deductive reasoning: The search for a sense of knowing. *Educational Studies in mathematics,* 30**,** 197-210.

SKINNER, B. 1965. Science and Human Behavior. Pearson Education, Inc.

SKULMOSKI, G., HARTMAN, F. & KRAHN, J. 2007. *The Delphi method for graduate research* [Online]. Available: http://bern.library.nenu.edu.cn/upload/soft/0-article/+03/JITEv6p001-021Skulmoski212.pdf [Accessed 16 January 2014].

STAKE, R. E. 1978. The case study method in social inquiry. *Educational researcher,* 7**,** 5-8.

STAN, J., RIBIÈRE, M., PICAULT, J., NATARIANNI, L. & MARIE, N. 2011. Semantic-Awareness for a Useful Digital Life. *Social Network Mining, Analysis, and Research Trends: Techniques and Applications: Techniques and Applications*, 306.

STATISTA. 2016. *Penetration of leading social networks in Saudi Arabia as of 4th quarter 2015* [Online]. Available: https://www.statista.com/statistics/284451/saudi-arabia-social-network-penetration/ [Accessed 14 October 2016].

STC. 2014. *Internet On the Move* [Online]. Available: http://www.stc.com.sa/wps/wcm/connect/english/individual/Internet/onTheMove/lte [Accessed 6 January 2014].

STRAUSS, A. L. & CORBIN, J. M. 1990. *Basics of qualitative research*, Sage Newbury Park, CA.

SUBRAHMANYAM, K., REICH, S. M., WAECHTER, N. & ESPINOZA, G. 2008. Online and offline social networks: Use of social networking sites by emerging adults. *Journal of Applied Developmental Psychology,* 29**,** 420-433.

TAM, M. 2001. Measuring Quality and Performance in Higher Education. *Quality in Higher Education,* 7**,** 47 - 54.

TAPIO, P., PALONIEMI, R., VARHO, V. & VINNARI, M. 2011. The unholy marriage? Integrating qualitative and quantitative information in Delphi processes. *Technological Forecasting and Social Change,* 78**,** 1616-1628.

TASHAKKORI, A. & CRESWELL, J. W. 2007. Editorial: The new era of mixed methods. *Journal of mixed methods research,* 1**,** 3-7.

TATWEER. 2014. *King Abdullah Project for General Education Development :Overview* [Online]. Available: http://www.tatweer.edu.sa/content/aboutus [Accessed 12 January 2014].

TECHNICAL AND VOCATIONAL TRAINING CORPORATION. 2015. *Colleges and Institutes* [Online]. Available: http://www.tvtc.gov.sa/English/Pages/default.aspx [Accessed 12 August 2015].

THE AMERICAN ANTHROPOLOGICAL ASSOCIATION. 2007. *RACE Project: Glossary* [Online]. Available: http://www.understandingrace.org/resources/glossary.html [Accessed 28 November 2016].

THOMPSON, A. D. & MISHRA, P. 2007. Breaking news: TPCK becomes TPACK! *Journal of Computing in Teacher Education,* 24**,** 38.

TIMES HIGHER EDUCATION. 2015. *The Times Higher Education World University Rankings 2015-2016* [Online]. Available: https://www.timeshighereducation.com/world-university-rankings/2016/world-ranking#!/page/0/length/25 [Accessed 15 November 2015].

TROCHIM, W. M. K. 2006. *The Research Methods Knowledge Base: Deduction & Induction* [Online]. Available: http://www.socialresearchmethods.net/kb/dedind.php [Accessed 2 November 2016].

TUROFF, M. & HILTZ, S. 1995. *Computer based Delphi processes* [Online]. Available: http://web.njit.edu/~turoff/Papers/delphi3.html [Accessed 28 November 2016 2016].

TURUK, M. C. 2008. The Relevance and Implications of Vygotsky's Sociocultural Theory in The Second Language Classroom. *ARECLS,* 5**,** 244-262.

ULLRICH, C., BORAU, K., LUO, H., TAN, X., SHEN, L. & SHEN, R. 2008. Why web 2.0 is good for learning and for research: principles and prototypes. *17th International World Wide Web Conference(www2008).* Beijing.

UNESCO. 2003. *Vygotsky's Sociocultural Theory* [Online]. Available: http://portal.unesco.org/education/en/ev.php-URL_ID=26925&URL_DO=DO_TOPIC&URL_SECTION=201.html [Accessed 24 November 2016].

VAN TEIJLINGEN, E. & HUNDLEY, V. 2001. The importance of pilot studies. *Social research update***,** 1-4.

VENKATESH, V., MORRIS, M. G., DAVIS, G. B. & DAVIS, F. D. 2003. User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly,* 27**,** 425-478.

VENKATESH, V., THONG, J. Y. L. & XU, X. 2012. Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly,* 36**,** 157-178.

VON GLASERSFELD, E. 1984. An introduction to radical constructivism. *The invented reality***,** 17-40.

VON GLASERSFELD, E. 1996a. *Radical constructivism: A way of knowing and learning,* London, Routledge Falmer

VON GLASERSFELD, E. 1996b. Aspects of radical constructivism and its educational recommendations. *In:* STEFFE, L. P., NESHER, P., COBB, P., GOLDIN, G. A. & GREER, B. (eds.) *Theories of*

mathematical learning. New Jersey Lawrence Erlbaum Associates, Inc.

VON GLASERSFELD, E. 2001. The Radical Constructivist View of Science. *Foundations of Science,* 9**,** 31-43.

VOOGT, J., FISSER, P., PAREJA ROBLIN, N., TONDEUR, J. & VAN BRAAK, J. 2012. Technological pedagogical content knowledge–a review of the literature. *Journal of Computer Assisted Learning.*

VYGOTSKY, L. 1978. *Mind in society*, Cambridge, MA: Harvard University Press.

WAKS, L. J. 2007. THE CONCEPT OF FUNDAMENTAL EDUCATIONAL CHANGE. *Educational Theory,* 57**,** 277-295.

WALFORD, G. 2011. *Researching the powerful* [Online]. Available: http://observatory-elites.org/wp-content/uploads/2012/06/researching_the_powerful.pdf [Accessed 12 January 2014].

WALS, A. E. 2007. *Social learning: towards a sustainable world: principles, perspectives, and praxis*, Wageningen Academic Pub.

WANG, Z., CHEN, L. & ANDERSON, T. 2014. A framework for interaction and cognitive engagement in connectivist learning contexts. *The International Review of Research in Open and Distributed Learning,* 15.

WANKEL, C., MAROVICH, M. & STANAITYTE, J. 2010. *Cutting-edge Social Media Approaches to Business Education: Teaching with LinkedIn, Facebook, Twitter, Second Life, and Blogs*, Information Age Pub.

WEDELL, M. 2003. Giving TESOL change a chance: supporting key players in the curriculum change process. *System,* 31**,** 439-456.

WEDELL, M. 2009. *Planning for educational change: putting people and their contexts first,* London, Continuum.

WESTERA, W. 2008. Web 2.0 in Higher Education in the Netherlands. *A review of current and developing international practice in the use of social networking (Web 2.0) in higher education***,** 61-71.

WHITCOMB, J., BORKO, H. & LISTON, D. 2009. Growing talent. *Journal of Teacher Education,* 60**,** 207-212.

WIKIPEDIA. 2016. *Wikipedia:Main Page* [Online]. Available: https://en.wikipedia.org/wiki/Main_Page [Accessed 18 October 2016].

WILLIAMS, J. B. & JACOBS, J. 2004. Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology,* 20**,** 232-247.

WILSON, D. A. 2008. *Forensic Procedures for Boundary and Title Investigation,* New Jersey, USA, Wiley.

WINER, D. 2003. *What makes a weblog a weblog?* [Online]. Available: http://blogs.law.harvard.edu/whatmakesaweblogaweblog.html [Accessed 28 November 2016 2016].

WORLD ECONOMIC FORUM. 2014. *The Global Information Technology Report 2014: Rewards and Risks of Big Data* [Online]. Available: http://www3.weforum.org/docs/WEF_GlobalInformationTechnology_ Report_2014.pdf [Accessed 12 October 2015].

WORTHAM, S. 2003. Learning in Education. *Encyclopedia of Cognitive Science* [Online], 1. Available: http://repository.upenn.edu/cgi/viewcontent.cgi?article=1081&contex t=gse_pubs [Accessed 28 November 2016].

YANG, H. & TANG, J.-H. 2003. Effects of social network on students' performance: a web-based forum study in Taiwan. *Journal of Asynchronous Learning Networks,* 7**,** 93-107.

YARMOSH, K. 2005. *Why Web 2.0 Matters to your Business – The Web 2.0 Watermil* [Online]. Available: http://kenyarmosh.com/why-web-20-matters-to-your-business-the-web-20-watermill [Accessed 23 November 2016].

YIN, R. K. 1984. *Case study research: Design and methods*, Sage Publications.

YIN, R. K. 2009. *Case Study Research: Design and Methods,* London, UK, Sage.

YOUTUBE. 2014. *Statistics* [Online]. Available: http://www.youtube.com/yt/press/en-GB/statistics.html [Accessed 11 January 2014].

ZAIDIEH, A. J. Y. 2012. The use of social networking in education: challenges and opportunities. *World of Computer Science and Information Technology Journal (WCSIT),* 2**,** 18-21.

ZAIN. 2013. *4G Internet* [Online]. Available: https://www.sa.zain.com/autoforms/portal/site/personal/broadband? AF_language=en [Accessed 28 November 2016].

ZHOU, E. 2000. XML and data exchange. *IEEE Power Engineering Review,* 20**,** 66-66.

APPENDICES

Appendix I: Information Sheet (English)

Potential Use of Online Collaborative Social Networks (OCSN) to Enhance Learning and Teaching in Saudi Higher Education

Information Sheet

Dear Prof/Dr,

As part of my PhD study requirements at Leeds University, I'm planning to conduct a study about the usage of technologies for educational purposes. The study mainly focuses on the usage of online collaborative social networks (OCSN) to enhance learning and teaching in Saudi higher education. In more detail, the study aims to identify the possibility of using OCSNs, illustrate models of usage can be fitted in Saudi context, and categorize the difficulties which may face its usage. And we mean by OCSN each website has these three characteristics: [a] each user has a profile, [b] users have the ability to view some information on other profiles, such as friends' lists and contact information, and [c] users can comment on others' profile content. Figure 1 may provide more understanding about this concept.

My Dear, I appreciate your time and I hope to accept my invitation to participate in this study. In fact, such work cannot be success without having support from expert in this filed such you.

