Exploring how digital media technologies can foster Saudi EFL students' English language learning

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STATEMENT OF AUTHENTICATION

The work presented in this thesis is, to my best of knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

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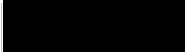
DEDICATION

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أهدي هذا العمل إلى أولئك الرائعين في حياتي والذين ساهموا في جعل الحلم حقيقة:

إلى أمي وأبي الغاليين (رحمهما الله)، رحلا قبل رؤية تحقيق الحلم.

إلى زوجتي وأبنائي، إلى أخواتي وإخواني.

إلى أصدقائي وزملائي

كنتم خير معين لي في مسيرتي

أشكركم جميعًا على كل ما وجدته منكم من حب ودعم وتشجيع وصبر ودعاء.

لولا الله ثم وقوفكم معي، ما كان لهذا الإنجاز أن يكتمل.

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I dedicate this work to the great people who made this dream possible: to my mother and father, who passed away before seeing me achieve their dream; to my lovely wife and children; and to my brothers, sisters, and friends. I thank them all for their love, help, support, patience, encouragement, and prayers, which gave me the ability to complete my PhD degree and successfully reach my goals.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Digital Media Technologies (DMTs) has been inspiring people, especially younger generations, for decades. In education, DMTs usage has been investigated as a learning tool. In recent years, studies have been conducted to examine the affordances of DMTs in the context of learning English as a foreign language (EFL). Research has shown that there is a relationship between DMTs usage and intentional learning, as the latter has been argued to be an important aspect of learning. This study aims to understand high-school students' use of DMTs for fostering EFL intentional learning, especially outside the classroom in the Saudi context. To achieve this goal, a mixed-method research approach was applied. The quantitative data was collected through an online survey that was distributed to Year 12 Saudi male students (n= 350). The qualitative data was collected with students through two phases: the first phase consisted of semi-structured focus group interviews (n= 24) while the second was an online journal (n= 6). The results have shown that Saudi high-school students were highly engaged with DMTs and intentionally use several types of DMTs for learning purposes.

LIST OF SHORTENED FORMS

DMTs	Digital media technologies
EFA	Exploratory Factor Analysis
EFL	English as a Foreign Language
ESL	English as a Second Language
KSA	Kingdom of Saudi Arabia
L2	Second language
MLR	Multiple linear regression
SNS	Social networking sites
LTS	Linked text sets

CHAPTER ONE

Introduction

The term "digital media technology" refers to technologies used for transmission of digitised information. There are many varieties of technologies that can be used in digital media. While the singular term "Digital Media Technology" refers to technology as a common noun for all such technologies, in this thesis, the researcher uses the pluran term "Digital Media Technologies" to indicate more precisely the varities of technologies that can be used. Henceforth, in this report, the acronym DMTs means Digital Media Technologies.

This chapter is organised as follows. The first section covers the background of the study. It commences with a description of the place of the English language in the world and some aspects related to learning English in the Kingdom of Saudi Arabia (subsequently referred to as "Saudi Arabia"), as well as a discussion of the forms of digital media and their use in learning. This section sets the scene for the research. It is followed by the rationale for conducting the study and subsequently the aims of the study and its research questions. Finally, the significance of the study is discussed.

1.1. Background to the study

1.1.1. The necessity of learning English

English is recognised as a global language. Northrup (2013) pointed out that English is the primary language for over 350 million people and the second language for another 430 million people. It is widely used as the international language of business and trade, tourism, the internet, social media and education. In countries where English is not the native language, it is taught and learned either as a second language (ESL) or as a foreign language (EFL). Veerappan, Yusof and Aris (2013) explained the distinction between ESL and EFL. English is spoken as a native language in countries such as the UK, USA, Australia, New

Zealand and Canada. Commonly, English is spoken and used as a second language (ESL) in those countries that were either British or American colonies. These countries include India, Sri Lanka, Malaysia, the Philippines, Nigeria, Pakistan and South Africa. Other countries that were not colonised by either the British or the Americans commonly have not institutionalised English as a second language: in countries such as Japan, China, Russia, Indonesia, Yemen, Lebanon and Saudi Arabia, English is regarded as a foreign language, and it is taught as EFL. Since the context of this research is Saudi Arabia, this research focuses on EFL.

The need to learn English in ESL or EFL countries arises due to the need to use the language in education, business, communication, tourism, and cross-cultural interactions within a country or internationally. Governments recognise the importance of English for their economies and societies. Their citizens also need English to fulfil their personal aspirations, because they understand its capacity to empower and support development. Coleman (2010) discussed why English is required for the development of countries in which English is not a native language, and the issues associated with adopting English as a complementary language in such countries. In these non-English-speaking countries, English represents a means of communication, and a gateway for industry and business.

Several factors seem to influence the learning of English as a foreign language: they are related to economy, culture, entertainment, communication or skill development (Crystal, 2012). Students in the abovementioned countries are aware of the potential benefits of learning the language; therefore, they tend to follow learning strategies such as the use of DMTs (Darling-Hammond, Zielezinski, & Goldman, 2014; Khamkhien, 2010) to foster their learning. These factors and strategies will subsequently be discussed.

The aim of this chapter is first to set the scene by defining the context of the study, and to provide background and justify the study; then to state the aim, research questions,

objectives and hypotheses formed for the implementation of the study, as detailed in the subsequent chapters.

1.2. The context of the study

The study was undertaken among Year 12 EFL students in Saudi schools. Thus, the history of English education, its development and the current status of DMTs in EFL outside school define the context. These aspects are discussed in the following subsections.

The beginning of EFL teaching in Saudi Arabia can be traced to the mid-1920s (Al-Ahaydib, 1986). In 1936 English was taught in the first high school in Mecca (Al-Ghamdi & AL-SAADAT, 2002; Elyas & Picard, 2010). Around 1958, languages such as French and English (Al-Abdulkader, 1979) were taught in Saudi Arabia in Grades 7 to 9 in selected schools. Since 1970 English has been taught in Saudi public schools from Grades 7 to 12. Students have English classes four times a week, with each period lasting 45 minutes (Mahboob & Elyas, 2014). In 2001 English was introduced to Saudi students at the elementary level, starting from Grade 4. Unlike students in Grades 7 to 12, students at the elementary level have only two classes per week, but of the same duration of 45 minutes per period. Thus, since 2001 English has been taught as a core subject in public and private schools across the country from Grades 4 to 12. Grade 12 being the last stage of EFL learning in school and this was the appropriate stage at which current level of DMTs use and pedagogies of DMTs for EFL learning could be meaningfully evaluated. At this stage, students have been exposed to various pedagogies and are mature enough to evaluate the use of DMT for leanring. Findigs in this study could potentially provide insights for the future development of pedagogies using DMT for EFL learning. Therefore, the study was undertaken among Year 12 EFL students in Saudi schools.

The Ministry of Education plays a dominant role in the Saudi education system, centralising and controlling it. All teachers, including English teachers, are provided with "an

identical syllabus with guidelines and deadlines that they are expected to follow" (Mahboob & Elyas, 2014, p. 130). Teachers are also given specific objectives and goals that they need to achieve. One of the main goals of teaching English in Saudi Arabia is to prepare Saudi students to be as fluent as possible in this global language and to be able to communicate with other English-speaking communities (Liton, 2012). Other important goals include, acquiring basic language skills in order to communicate with the outside world, respecting different cultures among nations, and developing students' intellectual, personal, and professional abilities. DMTs are important tools for helping learners achieve these goals and this is why the use of DMTs was chosen as the topic for this research. This study also tried to understand whether DMTs have been employed in language learning intentionally.

1.3. The use of DMTs for teaching and learning English in the Saudi EFL context

In today's context, DMTs represent an important tool for using English. It is also pervasive in education, especially in the teaching and learning of EFL and ESL around the world (Barrett & Sharma, 2007; Kern, 2006; Yi, 2012). Social and cultural factors can affect how DMTs are used in education, and this is particularly evident in the Saudi education system (Al-Ahaydib, 1986; Al-Saggaf, 2004; Al-shehri, 2012). The Islamic culture is typical of the common culture of the Middle Eastern countries. Research suggests that EFL classrooms in the Middle East are generally teacher-centred and teacher-dependent (Al-Saggaf, 2004). The mode of teaching and learning is didactic, with students often consigned passive roles (Al-Fahad, 2009; Al-shehri, 2012; Chen, 2007). In Saudi EFL classes, teachers determine most of the learning-teaching processes (Asmari, 2008); students do not have active roles, and this can limit and affect their practice of English in the classroom. Therefore, the teachers need to consider the use of DMTs for language leanring and devise strategies to motivate students in using DMTs for learning.

Preparing Saudi students to be as fluent as possible in this global language and to be able to communicate with other English-speaking communities (Liton, 2012) is declared to be an important objective in the "Objectives of Learning English Language" in Saudi schools (MoE, 2017). The Saudi Ministry of Education has initiated a number of projects to help the Saudi economy transition from an oil export-based economy to a knowledge-based economy (SaudiVision2030, 2017). The English language has an important place in this transition. Moreover, the Saudi Ministry of Education has released a list of twelve "Objectives of Learning English Language in Saudi schools". According to one of these objectives, it aims to "develop the students' intellectual, personal and professional abilities", while another is to "acquire the linguistic bases that enable them to participate in transferring scientific and technological advances of other nations to their nation" (MoE, 2004). In this context, DMTs play an important role and represents a main source of learning. Students can use their personal DMTs for learning, whether they are inside or outside the school environment. However, Saudi education policies relating to the expected conduct of the students in the classroom, as stated in the Rules of Behaviour and Attendance (MoE, 2017), do not allow them to bring personal electronic devices such as mobile phones to school. This means that Saudi EFL students in K-12 levels cannot completely benefit from their "personal" digital media devices inside the school (Al-Kathiri, 2015). This mandate is a key reason why EFL students can only use DMTs outside the school. Thus, DMTs may also be beneficial to students in their English language learning outside the school context. Students have been found to use DMTs for educational purposes outside the classroom in many non-Saudi contexts (Ito, Gutiérrez, Livingstone, Penuel, Rhodes, Salen, & Watkins., 2013; Kolb, 2008), and this may also be the case in Saudi Arabia. It is necessary to explore the extent to which and in what way students use DMTs for EFL learning outside classroom, due to the regulatory restrictions to use DMTs inside classroom.

Within the Saudi context, there is rapid growth in the use of new technologies and digital media, with some of these technologies being important for helping Arabic youth learn the English language (Ha & Barnawi, 2015). Some Saudi students see learning English as a vehicle for personal and professional development (Hameed & Aslam, 2015). However, to date there have been only very few studies examining the use of DMTs by Saudi high-school students outside school and for EFL purposes (Al-Kathiri, 2015). The growing interest amongst Saudi education professionals and policymakers in exploring the potential of digital media for English-language learning necessitates research to address digital media usage among Saudi EFL learners (Chao & Chen, 2009; Nassuora, 2012; Phuangthong & Malisawan, 2005). It is thus clear that a study is needed to address the gap of using DMTs for EFL by Saudi high-school students outside school and to explore the potential role of DMTs in supporting Saudi students' English language learning outside school.

1.4. The rationale for this study

Few research studies (Ito et al., 2013; Kolb, 2008) have investigated the use of DMTs outside the classroom for learning EFL. Thus, it is imperative to further explore how students in the Saudi context intentionally learn EFL through DMTs. In this study, the concept of intentional learning was used as the theoretical framework. Intentional learning is generally defined as learning that is motivated by intentions and is goal directed (Blumschein, 2012). Intentional learning gained particular attention as a result of the seminal work of Bereiter and Scardamalia (1989). According to Lee, Rooney and Parada (2014), "intentional learning occurs when a learner wants to learn, sees the need to learn, believes in the need to learn, knows what to learn, knows what is needed to learn and knows how to learn." They argued that intentional learning emphasises the consciousness of learning. It addresses the content of learning and its end product, as well as the learning process itself. There has been growing interest in the role of intentional learning in the context of language acquisition

(Hulstijn, 2003; Mitchell, Myles, & Marsden, 2013). It is imperative that we understand how learners exploit DMTs with which they are familiar to intentionally learn English outside the school context, so that we may be able to replicate such intentional efforts in the classroom context to allow meaningful learning of EFL to occur. Because this study focuses on students' intentional efforts, it is also necessary to understand whether self-efficacy plays a pivotal role in their using of DMTs for learning EFL outside the classroom. Self-efficacy, which refers to individuals' beliefs in their abilities to successfully perform tasks, as researchers have pointed out, is likely to be an important variable in terms of intentional learning with digital technologies (Hanham, Ullman, Orlando, & McCormick, 2014), When students have better self-efficacy in the use of DMTs, they may be more willing to invest in intentional EFL learning. Students tend to exert effort and engage deeply in tasks for which they have relatively strong self-efficacy. Conversely, students tend to apply minimal effort and have little engagement in tasks for which they have relatively weak self-efficacy (Schunk, Pintrich, & Meece, 2002). Therefore, this study sought to examine how Saudi EFL students could intentionally foster their English language learning outside of the school using DMTs and the relationship of self-efficacy and metacognitive strategies in this learning process.

Some research findings support the proposition that EFL students are often predominantly "in-class" learners, with little systematic learning taking place outside the school (Al-shehri, 2012; Chen, 2007). EFL students are described as in-class learners because of the lack of opportunities to learn and practise English outside the boundaries of the classroom. Traditional classes are delivered via a teacher-centred approach, with teachers giving a lecture and most students listen passively. This more passive style becomes an issue due to the fact that EFL students are expected to develop a level of English that allows them to communicate and exchange knowledge (Tamer, 2013). It is, therefore, important for students to take an active approach, and to do this they require support systems or aids. Such

assistance can take the form of people who are available to help students learn English (e.g. coaches/tutors) and technological aids (e.g. internet applications that can help students learn English). The latter are more personally accessible anywhere, anytime, if mobile devices are used.

What is the scope of using digital media outside school? According to Gee (2004), digital media can be used for English language learning within two social areas, at school and outside school. Based on their studies of young people's digital media practices, various researchers (Ito et al., 2013; Kolb, 2008; Sait, Al-Tawil, Ali, & Khan, 2003) have contended that outside school, young people are more likely to intentionally use technologies to undertake a range of learning tasks, including completing schoolwork and homework. This learning can be active or passive. An example of passive learning would be watching educational videos on YouTube to learn about a specific topic or copying and pasting material from an internet source to one's homework. An example of active learning would be reading about a topic on the internet. Some researchers (Ito et al., 2013; Kolb, 2008) have posited that young people might well be engaging in tacit forms of English-language learning, such as watching English content or practising speaking skills online with other users, through the process of using digital technologies such as televisions (TVs), personal computers (PCs), laptops and mobile devices.