The study use three-round Delphi Method. In each round participation has a task as it summarized below:

Delphi's Round	Period	Estimated time	Task
First Round	Two weeks	One hour	Answer the first round questions (ten open-end questions).
Second Round	Two weeks	30 minute	Rank the answers of each category from the first round answers.
Final Round	Two weeks	20 minute	Reflect on his ranking in round two based on the mean of all participations ranking.

The study approved from the Research Ethics Committee at Leeds University and supervised by: Dr Maggie McPherson (m.mcpherson@leeds.ac.uk) and Prof Jeremy Higham (j.j.s.higham@leeds.ac.uk) at School of Education, University of Leeds, Leeds, LS2 9JT, UK.

Please sign on the attached consent form and send it back to indicate that you grant permission for the information that you provide to be used for the purpose of this study.

Thank you for taking the time to share you insights with me. If you have any questions or require any clarifications, please do not hesitate to contact me any time on my email: edamaa@leeds.ac.uk

Sincerely yours,

Abdullah Alnutaifi
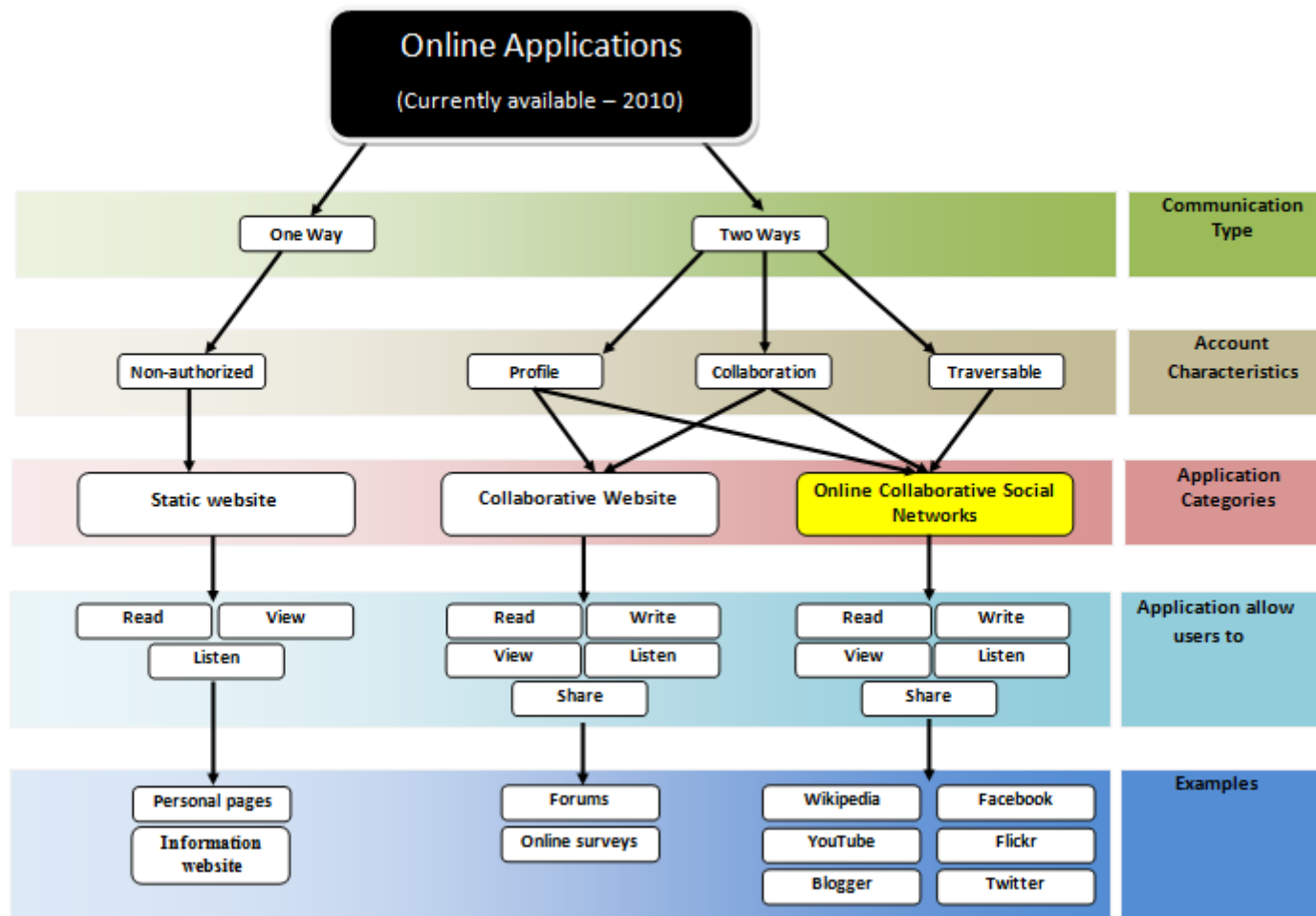
Figure 1 : Online Applications

Appendix II: Consent Form(English)

Potential Use of Online Collaborative Social Networks (OCSN) to Enhance Learning and Teaching in Saudi Higher Education

Consent Form

Initial the box if you agree with each statement to the left

- I confirm that I have read and understand the information sheet □ explaining the above research project, and I have had the opportunity to ask questions about the project.

- I understand that my participation is voluntary and that I am free to □ withdraw at any time without giving any reason and without there being any negative consequences.

- I understand that my responses will be kept strictly confidential. I □ give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.

- I have experiences in using online learning resources and interest □ in using OCSNs to support teaching and learning.

- I have the required time to participate in this study. □

Name: ………………………………
Date: ………………………………
Signature (or type your name instead of a signature): ………………………
Specialization: ………………………………
College/School: ………………………………
University: ………………………………

Appendix III: First Round Questionnaire (English)

Potential Use of Online Collaborative Social Networks (OCSN) to Enhance Learning and Teaching in Saudi Higher Education

First Round Questionnaire

Please answer the following questions from your perception and based on your experiences as a higher-education lecturer. Your identity will be anonymous, so feel free to share your opinion while answering these questions. As mentioned before, by 'OCSN', we mean websites that have the following three characteristics: [a] each user has a profile; [b] users have the ability to view some information on other profiles, such as friends' lists and contact information; and [c] users can comment on others' profile content.

Part I: Demographic Information

a)   Name (option):Click here to enter text.

b)   Gender : ☐Male   ☐ Female

c)   Select the type of your current college :

☐ Humanities Colleges (e.g., Arts, Education, Law and Political Science)

☐ Science Colleges (e.g., Engineering, Science, Food and Agricultural Sciences)

☐ Health Colleges (e.g., Medicine, Pharmacy, Nursing)

a)   Your experiences as lecturer (in years):

Click here to enter text.

b)   Which of the following options you used to acquire your Information and Communication Technology (ICT) skills (please note that you may mark more than one):

☐ Academic degree   ☐ Self-training

☐ Training courses   ☐ Others (please specify): Click here to enter text.

c)   To which of these online social networks do you belong as a member (Please mark all answers that apply):

☐ acebook
☐ Twitter
☐ LinkedIn
☐ MySpace
☐ YouTube
☐ Classmates
☐ MyLife
☐ LiveJournal
☐ Others (please specify):

d)   In the last three years, how many modules have you taught online (totally or partially online)?

Part II: Online Collaborative Social Networks Usage

Based on the characteristics of OCSNs as described above, please answer the following questions:

1.   Based on your perceptions, how would you describe the widespread OCSN usage in Saudi higher education in these three types of colleges (1 = very low level of usage, 5 = very high level of usage):

Colleges	1	2	3	4	5	Don't know
Humanities						
Science						
Health						

2.   In which ways do you think OCSNs can be used by teachers for designing and planning courses?

Click here to enter text.

3.   In which ways do you think OCSNs can be used as part of courses to support the learning and teaching process?

Click here to enter text.

4.   In which way do you think OCSNs can be used as part of the assessment of student work?

5.   In what way can OCSNs assist with the process of gaining and responding to students' feedback on the quality of the learning experiences on the courses?

Click here to enter text.

6.   Describe the OCSN(s) that you think suitable to use in Saudi higher education giving more attention to the level of applications (e.g., for students enrolment in a course, local level, national level) and the policies of use?

Click here to enter text.

7.   What requirements are needed for successful implementation of OCSNs in Saudi higher education?

 Click here to enter text.

8. Which educational policies do you think need to be developed in order to maximize the benefits from using OCSNs?
Click here to enter text.

9. From your point of view, what are the advantages and disadvantages of using OCSNs in higher education in Saudi Arabia?
Click here to enter text.

10. In which ways do you think OCSNs usage can help to obtain international academic accreditation for Saudi higher educational projects?
Click here to enter text.

11. From your point of view, what is the benefit to Saudi society from using OCSNs in higher education?
Click here to enter text.

---End—

I do appreciate the time that has been spent on answering the above questions. Please send you completed survey to my email:

edamaa@leeds.ac.uk

If further additions or corrections need to be made, please notify me as soon as possible.

Appendix IV: Second Round Questionnaire

Potential Use of Online Collaborative Social Networks (OCSNs) to Enhance Learning and Teaching in Saudi Higher Education

Second Round Questionnaire

First of all, I would like to thank you for your kind participation in this study; I appreciate your efforts and time.

This is the last round questionnaire, which is designed based on data authored during the first round stage. It consists of four sections titled Technological Issues, Pedagogical Issues, Content Issues, and OCSN Issues. Items listed in these sections under subtitles are based on their obvious relation to it.

As mentioned before, by 'OCSN,' we mean websites that have the following three characteristics:

a) Each user has a profile.

b) Users have the ability to view some information on other profiles, such as friends' lists and contact information.

c) Users can comment on others' profile content.

Please answer the following questions based on your perceptions and experiences as a higher-education lecturer. Your participation is voluntary and you are free to withdraw at any time without giving any reason and without provoking any negative consequences. Your responses will be kept strictly confidential.

If you have any questions or require any clarification, please do not hesitate to contact me any time on my email: edamaa@leeds.ac.uk

Sincerely yours,
Abdullah Alnutaifi

Participation code (sent via email):……………..

1:Technological Issues:
This section focuses on the technological issues related to the use of OCSNs and mentioned by participants during the first round.

a)Equipment:

Please consider the importance of the following items for the implementation of OCSNs.

U = Unimportant, OI = Of low importance, MI = Moderately Important, I = Important, VI = Very Important

	Item	U	OI	MI	I	VI
1	Provide required software for networks usage					
2	Provide Internet infrastructure in areas where not available					
3	Provide computer labs that are necessary for communication					
4	Update management system to suit use requirements					
5	Use e-learning management systems to support such applications					
6	Provide multi-language applications					

Additional comments:

b) Training:

Based on some of the study participants' answers about OCSNs usage, these training aspects are needed. What is your opinion about it?

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Training faculty members on technology usage					
2	Training students to deal with these types of sites					
3	Include OCSN use skills in computer modules					
4	Training is important because of the lack of computer education					

Additional comments:

c)Support:

Do you think these actions will support and encourage people to use OCSNs? Please tick the appropriate box based on your agreement for each item.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Provide a computer club in each facility					
2	Provide incentive programs to encourage the use of technology					
3	Provide technical support for users					
4	Develop educational programs about the use of new technologies					
5	Set up a national strategy to take advantage of new technologies					
6	Faculty members' attention is important to the success of use					
7	Reduce the cost of Internet connections to encourage the use of OCSN					

Additional comments:

2: Pedagogical Issues:

This section focuses on the pedagogical issues related to the use of OCSNs and is divided into four parts.

a)   Teaching Model:

Looking at the OCSN usage and its requirements and changing on the teaching model, please tick the appropriate box to indicate your agreement level for each item.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Requires changing the learning environment to an interactive learning environment					
2	Can be used as part of the learning environment					
3	Requires special assessment methods					
4	Requires special teaching strategies such as programmed instruction					
5	Allows students to learn from their peers					
6	Requires adding its usage skills as a module requirement					
7	Contributes to making education collaborative between students					

Additional comments:

b) Evaluation:

In order to evaluate the teaching and learning process, OCSNs can be used as an evaluation tool. Please indicate how much you agree with these possibilities of use for modules evaluation.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Using students' participation to access their opinions about the module					
2	Set up discussions about the module evaluation					
3	Distribute questionnaires for evaluation purposes					

Additional comments:

c) Assessment:

Assessing student achievement is a key part of the learning process. For this purpose, participants thought OCSNs offered a number of assessment methods. From your perspective, please indicate how much you agree with these items?

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Using the number of discussion posts as part of students' assessment					
2	Using the quality of posts as part of students' assessment					
3	Using students' cooperation as part of students' assessment					
4	Using peer assessment as part of students' assessment					
5	Allows measurement of understanding					
6	Can be used as a test platform					
7	OCSNs valid for student assessment (R)					

Additional comments:

	Item	SD	D	N	A	SA
	d) Support:					

In general, OCSNs can be used to support the teaching and learning process. Please complete the following by ticking the appropriate box for each item according to how much you agree.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Used as a communication tool					
2	Used to publish educational experiences					
3	Allows for sharing samples from previous works and projects					
4	Provides a cooperative environment between students					
5	Used as a media tool between the educational institution and students					
6	Used to change the negative perception of social networks					

Additional comments:

3: Content Issues:

This part focuses on content issues connected to OCSNs usage. Participations in the first round illustrated the following issues related to the content side, which are grouped into four sets.

a) Pre-Application Stage:

This stage focuses on the possibility of benefit from using OCSNs for all the processes related to planning, design, and building of content.

Please indicate your agreement level with these uses list by ticking the appropriate box.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Share experiences with specialists in the same field					
2	Explore students' opinions about their interests					
3	Discuss module topics					
4	Can be used in the pre-application stage (R)					

Additional comments:

b) Application Stage:

This is the action stage to apply the content. During this stage, participants listed these ways to use OCSNs. From your perspective, please indicate how much you agree with these items.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	To exchange experiences					
2	To communicate between students and faculty members					
3	To create discussion boards about educational content					
4	To support the process of teaching and learning					
5	To support the educational content as a source of knowledge					
6	To assess students' achievement					
7	As an environment for self-learning					
8	As an environment for learning from peers					
9	As a meeting point between students for everything related to the module					

Additional comments:

c) After Application Stage:

This is a set of ways that can be used to benefit from OCSNs after applying the content. Please tick the appropriate box for each item according to how much you agree.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Can be used to hold discussions to evaluate content					
2	Students' participation can be used as an indicator to evaluate content					
3	Can be used to distribute opinion polls about content					
4	Can be used by teachers to provide students with feedback					
5	Can be used to encourage students to share their experiences					

Additional comments:

d)	**Content Type:**					
Looking at the type of content that can be used on OCSNs, please tick the appropriate box for each item according to how much you agree.						
SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree						
	Item	SD	D	N	A	SA
1	Interactive content can be used on OCSNs					
2	Content should be designed to be commensurate with OCSNs' potential					
Additional comments:						

4: **Social Network Issues**	
This is the final part of this questionnaire and focuses on social network issues related to the usage of OCSNs to enhance teaching and learning in Saudi higher education.	
a)	**Purpose of a New Network:**
Assume we need to build a new OCSN and as a faculty, please sort these items to indicate which purpose is more important (1 = most important - 5 = least important).	
Item	Rank
1 Educational	
2 Cultural	
3 Social	
4 Training	
5 Lifelong learning	
Additional comments:	

b) The New Network Users' Authority:

There are different levels of users' authority can be used in any OCSN. Please complete the following by ticking the appropriate box for each item according to how much you agree with it.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Everyone has the same level of authority					
2	Faculty members have a higher level of authority than students					
3	Non-members can browse the network content					

Additional comments:

c) The New Network Moderators:

Participants mentioned different types of network moderators. Please sort these items based on your point of view about the appropriate moderator of the new network (1 = more appropriate - 5 = least appropriate)

	Item	Rank
1	Ministry of Higher Education	
2	Private company (non-governmental)	
3	University	
4	College	
5	Group of specialists	

Additional comments:

	d) OCSN advantages:					
	In general, these are some of the OCSN usage advantages. Please indicate your agreement level about each item.					
	SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree					
	Item	SD	D	N	A	SA
1	Contributes to the improvement and development of teaching methods					
2	Contributes to the building of cooperative education					
3	Changes teachers' role from a source of knowledge to directors of the educational process					
4	Reduces costs of education and training					
5	Allows students to access education and training at an appropriate time and place					
6	Largest number of students benefit from the outstanding teachers					
7	Provides opportunity for some students to express their views without shame					
8	Enriches educational process					
	Additional comments:					

	e) OCSN Disadvantages:					
	On the other hand, these are some disadvantages of OCSN usage. Please indicate your level of agreement about each item.					
	SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree					
	Item	SD	D	N	A	SA
1	Can be misused					
2	Could lead to inequality of opportunity in education					
3	May lead to a form of isolation					
4	Waste of time					
5	Additional cost to students					
6	Not suitable for some scientific topics					
7	Represents an unsafe environment					
8	Requires more efforts to manage the educational process					

Additional comments:

f) Educational Institution's Benefits from OCSN Usage:

On an educational institution level, OCSNs have possibility of usage. Please tick the appropriate box for each item according to how much you agree with this use.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	To cooperate between national and international educational institutions					
2	To disseminate opportunities and possibilities in the educational institution					
3	To promote research projects					
4	To announce academic achievements					
5	To raise students' academic level					
6	To exchange experiences among university employees					

Additional comments:

g) Society's Benefits from OCSN Usage:

These are some societal benefits from OCSN usage. Please tick the appropriate box based on your level of agreement or disagreement for each item.

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

	Item	SD	D	N	A	SA
1	Allows students to learn at a time and place that suit them					
2	Increases awareness about the beneficial uses of these networks					
3	Increases improvement and development of educational environment					
4	Used as a communication tool between universities and civilian society					
5	Develops the level of technical knowledge and skills					
6	Opens broad prospects for knowledge and self-learning					

Additional comments:

h)	OCSN Usage Policies Need to be Developed:					
In order to have a successful use of OCSNs, the following policies need to be developed. Please tick the appropriate box to indicate your agreement level for each item. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree						
	Item	SD	D	N	A	SA
1	Develop online social network usage regulations					
2	Develop online social network usage policies					
3	Develop intellectual property rights policies					
4	Develop distance learning and e-learning policies					
5	Develop higher education legislation to promote OCSN use					
6	I know about social network usage policies in higher education					
Additional comments:						

I do appreciate the time that has been spent on answering the above questions. Please send your completed survey to my email: edamaa@leeds.ac.uk

If further additions or corrections need to be made, please notify me as soon as possible.

The next step of my study is to conduct an interview with a group of participants. I hope you have time to participate in a 30-minute telephone or Skype interview.
If you would like to participate please check this box☐ .

Sincerely yours,

Abdullah Alnutaifi

Appendix V: Interview Information Sheet

Potential Use of Online Collaborative Social Networks (OCSNs) to Enhance Learning and Teaching in Saudi Higher Education

Interview Information Sheet

Dear Prof/Dr,

First of all, I would like to extend my deepest thanks to you for your participation in this study.

Based on findings from the previous phase (Delphi method) of this study, it became clear we needed to investigate some areas related to the study in-depth. For this reason, a semi-structured interview phase will take place during the next three weeks. The interview is expected to take around thirty minutes via phone or Skype as you prefer.

The study approved from the Research Ethics Committee at Leeds University and supervised by: Dr Maggie McPherson (m.mcpherson@leeds.ac.uk) and Prof Jeremy Higham (j.j.s.higham@leeds.ac.uk) at School of Education, University of Leeds, Leeds, LS2 9JT, UK.

I appreciate your time and I hope to accept my invitation to participate in this phase. Please sign on the attached consent form and send it back to indicate that you grant permission for the information that you provide to be used for the purpose of this study.

If you have any questions or require any clarifications, please do not hesitate to contact me any time on my email: edamaa@leeds.ac.uk

Sincerely yours,

Abdullah Alnutaifi

Appendix VI: Interview Consent Form

Potential Use of Online Collaborative Social Networks (OCSNs) to Enhance Learning and Teaching in Saudi Higher Education

Interview Consent Form

Initial the box if you agree with each statement to the left

• As participant in the previous stages from this study, I confirm that I have read and understand the information sheet explaining the above research project, and I have had the opportunity to ask questions about the project.	☐
• I agree to be interviewed for the purposes of this study.	☐
• I agree to have my interview electronically recorded.	☐
• I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences.	☐
• I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.	☐

Name: ………………………………

Date: ……………………………….

Signature (or type your name instead of a signature): ………………………

Specialization: ……………………………….

College/School: ………………………………

University: ……………………………..

Appendix VII: Semi-Structured Interview Guide

Potential Use of Online Collaborative Social Networks (OCSNs) to Enhance Learning and Teaching in Saudi Higher Education

Semi-Structured Interview Guide

Q1: Based on your experiences, do you think learning and teaching in Saudi higher education can be enhanced by using online collaborative social networks (OCSNs)? How?

Q2: From your point of view, what are the factors regarding Saudi context that may affect the usage of OCSNs in higher education?

Q3: What would be an appropriate model to support learning and teaching in the Saudi context?

Q4: What polices do you think need to be developed in order to use OCSNs in Saudi higher education?

Q5: To what extent do you think the infrastructure of Saudi universities is applicable for using OCSNs?