Over the last few decades, DMTs have greatly influenced education practices in many countries, especially in economically advanced economies (Selwyn, 2012), and many new educational technology-enhanced tools have emerged. Education is no longer limited to traditional schools and classrooms, traditional teaching tools such as blackboard and textbooks, and the traditional teacher standing in front of his/her students and lecturing. DMTs have the potential to make education in general, and English language learning in particular, more effective (Carrier, Damerow, & Bailey, 2017; Evans, 2008) through the use

of mobile devices and computers (Golonka, Bowles, Frank, Richardson, & Freynik, 2014; Kolb, 2008), information and communication technologies (ICT) (Livingstone, 2012), and worldwide web applications (Selwyn, 2016). It has been argued that DMTs can foster learning of EFL language skills (García-Sánchez & Luján-García, 2016; Gilakjani, 2012; Noytim, 2010). For example, (Gilakjani, 2012, p. 63) reported that "the use of video has been found to effectively develop listening skills". Some EFL students may have a desire to use other forms of DMTs to improve their English language skills. As noted in the previous section, there are numerous learning practices which use DMTs, such as online learning, watching videos, and listening to audio clips (Kim, Rueckert, Kim, & Seo, 2013b; Livingstone, 2012; Mayfield, Ohara, & O'Sullivan, 2013; Selwyn, 2011). Currently, technological materials (e.g. podcasts, videos) and supplements for English-language learning are often easily accessible and can be located on websites such as YouTube and Khan Academy. To be successful intentional learners, students need the opportunities and the necessary forums to practise English in their everyday activities. In addition, the use of digital media increases students' language learning and performance achievement in their lessons (Karamti, 2016). Technologies "can motivate and engage students in thinking and working creatively, exploring and experimenting, reflecting and planning, creating new possibilities and ultimately achieving excellence" (Patil, 2014, p. 2). Moreover, language learning through DMTs is not limited to time and place. Both synchronous and asynchronous learning can take place regardless of time and space (Livingstone, 2012; Selwyn, 2011). It has been argued that DMTs can be used in any educational field and in any context (Al-Jarf, 2012; Jarvis, 2013). Hence, DMTs certainly have an important role in the context of Saudi English language learning classroom.

The availability and widespread use of new technologies can facilitate intentional learning of EFL and the four fundamental skills of English language. Understanding how

digital media are used among Saudi high-school EFL students may provide insights that contribute to improving the learning experiences of students in the Saudi context. Investigating the use of DMTs among Saudi high-school EFL students could also lead to more effective pedagogical approaches to foster their intentional English language learning. Furthermore, the impact of the external environment on the improvement of EFL intentional learning and on language use is an important area of research (Al-Jarf, 2012; Al-shehri, 2012). The findings of this study are expected to identify preferred and frequently used types of digital media, and related insights that could help benefit students in their EFL learning through DMTs. The main intention of this study was to assess the preferred and actual use of DMTs for intentional learning directly or indirectly.

1.5. The significance of this study

The significance of this study arises from the fact that there are very few studies on the use of DMTs for learning purposes by Saudi high school students, although several studies have been conducted in Saudi university classes (Liton, 2012) on the use of DMTs by EFL students, (Al-Kathiri, 2014; Nassuora, 2012; Sait et al., 2003), and outside-class learning habits, (Richards, 2015; Sargsyan & Kurghinyan, 2016). A lot of the reported studies on the Saudi context regarding the use of DMTs for learning English have focused on higher education (i.e. university students). In this study, students in their final year (Year 12) of high school were selected because they were about to transit from public schools, where no DMTs is allowed in school, to universities, where DMTs is allowed to be used in the campus.

Selecting Year 12 students is important for the current Saudi context because findings emerging from this study are expected to be of immediate practical value, providing insights into the influence of using DMTs on learning English outside school. This study may help researchers to gain a greater understanding of how EFL students graduating from high schools intentionally use DMTs, and whether transiting to university education has an

influence on their use of DMTs for EFL learning. The findings may also indicate whether self-efficacy is an important variable in such learning processes. In addition, this study used a cross-sectional mixed-method research design for a more holistic understanding of the phenomena being studied. Such a design enables the researcher to explore more deeply the influences of using DMTs on the learning of English outside school. The methodology followed in this research may provide a template for researchers in similar countries who wish to conduct comparable research.

Although students use a wide variety of DMTs, they may not be in a position to derive maximum advantage from it for learning English due to their lack of knowledge of the potential use of DMTs, as the experience they currently possess is purely experiential or personal. The findings of this study are expected to generate leads to recommend effective strategies of achieving the potential of DMTs to maximise the benefits (e.g. learning outcomes such as scores in tests) for educational purposes. This is especially important when the students enter the stage of selecting a career and undertaking higher education after graduating from high school. Teachers will have a better understanding of the learning that students undertake outside the classroom, and this information can help them to alter their in-class approach to maximise students' learning. Understanding how students use DMTs outside the classroom for EFL may help educators to explore and develop pedagogies that enable students to effectively use strategies both inside and outside the classroom for language learning.

The outcomes of this research should be beneficial for policymakers in Saudi Arabia. By gaining an understanding of the nature and frequency of the use of DMTs for English-language learning, and the processes that underlie how Saudi students intentionally use digital resources to acquire specific English language skills, policymakers will be able to formulate evidence-based policies to support student learning with appropriate DMTs. The findings

from this study can also be used to optimise the English language curriculum in Saudi Arabia and to consider alternative ways of delivering the curriculum (e.g. through particular technologies). Specifically, they may provide a platform for policymakers to consider the educational affordances of using DMTs, together with associated strategies for language learning, and to plan for a systemic policy on integrating DMTs seamlessly into the school contexts.

To reiterate, the need for this study arises from two factors. Firstly, there is a lack of research on the suggested study and its components. This research will address that gap. Secondly, the study is useful for understanding the current pattern of using DMTs for learning purposes by Saudi high-school students outside the classroom. By understanding the DMTs usage patterns, it may be possible to determine whether the existing practices are adequate, and if not, why not. If they are inadequate, it may be possible to recommend methods to raise these practices to their full potential, to maximise the benefits of using DMTs for learning English.

1.6. Aim and objectives of this study

The overall aim of this study was to understand the use of DMTs for fostering EFL intentional learning, especially outside the classroom in the Saudi context in relation to the concept of self-efficacy (Bandura, 1997), which has been theorised to be an important precursor of intentional learning (Hanham et al., 2014).

1.6.1. Objectives

The specific objectives of the study are to:

(a) explore the kinds of DMTs that Saudi EFL students are using outside school – that is, to identify all the possible types of digital devices that Saudi students are familiar with and use in their daily lives.

(b) identify the DMTs that Saudi students most frequently use in the intentional acquisition of English-language skills outside school.

(c) examine the processes that underlie how Saudi students intentionally use digital resources to acquire specific English language skills (i.e. reading, writing, speaking and listening). This will include exploring the types of goals, deliberate choices, learning strategies and self-monitoring processes that Saudi students employ when intentionally utilising digital resources outside of the classroom to acquire specific English-language skills.

d) examine the relationships involving self-efficacy, and intentional learning beliefs, associated with DMTs usage.

1.7. Chapter summary

In this chapter, the need to study English was justified by its status as a global language, its use as the most common communication tool and the language of international business, and its use in tourism and education. In Saudi Arabia, English is learned as a foreign language, EFL. The cultural dimensions of Saudi Arabia restrict teaching to more traditional teacher-centred instructional methods, with no active roles for students. The regulations do not allow the use of personal technological devices inside schools. However, new generations of Saudi students already use a variety of DMTs very widely outside school (Alfawzan, 2012; Alshahrani & Al-Shehri, 2012). They access social sites and other sites for much of the information they require.

Some studies on the use of DMTs by Saudi university students are available, but as yet there have been no studies on high-school students. As the students in the final year of schooling (Year 12) enter a critical stage of their education and career, their use of DMTs for learning purposes assumes special significance.

This research was undertaken to address these issues and recommend ways and means to improve the use of DMTs to derive maximum potential benefits from the use of

DMTs devices. Apart from the students, the other stakeholders who could benefit from such research include the policymakers, pedagogues and the academic community.

This research was expected to be useful in identifying the directions of future EFL research and to recommend possible changes to the education policies in terms of the use of DMTs for maximum benefit in teaching and learning. The Saudi Vision 2030 highlights the anticipated improvements in educational outcomes with the aid of DMTs (SaudiVision2030, 2017). It is ikely that DMTs will be capable of contributing to these educational outcomes, and this reinforces the need for such a study in Saudi Arabia.

CHAPTER TWO

Literature Review

2.1. Introduction

In the first chapter, the context of this study was specified as being the educational system in the cultural setting of Saudi Arabia and its impact on the out-of-school use of DMTs for the intentional learning of English. Chapter One also presented the justification for the study and its significance. The main aim and objectives were also outlined. Moreover, the rationale of using the plural form of the term "digital media technologies" was because it represents various technological devices and applications, not only a particular type of technology.

The overall aim of this research was to understand the use of DMTs for fostering EFL outside the classroom in the Saudi Arabian context. The study examined three aspects in the form of research questions:

1) How are Saudi EFL students using DMTs to intentionally learn the four main skills of the English language (i.e. reading, writing, speaking, and listening) outside the school context?

2) What are the strategies students used to learn English intentionally using the DMTs preferences they nominated outside the school context?

3) What are the factors that influence the choice of the identified DMTs in learning English outside the school context?

This chapter is arranged in the following manner. Under Section 2.2, the patterns of DMTs use are examined. Subsection 2.2.1 investigates the overall patterns and extent of DMTs use by students. This subsection includes reviews of research into ways in which DMTs can be used in general, whether inside or outside school. The use of DMTs inside the classroom and its limitations are then discussed in subsection 2.2.2. A discussion of the

limitations of using DMTs inside the classroom leads to an examination of the scope of using DMTs outside the classroom, which covers the range of DMTs tools and practices employed, the merits and demerits of these tools, and ways in which these out-of-classroom practices lead to effective learning of English by Saudi students.

The next section, 2.3, presents the theoretical framework of this study, which is intentional learning. In this section, intentional learning is discussed in conjunction with other learning theories, and arguments are put forward to establish that intentional learning theory is the most suitable framework for this study.

The factors behind DMTs use that influence the effectiveness of EFL learning are sociocultural, cognitive and metacognitive. They may include self-efficacy, belief in the use of DMTs, the desire to use DMTs, knowledge of how to learn English, knowledge of how to use DMTs and the different types of DMTs. Hence, essentially, research on some of these related factors forms the core of this review in section 4 of this chapter.

Saudi Arabia has started implementing Vision 2030, with ambitious targets that are expected to benefit the nation. Vision 2030 is a development plan that has a package of changes designed to free Saudi Arabia from depending on oil, as well as providing several changes and improvements in the government relating to as economic, social, educational, and political concerns, just to mention a few. In the package relevant to education, there are several strategic plans to improve Saudi education, including the switch to digital learning. The scope of achieving this will be discussed using reviews on Vision 2030 targets in this chapter under section 5.

Having discussed the available literature related to all the dimensions of this research work, a final synthesis of the literature will be drawn in section 6, leading to the next chapter on research methodology.

2.2. Usability of DMTs

The usability of DMTs among students is discussed in this section. Common patterns can be found across many different types of DMTs use under a range of learning conditions. To identify these, it is first of all necessary to review studies that examine the use of different types of DMTs in a variety of contexts. Next, usability of DMTs is identified. The discovery and identification of DMTs usability aids in determining the direction in which the current trend of research in this field is heading and provide useful information for the design of this research.

2.2.1. General uses of DMTs by students

The high levels of use of various types of DMTs both for teaching and learning were identified in Chapter One, in which the works of (Barrett & Sharma, 2007; Kern, 2006; Yi, 2012) were cited. These authors noted that it was necessary to differentiate between digital media devices, technological applications and platforms. Digital media devices include laptops, mobile devices and TVs. They are used for accessing technological applications such as email, text messages, podcasts, skypes, videogames, entertainment program, and sports and games. There is a variety of platforms for delivering messages and interacting. These include email platforms such as Gmail, websites, search engines, social network sites such as Facebook, and professional collaboration groups.

Students have been using these digital media devices, technological applications and platforms for learning purposes for the past few decades. They have displayed diverse aspects of using DMTs and practised several learning activities. For instance, Ürün (2015) traced the development of DMTs in learning the listening skill, observing that audio tapes, cassettes, discs and CDs were developed progressively from the 1950s. The listening devices became progressively lighter, and now these are incorporated into mobile phones. These audiotapes developed from being used for mere listening to more interactive listening, which is an important aspect of language learning. These tools are useful for improving the speaking skill

as well. They enhance the comprehensible inputs and facilitate progressive construction of knowledge by learners, as per the input theory of Krashen (1985).

However, the usefulness and frequency of specific tools may vary with context. For example, skype sessions and podcasts were found to be advantageous in learning language skills such as speaking and listening (Tsukamoto, Nuspliger, & Senzaki, 2009; Yang & Chang, 2008). Skype conferences were particularly useful for Japanese students, allowing them to interact with far-away Americans to enhance their English-speaking skills, according to Tsukamoto et al. (2009). In their experimental research, McKinney, Dyck, and Luber (2009) evaluated the use of Podcasts by university students on lessons they had missed. The researchers found that students who listened to the lectures over the podcast repeatedly and took notes achieved higher scores than other students who only took notes inside the classroom. Podcasts of lectures were, therefore, more beneficial to students in terms of achieving higher scores, because such podcasts enabled them to make up for the missing parts of lectures, and the students were able to listen to the lectures repeatedly. More importantly, students could engage in reflection as they listened to the podcasts at their own pace.

The range of DMTs that can be used at different levels of language learning has been demonstrated in a series of case studies (Motterram, 2013). In the case of secondary-level learning in several countries, the following case studies, with their applications by the teachers, were discussed:

1. Case Study 2.1: Tele-collaboration at a secondary school – Egypt (Ayat Al-Tawal)

Applications included the teacher's own laptop, projector, Skype (www.skype.com), private Facebook group (www.facebook.com), Photopeach.com (photo-based slide shows), MP3 Skype recorder (www.voipcallrecording.com), Edmodo (www.edmodo.com), and Voxopop (www.voxopop.com). In her study, Al-Tawal applied Skype to enable her students to interact

with the outside world to practise their English with other English speakers in different countries.

2. Case Study 2.2: Sharing the experiences of web tools – Brazil (Ana Maria Menzes)

Applications included learner podcasts, teacher feedback videos (www.educreations.com), Voki (www.voki.com), and Edmodo (www.edmodo.com) used as a portfolio or PLN Songify (an iPad app). Menzes asked her students to use technology for language learning at home; her students reported that they liked this type of interesting technological homework.

3. Case Study 2.3: Digital storytelling – Argentina (Vicky Saumell)

Applications included Wiki for project work (www.wikispaces.com), and Windows Movie Maker Zimmer Twins (www.zimmertwins.com). Saumell developed her own ICT to teach English; she wanted to reduce the reliance on a course book to drive the English curriculum. She therefore applied technology in her English language courses and eventually found that her students' motivation had increased.

4. Case Study 2.4: Mobile learning inside and outside the classroom – Turkey (Karin Tıraşın)

Applications included learners' own mobile phones, School Wi-Fi Website creation tool (Doodle Kit, www.doodlekit.com), Fotobabble (www.fotobabble.com) for uploading pictures, animated cartoons using Go Animate (www.goanimate.com), cartoon strips using Toon Doo (www.toondoo.com), Bit Strips (www.bitstrips.com), Voki (www.voki.com), Quick Response (QR) codes, Audio blog software VocalPost (www.vocalpost.com), and Online grammar quizzes (Dictionary app). In her English language classes, Tıraşın applied the approach of "bring your own device" to enable students to use their own technology. She mainly focused on using mobile phones while going on a field trip. Tıraşın asked her students

to do several tasks (reading, listening and writing) and report their findings in English by sending them to her email.

The DMTs possibilities exemplified by the four case studies range from digital story-telling to mobile phone use and the use of SNS and tele-collaborations. The specific choice is determined by the learning context, the capabilities of the teacher, the learner and locational accessibility to DMTs. Notably, all the case studies are examples of teacher-led DMTs practices. The purposes of DMTs in these case studies were clearly aligned with specific language-learning objectives in the formal school setting.