Q6: Is it possible to achieve the same level of success without using OCSNs? How?

Appendix VIII: Information Sheet (Arabic)

إمكانات استخدام الشبكات الاجتماعية التعاونية على الإنترنت لتحسين التعليم والتعلم في التعليم العالي في

المملكة العربية السعودية

معلومات عن الدراسة

سعادة الدكتور/ الدكتورة/   وفقه الله

تتطلب المرحلة القادمة من دراستي لدرجة الدكتورة في جامعة ليدز حول استخدام تقنيات المعلومات والاتصال في التعليم وبشكل محدد منها بالجيل الثاني من التعليم الإلكتروني (eLearning 2.0) إجراء بحث ميداني حول هذا الجانب. وبشكل أكثر تحديداً وحيث أن أكثر ما يتميز به هذا الجيل من التعليم الإلكتروني هو استخدام ما يعرف بالشبكات الاجتماعية التعاونية على الإنترنت كقاعدة لمعظم التطبيقات المستخدمة فيه، فنعتقد أنه من المهم أن تبحث الجوانب المتعلقة بإمكانات استخدام هذه الشبكات وفقاً لخصائص المجتمع السعودي بهدف زيادة كفاءة عمليات التعليم والتعلم في التعليم العالي السعودي.

نظراً لوجود مئات الآلاف من هذه الشبكات والتي تغطي شتى مجالات الحياة، نجد من الأهمية بمكان أن نحدد ما نقصد بالشبكات الاجتماعية التعاونية على الإنترنت كما يلي : هي كل المواقع التي على الإنترنت وتمتلك الخصائص التالية: (أ) كل مستخدم يمتلك سجل يحتوي على معلوماته الخاصة، (ب) يكون لدى المستخدم إمكانية الإطلاع على بعض أو كل معلومات المستخدمين الآخرين من خلال سجلاتهم، (ج) يمكن للمستخدم التعليق على محتويات هذه السجلات. الشكل (١) قد يفيد في توضيح هذا المفهوم أكثر.

أقدر وأثمن وقتكم وآمل موافقتكم على المشاركة في هذه الدراسة حيث أنه لن تحقق أهدافها إلا بدعم ومساندة الخبراء والمهتمين بهذا الجانب مثلكم.

الدراسة تعتمد منهج دلفي من ثلاث مراحل، يطلب من المشارك عمل محدد في كل مرحلة كما يبينه الجدول التالي:

المهمة	الزمن المقدر	الفترة المتاحة للاستجابة	جولات دلفي
الإجابة على إستبانة مكونه من ١٠ أسئلة مقاليه	ساعة واحدة	ثلاثة أسابيع	الجولة الأولى
ترتيب إجابات الجولة الأولى	٣٠ دقيقة	أسبوع	الجولة الثانية
إطلاع المشارك على الترتيب العام للعبارات مع إمكانية تعديل ترتيبه للعبارات في حال رغبته	٢٠ دقيقة	أسبوع	الجولة الأخيرة

علماً أن خطة الدراسة تمت الموافقة عليها من قبل لجنة أخلاقيات البحث العلمي بجامعة ليدز ـ بريطانيا وتحت إشراف الدكتور ماكفيرسون(m.mcpherson@leeds.ac.uk) والبروفسور هايم (j.j.s.higham@leeds.ac.uk) من كلية التربية بجامعة ليدز .

فضلاً وقع على نموذج الموافقة المرفق ليخولنا استخدام المعلومات المقدمة من قبلكم لغرض هذه الدراسة قبل إعادة إرساله لنا.

شاكراً ومقدراً لكم تعاونكم وفي حال وجود أسئلة أو لمزيد من الإيضاح لا تتردد في الاتصال بنا على البريد الإلكتروني (edamaa@leeds.ac.uk)، وتقبلوا تحياتي،،،
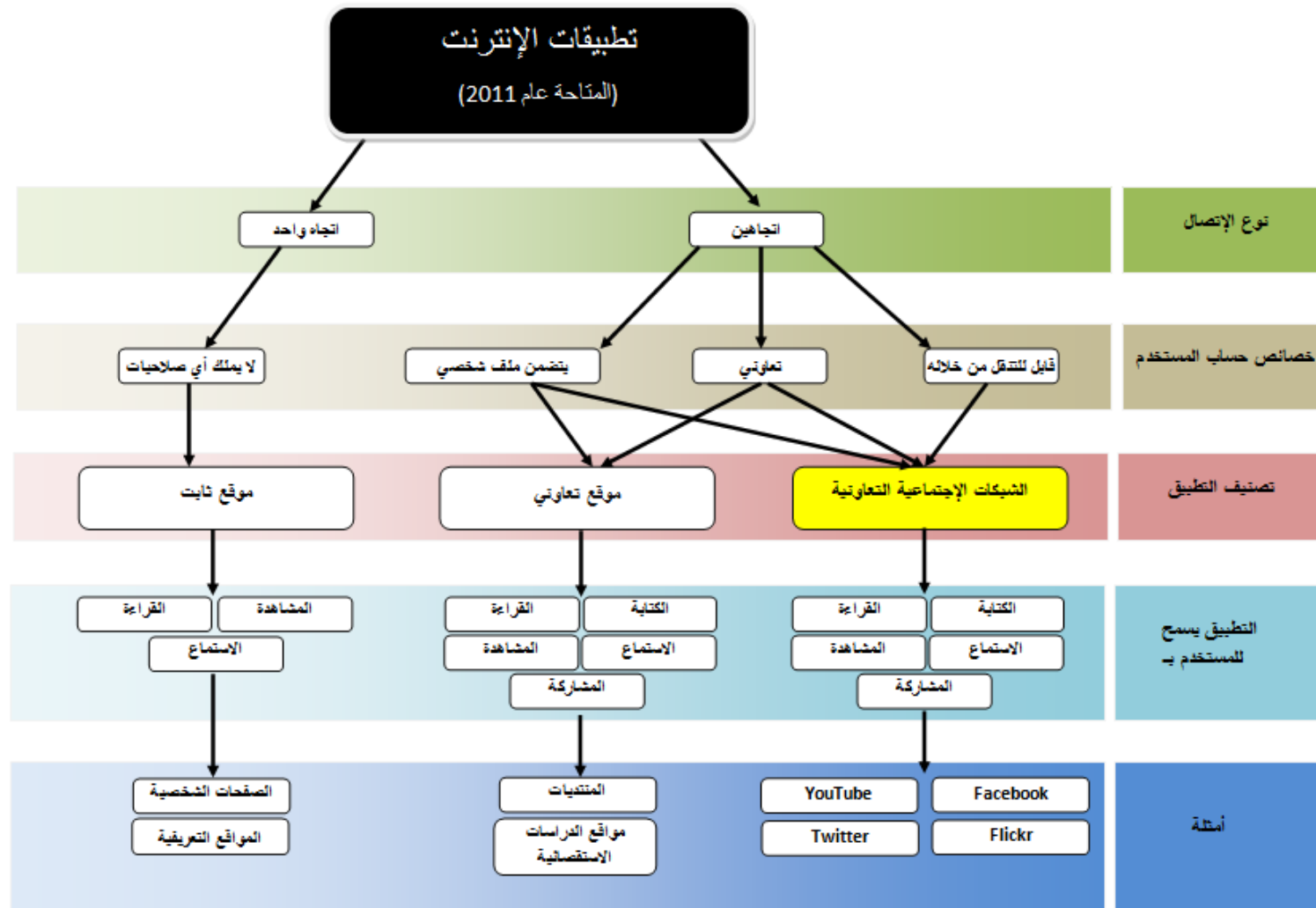
شكل(١): تطبيقات الإنترنت

Appendix IX: Consent Form (Arabic)

إمكانات استخدام الشبكات الاجتماعية التعاونية على الإنترنت لتحسين التعليم والتعلم في التعليم العالي في المملكة العربية السعودية

نموذج الموافقة

فضلاً، أكتب كلمة "موافق" في المربع المقابل لكل عبارة من العبارات التالية في حالة الموافقة عليها:

	• أقر أني اطلعت على وثيقة معلومات الدراسة وقد فهمت ما ورد فيها، كما أنه كان متاح لي إمكانية طرح الأسئلة والاستفسارات حول الدراسة.
	• أعرف أن مشاركتي تطوعية ولدي حق الانسحاب في أي وقت بدون تقديم أي أسباب أو وجود أثار سلبية تلحق بي نتيجة لهذا الانسحاب.
	• أعرف أن مشاركتي ستعامل بسرية تامة وأعطي فريق البحث حق استخدام البيانات والمعلومات المقدمة. كما أني أعرف أن اسمي لن يربط بأي من مواد البحث أو وثائقة كما أنه لن يظهر في التقارير المستخلصة من نتائج الدراسة.
	• لدي خبره في استخدام المصادر التعليمية المتوفرة على الإنترنت ولدي أهتمام في استخدام الشبكات الاجتماعية التعاونية على الإنترنت لدعم عمليات التعليم والتعلم.
	• لدي الوقت المطلوب للمشاركة في هذه الدراسة.

الاسم:..
التاريخ:......................................
التوقيع(يمكن كتابة الاسم في حال تعذر التوقيع):..............................
التخصص:..................................
الكلية:................................
الجامعة:..............................

Appendix X: First Round Questionnaire (Arabic)

إمكانات استخدام الشبكات الاجتماعية التعاونية على الإنترنت لتحسين التعليم والتعلم في التعليم العالي في المملكة العربية السعودية

إستبانة الجولة الأولى

فضلاً، أجب عن جميع الأسئلة التالية بناءً على تصورك ومن خلال تجاربك كأحد أعضاء هيئة التدريس في التعليم العالي. ستعامل إجاباتك بسرية تامة، فعبر عن رأيك بكل حيادية عند إجابتك على هذه الأسئلة.

ضمن هذه الاستبانة نقصد بالشبكات الاجتماعية التعاونية على الإنترنت كل مواقع الإنترنت التي تمتلك الخصائص التالية: (أ) كل مستخدم يمتلك سجل يحتوي على معلوماته الخاصة، (ب) يكون لدى المستخدم إمكانية الإطلاع على بعض أو كل معلومات المستخدمين الآخرين من خلال سجلاتهم، (ج) يمكن للمستخدم التعليق على محتويات هذه السجلات.

أولاً : البيانات العامة

ملحوظة: لاختيار الحقل المناسب أنقر على المربع بالزر الأيسر للفأرة نقراً مزدوجاً ثم اختر Checked من النافذة المنبثقة.

أ): رمز المشارك (مرفق في الرسالة): ....

ب): الجنس: ☐ ذكر ☐ أنثى.

ج): الدرجة العلمية:
☐ أستاذ
☐ أستاذ مشارك
☐ أستاذ مساعد
☐ محاضر
☐ معيد

د): فضلاً، حدد نوع الكلية التي تعمل فيها حالياً:
☐ الكليات الإنسانية(مثل الآداب، التربية، القانون،...)
☐ الكليات العلمية(الهندسة، العلوم، الزراعة،...)

☐ الكليات الصحية(الطب، الصيدلة، العلوم الطبية التطبيقية،...)

هـ): كم عدد سنوات الخبرة كعضو هيئة تدريس في التعليم العالي (بالسنوات): ....

و): أي من الطرق التالية استخدمتها لإكتساب مهاراتك في مجال تقنية المعلومات والإتصال(يمكن أختيار أكثر من واحد):

☐ دراسة أكاديمية   ☐ برامج تدريبية   ☐ تدريب ذاتي   ☐ غير ذلك (فضلاً ، حددها): ....

ز): أي من الشبكات الاجتماعية التالية تنتسب إليها كعضو (فضلاً حدد جميع الخيارات المناسبة):

MySpace ☐   LinkedIn ☐   Twitter ☐   Facebook ☐

LiveJournal ☐   MyLife ☐ Classmates ☐   YouTube ☐

☐ غير ذلك (فضلاً، أذكرها): ....

ح): خلال الثلاث سنوات الأخيرة كم عدد المواد الدراسية التي قمت بتدريسها (كلياً أو جزئياً) من خلال الإنترنت:

....

ثانياً : استخدامات الشبكات الاجتماعية التعاونية على الإنترنت

فضلاً أجب على جميع الأسئلة التالية بناءً على خصائص الشبكات الاجتماعية التعاونية على الإنترنت كما ذكر سابقاً:

السؤال الأول : بشكل عام ومن خلال تصورك، كيف تصف مدى انتشار استخدام الشبكات الاجتماعية التعاونية على الإنترنت في التعليم العالي السعودي في أنواع الكليات التالية(١يعني منخفض جداً، و ٥ يعني تستخدم بشكل مرتفع جداً):

نوع الكلية	١	٢	٣	٤	٥	لا أعرف
الكليات الإنسانية	☐	☐	☐	☐	☐	☐
الكليات العلمية	☐	☐	☐	☐	☐	☐
الكليات الصحية	☐	☐	☐	☐	☐	☐

السؤال الثاني : ما هي الطرق التي تعتقد إنه يمكن لأعضاء هيئة التدريس استخدام الشبكات الاجتماعية التعاونية على الإنترنت فيها لتصميم وبناء المحتوى التعليمي للمواد الدراسية(تحديداً ما قبل مرحلة التطبيق الفعلي للمادة الدراسية).

الإجابة: ....

السؤال الثالث: ما هي الطرق التي تعتقد إنه يمكن أن تستخدم الشبكات الاجتماعية التعاونية على الإنترنت كجزء من المادة الدراسية لتقديم الدعم أثناء التطبيق الفعلي لعمليات التعليم والتعلم.

الإجابة: ....

السؤال الرابع: كيف يمكن استخدام الشبكات الاجتماعية التعاونية على الإنترنت كجزء من الأدوات المستخدمة لتقييم أعمال الطالب.

الإجابة: ....

السؤال الخامس: ما هي الطرق التي يمكن استخدام الشبكات الاجتماعية التعاونية على الإنترنت فيها للحصول على التغذية الراجعة من الطلاب حول خبراتهم التعليمية خلال دراسة المادة.

الإجابة: ....

السؤال السادس: من خلال تجربتك كعضو هيئة تدريس، فضلاً حدد الجوانب التالية والمتعلقة بتصوركم لموقع (أو مواقع) جديد لشبكة اجتماعية تعاونية على الإنترنت ترى أنه أكثر مناسبة للاستخدام في التعليم العالي السعودي:

أ-الغرض الذي تصمم الشبكة الجديدة(الموقع) من أجله:

الإجابة: ....

ب-الفئات المستهدفة لاستخدام هذه الشبكة:

الإجابة: ....

ج-الجهة المشرفة على الشبكة(الموقع الجديد):

الإجابة: ....

د-حدود صلاحيات الاستخدام للفئات المستخدمة لهذه الشبكة:

الإجابة: ....

السؤال السابع: ما هي متطلبات تحقيق النجاح في استخدام الشبكات الاجتماعية التعاونية على الإنترنت في التعليم العالي السعودي.

الإجابة: ....

السؤال الثامن: ما هي اللوائح والنظم التي ترى أنها تحتاج إلى تطوير لزيادة الفائدة من الشبكات الاجتماعية التعاونية على الإنترنت في التعليم العالي السعودي.

الإجابة: ....

السؤال التاسع: من خلال وجهة نظرك، ماهي مميزات وعيوب استخدام الشبكات الاجتماعية التعاونية على الإنترنت على التعليم العالي السعودي.

الإجابة: ....

السؤال العاشر: ما هي الطرق التي يمكن أن تستخدم فيها الشبكات الاجتماعية التعاونية على الإنترنت للمساعدة في الحصول على اعتراف دولي بمشاريع مؤسسات التعليم العالي السعودي.

الإجابة: ....

السؤال الحادي عشر: من وجهة نظرك ما هي الفوائد التي قد يحققها المجتمع السعودي من استخدام الشبكات الاجتماعية التعاونية على الإنترنت في التعليم العالي.

الإجابة: ....

— النهاية –

شاكراً ومقدراً جهدكم ووقتكم المبذول في الإجابة على هذه الأسئلة، فضلاً أرسل الإستبانة بعد الإجابة عليها إلى بريدنا الإلكتروني edamaa@leeds.ac.uk ، وإذا رغبت في إجراء بعض التعديلات أو الإضافات على إجاباتك بعد إرسالها، آمل إبلاغنا بذلك في أسرع وقت ممكن.

Appendix XI: Final Round Questionnaire (Arabic)

إمكانات استخدام الشبكات الاجتماعية التعاونية على الإنترنت لتحسين التعليم والتعلم في التعليم العالي في المملكة العربية السعودية

استبانة الجولة النهائية

بادئ ذي بدء، يطيب لي أن أتقدم لسعادتكم بالشكر والتقدير على مشاركتكم معنا في هذه الدراسة، سائلاً المولى عز وجل أن يجزل لكم الأجر والمثوبة.

هذه هي استبانة الجولة النهائية من هذه الدراسة والتي تم تصميمها بناء على إجابات المشاركين في الجولة السابقة. وقد تم تصنيفها تحت أربعة محاور رئيسية هي: التقنية والتربية و المحتوى و الشبكات التعاونية على الإنترنت، وقسم كل محور إلى عدد من المحاور الفرعية يحتوي على العناصر التي يغلب ارتباطها بالمحور.

ضمن هذه الاستبانة نقصد بالشبكات الاجتماعية التعاونية على الإنترنت كل مواقع الإنترنت التي تمتلك الخصائص التالية:

(أ) كل مستخدم يمتلك سجل يحتوي على معلوماته الخاصة.

(ب) يكون لدى المستخدم إمكانية الإطلاع على بعض أو كل معلومات المستخدمين الآخرين من خلال سجلاتهم.

(ج) يمكن للمستخدم التعليق على محتويات هذه السجلات.

هذه الشبكات قد تكون لفئة محدودة من المستخدمين مثلاً خاصة بكلية أو جامعة معينة أو مفتوحة للجميع.

نأمل الإجابة جميع الأسئلة التالية بناءً على تصوركم ومن خلال تجاربكم كأحد أعضاء هيئة التدريس في التعليم العالي. ستعامل إجاباتكم بسرية تامة، فعبروا عن رأيكم بكل حيادية عند إجابتكم على هذه الأسئلة، كما أن مشاركتكم اختيارية ويحق لكم الانسحاب في أي وقت دون إبداء الأسباب وبدون أي تأثير سلبي عليكم

إذا كان لديكم أي استفسار فضلاً لا تترددوا في الاتصال بنا على البريد الإلكتروني edamaa@leeds.ac.uk ،

شاكراً ومقدراً لكم تعاونكم ومشاركتكم معنا في هذه الدراسة، سائلاً المولى عز وجل لكم دوام التوفيق.

عبدالله بن محمد النتيفي

رمز المشارك (مرفق في البريد الإلكتروني المرسل) : ....

أولاً : التقنية
هذا المحور يركز على الجوانب التقنية المتعلقة باستخدام الشبكات الاجتماعية التعاونية على الإنترنت والتي أشار المشاركون إليها في الجولة الأولى.

١ - التجهيزات

فضلاً حدد مدى أهمية العبارات التالية لتطبيق الشبكات الاجتماعية التعاونية على الإنترنت

اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير مهم إطلاقاً، ٢: غير مهم، ٣: محايد، ٤: مهم، ٥: مهم جداً)

م	العبارة	١	٢	٣	٤	٥
١	توفير البرامج اللازمة لاستخدام هذه الشبكات					
٢	إيجاد بيئة تحتية للانترنت في المناطق الغير متوفر فيها					
٣	توفير معامل الحاسب اللازمة لاستخدامها					

م	العبارة	١	٢	٣	٤	٥
٤	تحديث الأنظمة الإلكترونية لتتناسب مع متطلبات الاستخدام					
٥	استخدام نظم إلكترونية للإدارة التعليمية تدعم مثل هذه التطبيقات					
٦	توفير تطبيقات برمجية تدعم تعدد اللغات					

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٢- التدريب

من خلال إجابات بعض المشاركين في الدراسة، تبينت الحاجة إلى بعض البرامج التدريبية لتحقيق النجاح في استخدام الشبكات الاجتماعية التعاونية على الإنترنت. فضلاً حدد مدى موافقتك حول هذه العبارات.

(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

م	العبارة	١	٢	٣	٤	٥
١	تدريب أعضاء هيئة التدريس على استخدامها					
٢	تدريب الطلبة على التعامل مع هذه الشبكات					
٣	إضافة دروس في مقررات الحاسب العامة توضح كيفية التعامل مع هذه الشبكات الاجتماعية					
٤	التدريب مهم بسبب التأخر في تعليم الحاسب					

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٣- الدعم

هل تعتقد إن هذه الخطوات سوف تشجع وتساعد على استخدام الشبكات الاجتماعية التعاونية على الإنترنت؟ فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

م	العبارة	١	٢	٣	٤	٥
١	توفير نادي للحاسب مصغر خاص بأعضاء التدريس في كل كلية					
٢	وضع برامج تحفيزية لتشجيع استخدام التقنية					

					العبارة	م
					توفير دعم فني لمستخدمي هذه التقنية	٣
					تطوير برامج تثقيفية حول استخدام التقنيات الجديدة	٤
					وضع خطة وطنية للاستفادة من التقنيات الجديدة	٥
					اهتمام أعضاء هيئة التدريس بهذه الشبكات عامل مهم لنجاح الاستخدام	٦
					تخفيض تكلفة الاتصال بالانترنت سوف يشجع على استخدام هذه الشبكات	٧

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

ثانياً: التربية

هذا المحور يدور حول الجوانب التربوية المتعلقة باستخدام الشبكات الاجتماعية التعاونية على الإنترنت ، وقد تم تقسيمه إلى أربعة محاور فرعية .