DMTs have been increasingly addressing personal learning needs, especially mobile devices. Mobile devices as a form of DMTs have the potential to be used for language learning in various ways, based on the affordances of the devices. They can be used to access information anywhere, anytime, provided an internet connection is available. Language learning is facilitated by social contacts, and collaborative learning is made easier by mobile devices. Speaking and listening skills are enhanced in both synchronous and asynchronous interactions. The mobile devices considered in a review by Kukulska-Hulme (2012) included mobile phones, handheld computers, MP3 players and digital recording devices. In his review of the use of mobile devices for learning, mobile phones are most frequently used for text messaging to enhance vocabulary learning, and student-teacher and student-student communications (textual) are enhanced by mobile phones. It is worth noting that mobile phones are used only occasionally for oral communication, while handheld computers are used for written, web-based activities such as grammar drills, adding phonetic instructions to texts and participating in synchronous chats. MP3 players are used for content download to follow lectures, and to complete and upload homework assignments. Although digital voice recorders and multifunction mini-camcorders have the facilities of archiving audio, photographic and video recordings on a storage device using a USB connection to a PC,

which can subsequently be edited and even shared with others through websites and blogs, these devices were less used by learners. The under-use of these devices may be due to ignorance about their multi-functionality.

2.3. The usefulness and limitations of DMTs in the classroom

DMTs can be used in or outside classrooms, or in both learning environments. The types of learning taking place in the two environments may differ; this will be discussed in the following sections. It is vital that out-of-classroom learning complement inside-classroom learning, especially in the case of EFL learning. Because the learning involves a foreign language, any incongruence between the learning processes in the two environments may confuse the learner and negatively affect the intended learning, especially when the use of DMTs within one of the environments is not possible. For this reason, it is desirable that the use of DMTs in both environments be studied. However, in the Saudi context, where students' personal DMTs devices are banned inside the classroom, only the out-of-classroom environment can be studied.

2.3.1. Use of DMTs in the classroom

The scope for using digital media for English language learning in the school the school seems to be limited by the methods and materials available, compared to the scope available outside the school. In the field of English language teaching, some teachers may use supplementary technological tools in class to enhance English language learning. Introducing technological tools in EFL classrooms, especially among younger learners, has great potential for increasing students' language learning skills (Badrinathan, 2013). For example, teachers may use interactive whiteboards or computers to strengthen the four language skills of reading, listening, writing and speaking. A number of studies have investigated this type of usage.

López (2010) evaluated the use of interactive whiteboards (IWB) among English Language Learners (ELL) and regular students to determine the extent to which such a tool could increase ELL students' academic learning relative to that of ELL students in traditional classrooms (i.e. without IWBs), and to see how IWB technology would foster the performance of these two groups of students. The study focused on 3rd- and 5th-grade mathematics and reading. López implemented IWB technology inside the classrooms, consisting of a large, wall-mounted electronic board connected to both a ceiling-mounted LCD projector and a laptop computer that can connect to the internet via the school's wireless network. The LCD projector displays the image from the computer screen on the board. The laptop computer can then be controlled by touching the board with a wireless hand-held pen device that functions much like a PC mouse. Such technology was implemented to deliver the curriculum materials built around the IWB technology. The findings suggested that the digital-learning classroom can significantly improve ELL students' performance in mathematics and reading. López reported that "the Digital Learning Classroom [i.e. IWB] increased student achievement for ELL students compared to ELL students in traditional classrooms" (p. 910). For instance, third-grade students' results in mathematics were 13.4% higher than those of students in the traditional classroom. Admittedly, in reading they were still 6.8% below. However, the results of 5th-grade ELL students were significantly higher in both reading and mathematics than those of students in the traditional classroom: 22.9% higher in reading and 26.8% higher in mathematics.

The influence of other types of DMTs on reading and writing skills has also been investigated. For instance, Yilmaz (2015) studied the integration of short stories into computers in teaching reading and writing skills to 35 EFL learners in a university. Three short stories and three different computer programs were used for a period of three months. The results showed positive effects on learners' progress in language learning and on related

aspects such as drawing attention, raising curiosity, fostering cooperation, giving and receiving feedback, improving reading and writing skills, and increasing Second Language Learning (L2) motivation.

Moving images and videos can capture the attention of learners more than any other tool (Weiss, Rand, Katz, & Kizony, 2004; Zhai & Shah, 2006). Applying visual tools (videos) inside EFL classes may attract the students and raise their interest, particularly in the case of younger learners. In this sense, Mangubhai (2005) and Shea (1995) argued that immersing second/foreign language teaching in technology, and immersing EFL students in long engagements with film, would be beneficial. Watkins and Wilkins (2011) suggested the use of online YouTube material (or other online-streaming video websites) in EFL classes because they provide teachers with updated and current materials and topical contents that suit EFL classes.

It is evident that DMTs has a lot of potential in enhancing learning in the classroom setting. When integrated into teaching and learning appropriately, along with suitable pedagogical approaches, DMTs is likely to bring cognitive and motivational benefits.

Since the context of this study is Saudi Arabia, the question of how the use of DMTs in the classroom is perceived in the country is also relevant to the selection of DMTs for the out-of-classroom learning environment. Hence, a number of limitations on using DMTs in classrooms of Saudi Arabia are discussed below.

2.3.2. Limitations on using DMTs in Saudi schools

Although evidence for the benefits of using DMTs in schools is available, its application in Saudi schools has been limited due to two factors: limited options provided by the Ministry of Education by way of facilities, and the regulatory ban on students bringing mobile devices into school. These are discussed under two subheadings below.

2.3.2.1. Regulatory limitations on students bringing mobile devices into schools

In the Saudi context, where this study was conducted, public schools are generally equipped with advanced technologies. The Ministry of Education provides schools with modern teaching tools such as interactive whiteboards, computers, projectors, and video players for use by teachers (MoE, 2004). Moreover, the Ministry of Education encourages and trains teachers, including EFL teachers, to use these tools in their classrooms (MoE, 2004). However, there are obvious differences between the digital technologies provided and used in Saudi Schools and those technologies used by individual students. The technologies provided in Saudi schools by the Ministry of Education are limited in number (i.e., one per class to be used only by the teacher) and limited in variety (i.e. they generally consist of a computer, data projector and interactive whiteboard). The personal devices used by students outside the school are completely different in type, size and price, and even in quality. They include smart phones, iPads, laptops, and mp3 players. Students are banned from bringing personal electronic devices into the classrooms; students who disobey and violate the rules can be penalised according to the guidelines of the Rules of Behaviour and Attendance MoE (2017). The Rules of Behaviour and Attendance is a policy that has lists of rules to regulate students' behaviour inside the school. The regulatory limitations on students bringing mobile devices into the schools thus lead to an inconsistency between the devices used by the students in class and outside class. Such limitations eliminate opportunities students would otherwise have for learning through the use of their own digital devices in the classroom.

2.3.2.2. Limitations on the use of DMTs in schools by the Ministry of Education

Some Saudi EFL teachers do in fact use DMTs to provide their students with curriculum-related content. From their investigation into Saudi EFL teachers' use of digital media in their EFL classes, Alshumaim and Alhassan (2010) reported that, in general, Saudi EFL teachers are interested in using computers in this context and already use them to support their lesson plans. However, there have been some challenges in their classroom use of

computer technologies, including lack of social and political support, and the perception that ICT might be incompatible with the educational beliefs of some teachers (Alshumaim & Alhassan, 2010).

Due to education policy in Saudi Arabia, some digital media types may not be applicable in the Saudi context for English language learning inside the school, as noted above. Students' use of personal digital communication devices, such as cell phones and tablets, is banned (MoE, 2017). Although this policy only relates to communication devices, all other mobile devices (e.g. iPads) are also banned in practice (MoE, 2017). This could be a misunderstanding of an unclearly stated policy. Therefore, students cannot completely benefit from these "personal" tools inside school for language-learning purposes; however, they may benefit more by using their devices outside school, where they may have wider opportunities to use them as enhancing tools for learning school-related information. Therefore, there is a need to investigate the potential influence of the intentional learning of English outside the school.

The above literature review shows that it is not possible to study the use of DMTs inside classrooms in Saudi Arabia; hence, the scope of such studies in out-of-classroom learning environments is examined below. It is this author's opinion that the wide scope for studying DMTs use outside the classroom in Saudi conditions justifies the selection of the out-of-classroom learning environment for this study.

2.4. The use of DMTs outside the classroom

Digital media can be used for learning English within two social areas, at school and outside of school (Gee, 2004). The first area of English language learning is within the premises of the school, in classrooms, when the instructor uses technology to enhance the curriculum. This happens when the instructor uses various types of digital media to enhance specific skills inside the classroom, such as watching a YouTube clip or listening to an online

conversation to improve students' listening and speaking skills. One of the advantages of YouTube is that it is already used worldwide, and as such, is likely to be highly familiar to students. Moreover, YouTube is often easily accessible and provides a wide range of content on language learning (López, 2010; Watkins & Wilkins, 2011). In the opinion of Rahamat, Shah, Din, and Aziz (2017), technologies can be used in learning as an intelligent tutor system, as simulators and learning tools as well as pedagogy agents. This highlights the usefulness of technology as a learning aid outside the classroom. These materials are not part of the curriculum, but support specific language skills, such as listening and speaking. The second area of English language learning is the outer and larger social context beyond the school boundary. Although the content in this area may not be guided by a specific curriculum or a specific type of DMTs, it may have a relationship to the curriculum if digital media are used for learning curriculum-related materials. This may be carried out by students as homework or extra credit work or even learning general content regarding the English language. Moreover, learners in this area may also learn new information incidentally through the use of digital media (Ito, Horst, Bittanti, Boyd, Herr-Stephenson, Lange, & Robinson, 2008).

After discussing DMTs use outside the classroom, the relationship between DMTs practices and their effects on English language learning are examined in the section below. This constitutes the topic of this research.

2.4.1. DMTs practices outside schools and their effects on English language learning

Using various forms of digital media for English language learning outside the school could result in a very wide range of practices. Jarvis (2013) found that in their local contexts, non-native speakers of English from the United Arab Emirates and Thailand make use of a wide variety of computer-based materials outside the school to learn both first and second languages. In addition, Jarvis and Achilleos (2013) reported that these students used

their desktops, laptops, and mobile phones most of the time. They also reported that the students used digital media in many different ways, such as listening to music and podcasts, watching videos on YouTube, downloading films and serials, researching, reading news, translating new words, checking weather, communicating with friends on Facebook or Twitter, and sending and receiving text messages. Essentially, DMTs has the potential to be used by learners to foster various language skills.

Many studies have reported on the positive attitudes of students towards using mobile devices outside school for English language learning (Kim, Rueckert, Kim, & Seo, 2013a; Mayfield et al., 2013). A few other studies have investigated the effects of using mobile learning methods outside school on language skills such as vocabulary, speaking and listening (Al-Jarf, 2012; Al-shehri, 2012; Lu, 2008). For instance, Al-Jarf (2012) employed MP3 English lessons as tools to investigate their influence on a group of Saudi EFL language learners. Compared with a control group of 44 university students who received only classroom instruction, an experimental group of 46 students used these devices for 12 weeks anywhere outside the classroom to practise listening and speaking. The content was accessible through mobile phone, MP3 player or computer. Significant listening and speaking improvements were observed among the experimental group in their post-tests when compared with students of the control group. In another study, Lu (2008) found that the use of SMS was beneficial for vocabulary learning. Lu examined the effectiveness of SMS vocabulary lessons of limited lexical information on the small screens of mobile phones. Thirty Taiwanese students in Grade 10 were recruited to participate in the study and randomly distributed into two groups. They were given two sets of English words either on paper or through SMS messages for two weeks. The post-test results showed that students' English vocabulary scores were higher for SMS-assisted reading than reading from conventional print material, because the students were highly engaged with their own devices and could read and

review the sent vocabulary. This indicates the benefits of DMTs in out-of-classroom learning. There is clear evidence that using DMTs for language learning outside the classroom helps learners to develop their language skills. The accessibility and flexibility of DMTs may potentially be a catalyst in developing Saudi students' language capability especially when Saudi students' need and interest to learn English is high.

DMTs also foster collaboration in English language-learning environments. Another study conducted in a similar context by Al-shehri (2012) reported more significant results regarding English language learning. The researcher recruited 33 Saudi EFL male learners and created a Facebook vocabulary group as the tool to investigate the potential of mobile phone-based social networking to create an effective L2 English learning environment that promoted student-centeredness and collaborative language learning. Learners were asked to use their mobile phones to post photos from their everyday lives outside the classroom settings and comment on them in that Facebook group. Al-shehri (2012) used qualitative research methods in his study, including pre- and post-task interviews, stimulated recall sessions and Facebook observation. He found that mobile social networking played a major transformational role and fostered the shift from traditional teacher-directed instruction to more collaborative, student-centred learning, which the students enjoyed more. In this example, the use of DMTs outside the classroom setting builds on the students' learning intention.

Much of the past focus was on learning English inside classrooms for outside language usage. To derive full benefit from out-of-classroom learning experiences, there is a need to complement in-class learning; schools should strike a balance between focusing on structure and focusing on meaning to achieve good English grades, stressed Lai, Zhu, and Gong (2015) based on studies involving a survey of 82 middle school EFL students in Hong Kong. Their out-of-classroom learning experience consisted of several considerations to meet

the different learning needs of learners. Identifying the learning needs of each student and meeting these needs in common classrooms can be difficult (Levy, 2008). Personal needs seem to be more easily tackled out of classrooms, as DMTs has affordances for both individual and interactive learning. Commonly used affordances of digital tools for English language learning were reviewed by Beach (2012). The affordances promote access to information, collaborative construction of knowledge, multimodal methods of communication, gaming, and reflective learning. Students use digital tools widely for social purposes, which include accessing, sharing, communicating, and reflecting on knowledge in shared learning contexts. They also use multimodal methods of the presentation of knowledge for immediate and worldwide audiences, and they participate in collaborative gaming to acquire knowledge and learn by collaboration. Moreover, Beach (2012) observed that there are barriers to the use of digital tools in schools. Students tend to use the tools more out of classrooms, usually in their homes, than in classrooms. Schools may not allow students to carry mobile phones into the classrooms. The majority of teachers and students hesitate to use e-books or other online materials inside classrooms (Elias, Phillips, & Luechtefeld, 2012). Teachers use them only for homework, practice and group collaborations, not for any creative activities. They have not been taught how to integrate technology into learning and teaching (Kim, Kim, Lee, Spector, & DeMeester, 2013). Affordability may also be a major factor for students, teachers and schools (Matovu, 2012). Clearly there is evidence to suggest the educational benefits of DMTs outside the classroom context. The range of benefits, which include personal and collaborative learning gains, may be more wide-ranging than those found in the classroom.

Informal online-learning communities are widely prevalent, and studies have been conducted to examine the intention and motivation of learners in informal settings. Learning outside the classroom was studied by Sun, Franklin, and Gao (2017) in an online English

community-learning platform (i.e. the GRE Analytical Writing Section Discussion) in China. The postings in the online forum were analysed, and there was strong evidence of teaching presence, cognitive presence and social presence, all of which the students perceived. The well-designed technological environment; a teaching presence, shared by moderators and members; and the extensive evidence of social presence in the discussion forum worked together to support learning in the GRE Analytical Writing Section Discussion Forum. Effective learning support provided by teacher presence, social presence and cognitive presence forms a theoretical basis for the use of DMTs outside classrooms. This is reflected in the intentional theoretical framework used in this study and discussed in the next section. In addition, Hu (2016) noted that the dominant out-of-class learning activities were self-directed language learning activities such as writing emails, reading academic books, browsing the internet, watching English movies, listening to English songs, and reading and listening activities, rather than traditional language-learning activities such as face-to-face interaction. However, experiencing an inadequate learning environment out of the classroom can cause anxiety, time management problems, lack of interest, lack of motivation and lack of confidence, because as not all learners know how to take charge of their learning activities (Young, 1991). Variations in the capability of learners means there are different types of activities using different tools. It is not always necessary for students to use the most appropriate activities for improving their language skills. For instance, watching television can improve listening skills but not conversation skills. Many of the out-of-class activities using DMTs may not help learners to learn English in a formal setting as they do in the school. Most of the time, out-of-class learning involves ad hoc learning or informal communicative skills. Pedagogical considerations for the use of DMTs outside the classroom are needed to build the learning intention of learners and for more meaningful use of the tools for learning English.

Besides the abovementioned benefits of using DMTs for English learning outside the classroom, the learning of English using DMTs is also an enjoyable experience for the learners, as has been reported by some researchers. Yoon (2013), Kabilan, Ahmad, and Abidin (2010) and Joo, Park, and Shin (2017) have endorsed fun learning as a very effective method of learning. However, researchers and educators must be cautioned that enjoyment does not necessarily equate with effective learning. Kabilan et al. (2010) stressed the need to reduce the use of Facebook for social purposes and increase its use for learning purposes. It may be challenging to find ways of reducing the use of DMTs for social purposes because learners often lack learning intentions and have strong inclinations to DMTs. However, it is imperative to explore ways to balance the social and educational uses of DMTs. Yoon (2013) pointed out that the use of DMTs for interactions with non-Arabic friends, and even with Arabic friends who are fluent in English just for fun, is also a good way to improve English speaking skills. Similarly, using DMTs for watching English films can strengthen listening and speaking skills if, after having watched several films, there are strategies in place for learners to practice these skills. For example, in a study by Sargsyan and Kurghinyan (2016), Armenian EFL learners, improved their language skills very frequently while using English outside the classroom, irrespective of age, gender and English proficiency levels, through social media, listening to songs, watching movies and clips, searching the internet and travelling (Sargsyan & Kurghinyan, 2016). This can also be categorised as learning through recreational practices. Greater exposure to better ways of communicating in English by greater interactions with people whose first language is English may be advantageous.

2.5. Convergence of points derived from the above review

In the above sections, three aspects were discussed: the general use of DMTs, the use of DMTs inside classrooms, the limitations and use of DMTs outside the classroom and the

effects of these limitations. The points derived from the reviewed findings in the above three sections will now be converged for application to this research.

- Several digital media devices and tools are used for various learning activities in a variety of situations. Out of these options, the use of DMTs for English language learning by K-12 students is selected for this work.

- Under Saudi conditions, it is not possible to study the use of DMTs and its effects on English language learning in a classroom environment. Moreover, most of the currently used forms of DMTs are better suited to out of classroom uses. For this reason, this research was conducted in the out-of-classroom environment.

- Most of the studies reviewed above report positive effects of using DMTs outside the classroom. These effects, are studied in this research and listed below:

  1) A wide variety of DMTs is used for different learning purposes.

  2) Recreational practices can be directed for intentional learning of English.

  3) Specific DMTs preferences can be employed for language learning.

  4) SNS interactions can be directed for the intentional learning of English.

  5) DMTs can be used for learning preferred skills.

  6) DMTs can be used to complement classroom lectures.

  7) DMTs can be used according to perceived learning needs and desires.

  8) DMTs promotes motivation, interest and confidence in its use, builds awareness of time management, and provides access to mobile learners.

  9) DMTs provides the right tools for the right purposes.

  10) DMTs can make learning fun by making it entertaining.

  11) DMTs incorporates some positive metacognitive aspects of English language learning.

12) DMTs builds mutual relationships of self-efficacy, as learners confidently believe in their DMTs use, knowing how to use it and what they want from it.

Following the convergence of the points derived from identifying patterns of DMTs use outside the classroom, the theoretical framework used for this study is discussed in two sections (2.6 and 2.7). How the framework is applied in topics related to DMTs use in education is discussed in section 2.7.

2.6. Intentional learning as a theoretical framework for this research

The theoretical framework of this study draws on the concept of 'intentional learning'. Many researchers have attempted to define intentional learning (Bereiter & Scardamalia, 1989; Subagdja, Sonenberg, & Rahwan, 2009). In one of the recent definitions, Lee et al. (2014, p. 2) stated, "intentional learning occurs when a learner wants to learn, sees the need to learn, believes in the need to learn, knows what to learn, knows what is needed to learn and knows how to learn." Also, Bereiter and Scardamalia (1989, p. 3) refers intentional learning to " cognitive processes that have learning as a goal rather than an incidental outcome." Intentional learning through digital media can occur in different ways, such as having the intention to access educational websites on the internet to learn English and engaging in a variety of intended communicative activities like reading and listening (Hulstijn, 2003). Accessing non-educational websites can also be considered as intentional, as long as language learning occurs. In this sense, intentional learning leads to a deeper learning rather than an incidental one. As Lee et al. (2014) argued, technology can play an important role in fostering intentional learning. Therefore, there should be a connection between intentional learning and the implementation of digital media. In the Saudi EFL context, students are highly engaged with technology and digital media (Al-Asmari, 2005; Allam & Elyas, 2016). Furthermore, Bereiter and Scardamalia (1989, p. 2) claimed that "students are intentionally involved in learning only when they are visibly engaged in independent learning activities."

33

Therefore, this high engagement would be a required factor in fostering their intentional learning and becoming more self-directed learners with their own digital media devices outside the regular classroom settings. Thus, digital media and intentional learning would have a strong connection.

2.7. Intentional learning of English language skills through DMTs

This section reviews research studies about the intentional learning of English language skills through DMTs and examines the application of intentional learning theory for two purposes: 1) the intentional use of DMTs for the learning of specific language skills; 2) the use of DMTs for the intentional learning of certain skills. The emphasis in the first case is on the intentional use of DMTs, and in the second case on the intentional learning process. Both can occur simultaneously, such as when specific DMTs such as Facebook is chosen intentionally over other social networking sites for the intentional learning of writing skills.

It is also evident that DMTs can foster intentional learning. Although various studies tend to refer to the term differently, the essence of intentional learning prevails in many of them. There is sufficient evidence to suggest that students use DMTs intentionally to learn the English language. In a study of a Japanese university student population by Thornton and Houser (2005), exchanges between students on paper, PC and commercial websites were intentionally replaced by mobile phones, email and specific sites, to determine whether this would allow students to learn English vocabulary lessons more effectively. Thornton and Houser used three types of test and reported that 71% of the participating students preferred receiving the vocabulary lessons on mobile phones rather than PCs, and 93% felt this to be a valuable teaching method. Similarly, from their qualitative studies of students and teachers at three US universities, Gikas and Grant (2013) noted that teachers were integrating mobile devices into their teaching. This action by teachers triggered intentional mobile use by the students for learning, communicating and collaborating.

Another study indicating the usefulness of DMTs for the intentional learning of English was conducted by Kabilan et al. (2010) with students at a Malaysian university. The survey results indicated that students believed Facebook could be used for the intentional online learning of English. In another study on the team-learning environment of large classes (Rasiah, 2014), the use of Facebook outside school was found to have improved team learning as a complement to classroom lessons. In addition, many student-centred learning mechanisms, such as poster presentations and expert forums, were used to give students a more holistic experience of learning. Rasiah (2014) found that students had a positive perception of Facebook as an innovative tool, and this enhanced the effectiveness of their learning. Both teaching and learning processes were enhanced. Facebook was intentionally designed for learning, providing further evidence that DMTs can be used outside the classroom for intentional learning.

More specifically, the successful introduction of multiple digital technologies for improving English writing in the composition classroom was reported by Clark (2010). The researcher introduced several types of DMTs, such as ePortfolios, digital stories, on-line games, a Second Life virtual environment, and blogs in a calculated and sequential manner to improve students' English writing skills. In this study, DMTs was carefully planned, designed and integrated into the language-learning environment for purposeful and intentional learning. Another innovative approach to encourage English language skills using DMTs is to encourage students' use of gaming. This was also part of the DMTs integration plan discussed by Clark (2010) and Chik (2014). Similarly, the results of a large-sample survey of teachers under the Advanced Placement (AP) and National Writing Project (NWP) conducted in US schools by Purcell, Buchanan, and Friedrich (2013) concluded that digital tools encouraged the students to be more interested in acquiring writing skills, as the tools provided space for personal expression and a wide audience. In addition, teaching was made easier by the use of

digital tools. However, the line between formal and informal writing was increasingly blurred, and the need for students to understand issues of plagiarism and fair use were increasingly felt with the increasing use of digital tools for writing. Nevertheless, DMTs strengthens the interest of the students in writing skills and reflects the deliberate use of the technology for constructive learning.

DMTs have the potential to foster intentional learning in multiple ways, and the benefits are far-reaching. For instance, a digital poetry curriculum for learning English was designed, implemented and reiterated by Curwood and Cowell (2011) for adult learners. The aim was to introduce new literacy practices that could foster students' engagement, increase their audience awareness and encourage the progressive use of DMTs. The students read, critiqued, and used traditional printed text to write poetry, then employed multimodal digital tools to reinterpret the poems. Curwood and Cowell stressed the need to create a collaborative community among educators for dialogue on the further development of such practices. In this example, a collaborative learning environment was created through the intentional use of multimodal DMTs, which clearly enabled intentional learning.

One reason why social media can be used for effective language learning in this digital age was given by Jabbari, Boriack, Barahona, Padron, and Waxman (2015). It is that with the emergence of new technologies, it is possible for individuals to socialise beyond the boundaries of time and space and use their target language more meaningfully. The current new generation of language learners are unable to lead a normal life without being involved in social media. These young learners have become accustomed to certain learning habits that traditional education settings and approaches cannot address effectively.

Using "community of enquiry" and "virtual ethnography" as theoretical and methodological bases, Rambe (2012) investigated the pedagogical impact of social media in a course in a South African university. Facebook postings of lectures by lecturers to students

and among student peers were examined. Results showed that Facebook served as the third space for counter scripts, strengthened traditional academic networking, and was a safe place for democratic expressions and co-construction of knowledge among students. Some limitations on the development of good quality academic discussions were found, along with limitations on Facebook's ability to enhance student engagement at conceptual and epistemological levels. Even with these limitations, the very fact that Facebook was being used as the third space in connection with learning makes it an example of intentional use. Intentional learning theory is, thus, applicable here, at least in part.

A number of studies have documented that while students perhaps use DMTs more for social purposes than for learning, some traces of purposeful learning can still be discerned. For instance, three studies by Wodzicki, Schwämmlein, and Moskaliuk (2012) on the use of StudiVZ, the German equivalent of Facebook, for study-related interactions showed that only about 20% of students were using the site specifically for study purposes. The majority of students were using the site more for social interaction, although some study-related interactions did occur. In this case the use of the SNS by 20% of the students for learning makes it intentional, while the use of the same site by other students for social interaction, where some learning also occurred, makes it incidental learning. The authors therefore clearly differentiated between intentional and incidental learning. In a qualitative study on the use of Twitter by undergraduate and graduate students, Lin, Hoffman, and Borengasser (2013) noted that students used Twitter as consumers: most of the time they did not re-tweet or reply. This suggests that factors of scaffolding, modelling, privacy and course design need to be considered when incorporating Twitter into courses. It is possible that the informal social focus of Twitter may be a barrier towards using it as an educational tool. Intentional learning using Twitter was affected by certain factors acting as barriers in this case. The systemic

integration of DMTs into learning needs to be considered if DMTs is to be integrated successfully so as to foster intentional learning.

On a wider perspective in the application of DMTs for purposeful learning, Meurant (2010) put forward some suggestions to make Korea more competitive in the global economy through the development of digital literacy in its EFL courses. This is necessary because in the future, almost all personal communication between non-native English-speaking countries and English-speaking countries will be in online digital form. Korea is a "highly wired" nation. However, it has not extended its awareness enough to its education system. According to Meurant (2010) ,this needs to be rectified by increasing the opportunities for computer-mediated second-language learning. Multimedia-capability and mobile web solutions with internet facilities need to be provided to all teachers and students. All campuses should be Wi-Fi networked to convert them into wireless classrooms. All classrooms need to be equipped with computer consoles for teachers. Adequate computing facilities should be provided to all students for use anywhere, any time. It has now become possible to have computing facilities everywhere in Korea if all students are provided with Wi-Fi and a3G-enabled tablet such as an Apple iPad on their enrolment. Typically, some universities in the US are providing students with free iPhones or other internet-enabled mobile devices and integrating them into their curriculum. Web apps are used for many curriculum-related activities, such as checking class schedules and grades, watching lecture podcasts, completing and submitting homework, and looking up campus maps. Classroom participation is facilitated by polling software so that shy students can make choices without the risk of embarrassment. The use of iPhones and Kindle means that students can spend less money on textbooks. In-built GPS can track the attendance of staff as well as students. The screen sizes of many smartphones are small, although iPhones have the advantage of larger screens. Meurant (2010) strongly supports an iPad-integrated education system in Korea and

recommends the implementation of steps to achieve this, so that Korean students can intentionally use DMTs for their learning. In this respect, this study provides a national dimension for intentional learning theory.

The intentional use of DMTs can become a bridge between the two methods of language acquisition, formal and informal. This is another application of intentional learning theory. For instance, in a case study on university students (Bawazeer, 2013) the author focused on a learning group that was created and started in class and then followed up outside the class using DMTs such as the internet and mobile devices to establish a continuous English-language learning environment. She revealed that DMTs connected students' formal and informal learning experiences. Greenhow and Lewin (2016) also viewed social media as a bridge between formal and informal learning. They suggested that most youngsters are consumers and do not participate fully. A model based on constructivism and connectivism was tested and validated by the authors to explain their contention. However, the model was explained in a lengthy tabular form rather than as a diagram, making it potentially difficult for a reader to understand the interrelationships properly.

2.8 Self-efficacy theory and the use of DMTs

Self-efficacy is a key personal factor and refers to individuals' beliefs that they can organise and execute plans of action in order to successfully carry out tasks (Bandura, 1997, 2001). Self-efficacy can influence one's behaviour, such as whether or not one will exercise effort when undertaking tasks or persevere when faced with difficulties. Beliefs surrounding self-efficacy can also play a role in how one shapes one's environment, as well as how one responds to external environmental factors. Self-efficacy is widely studied in the educational context, and in recent years, researchers have established the connection between self-efficacy and technology use (Moos & Azevedo, 2009). Self-efficacy has been identified as an important aspect of this study because of its pivotal role in intentional learning (Hanham et al., 2014). It is a key component of Bandura (1997, 2001), Social Cognitive Theory (SCT).

Within SCT is the theory of reciprocal determinism, which proposes that personal factors, behaviours, and the environment have reciprocal relationships that can explain human functioning (Bandura, 2001).

It is important to emphasise that self-efficacy beliefs are domain-specific and/or task specific beliefs and vary according to the domains/tasks of interest. By way of illustration, in the domain of multimedia, a person will have specific beliefs about her or his ability to operate a software program for editing videos (e.g. Adobe Premiere Pro). This same person may have different beliefs concerning her or his abilities in another domain, such as operating software programs for carrying out statistical analyses (e.g. SPSS). Although there are domain-general measures of self-efficacy, Bandura (1997) has asserted that self-efficacy beliefs should be measured in a way that captures the tasks or activities that a person is expected to carry out. For example, rather than asking a person about their beliefs in mathematics in general, it is preferable and more accurate to provide students with items that capture their perceived capabilities in specific sub-domains of maths (e.g., trigonometry) or for carrying out specific tasks (e.g., balancing differential equations).