١ - النموذج التعليمي

بالنظر لاستخدام الشبكات الاجتماعية التعاونية على الإنترنت ومتطلباتها وتأثيراتها على النموذج التعليمي، فضلاً اختر الحقل المناسب حسب مستوى موافقتك على كل عبارة.

(١: غير موافق بشدة- ٢: غير موافق – ٣: محايد – ٤:موافق – ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					يتطلب استخدامها تغيير بيئة التعلم إلى بيئة تعليمية تفاعلية	١
					يتم استخدام الشبكات الاجتماعية كجزء من البيئة التعليمية	٢
					تحتاج إلى أساليب خاصة في تقييم أداء المتعلم	٣
					تتطلب استخدام استراتيجيات تدريس خاصة مثل التعليم المبرمج والتعليم عن بعد	٤
					تتيح للطلاب التعلم من أقرانهم	٥

٥	٤	٣	٢	١		م
					تتطلب إضافة مهارات استخدام الشبكات إلى المتطلبات اللازمة للمقرر الدراسي	٦
					تساهم في جعل التعليم تعاوني بين الطلاب	٧

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٢- التقويم

التقويم : هو مجموعة من العمليات تهدف إلى الحكم على مدى تحقق أهداف العملية التعليمية والكشف عن جوانب الضعف لمعالجتها وجوانب القوة لتعزيزها.

تمت الإشارة من قبل المشاركين في الجولة السابقة إلى إمكانية استخدام الشبكات الاجتماعية التعاونية على الإنترنت بغرض تقويم عمليات التعليم والتعلم لتطويرها وتحسين مخرجاتها. فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة- ٢: غير موافق – ٣: محايد – ٤:موافق – ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					استخدام مشاركات الطلاب للوصول إلى آرائهم حول المادة الدراسية	١
					طرح موضوعات على هذه الشبكات للنقاش حول تقويم المادة التعليمية	٢
					استخدام الشبكة لتوزيع استبانات لغرض التقويم	٣

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٣- التقييم

التقييم: هو جمع المعلومات ذات الصلة بتحصيل الطالب التي يمكن الاعتماد عليها في اتخاذ قرارات معينة. ويعتبر تقييم مستوى تحصيل الطالب من أهم العمليات التعليمية. في الجولة السابقة من هذه الدراسة أشار عدد من المشاركين إلى مجموعة من الطرق التي يمكن استخدام الشبكات الاجتماعية التعاونية فيها لتقييم تحصيل الطالب. ماهو مدى

م	العبارة	١	٢	٣	٤	٥
	موافقتك على هذه العبارات حول هذا الجانب؟					
	(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)					
١	استخدام عدد المشاركات كجزء من تقييم الطالب					
٢	استخدام نوعية المشاركات كجزء من تقييم الطالب					
٣	استخدام مبادرات وتعاون الطالب كجزء من تقييمه					
٤	استخدام تقييم الطلاب لزملائهم كجزء من تقييم الطالب					
٥	تمكن من قياس الفهم لدى الطالب					
٦	يمكن أن تستخدم الشبكات كوسيط يتم من خلاله اختبار الطلاب					
٧	الشبكات غير صالحة لتقييم الطالب من خلالها					

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٤- الدعم

بشكل عام يمكن أن تستخدم الشبكات الاجتماعية التعاونية على الإنترنت لدعم عمليات التعليم والتعلم. ما مدى موافقتك على العبارات التالية :

(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

م	العبارة	١	٢	٣	٤	٥
١	تستخدم كأداة للتواصل					
٢	تستخدم لنشر الخبرات التعليمية					
٣	تستخدم لنشر نماذج من الأعمال السابقة للطلاب					
٤	توفر بيئة تعاونية بين الطلاب					
٥	تستخدم كوسيلة إعلامية بين المؤسسة التعليمية والطلاب					
٦	تستخدم لتغيير التصور السلبي عن الشبكات الاجتماعية					

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

ثالثاً : المحتوى

هذا المحور يدور حول الجوانب المتعلقة بـالمحتوى التعليمي ذات العلاقة باستخدام الشبكات الاجتماعية التعاونية على الإنترنت. المشاركون في الجولة الأولى أحصوا عدد من الجوانب المرتبطة بـالمحتوى وقد تم تصنيفها في الأربع مجموعات التالية :

١ -مرحلة ما قبل التطبيق

هذه المرحلة تركز على الفوائد المرجوة من استخدام الشبكات الاجتماعية التعاونية على الإنترنت في عمليات التخطيط والتصميم وبناء المحتوى التعليمي. فضلاً حدد مدى موافقتك حول هذه القائمة من الاستخدامات.

(١: غير موافق بشدة-   ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					تبادل الخبرات مع المختصين في نفس المجال	١
					استطلاع آراء الطلاب حول الموضوعات التي تلامس احتياجاتهم	٢
					إجراء المناقشات حول موضوعات المادة الدراسية	٣
					أعتقد إن الشبكات الاجتماعية لا تستخدم في بناء المحتوى التعليمي	٤

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٢- مرحلة التطبيق

وفيها يتم تطبيق المحتوى على أرض الواقع. ومن خلال الجولة السابقة أشير إلى الاستخدامات التالية للشبكات الاجتماعية التعاونية على الإنترنت في هذه المرحلة. فضلاً حدد مدى موافقتك على كل من هذه العبارات.

م	العبارة	١	٢	٣	٤	٥
(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)						
١	لتبادل الخبرات عن طريق الشبكة					
٢	للتواصل بين الطلاب وأعضاء هيئة التدريس					
٣	لتنفيذ حلقات نقاش حول المحتوى التعليمي					
٤	كوسيلة تعليمية لدعم العمليات التعليمية					
٥	كمصدر للمعرفة يدعم المحتوى التعليمي					
٦	كأداة لتقييم الطالب					
٧	كبيئة للتعلم الذاتي					
٨	كبيئة للتعلم من الأقران					
٩	كنقطة التقاء مستمر للطلاب في كل ما له علاقة بالمقرر					

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٣- مرحلة مابعد التطبيق

هذه مجموعة من الطرق التي يمكن الاستفادة من الشبكات الاجتماعية التعاونية على الإنترنت فيها بعد تطبيق المحتوى. فضلاً اختر الحقل المناسب حسب مدى موافقتك على كل من العبارات التالية:

(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

م	العبارة	١	٢	٣	٤	٥
١	يمكن استخدامها لعقد حلقات نقاش لتقويم المحتوى التعليمي					
٢	استخدام انطباعات الطلاب في مشاركاتهم كمؤشرات لتقويم المحتوى					
٣	أداة لتوزيع استطلاعات الرأي حول المحتوى					
٤	يستخدمها المعلم لتزويد الطلاب بتغذية راجعة حول تقييمهم					
٥	تشجيع الطلاب على تبادل الخبرات المكتسبة بمشاركتها مع					

					زملائهم

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٤- نوع المحتوى

بالنظر إلى نوع المحتوى الذي يمكن استخدامه في الشبكات الاجتماعية التعاونية على الإنترنت ، ماهو مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة-   ٢: غير موافق – ٣: محايد – ٤:موافق – ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					يمكن استخدام المحتوى التفاعلي على هذه الشبكات	١
					يجب أن يكون تصميم المحتوى متناسب مع الإمكانات المتاحة على هذه الشبكات	٢

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

رابعاً: الشبكات الاجتماعية

هذا المحور الأخير من الاستبانة ويدور حول الجوانب المتعلقة بالنموذج المناسب من الشبكات الاجتماعية التعاونية على الإنترنت لتحسين التعليم والتعلم في التعليم العالي السعودي.

١- الغرض الرئيس لشبكة اجتماعية جديدة (مقترحة)

نفترض أننا نحتاج إلى بناء شبكة اجتماعية تعاونية على الإنترنت ، كعضو هيئة تدريس، فضلاً رتب العبارات التالية حسب أهمية الغرض من وجهة نظرك (رقم ١ أكثر أهمية – رقم ٥ أقل أهمية)

الترتيب	العبارة	م
	تعليمي	١
	ثقافي	٢
	اجتماعي	٣

						م
					تدريبي	٤
					تعليم مستمر	٥

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٢- صلاحيات استخدام الشبكة الجديدة (المقترحة)

هناك العديد من مستويات صلاحيات الاستخدام يمكن استخدامها في أي شبكة اجتماعية . فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة–   ٢: غير موافق – ٣: محايد – ٤:موافق – ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					الجميع يتمتع بنفس المستوى من صلاحيات الاستخدام	١
					أعضاء هيئة التدريس لهم صلاحيات أعلى من الطلاب	٢
					يمكن الإطلاع على محتواها من غير الأعضاء في الشبكة	٣

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٣- الجهة المشرفة على الشبكة الجديدة (المقترحة)

المشاركون في هذه الدراسة اقترحوا عدد من الجهات التي يمكن أن تشرف على هذه الشبكة. فضلاً رتب العبارات التالية حسب أفضلية الإشراف على الشبكة الجديدة من وجهة نظرك.