Self-efficacy beliefs have been studied with respect to technology use (Moos & Azevedo, 2009). Computer self-efficacy is arguably the most widely studied efficacy construct in the domain of learning technologies (Compeau & Higgins, 1995; Johnson, 2005; Marakas, Yi, & Johnson, 1998; Mun & Hwang, 2003). Computer self-efficacy beliefs have been measured at the domain general level; that is, learners' beliefs about their capabilities for using a computer (Compeau & Higgins, 1995), as well as at more task-specific levels, such as learners' beliefs for using specific computer applications (Downey & McMurtrey, 2007). Computer self-efficacy beliefs have been associated with learners' performance and motivation when using DMTs (Johnson, 2005).

2.7.1. Self-efficacy in English language learning

Another important aspect of self-efficacy is that self-efficacy beliefs are not static. They are, in fact, fluid and can change overtime as a result of influence from at least four key sources. According to (Bandura, 1997, 2001), mastery experiences – specifically, perceptions of past successes and failures – are the strongest source of self-efficacy. Students who have been successful in the past in using DMTs outside school for learning English are likely to have high self-efficacy in this respect. On the other hand, individuals who have not been very successful using DMTs for acquiring English language skills are likely to have relatively low self-efficacy in this domain. Although not as strong as mastery experiences, vicarious experiences – that is, observing others performing tasks – can also influence self-efficacy. If students perceive peers of similar ability successfully using DMTs for acquiring English language skills, then this is likely to increase self-efficacy, whereas observing peers of similar ability struggle using DMTs for learning English is likely to lower self-efficacy. Verbal persuasion can also be a factor in shaping self-efficacy beliefs. Significant others, such as peers or teachers, can persuade individuals that they are capable – or indeed, incapable – of using DMTs for learning English. Positive persuasion is likely to strengthen self-efficacy, whereas negative judgements are likely to weaken self-efficacy. An individual's physiological and emotional state can also impact self-efficacy. For some individuals, using technology may result in anxiety, which can have flow-on physiological effects (increased heart rate, sweating, shaking). If these physiological indicators are interpreted negatively, this can reduce self-efficacy.

Self-efficacy beliefs in a particular domain of learning, such as using DMTs for acquiring English language skills, are associated with students' beliefs that they have control over their learning in that particular domain. Notably, self-efficacy has been theorised to be an important precursor of intentional learning (Hanham et al., 2014). Learner control is a key

41

component of intentional learning. If students do not believe that the have the necessary capabilities for successfully performing tasks in a particular domain, it is unlikely that they will engage in intentional action in that domain. Self-efficacy is related to various indicators of learner motivation. These include choice, perseverance, effort and engagement. Individuals tend to choose tasks, activities and technological devices and software programs for which they are self-efficacious. For example, students who are confident in using certain types of DMTs for learning English, such as iPads, will tend to choose iPads when seeking to improve their English language skills, whereas those who are not confident in using iPads will likely choose another type of DMTs. When faced with difficulties – for example, struggling to operate a particular type of DMTs – individuals who are self-efficacious will persevere and seek to overcome obstacles associated with using a particular type of DMTs, whereas those with low self-efficacy will tend to give up and perhaps seek another type of DMTs. Students tent to exert effort and engage deeply in tasks for which they have relatively strong self-efficacy. Conversely, students tend to apply minimal effort and have little engagement in tasks for which they relatively weak self-efficacy (Schunk et al., 2002).

2.8. Mediums and approaches to using DMTs for English learning

In this research, the students were asked about the learning practices and the types of DMTs they were using, especially out of the classroom. The learning activities were gaming with non-Arabic users, online shopping, improving language skills, programming (such as designing applications or websites), communicating with non-Arabic speakers, and watching films and serials in the English language. In terms of DMTs activities, these learning practices include using social media, digital storytelling, blogging, gaming and podcasts, as well as mobile devices and other platforms such as You Tube, Wikis and virtual sites. Research studies focus on how these media are used. Their effects, and factors affecting them, are discussed below.

2.8.1. Social media sites

The use of social media sites or platforms has become commonplace among young people. These sites have been widely used in several research studies as tools to explore their effectiveness in English language learning. In a critical review of the suitability of Facebook as a learning tool, Manca and Ranieri (2013) noted that there had been only a partial implementation of the pedagogical affordances of Facebook. Many obstacles still exist for the full adoption of social media platforms such as Facebook as learning environments. These obstacles may be implicit or institutional, teacher-related or student-related pedagogical obstacles, or cultural issues. However, there are educational benefits being documented as well. A study on the students of a Serbian university by Milošević, Živković, Arsić, and Manasijević (2015) revealed that students' use of Facebook as a virtual classroom improves the quality of the education process and positively influences students' knowledge-building. Similarly, in a study of informal teacher practices by Deng and Tavares (2015), the use of Google sites and Facebook was evaluated for their relative effect on learning. It was found that teachers shared many self-developed teaching resources and ideas via Google sites. Facebook facilitated interactions that enabled the students to seek peer support, exchange ideas on teaching and discuss many topics. The complementary natures of the structure and control provided by Google sites, combined with the immediacy and interactive characteristics of Facebook,was clearly evident.

Amaro-Jiménez, Hungerford-Kresser, and Pole (2016) examined the blended approach of using a common traditional teaching strategy with an online platform (Twitter), which offers students a direct line of contact with the instructor, and another line via cyberspace to personalise learning and instruction with technology. In their research they found that students were able to use the facilities to collaboratively solve problems, construct understanding and reflect on their learning. Using Twitter as part of the teaching and learning

provided a model of effective teaching practice. It also helped to ensure that the voices of students were heard even in large classes. The use of Twitter as part of the learning tool brought an immediacy to classroom interactions. Similarly, the possibility of using Instagram ELE for the global learning of Spanish was discussed by Munday, Delaney, and Bosque (2016). Instagram includes activities such as sharing photos and images, leading to the development of descriptive language. They found that visual elements can be incorporated with great effect into cultural issues to develop cultural awareness and competence. An instructional task, the "#instragramELE" challenge, was tested by the authors for the acquisition of new vocabulary, the understanding of cultural topics and the development of reading and writing. The global response to this challenge was overwhelming, with over 30,000 tagged photos accumulating from all over the world.

It is evident that Facebook as a social media platform is the predominant choice for the majority of students. However, Twitter and YouTube are also being used widely.

2.8.2. Digital storytelling

In an Egyptian study by Sadik (2008), students produced digital stories in MS Photo Story, then presented, published and shared them with their peers. The researcher used both qualitative and quantitative methods in his analysis and showed that students could understand the curricular content better through the use of digital storytelling projects. He found that the teachers were convinced of its usefulness, in spite of certain challenges.

In a study on the use of digital textbooks for learning, Joo et al. (2017) found that student expectations were met, which led to perceived usefulness, satisfaction and enjoyment of those digital textbooks. They found that perceived usefulness and satisfaction had positive influences on the continued use of digital textbooks, but not on the enjoyment of them. A qualitative and quantitative mixed approach was used by Smeda, Dakich, and Sharda (2014) to study the utility of digital storytelling in teaching and learning processes. The results

showed that digital storytelling could be a powerful tool for the integration of instructional messages with learning activities. It created a positive and suitable learning environment for increased student engagement, leading to better learning outcomes. In a study by Niemi and Multisilta (2016), significant motivation and engagement among students using digital storytelling in knowledge creation was noticed in Greece, Finland and California. Sociocultural theories provided the theoretical framework for their study.

It is widely acknowledged by educational researchers that learning consists of the dialogical interactions between individuals, substances and artefacts. In a study by Yang and Wu (2012), digital storytelling was used as a transformative, technology-supported pedagogy. Multimethod data collection in a quasi-experimental setup in a classroom environment of 10th-grade students showed that digital storytelling enhanced motivation, critical thinking and academic achievement. Scaffolded digital texts can be used as a DMTs approach for teaching reading comprehension and vocabulary, as the experimental results of Dalton, Proctor, Uccelli, Mo, and Snow (2011) showed. They also found that the language status of learners (bilingual or monolingual) had an effect on both comprehension and vocabulary. According to Dreon, Kerper, and Landis (2011), digital storytelling, such as the use of YouTube for teaching maths, is a highly effective approach. And it is widely believed by researchers that the new generation of teachers are as accustomed to using DMTs as the new generation of students, meaning that these teachers will be able to devise many DMTs approaches for effective learning.

To increase vocabulary knowledge in language learning, Dalton and Grisham (2011) proposed 10 strategies for eVoc using free digital tools and internet resources. The strategies are aimed at increasing student engagement in vocabulary learning. The design of the strategies is meant to support word teaching and learning strategies. They also promote the strategic use of web-based vocabulary tools by students on demand. Furthermore, these

strategies increase the volume of reading and incidental word learning by students. The emphasis of the strategies is on the development of students' interest throughout the process of their reading, viewing, interacting with words and creating word meanings in digital and multimedia contexts.

In a Spanish study by Lee (2014), the usefulness of digital news stories in enhancing content knowledge and oral language skills was examined using a mixed approach. The results showed that students were empowered by digital news reading, as they could use their own voices for self-expression and self-reflection. Social interactions helped them to establish a sense of community in which they supported each other by offering feedback and new ideas on each other's writing. The students also gained multiliteracy skills, including improvements in their speaking fluency.

The attitudes of 6th-grade students to reading experience, based on navigating and using a combined e-book and audiobook using Kindle Fires, were assessed by Larson (2015). The ability to synchronise audio content with digital texts is an innovative skill. In this work, students used tools and features of e-book to customise their reading experience according to their individual needs. Immersion reading was used to listen to a professional narration, while the digital text was read simultaneously with synchronised highlighting. The findings showed that reading stamina, vocabulary development, and the reading motivation of most students were improved by reading with listening.

2.8.3. Blogging

Reflective blogging, as an approach that uses DMTs, was explained and researched by Hourigan and Murray (2010). Several factors need to be considered for the successful implementation of blogging. The capabilities of learners to use the technology properly may vary, and this needs to be rectified through scaffolded learning.

A mixed approach was used by Hsu and Wang (2010) to study whether the reading skills of students were enhanced by blogging. The results showed that using blogs did indeed result in a higher retention rate. Integration strategies of blogging in the curriculum, specifically to improve reading skills, were suggested to address the challenges in this regard.

Aydin (2014) cited studies substantiating the view that blogs help to enhance speaking, reading and writing skills. Voice blogs help to develop skills to conceptualise, to brainstorm, articulate, monitor, and to evaluate, and to develop skills of self-presentation and information exchange. However, Aydin (2014) found that blogs have no effect on improving pronunciation, accuracy, fluency or complexity of language. Sometimes, audio-blogs can improve the oral performances of learners. Reading skills are improved by blogs, along with critical thinking skills.

Furthermore, blog writing practices can help learners by providing an expanded audience and increased literacy activities. Blogs can be integrated into the writing environment of EFL easily, as writing skills are shown to improve through using blogs. Writing blogs improves not only writing performance, but also the ability to monitor writing, students' attitudes and perceptions of writing, and interactions and participation in writing projects. Along with writing skills, related skills such as using rhetorical strategies and correct grammar, designing paragraphs and essays, revising written works, giving and receiving feedback and participating in peer reviews are also strengthened. There is evidence for the improvement of expository, narrative, persuasive and argumentative writing skills due to blogging, which in turn help autonomous learning.

The impact of blogging on EFL teaching in a school in Kuwait was assessed by Al-Qallaf and Al-Mutairi (2016) using a mixed approach. The results revealed that by the time the semester was ending, students were able to write lengthy sentences with fewer spelling and grammatical mistakes. Furthermore, they were more motivated and independent. Students

expressed more positive attitudes towards learning EFL. On the other hand, although teachers were enthusiastic about the technology, they also expressed concerns over the lack of access to digital content and the students' lack of competency in digital literacy and the use of technology.

This review of studies about blogging reveals that the blogging activities examined in the studies helped learners improve their English language skills, such as reading and writing. When these learners interact through the blogs, they have opportunities to practise their skills.

2.8.4. Digital gaming

In an experimental study by Liu and Chu (2010), the ubiquitous "gaming method" outperformed non-gaming methods in enhancing motivation and learning outcomes. A direct positive relationship between motivation and learning outcomes was also noted. Chik (2014) used multiple mixed methods to evaluate the effect of digital gaming on autonomy and community in L2 learning. Her results revealed that "learners exercised their autonomy by managing their gameplay for both leisure and learning, suitably varied by the dimensions of location, locus of control formality, trajectory and pedagogy." Wider communities of gamers take the roles of teachers and advisors when gaming is used for learning. These dimensions of the activities determined both autonomous learning and learning from the community.

One method of increasing vocabulary is playing online vocabulary games. Yip and Kwan (2006) compared a control group (activity-based lessons) with a group using websites specifically for vocabulary-learning games. After eight weeks, the performance of the experimental group was significantly better than that of the control group. Online learning supplemented with digital educational games was preferred by the experimental group over conventional activity-based lessons. Although teachers generally supported the online games, the requirement of extra support was an obstacle for its adoption in the curricula.

The review above suggests that digital gaming represents an attractive method for learning English language skills, because individuals usually prefer games over other methods.

2.8.5. Mobile devices

Naismith, Sharples, Vavoula, and Lonsdale (2004) used activity-centred approaches to list the uses of mobile devices for learning. The key issues were mobility, context, ownership, informality and learning period. The list of activity-based approaches with mobile devices included:

1) behaviourist – activities that promote learning as a change in learners' observable actions. The stimulus is the presentation of a problem, and the contribution by the learner is to solve the problem. Feedback provides reinforcement. In mobile devices, classroom responses, assessments, and content delivery using text messages represent this type of use.

2) constructivist – activities in which learners actively construct new ideas or concepts based on both their previous and current knowledge. This is an example of active learning. Here, mobile devices embed students in a realistic context and offer access to support tools at the same time. Participatory simulations fall in this category.

3) situated – activities that promote learning within an authentic context and culture. Mobile devices are very well suited to context-aware applications, as they are available in different contexts and can draw on these contexts to enhance the learning activity, such as in the case of updating information on museum displays.

4) collaborative – activities that promote learning through social interaction. Mobile devices can support collaborative learning by providing coordination without replacing any human interaction, compared to online discussion boards that substitute for face-to-face discussions.

5) informal and lifelong – activities that support learning outside a dedicated learning environment and formal curriculum. Informal learning may be intentional (intensive, significant and deliberate learning) or accidental, such as acquiring information through conversations. Mobiles can substitute effectively for these sources of informal knowledge.

6) learning and teaching support – activities that assist in the coordination of learners and resources for learning activities. Mobile devices can be used by teachers to report on class attendance, to review student marks, for general access to central school data and to effectively manage their schedules. In higher education, mobile devices can be used for providing course material to students, along with due dates for assignments, timetables and information about room changes.

According to the results of a mixed-approach study by Dashtestani (2016), the perceptions of Iranian EFL students on mobile learning and the use of mobile devices for learning EFL were largely positive. Opportunities for ubiquitous learning and access to the internet, use of multimedia in the classroom and portability were listed as the benefits. Iranian students use mobile devices predominantly for non-educational purposes.

Several research studies (Gikas & Grant, 2013; Ito et al., 2008; Prensky, 2001; Tang & Hew, 2017) suggest that mobile devices have a higher connection to learners because such devices have several features that attract people, such as touch screens, a wide range of applications, mobility everywhere, and long-life batteries. These features represent motivational factors behind the use of mobile devices for learning English language skills.

2.8.6. Other DMTs media and approaches

The following content reviews several DMTs tools studied by researchers that are not classified under the previous media and approaches. These include interactive white boards, online recording and speech-text programmes, and electronic books (e-books).

Interactive whiteboards have been widely used by schools and there are studies reporting the positive use of such tool. Specifically, the results of a quasi-experimental design by López (2010) showed that interactive white boards in ELL classes of 3rd- and 5th-grade learners were effective as a strategy and improved reading and maths skills to the level of other students in the standardised assessments.

In terms of fostering students' comprehension skills, Linked Text Sets (LTS) were found to be promising in giving the exposure required to adolescent students as per the common core state standards. An LTS enables the answering of many meaningful guiding questions via print and media texts. LTS has three phases: engagement, exploration, and expansion. As the students progress through the phases, they build interest, background knowledge and strategies to read targeted complex texts Elish-Piper, Wold, and Schwingendorf (2014).

The aim of a US study by Kim (2014) was to evaluate the use of online self-study resources, online recording, speech-text programs and feedback, in improving the oral efficiency of ESL learners in an autonomous learning environment. According to the findings, the use of self-study resources enabled learners to develop speaking skills and build considerable self-confidence. The resulting levels of student engagement revealed that the roles and feedback of instructors were important during the course of the development of learning autonomy.

In an Iranian flipped-classroom environment, Sohrabi and Iraj (2016) studied two groups of students focused on two different goals. Both groups preferred TED talks and documentaries and did not want to watch academic videos or "O'Reilly short books" or reports. The use of English language content was perceived as both a challenge and an opportunity (Sohrabi & Iraj, 2016).

Love, Spies, and Morgan (2017) noted that multimedia-delivered instruction could be used as a support to develop content-area academic vocabulary. They found that one such tool, electronic books (e-books), could be effectively used as a multimedia resource to supplement standard-based instruction and to pre-teach content-area vocabulary that was designed specifically for students with exceptional language needs.

Virtual worlds have been widely adopted by schools and institutions to promote collaboration and immersive learning. In a study by Wang, Song, Xia, and Yan (2009), on using the virtual site, Second Life (SL) for EFL purposes, Chinese students perceived it as an interesting and useful English learning platform; for this reason, the students perceived the use of EFL programs through SL to be successful. This study established the technological readiness of Chinese students to use SL for EFL.

Young people today learn digitally mediated modes of expression largely from one another outside school, and they engage with digital technologies in ways that are often more varied and more sophisticated than those they encounter at school. Consequently, the manner in which teachers should approach the incorporation of technology in their teaching is an important issue. Some heuristic concerns and their answers were provided by Chun, Kern, and Smith (2016) to solve this issue. They argue that technology should not be used for its own sake only, but it should serve as a means to support specific learning goals. Thus, learning goals will define what technology is to be used, rather than the teaching methods being fitted to the technologies already being used by the learners in their daily lives. This should lead to the analysis of the pros and cons of all promising technologies and the selection of the most suitable technology for a given learning goal.

The studies reviewed above explored the media and approaches of using DMTs for English learning. They examined social media sites, digital storytelling, blogging, mobile devices, and other unclassified DMTs tools. Within those media and approaches, the studies

demonstrate the wide range of possibilities of selecting appropriate DMTs and using it intentionally or incidentally for the acquisition of language skills. The studies exhibited various aspects of intentional learning through the use of DMTs for improving English language skills such as reading, writing, speaking, and listening.

2.9. Summary of the literature review

This research examined the three dimensions of current DMTs use by EFL students: intentional learning, the approach of intentional learning to using DMTs, and the factors affecting the choice of DMTs. Correspondingly, these were the three main aspects reviewed above, with additional sections on the description of approaches and aspects relating to how the outside classroom context had to be chosen. A summary of the observations from the above review is given below.

1. Various types of DMTs can be used for learning language skills inside and outside the classroom.

2. Regulatory limitations, and the limited DMTs provided in schools by the Saudi Ministry of Education, force students to seek methods of using DMTs for learning English outside school. Consequently, only the use of DMTs for EFL outside the school has been included in this research. It is likely that the out-of-school use of DMTs for EFL has many advantages and positive impacts.

3. DMTs can be used either for deliberate learning purposes or incidentally, when it is being used for other purposes. A third strategy is to use DMTs for intentional language learning. Some DMTs applications can be used intentionally for learning. An example is the use of Facebook for group learning. Intentional learning of writing skills happens when text messaging is conducted in Facebook. Intentional learning theory is used as the framework for this research.

4. There is considerable merit in using intentional learning as the framework, as many research works have shown. In this research, the framework has been used to explain the use of DMTs for intentional learning English language learning.

5. For intentional learning, students use many strategies such as blogs, games, messages etc. Each of these have effects on particular language skills. The DMTs strategies used outside classrooms by Saudi grade 12 students were measured in this study.

6. Self-efficacy is an important component in students' motivation to intentionally use DMTs to acquire skills in English. This research sought to investigate the role of self-efficicacy in EFL using DMTs outside classrooms.

7. Factors related to DMTs include the knowledge of what skills to learn, how to learn the required skill, and how to use DMTs to learn the required skill, as well as the desire to use DMTs to learn the required skill. Very little literature is available on these factors.

English is taught and learned in Saudi Arabia as a foreign language with second-language status. However, there is limited application of DMTs for learning inside schools. The students use their devices, especially mobile phones outside school, to aid them in learning, and much of DMTs use is intentionally or incidentally for learning purposes. However, the rich potential of using DMTs for acquiring and improving a variety of English language skills, either inside or outside classrooms, has not yet been adequately explored. Most of what is already known applies to diverse language-learning contexts of countries other than Saudi Arabia. On the other hand, Saudi Arabia recognises the importance of developing English language skills among its population to facilitate its economic development. This is particularly relevant because of the high levels of the targets fixed for skill development in the Vision 2030 document for the accelerated economic development of Saudi Arabia (SaudiVision2030, 2017). The need to raise educational competence for the

required national skills also includes the need to enhance English language skills for a large proportion of the population. DMTs is the only way to ensure maximum reach through online EFL facilities. The effort should start at school level, and 12th grade is the appropriate stage at which the effects should be studied. These needs provide a state of urgency for this work to be done.

Thus, the gap, and what this research adds to the current body of knowledge, is the application of what is already known in the context of other countries to the out-of-school environment in the Saudi EFL context. This research uses almost the same or similar parameters and variables to those used in the reviewed works for identifying and understanding the use of technologies for fostering EFL outside the classroom in the context of Saudi Arabian high schools.

2.10. Research aim, research questions and hypotheses

Based on the literature review of the current trends of DMTs use for English language learning, the theories underpinning learning and the background of Saudi's educational context, research aim, questions and hypotheses are carefully crafted to address the identified research gaps.

2.10.1. Research aim

The overall aim of this study is to understand and identify methods of improving the use of DMTs for fostering EFL outside the classroom in the Saudi Arabian context.

2.10.2. Research questions and hypotheses

This study aims to understand how students in Saudi Arabia use DMTs intentionally to learn English outside the school context. As discussed previously, intentional learning consists of cognitive processes that have learning as a goal rather than an incidental outcome (Bereiter & Scardamalia, 1989). Lee et al. (2014) have further outlined some of the

characteristics of the learner when engaged in intentional learning. Studies have suggested that intentional learning is positively related to the use of DMTs for language learning (Hung, 2015; Wastiau et al., 2013). In this research, we argue that DMTs can indeed foster intentional learning. Language learners who are exposed to the different types of DMTs and know their affordances for learning are likely to utilise specific technology to meet their learning needs. When they have the intention to learn the language, they will exploit the types of DMTs that will best serve their learning needs.

It has been theorised that self-efficacy beliefs are likely to be important in terms of intentional learning with digital technologies (Hanham et al., 2014). As described earlier in the literature review, self-efficacy reflects individuals' beliefs about their capabilities to successfully carry out specific tasks (Bandura, 1997). Because self-efficacy is a domain-specific construct, it is important to define self-efficacy within the domain in which it is being studied. In this context, the researcher is interested in students' perceived capabilities for using DMTs to learn English. The researcher uses the term "self-efficacy for DMTs" to reflect self-efficacy beliefs in this domain.

Research suggests that self-efficacy predicts individual choices, the extent to which an individual will persevere when confronted with difficulties and obstacles, and how much effort an individual will expend on activity (Bandura, 2012; Schunk et al., 2002). In general, self-efficacious learners intentionally improve their learning through choosing tasks and activities that are challenging but achievable, persevering when faced with challenges, and exerting effort to successfully complete tasks. On the other hand, those with relatively weak self-efficacy are less likely to engage in intentional learning, avoid tasks that are demanding, abandon an activity when the activity is perceived to be too challenging, and expend minimal effort on learning tasks.

With respect to digital media technologies for learning English, it may be argued that students who perceive themselves as capable of successfully using DMTs (self-efficacy for DMTs) are likely to actually use these types of DMTs for learning English. Furthermore, self-efficacy beliefs are reflective of learners' perceived abilities to exercise control in their learning (Bandura, 1997). The conscious exercise of control in one's learning is an important component of intentional learning. As such, it may be argued that self-efficacy for DMTs will be positively associated with intentional learning practices such as knowing how to learn and what to learn.

Based on the preceding arguments, the following research questions and hypotheses are posited:

1. How are Saudi EFL students using digital media to intentionally learn the four main skills of English language (i.e. reading, writing, speaking, and listening) outside the school context?

2. What are the strategies students used to intentionally learn English using the digital media preferences they nominated outside the school context?

3. What are the factors that influence the choice of the identified digital media in learning English outside the school context?

Hypothesis 1: *Intentional learning of English will be positively related to student use of DMTs for learning English.*

Hypothesis 2: *Self-efficacy in DMTs will be positively related to student use of DMTs for learning English.*

2.11. Chapter summary

The importance of English as a global language (as described in Chapter One) has been recognised in Saudi Arabia. In intentional learning, the learner wants to learn, sees the

need to learn, believes in the need to learn, knows what to learn, knows what is needed to learn and knows how to learn (Lee et al., 2014). Complementing the intentional learning framework is self-efficacy theory (Bandura, 1997). Conscious, deliberate and goal-directed action (i.e., intentional learning) requires that students believe that they have the necessary capabilities to successfully learn and perform tasks. Arguably, students cannot engage in intentional learning with DMTs if they do not believe that they have requisite skills for using DMTs to learn English and the capabilities to execute these skills when needed. It is therefore to be expected that intentional learning with DMTs will be based significantly on students' self-efficacy beliefs for successfully using DMTs for acquiring English language skills.

DMTs supports intentional learning, especially as it can only be used out of class in Saudi Arabia. The varying contexts and environments involving various types of information sources and people provide immense opportunities for intentional learning to happen outside classrooms. There are many forms and methods of using DMTs for a range of learning strategies to acquire any required language skills.

Based on the research gaps identified from the literature and the urgent need to modernise technological applications in EFL learning by high-school students in Saudi Arabia, the research aim, research questions and objectives have been formulated and listed in the final section of this chapter. The research questions and hypotheses were designed based on the extensive literature review presented in this chapter. Given the complexities in using DMTs for learning, especially in the context of Saudi as the use of DMT in classroom is largely under explored, a mixed method design was used in this study to unearth the intricacies involved in using DMTs for learning. Extensive data were collectd and these included responses from online survey, focus group interviews and online journal entries.

The methodology used to collect and analyse the data required for answering the research questions through the objectives, and thus to achieve the research aim, is described in the next chapter.

CHAPTER THREE

Methodology

3.1 Introduction

In the previous chapters the background to this research was discussed and a review undertaken of the available literature on topics related to this research. Subsequently, the aim of this research was defined and research questions framed, the resolution of which will fulfil the aim. This chapter addresses the methods used in the research. It begins with presenting the research design, which outlines the approach taken to answer the questions. The research setting, participants, instrubments and the validity of these instruments are presented and discussed. The data collection processes are outlined and the approaches to analysis discussed.

3.2. Research design

The research design refers to the overall strategy adopted to integrate the different components of the study in a coherent and logical way, to ensure that the research problem is effectively addressed. Thus, it constitutes the blueprint for the collection and analysis of the data.

This study employed a mixed-methods design. By definition, a mixed-methods design comprises both quantitative and qualitative data (Lodico, Spaulding, & Voegtle, 2010). Also, Lodico et al. (2010) stated that, in a mixed-methods approach, both quantitative and qualitative data are collected, emphasising one or the other, or giving them equal emphasis. A mixed-methods research approach combines the respective strengths of qualitative and quantitative methods in such a way that the overall strength of an inquiry exceeds that of one method alone (Creswell, 2013). Mixed-methods research has been described as a paradigm that allows the generating of important research questions and warranted answers to those questions (Johnson, Onwuegbuzie, & Turner, 2007). It involves combining or connecting

quantitative and qualitative data to provide a more complete understanding of a research question or set of related questions (Clark & Creswell, 2010).

Mixed method includes both qualitative and quantitative approaches in the design, data collection, and analysis. This facilitates a deeper understanding of the phenomena under study icnlding how and why (Creswell, Clark, Gutmann, & Hanson, 2003; Johnson et al., 2007; Tashakkori & Teddlie, 2010). Mixed methods can provide insights and understanding that might be missed when only a single method is used and yield a more complete picture of a participant's behaviour and experience (Morse, 2003). These were the rationales to select mixed approach in this research. The importance of using such a design in this study is that it enables the researcher to dig deeper into the phenomenon being studied and explore the influences of using DMTs in learning English outside the school, given that this is an area that is still largely unexplored in the Saudi Arabian context. As such, both quantitative and qualitative data were employed in this study.

In this study, the researcher utilised a cross-sectional mixed-methods design for collecting data. In this way, "data are collected at one point in time from a sample selected to describe some larger population at that time" (Babbie, 1990, p. 56). According to Busk (2005), cross-sectional research involves collecting data at the same time from one or more groups of individuals who have variable characteristics. In addition, cross-sectional research is conducive to studies of large participant cohorts and to minimising the drop-out of participants (Busk, 2005). According to Creswell et al. (2003), the cross-sectional survey design provides information in a short amount of time regarding practices and behaviours of a particular group.

Three types of data were collected from Saudi EFL students. The quantitative type involved the collection of data through questionnaire survey. The collection of qualitative data involved semi-structured focus groups and online journal entries. The quantitative data

was collected first, followed by the qualitative data. These methods are described in detail later in this chapter.

3.3. The research context

The study was conducted within the context of male Saudi EFL high-school students in both the metropolitan and rural areas to capture data about EFL students across the country. EFL instruction in Saudi Arabia starts in 4th grade at public schools. In Saudi EFL classrooms, language is currently taught with the help of several types of DMTs; however, the use of DMTs resources (e.g. computers, Smart Boards, the Internet) is limited to teachers, even though this generation of students is highly engaged with technology; students cannot bring their own DMTs to school and use them. Students only receive information and content from their teachers, and classroom activities are mainly teacher-centred. Students thus assume a passive role, as discussed in Chapter One.