(رقم ١ أكثر تفضيلاً – رقم ٥ أقل تفضيلاً)

الترتيب	العبارة	م
	وزارة التعليم العالي	١
	جهة خاصة- غير حكومية	٢
	الجامعة	٣
	الكلية	٤
	مجموعة من المختصين المتبرعين بالإشراف	٥

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٤- مميزات استخدام الشبكات الاجتماعية التعاونية على الإنترنت

بشكل عام هذه بعض من مميزات استخدام الشبكات الاجتماعية التعاونية على الإنترنت. فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة- ٢: غير موافق - ٣: محايد - ٤:موافق - ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					تساهم في تحسين وتطوير طرق التدريس	١
					المساهمة في بناء نوع من التعليم التعاوني	٢
					المعلم يصبح مديرا للعملية التعليمية بدلاً من ملقناً للمادة التعليمية	٣
					تخفيض تكاليف التعليم و التدريب	٤
					إتاحة التعليم في الوقت المناسب والمكان المناسب	٥
					الاستفادة من المعلمين المتميزين لتعليم أكبر عدد ممكن من الدارسين	٦
					إعطاء الفرصة لبعض الطلّاب للتّعبير عن آرائهم بدون خجل	٧
					تساهم بفاعليه في إثراء العملية التعليمية	٨

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٥- عيوب استخدام الشبكات الاجتماعية التعاونية على الإنترنت

من الناحية الأخرى، هذه بعض عيوب استخدام الشبكات الاجتماعية التعاونية على الإنترنت. فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة- ٢: غير موافق - ٣: محايد - ٤:موافق - ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م

	٥	٤	٣	٢	١		م
						يمكن إساءة استخدامها	١
						تؤدي على عدم تكافؤ الفرص التعليمية (نتيجة للتكلفة والمهارات المطلوبة)	٢
						تؤدي إلى نوع من العزلة للطالب	٣
						إضاعة للوقت	٤
						تكلفة مادية إضافية على الطالب	٥
						لا تتناسب مع طبيعة بعض المواد الدراسية العلمية	٦
						تمثل بيئة غير آمنه	٧
						تحتاج إلى جهد أكبر في عملية الإدارة التعليمية	٨

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٦- العائد على المؤسسة التعليمية من استخدام الشبكات الاجتماعية

على مستوى المؤسسة التعليمية هناك عدد من الاستخدامات التي يمكن للمؤسسة التعليمية من خلالها الاستفادة من هذه الشبكات. فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة– ٢: غير موافق – ٣: محايد – ٤:موافق – ٥: موافق بشدة)

٥	٤	٣	٢	١	العبارة	م
					للتعاون بين المؤسسات التعليمية وبين بعض المؤسسات المتميزة دوليا	١
					لنشر الفرص والإمكانات المتاحة في المؤسسة التعليمية	٢
					للترويج للمشاريع البحثية والانجازات الأكاديمية	٣
					للتعريف بالانجازات الأكاديمية	٤
					لرفع مستوى الطلاب أكاديميا	٥
					لتبادل الخبرات بين منسوبي الجامعة	٦

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٧- **العائد على المجتمع من استخدام الشبكات الاجتماعية**

هذه بعض الفوائد التي يمكن أن تعود على المجتمع من استخدام هذا النوع من الشبكات.

فضلاً اختر الحقل المناسب حسب مدى موافقتك على العبارات التالية:

(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

م	العبارة	١	٢	٣	٤	٥
١	إتاحة فرصة التعليم لمن يشاء في المكان والوقت المناسب للمتعلم					
٢	زيادة الوعي حول الاستخدامات المفيدة لهذه الشبكات					
٣	تحسين وتطوير البيئة التعليمية					
٤	فتح قناة للتواصل بين الجامعات والمجتمع المدني					
٥	تطوير مستوى معرفة أفراد المجتمع بالتقنية					
٦	فتح آفاق واسعة للمعرفة من خلال التعلم الذاتي					

هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:

٨- **اللوائح والسياسات المتعلقة باستخدام الشبكات الاجتماعية التعاونية على الإنترنت والتي تحتاج إلى تطوير**

اللائحة : هي مجموعة من القواعد المنظمة لاستخدام هذا النوع من التقنية.

السياسات : هي المبادئ والأطر العامة التي يقوم عليها استخدام هذه التقنية وتشمل تحديد فلسفة وأهداف هذا الاستخدام.

هناك بعض اللوائح والسياسات المتعلقة باستخدام هذا النوع من الشبكات تحتاج إلى تطوير من أجل تحقيق توظيف ناجح لهذه الشبكات. فضلاً اختر الحقل المناسب حسب مستوى موافقتك على كل عبارة.

(١: غير موافق بشدة- ٢: غير موافق — ٣: محايد — ٤:موافق — ٥: موافق بشدة)

م	العبارة	١	٢	٣	٤	٥
١	تطوير لوائح استخدام هذه الشبكات في التعليم العالي					
٢	تطوير سياسات استخدام هذه الشبكات في التعليم					

					العالي	
					تطوير لوائح حقوق الملكية الفكرية	٣
					تطوير اللوائح المنظمة للتعليم عن بعد والتعليم الإلكتروني	٤
					تطوير لوائح التعليم العالي بما يتفق مع إتاحة استخدامها	٥
					لا أعرف اللوائح المتعلقة بالشبكات الاجتماعية في التعليم العالي.	٦
هل لديك تعليقات حول هذا الجزء؟ فضلاً أضفها في هذا الحقل:						

دعوة: المرحلة التالية من هذه الدراسة تتطلب إجراء مقابلة مع بعض المشاركين في هذه الدراسة حول بعض الجوانب المتعلقة بنتائج هذه الجولة. آمل أن يكون لديكم الوقت للمشاركة معنا في مقابلة لمدة ثلاثون دقيقة عبر الهاتف أو سكايب. إذا كنتم ترغبون مشكورين في المشاركة، فضلاً اختر موافق:

☐ موافق – ☐ غير موافق

– النهاية–

شكراً جزيلاً على جهدكم ووقتكم المبذول في الإجابة على هذه الاستبانة. فضلاً أرسل هذه الوثيقة بعد التأكد من إكمال جميع الأسئلة إلى البريد الإلكتروني التالي : edamaa@leeds.ac.uk

إذا احتجتم إلى إضافة أو تصحيح أي معلومات بعد إرسال هذه الوثيقة، فضلاً أبلغونا في أسرع وقت ممكن.

والله يحفظكم ويرعاكم،،   عبدالله بن محمد النتيفي

Appendix XII: SNTPCK as A Model-Based Approach for Data Analysis
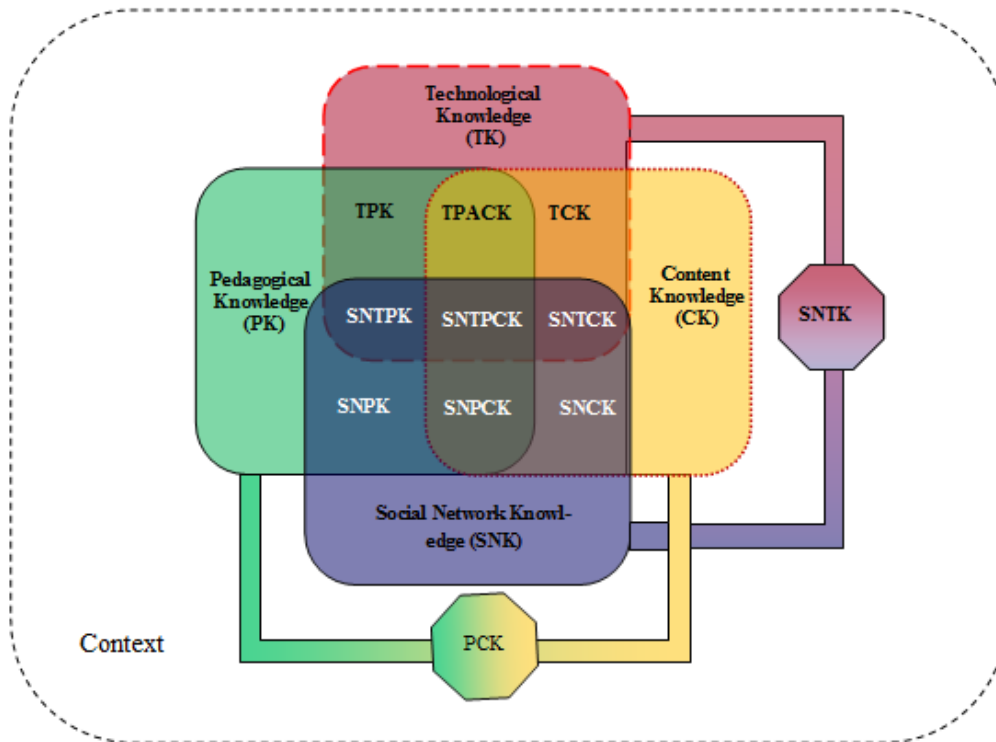
LIST OF ABBREVIATIONS

TK	Technological Knowledge
PK	Pedagogical Knowledge
CK	Content Knowledge
SNK	Social Network Knowledge
TPK	Technological Pedagogical Knowledge
TCK	Technological Content Knowledge
PCK	Pedagogical Content Knowledge
TPCK	Technological Pedagogical Content Knowledge
SNPK	Social Network Pedagogical Knowledge
SNTK	Social Network Technological Knowledge
SNCK	Social Network Content Knowledge
SNTPK	Social Network Technological Pedagogical Knowledge
SNPCK	Social Network Pedagogical Content Knowledge
SNTCK	Social Network Technological Content Knowledge
SNTPCK	Social Network Technological Pedagogical Content Knowledge

Applying the Social Network Technological Pedagogical and Content Knowledge (SNTPCK) Model

Potential Use of Online Collaborative Social Networks (OCSNs) to Enhance Learning and Teaching in Saudi Higher Education

Applying the Social Network Technological Pedagogical and Content Knowledge (SNTPACK) Model

1: Technological Issues			
a) Equipment:			
Consider the importance of the following items for the implementation of OCSNs:			
	Item		Mean
1a1	Provide required software for networks usage	TK, TCK	4.33
1a2	Provide Internet infrastructure in areas where not available	TK	4.73
1a3	Provide computer labs that are necessary for communication	TK	4.31
1a4	Update management system to suit use requirements	SNTCK, TCK	4.44
1a5	Use e-learning management systems to support such applications	TK	4.31
1a6	Provide multi-language applications	SNTCK, TCK	4.21

b) Training:			
Based on some of the study participants' answers about OCSNs usage, these training aspects are needed:			
	Item		Mean
1b1	Training faculty members on technology usage	TPK, SNTK	4.54
1b2	Training students to deal with these types of sites	TPK, SNTK	4.35
1b3	Include OCSN use skills in computer modules	SNPK, SNPCK	4.02
1b4	Training is important because of the lack of computer education	PCK TPCK	3.92

	Item		Mean
c) Support:			
Do you think these actions will support and encourage people to use OCSNs?			
	Item		Mean
1c1	Provide a computer club in each facility	TK, SNTCK	3.50
1c2	Provide incentive programs to encourage the use of technology	SNTK, TPK	4.06
1c3	Provide technical support for users	TK	4.46
1c4	Develop educational programs about the use of new technologies	TPK, SNTPCK	4.21
1c5	Set up a national strategy to take advantage of new technologies	TPACK, SNTPCK	4.17
1c6	Faculty members' attention is important to the success of use	TPK, SNTK	4.35
1c7	Reduce the cost of Internet connections to encourage the use of OCSN	TK	4.31