The participants were students from Year 12 classes in 20 public high schools in two different areas, metropolitan and rural. The metropolitan area was Riyadh, the capital of Saudi Arabia. According to the Ministry of Education, Riyadh has 256 boys public high schools (MoE, 2017). It would be difficult to gain a representative sample from all of these schools for practical reasons. Therefore, 10 high schools were randomly selected from the metropolitan area. Again, two cities were randomly chosen from the rural areas; the first city was Alghat, located 230 km north of Riyadh, while the second was Alzulfi, which is 265 km north of Riyadh. Together these cities had 13 boys' public high schools. Ten high schools were randomly selected from both cities combined. Thus, the total number of public high schools from which the students were recruited was 20.

The above context was selected due to the presence of several practical features beneficial to conducting this study. Firstly, there were close similarities of prescribed curricula across the schools, technological backgrounds and language exposure among the

learners. For this study, at grade 12, students would have been exposed to a variety of pedagogies and DMTs and were mature enough to evaluatre the use of DMTs for learning. The cultural backgrounds between the researcher and participating students was similar and this help to build good rapport between the researcher and the student participants which might be beneficial for data collection.

3.3.1. Participants

The participants of this study were Saudi EFL Year 12 male students. Due to the gender segregation in all Saudi schools, the sample comprised male students only. Female schools do not allow males to have access to their buildings. As the rsearcher is a male, he was not allowed to enter female schools and directly contact female students for the survey and focus-group interviews. Therefore, female high-school students could not be included as partcipants of this research.

Participating students from this age and level (i.e. Year 12) represent a suitable sample because they are on a shifting edge between public schools and higher education (Al Samadani & Ibnian, 2015; Alrabai, 2016). This feature would enable them to realise the potential of learning English through DMTs and its influence on their future (Al-shehri, 2012). Also, at this age they are expected to be able to decide which DMTs is suitable for them if they want to learn English outside school.

In all Saudi public schools, students study exactly the same prescribed curricula. This meant that the learning content of students from both the metropolitan and the rural areas did not differ in any way, helping to ensure the initial consistency of the study. However, urban and rural schools may differ in some ways like the distribution of resources and design of the learning environment. To minimise the differenced between schools the researcher selected a mix of schools from urban and rural areas for this study.

Like students of this generation in many countries of the world, most Saudi EFL learners have technological backgrounds. They are generally familiar with using mobile devices and other types of DMTs. This study explores how they used DMTs for learning purposes outside the school context.

3.3.2. Recruitment

The number of the students who consented to participate in ths research varied with respect to the three data-collection phases, namely survey, focus groups and online journal activity.

The participating students for the survey were chosen randomly from the 20 participating schools. The researcher visited these schools during school time (7:00 am–1:30 pm). With the school principals' authorisation, the researcher went to classrooms in each school and talked to the students in Arabic about the goals, potential benefits and procedures of this study. In each meeting, the researcher and students had a detailed conversation, and all students' questions and enquiries about the study and the survey were answered. Following this introduction, the researcher invited the students to participate and distributed the consent forms for those who agreed to participate.

In all 20 high schools, two different consent forms were provided to the participating students, as well as participation information sheets. The first type of consent form was a form to be signed by every participating student. They were asked to sign it prior their participation if they were over the age of 18 and agreed to participate. The second form was a parent consent form for students who were under the age of 18. Students who were under the age of 18 were asked to bring both consent forms (i.e. their own consent forms and their parents' signed consent forms) the next day, indicating their willingness to participate in the study. This meant that each school was visited twice within two days. During the first day of each visit, a short presentation was given to the students to remind them about the study and

how to fill in the survey. Students were clearly told that their participation was completely voluntary, and that they could withdraw at any time. This was also clearly stated on their parent consent forms as well. The two consent forms were adopted in compliance with the legal requirements surrounding Saudi Arabian and Australian research ethics.

Initially, the number of students who agreed to participate in the survey was 358. However, eight students chose not to complete the survey. Follow-up with these students revealed that they had other commitments after agreeing to participate. This brought the total number of the participants to 350.

Table 1 presents the geographical distribution of the participating students. About 73.1% were from Riyadh, and the remaining students were distributed almost in the ratio of 1:2 between the cities of Alghat and Alzulfi.

Table 1: Numbers of survey students from metropolitan and rural areas

Place	Number	Percent
Riyadh	256	73.1
Alghat	30	8.6
Alzulfi	64	18.3
Total	350	100.0

All the survey respondents were given the option to participate in a subsequent focus-group interview. Those who were willing to participate in the interviews were asked to provide their contact information. Twenty-four students indicated their willingness to participate in the focus-group interviews. These students were briefed about the interviews. They were then divided into groups of six for the interviews. After the interviews, students were asked whether they were willing to participate in the third phase of the study, which is the completion of an online journal. Four students indicated their willingness to participate in

this activity. They were briefed about the journal entry procedure and provided with necessary information about logging into the system.

3.4. Data Collection

The process of data collection started after the ethics application for this research was approved by the Human Research Ethics Committee at Western Sydney University, Approval Number (H11513). The data collection took approximately two months to complete. Within this time, initial results of the first phase of data collection (i.e. answers of the survey's last question) were briefly analysed to identify the participating students for the interviews that were to take place in the second phase of the study. The timeline for data collection from the three phases was carefully planned as: the survey took approximately three weeks; the focus-group interviews took about a week; and the weekly online journal was completed within four weeks. Detailed descriptions of each phase are provided in the following sections.

3.4.1. Survey

The first phase of data collection was an online survey (Appendix 1). As Dörnyei and Ushioda (2013) argued, a survey is a common and powerful form of data collection in educational studies. Due to the difficulty of surveying all Saudi EFL students, a cross-sectional survey was applied and carefully designed to address the required areas of study from the two areas (i.e. metropolitan and rural). According to Creswell (2013), the cross-sectional survey design provides information in a short amount of time regarding the practices and behaviours of a particular group. The reliability and validity of the survey items was assessed to ensure that the survey was appropriate for the study. The survey that was distributed to the students consisted of five parts. A description of each part is discussed below.

In the first part, a cover letter provided students with a brief introduction to the project. It also provided them with instructions on how to complete the survey. The other four parts consisted of several types of questions, described below.

The second part starts with section one of the survey, consisting of six demographic questions. The demographic items were included in the survey to give the researcher a clear profile of the characteristics of the students in this research. For example, students were asked about the place where they lived/had lived. This part would help obtain data to compare the metropolitan and rural areas in terms of the use of DMTs outside school. At the end of this section, students were asked about the frequency with which they used English in their daily lives outside school and about their recreational use of English. These questions provided information on the students' personal practices and use of the language outside school. These two questions also revealed the extent to which these language practices were related to the use of DMTs.

The items in section 2 dealt with general usage of DMTs outside school. It consisted of four subcategories of items relating to:

a) students owning digital media at home

b) using digital media for English learning outside the school

c) using the internet

d) using mobile devices.

The first subcategory contained questions about the availability of various types of digital media at home. The students were asked to report whether they had certain types of technology and then indicate in which languages they were using these devices. Such questions would indicate the extent to which students were familiar with DMTs, the types of DMTs students were likely to be more familiar with, and whether the use of DMTs outside the classroom was even possible. Subcategory b) of section 2 of the survey contained a 5-

point Likert type rating scale (Likert, 1932) that asked about the frequency of specific activities undertaken within the past two weeks outside school. These activities were related to the students' everyday lives and to their school work. Such questions would show the most recent activities (during the past two weeks) with which students had engaged.

Subcategories c and d of section 2 had questions that directly asked about the use of internet and mobile phones. These two types of digital DMTs were chosen because the internet represents the gateway to access the online world, while mobile phones represent the most popular digital media technological devices prevalent among this age-group of students (Tang & Hew, 2017). Subcategory c) consisted of three items that asked about how students used mobile phones to access the internet, how often they used it and how proficient they were at using the internet. Those three questions were chosen to provide information about their activities, as well as their background and knowledge regarding use of the internet. In subcategory d), there were five items asking about the types of mobile phones (i.e. smart or regular) they commonly used, how often they used mobile phones, what they used them for, and the communication applications they frequently used in mobile phones. These items were chosen to provide information about the prevalence of smartphones as opposed to regular phones. In addition, the items provided information about the ways in which the students used their mobile phones and the tools they employed.

Section 3 consisted of items on intentional use of DMTs for English language learning and self-efficacy. These items focused on the students' self-efficacy that asked the about their confidence in their ability to use DMTs to learn different aspects of English. Consistent with the recommendations of Bandura (1997), self-efficacy beliefs were measured on an 11-point percentage scale ranging from 0% (Not at all confident) to 100% (Completely confident). The students were asked about their confidence in using DMTs to improve their four main English language skills (speaking, listening, reading, and writing). At the end of this section, there

was an open-ended question that asked the students for their opinions and suggestions as to how digital media could foster their English language learning outside school. Response from this question provided supportive data to answer the last research question of this study.

Section 4 of the survey focused on the factors related to using DMTs in general and outside classrooms. The purpose of section 4 of the questionnaire was to understand the factors and purposes of using DMTs in English language learning. There were five items related to whether DMTs help learners to learn easier outside school, obtain good grades in school (by using DMTs to learn English outside classroom) and acquire good skills in the language.

The survey was designed electronically with a web link (online survey). It was created through the online survey design application Survey Monkey (http://www.surveymonkey.com). This platform was chosen because it creates surveys that are easy for the students to complete. It also provides customised surveys that can be easily implemented and monitored. Moreover, online surveys provide the researcher with an electronic data file that can be directly inserted into the analysis program (SPSS), rather that the paper survey form that needs to be entered manually.

When the electronic survey was ready for distribution, the link was made available to be accessed by the students. All students completed the online survey during school time using school computers. All the participating schools had computer labs and an internet connection. Having the students complete the questionnaire online at the school helped to ensure that all items were answered, and no questions missed and obtain high response rate. Students who wished to look through the survey items again could do so at any time, but they were only allowed to use them for the survey just once. To avoid disadvantaging the participating students and prevent any loss of classroom time, the survey was filled in during

recess. Precautionary measures such as paper-based surveys and additional computers were in place to ensure that the survey was smoothly administered.

In all the participating schools, the same procedure was followed with all students. After the researcher identified the participating students with the help of school principals and collected the consent forms, the students were briefed on the essential details of the research work in a short presentation about the goals of this study and told how to participate by filling in the survey. All students were told that their participation was completely voluntary. They were informed of their right to withdraw from the study at any time and of their right to ask questions regarding the research.

After the short presentation, participating students were asked to visit the school computer lab with the researcher, who remained there all the time, to answer any enquiries or solve any technical problems. Students were asked to open the browser and then access the online survey through the provided web link. They were requested to read the survey introduction carefully and clarify any doubts or questions before starting to fill in the survey items. The survey was anonymous, and no private or personal information was required. Filling in the survey took 15 to 20 minutes. As noted above, 350 students participated in the survey.

Given that students are not allowed to use any DMT inside the school by regulation, the school computer and internet were used only for filling the survey forms by the participating students. Special permission was given for this as a one-off case.

At the end of the survey, there was a final question that asked the participating students whether they were willing to participate in the next phase of the research-focus-group interviews. Those who agreed to be interviewed were asked to provide their names and schools to be contacted at a later stage.

3.4.2. Semi-structured focus group interviews

The collection of qualitative data in the second phase followed the survey (quantitative) data collection. The first method in this qualitative phase was focus group interviews (Appendix 2). The participating students were from two schools in Riyadh and Alghat. The interviews were conducted as a means of hearing directly from the students about their use and practices of DMTs outside school, especially for learning English. The purpose of those focus group interviews was to gain more insights into the responses the students had given in the quantitative survey. These interviews were guided by means of a unique semi-structured style that suited this study because it gave the researcher "some latitude to ask further questions in response to what are seen as significant replies" (Bryman, 2008, p. 196). The main benefit of using focus group interviews over the one-to-one interview is that focus groups enable interactions between the students during the discussion, which increase the depth of the inquiry and unveil aspects of the phenomenon assumed to be otherwise less accessible (Duggleby, 2005; Freeman, O'dell, & Meola, 2001; Lambert & Loiselle, 2008; van Eyk & Baum, 2003). It was anticipated that the high-school students in this study would be more willing to comfortably share their experiences in a group. Using a semi-structured interview helps the researcher to gather information pertaining to the research questions, at the same time giving the students the flexibility to share their thoughts freely.

The interview questions in this study were carefully framed according to the sequence of research questions of the study. These questions were crafted based on the key concepts of this study and meant to answer the research questions fully. Students were asked questions that sought elaborations on their survey responses. For example, they were asked to elaborate on their more frequent uses of DMTs and of English.

Questions were categorised into different themes based on the research questions. The themes were:

a) the students' general digital media practices out of school

b) the students' EFL-related digital media practices out of school. (c) the students' digital experience with, and knowledge of, using DMTs

c) the students' expectations with regard to the future implementation of EFL-related digital-media practices.

The discussions in these semi-structured interviews mainly focused on the students' intentional learning and how DMTs could be used outside the school to support the students' learning of English in the Saudi context. These discussions were guided by, and derived from, the students' own experience and perceptions. For instance, some elaborating questions were asked during the interviews such as "When you you play with no-Arabic speakers, how could you overcome your fearness of making mistakes?" The students' opinions were very important: as Al-shehri put it, their "voices must be heard, and students themselves need to experience their own contribution in reality" (Al-shehri, 2012, p. 45). These interviews were digitally voice-recorded with the consent of the students, and of their parents for those who were under the age of 18. In any case, each interviewee was given a pseudonym, and the interviewees' actual names or schools were not audio-recorded.

The interviews were conducted face to face during school time; the students from those two schools were interviewed during the recess to avoid any loss of class time. Such arrangement was made through negotiation with the school to ensure that students could take a short recess break before being interviewed. With the assistance of the school principals, a quiet room was provided. Each interview involved six students and took 35 to 45 minutes to complete. Before the interview, the researcher briefed the students about the interviews and assured them of confidentiality. The interviews were conducted in Arabic. The audio files were then transcribed and translated into English. The translation method is described in the paragraph below.

The interviewees were also told that their participation was completely voluntary and that they could withdraw at any time they wanted. No participating students withdrew from the interviews.

At the end of each focus group, students were asked whether they were willing to participate in the following stage, which was the weekly online journal to reflect on their experiences of using digital media technologies for learning English. Twelve students expressed their willingness to participate.

3.4.3. Weekly online journal

The third phase of data collection, a weekly online journal (Figure 1), began after the focus group interviews. The students of this phase were chosen from the same schools in which the interviews had taken place and from the students who had been interviewed and had agreed to continue with the study. Of the twelve students who had agreed to participate in this phase, only four students eventually participated due to time constraints and other prior commitments.

The students were required to be actively involved for four weeks in using DMTs for learning English outside the school context, then to reflect on this experience. Activities were designed on a weekly basis; after one week of using DMTs for learning English language, students were asked to write their online reflections. To provide more flexibility, participating students were encouraged to use any preferred types of DMTs throughout the four weeks to learn English language skills outside school. They could also use a combination of two types or more; for example, they could use their Twitter and Facebook as learning platforms through the use of iPads. Such strategy of engaging the students could possibly reduce stress and anxiety levels of involving in a research study. However, students were also told that they could only switch to other types of DMTs after one cycle of learning (one week). When the next cycle began in the following week, they were able to apply new, different types of DMTs.

The goal behind this arrangement was to provide sufficient time for the students to experience the chosen type of DMTs for learning and then reflect upon their learning. Quick switching from one type to another within a short time would not give the students enough time to build their experiences.

The weekly online journal was created through Google Forms (Figure 1).

Figure 1: A sample of the weekly online journal.