	Item		Mean
2: Pedagogical Issues:			
a) Teaching Model:			
Looking at the OCSN usage and its requirements and changing on the teaching model, indicate your agreement level for each item:			
	Item		Mean
2a1	Requires changing the learning environment to an interactive learning environment	SNTPK	3.94
2a2	Can be used as part of the learning environment	SNTPK	3.94
2a3	Requires special assessment methods	PK, SNPK	4.10
2a4	Requires special teaching strategies such as programmed instruction	PCK, SNPK	3.83
2a5	Allows students to learn from their peers	SNTPCK	4.15
2a6	Requires adding its usage skills as a module requirement	SNCK, SNPCK	3.81
2a7	Contributes to making education collaborative between students	SNCK, SNTPCK	4.13

b) Evaluation: In order to evaluate the teaching and learning process, OCSNs can be used as an evaluation tool.			
	Item		Mean
2b1	Using students' participation to access their opinions about the module	SNTPCK	4.17
2b2	Set up discussions about the module evaluation	SNTPCK	4.25
2b3	Distribute questionnaires for evaluation purposes	SNTPCK	4.21

c) Assessment: Assessing student achievement is a key part of the learning process. For this purpose, participants thought OCSNs offered a number of assessment methods.			
	Item		Mean
2c1	Using the number of discussion posts as part of students' assessment	SNTPCK	3.56
2c2	Using the quality of posts as part of students' assessment	SNTPCK	4.23
2c3	Using students' cooperation as part of students' assessment	SNTPCK	4.13
2c4	Using peer assessment as part of students' assessment	SNTPK, SNTPCK	3.46
2c5	Allows measurement of understanding	PK, SNPK	3.83
2c6	Can be used as a test platform	SNTPK	3.79
2c7	OCSNs valid for student assessment (R)	PK, SNPK	3.04

			Mean
d) Support: In general, OCSNs can be used to support the teaching and learning process.			
	Item		Mean
2d1	Used as a communication tool	SNTPK	4.46
2d2	Used to publish educational experiences	SNTPCK	4.42
2d3	Allows for sharing samples from previous works and projects	SNTPCK	4.23
2d4	Provides a cooperative environment between students	SNTPK, SNTPCK	4.40
2d5	Used as a media tool between the educational institution and students	SNTPK	4.29
2d6	Used to change the negative perception of social networks	SNTPK	4.04

			Mean
3: Content Issues:			
a) Pre-Application Stage: This stage focuses on the possibility of benefit from using OCSNs for all the processes related to planning, design, and building of content, indicate your agreement level with these uses list:			
	Item		Mean
3a1	Share experiences with specialists in the same field	SNPCK, SNCK	4.33
3a2	Explore students' opinions about their interests	SNPCK, SNTPCK,	4.31
3a3	Discuss module topics	SNPCK, SNTPCK	4.25
3a4	Can be used in the pre-application stage (R)	SNPCK, SNTPCK	3.08

b) Application Stage:			
This is the action stage to apply the content. please indicate how much you agree with these items:			
	Item		Mean
3b1	To exchange experiences	SNPCK, SNPK	4.25
3b2	To communicate between students and faculty members	SNPCK, SNPK	4.42
3b3	To create discussion boards about educational content	SNPCK, SNPK	4.17
3b4	To support the process of teaching and learning	SNPCK, SNPK	4.21
3b5	To support the educational content as a source of knowledge	SNPCK, SNPK	4.15
3b6	To assess students' achievement	SNPCK	3.73
3b7	As an environment for self-learning	CK, SNPK	4.10
3b8	As an environment for learning from peers	CK,SNPK	4.19
3b9	As a meeting point between students for everything related to the module	SNPCK, SNTPCK	4.35

c) After Application Stage:			
This is a set of ways that can be used to benefit from OCSNs after applying the content:			
	Item		Mean
3c1	Can be used to hold discussions to evaluate content	SNPCK, SNTPCK	4.06
3c2	Students' participation can be used as an indicator to evaluate content	SNTPCK	4.08
3c3	Can be used to distribute opinion polls about content	SNPCK, SNTPCK	4.19
3c4	Can be used by teachers to provide students with feedback	SNTPCK	4.19
3c5	Can be used to encourage students to share their experiences	SNTPK, SNTPCK	4.25

d) Content Type: Looking at the type of content that can be used on OCSNs. How much you agree with each item?			
	Item		Mean
3d1	Interactive content can be used on OCSNs	SNPCK	4.13
3d2	Content should be designed to be commensurate with OCSNs' potential	SNPCK, SNTPCK	4.21

4: Social Network Issues			
a) Purpose of a New Network: Assume we need to build a new OCSN and as a faculty, which purpose is more important?			
	Item		Mean
4a1	Educational	SNTPCK	2.02
4a2	Cultural	SNTPCK	2.76
4a3	Social	SNTPCK	3.31
4a4	Training	SNTPCK	3.55
4a5	Lifelong learning	SNTPCK	3.36

b) The New Network Users' Authority: There are different levels of users' authority can be used in any OCSN.			
	Item		Mean
4b1	Everyone has the same level of authority	SNTPK, SNK	2.63
4b2	Faculty members have a higher level of authority than students	SNTPK, SNK	4.40
4b3	Non-members can browse the network content	SNTPK, SNK	3.29

c) The New Network Moderators: Participants mentioned different types of network moderators. Please sort these items based on your point of view about the appropriate moderator of the new network.			
	Item		Mean
4c1	Ministry of Higher Education	SNTPK, SNK	2.76
4c2	Private company (non-governmental)	SNTPK, SNK	3.78
4c3	University	SNTPK, SNK	2.29
4c4	College	SNTPK, SNK	2.63
4c5	Group of specialists	SNTPK, SNK	3.54

d) OCSN advantages: These are some of the OCSN usage advantages:			
	Item		Mean
4d1	Contributes to the improvement and development of teaching methods	SNPK	4.15
4d2	Contributes to the building of cooperative education	SNTPCK	4.23
4d3	Changes teachers' role from a source of knowledge to directors of the educational process	PK, SNPK	3.98
4d4	Reduces costs of education and training	SNTPK	3.83
4d5	Allows students to access education and training at an appropriate time and place	SNTPCK	4.23
4d6	Largest number of students benefit from the outstanding teachers	SNTPCK	4.21
4d7	Provides opportunity for some students to express their views without shame	SNTPK, SNTPCK	4.40
4d8	Enriches educational process	SNTPCK	4.33

	e) OCSN Disadvantages:		
	These are some disadvantages of OCSN usage:		
	Item		Mean
4e1	Can be misused	SNTPK	4.04
4e2	Could lead to inequality of opportunity in education	SNTPK	2.81
4e3	May lead to a form of isolation	SNTPK	3.00
4e4	Waste of time	SNTPK, SNTK	2.69
4e5	Additional cost to students	SNTAPK, SNTK	3.04
4e6	Not suitable for some scientific topics	SNTPCK	2.52
4e7	Represents an unsafe environment	SNPK, SNTPK	2.96
4e8	Requires more efforts to manage the educational process	SNTPCK	3.69

	f) Educational Institution's Benefits from OCSN Usage:		
	On an educational institution level, OCSNs have these possibilities of usage:		
	Item		Mean
4f1	To cooperate between national and international educational institutions	SNTPK, SNTPCK	4.27
4f2	To disseminate opportunities and possibilities in the educational institution	SNTPK	4.27
4f3	To promote research projects	SNTPK	4.27
4f4	To announce academic achievements	SNTPK	4.29
4f5	To raise students' academic level	SNTPCK	4.00
4f6	To exchange experiences among university employees	SNTPK, SNTPCK	4.35

g) Society's Benefits from OCSN Usage:			
These are some societal benefits from OCSN usage:			
	Item		Mean
4g1	Allows students to learn at a time and place that suit them	SNTPCK	4.27
4g2	Increases awareness about the beneficial uses of these networks	SNPK, SNTPK	4.23
4g3	Increases improvement and development of educational environment	SNTPCK	4.13
4g4	Used as a communication tool between universities and civilian society	SNTPK	4.19
4g5	Develops the level of technical knowledge and skills	SNTPCK	4.19
4g6	Opens broad prospects for knowledge and self-learning	SNTPCK	4.27

h) OCSN Usage Policies Need to be Developed:			
In order to have a successful use of OCSNs, the following policies need to be developed:			
	Item		Mean
4h1	Develop online social network usage regulations	SNTPK	4.15
4h2	Develop online social network usage policies	TPCK, SNT PK	4.08
4h3	Develop intellectual property rights policies	TPCK SNT PK	4.19
4h4	Develop distance learning and e-learning policies	SNTPK	4.23
4h5	Develop higher education legislation to promote OCSN use	SNTPK	4.19
4h6	I know about social network usage policies in higher education	SNTPK	2.52

Item excluded from the final SNTPCK statistic

because of the difference in measurement scale.

(R)   reversed item

The findings of using SNTPCK mode shown below:

SNTPCK	No	Mean
CK	2	4.15
PCK	2	3.88
PK	3	3.74
SNCK	3	4.09
SNK	1	2.69
SNPCK	9	4.10
SNPK	10	3.98
SNTCK	4	3.78
SNTPK	13	3.84
SNTK	3	4.07
SNTPCK	11	4.10
TCK	2	4.09
TK	2	4.09
TPCK	4	4.09
TPK	2	4.36

Appendix XIII: Data Analysis Samples

Using Ground Theory and SNTPCK Mode as Code Generator

Text	Open Code	Axial Code	Axial Code	Selective Code	Item in Delphi Final Questionnaire
	Ground Theory	SNTPCK model	SNTPCK model	Ground Theory	
The university should provide labs in each school, we need it for using email and Internet, it is important to communicate with others	Needed Issues	TK	TK	Equipment	**Provide computer labs that are necessary for communication**
Social network, allows students to work together in one project	advantages	SNTPK, SNTPCK	PK	Support	**Provides a cooperative environment between students**
Yes, they should make it open, let anyone use the network's content	Authority	SNTPK, SNK	SNK	The New Network Users' Authority	**Non-members can browse the network content**
One of my colleagues used the student posts as part of the student assessment. I think it is wrong	OCSNs uses	SNTPCK	PK	Assessment	**Using the number of discussion posts as part of students' assessment**
We can use it at the end of	OCSNs uses	SNTPCK	PK	Evaluation	**Set up discussions about the**

Text	Open Code	Axial Code	Axial Code	Selective Code	Item in Delphi Final Questionnaire
	Ground Theory	SNTPCK model	SNTPCK model	Ground Theory	
the semester to know the students' feedback about the module					**module evaluation**
If I would like to design module, it will help me to know what the students like	Content	SNPCK, SNTPCK,	CK	Pre-Application Stage	**Explore students' opinions about their interests**
You can use it to teach yourself	Purpose	SNTPCK	SNK	Purpose of a New Network	**Lifelong learning**