The weekly online journal was carefully designed to achieve the required goal of discovering how those students would reflect on their practical use of DMTs for learning English outside school. Students were asked to describe their practical experiences by briefly

answering six questions for each cycle of journal entry. The questions, which were designed to scaffold students' writing of reflections, were written in clear and simple English. In the first question, the students were asked what types of digital media they had been using throughout the activity. In the second question, the students were asked what had influenced them in choosing the identified type of DMTs in learning English outside school in each week respectively. This question was designed to provide insight into the factors influencing the students' choice of DMTs. Students then, in the third question, turned to the skills they had focused on and had wanted to develop when using their chosen type of DMTs each week (listening, speaking, reading or writing). Students were then asked to name the techniques they had applied in order to learn English outside school with their chosen DMTs each week respectively (fourth question). It was hoped that the third and fourth questions would provide more data about the chosen skills and the strategies they applied through DMTs to develop each skill. In the fifth question, students were asked how many times they had used their chosen type of DMTs in each of the four weeks. The purpose of this question was to reveal the frequency of the students' weekly usage. The last question focused on the length of time in which they used DMTs each week. This question aimed to reveal the amount of time students usually spent on learning English outside school.

Unlike the previous two phases of data collection, the content of the online journal was written completely in English. Students were told that they could not use their first language (i.e. Arabic) when writing their online journal. The purpose of this initiative was to let the students practise the language and reflect on their learning in English.

3.5. Pilot study

In order to determine whether the measures functioned effectively prior to conducting the present study, a pilot study was implemented. Through this pilot study the researcher sought to achieve two goals: firstly, to identify necessary adjustments to the

measures in terms of item difficulty, item clarity, and measurement reliability; and secondly, to address administrative concerns, such as the amount of time students would typically require to complete the measures, and other procedural or administrative issues that might arise.

3.5.1. Participants

Twelve high-school students participated in the pilot study. The chosen Year 12 students were enrolled in a high school similar to the high schools that participated in the actual study. The pilot study was conducted within one day during school time (recess time) in the school computer lab. All twelve students completed the survey, while two of them participated in the other two instruments (focus group interview and online journal). These two students were chosen randomly from the twelve participating students.

3.5.2. Feedback and modifications

Regardless of the time limitation (one day only), the pilot results were able to provide sufficient meaningful information for the study to proceed. Participating students in the pilot study provided valuable feedback, most of which was positive. It was suggested that the length of the survey should be decreased, and that more closed questions should be added compared to open-ended questions. This was suggested with the objective of reducing the average length of time needed to complete the survey and the ambiguity of some questions. The survey items were subsequently reviewed and modified on the basis of the students' feedback, to ensure that the questions framed conveyed the intended meaning fully in an easily intelligible fashion, so that the students would be able to respond to the questions precisely, without any confusion. It seemed necessary to lower the item difficulty of the survey. Some items were found to be very difficult and ambiguous for the students. The students frequently voiced minor difficulties with the survey. For example, they mentioned that some of the vocabulary items used in the questions, and the sentence structures, were not

clear enough. These were then changed to ensure that the vocabulary and grammar was comprehensible. The two students of the focus group interviews and online journals also provided feedback. Students also mentioned that the amount of time needed to be reduced and the questions refined to be more clearly directed. They also provided feedback about the design of the online journal; for instance, a participant mentioned that it would be better if all of the questions were open-ended, to give them space to express how they used DMTs in learning English outside school. They also suggested that more space for writing responses should be added. As a result of this pilot study, several adjustments were suggested and then applied to the three instruments (survey, interviews and online journal).

3.6. Data analysis

Following the same sequence of data collection, data analysis began with the quantitative data and was followed by an analysis of the qualitative data. The source of quantitative data was the survey, while the qualitative data was obtained from three sources: open-ended questions in the survey, focus group interviews and the online journal. The quantitative data and the three sources of qualitative data were examined for the purpose of addressing the research questions, drawing conclusions and making recommendations. Figure 2 illustrates the flow of data analysis.
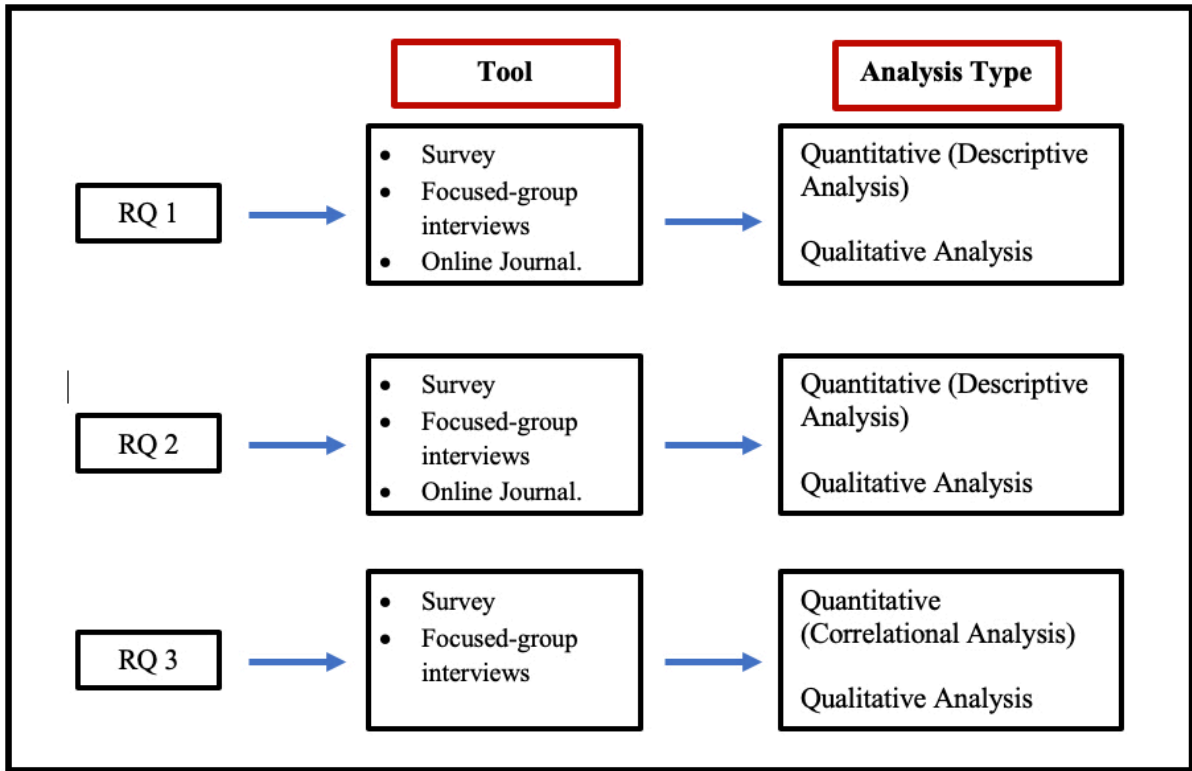
Figure 2: The flow of data analysis.

3.6.1. Quantitative data analysis

The survey results file was imported into the Statistical Package for the Social Sciences (SPSS) version 24 for quantitative data analysis. Specifically, the data collected from the online survey was downloaded as an excel spreadsheet and then exported to SPSS. Thereafter, the data were checked by the researcher for accuracy. Tests were performed, including normality tests, reliability tests and descriptive statistics, on each of the survey items relating to the students' use of DMTs.

3.6.1.1. Normality test

Prior to conducting statistical analyses, the assumptions of parametric statistics were inspected. A Kolmogorov-Smirnov statistic test was applied for this purpose. The variance between the empirical cumulative and theoretical distributions is compared in this test. If the Kolmogorov-Smirnov result shows a significant difference between the two distributions, it means that the distribution of the composited variable is not normal. The results of this test

showed the distribution to be normal and thus justified the use of parametric data analysis procedures. The detailed test results are given in Chapter Four.

3.6.1.2. Cronbach's alpha reliability test

The reliability of the survey scales and items related to scales was tested using Cronbach's alpha values. An alpha value of 0.7 or above was used as the criterion for establishing reliability (Santos, 1999). Sufficient reliability was established for all scales of the survey. The detailed results of this analysis are presented in the Chapter Four.

3.6.1.3. Descriptive statistics and data analysis

Descriptive statistics were tabulated for all questions in the case of demographic variables. Only numerical frequencies and their percentages or standard deviations were given for other variables related to the survey scales. In the case of self-rated skills, numerical frequencies and their percentages were tabulated.

To ensure the measurement validity, Exploratory Factor Analysis was established with Oblimin rotation for self-efficacy scales, students' use of DMTs and internal factors scales. Based on the EFA results and the literature review, four internal factors were identified: believing in using DMTs, knowing how to learn, knowing what to learn and wanting to use DMTs. A correlation matrix was developed between all the factors identified by EFA.

The regression modelling technique of multiple linear regression was also utilised in this research. Regression modelling is a useful technique for modelling the strength and direction of the relationship between one or more independent variables and a dependent variable (Tabachnick & Fidell, 2007). For the multiple linear regression, independent or explanatory variables were selected for inclusion into the multiple regression model using a stepwise method and a 0.05 criterion of statistical significance. Furthermore, was an attempt was made to deal with the strongly correlated independent variables (i.e. multi-collinearity) by using a criterion of >0.3 (lower limit) for tolerance and <0.3 (upper limit) for the variance

inflation factor (vif). The assumptions of multiple regression were tested for, including linearity of the relationship between dependent and independent variables, independence of errors, homoscedasticity, and normality of errors. These were met for all the models.

3.6.2. Qualitative data analysis

After completing the quantitative data analysis, the researcher began analysing the qualitative data. The qualitative data were derived from three main sources: focus group interviews, information gathered from an open-ended question within the survey, and online journal entries. The qualitative analysis consisted of an analysis of the content of these three sources. Nvivo 11, which is the qualitative analysis software, was used to store, organise, and represent qualitative data. It was used to assist in the qualitative analysis procedure in an attempt to improve the validity of the qualitative results.

Nvivo 11 was utilised to help organise the coding processes. During the initial coding process, the data was examined to "uncover, name and develop concepts" by "breaking down data into discrete parts", comparing these for similarities and differences (Corbin & Strauss, 2008, p. 102). Within the first round, data was broken into approximately 80 initial categories. During this process, memos within Nvivo (essentially notes for the researcher) were constructed to document the analysis process, including the recording of "thoughts, interpretations, questions, and directions for further data collection" (Corbin & Strauss, 2008, p. 110). After several analytical reviews of the data, patterns emerged, and data were parsed into main categories and subcategories (Figure 3).
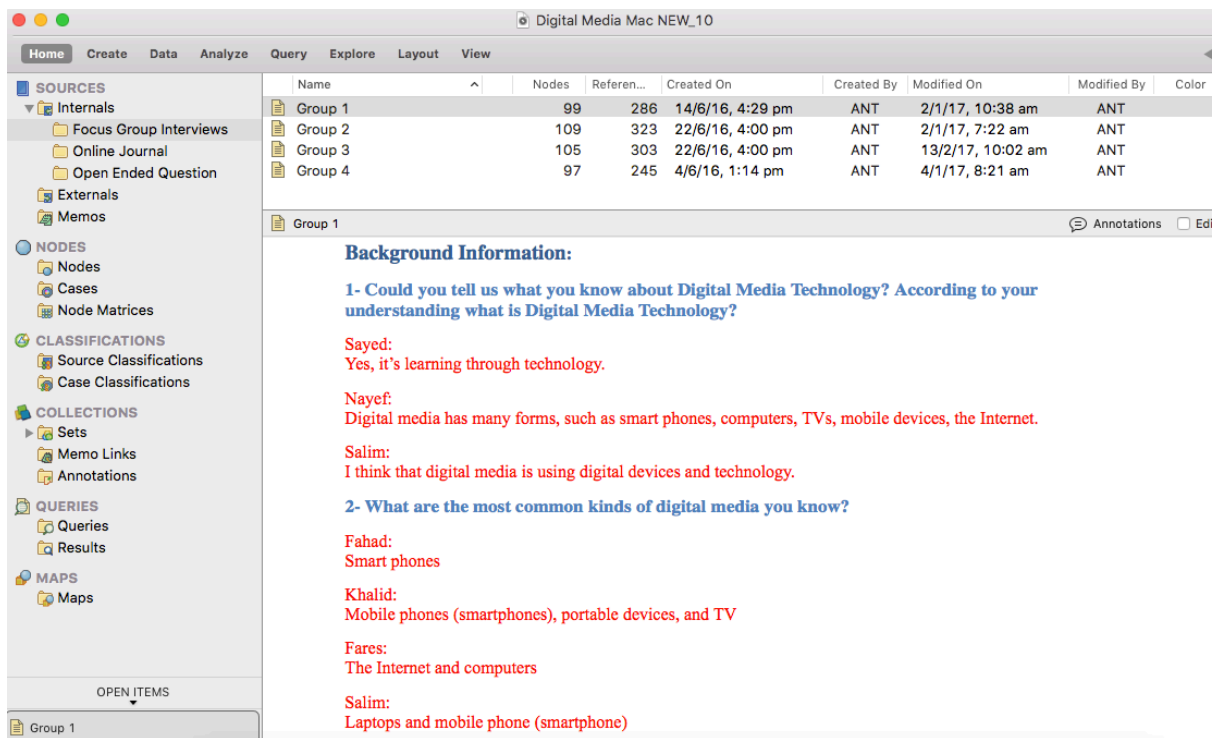
Figure 3: A sample of the qualitative data analysis program Nvivo.

The second source of qualitative data was the weekly online journal. Students were asked to use their preferred types of DMTs for intentional English language learning outside the school for a whole week. They were then requested to post their online reflection about their learning experience on a weekly basis. Students were asked to answer a specific set of questions that were prepared in advance by the researcher. Only four students responded in the online journal. The responses in the online journal were very simple and short, thus not yielding rich data.

Another source of qualitative data was the open-ended question in the survey questionnaire, which asked the students about the ways in which they thought DMTs could foster their English language learning outside of school. A total of 147 students responded to the open-ended question (Figure 4). Most of the 147 responses provided useful data. However, some responses did not provide sufficiently reliable data. Some responses were very simple and brief, consisting of only one or two words.

Figure 4: A sample of the open-ended responses (translated into English in RED).

The qualitative data was analysed according to the guidelines of Braun and Clarke (2006), and King and Horrocks (2010). The analysis consisted of three steps. First, a descriptive coding was applied to students' transcribed responses. In a second step, interpretive coding was used to group and define the initial codes. The themes from the data were identified in a third step.

In Stage 1, initial descriptive coding was applied to the transcribed data. In descriptive coding, the main aim was to identify those responses that were likely to help in addressing the research questions. For this, the transcripts of the three sources of data were read repeatedly to maximise familiarity with the responses. Responses that could contribute to addressing the research questions were identified. Anything in the transcripts that could aid in understanding the views, experiences and perceptions of students, and which was related to the topic of investigation, was highlighted. An example of such a response is this quote from one of the participating students, which contributes to answering the research question relating to the factors that influence the choice of the identified digital media in learning English outside the school context: "I think the smartphones are the easiest and more fun to use for learning." During this process, short preliminary comments were written close to the

highlighted data to assist in refining the written findings. In the final step, these comments were utilised to generate descriptive codes.

In Stage 2, interpretive coding was employed. In this stage, the descriptive codes were clustered and conflated into categories. Interpretive codes representing students' words were then generated. Interpretive codes were formulated based on interpretation of the meanings of the students' responses in order to identify emerging themes. For example, one of these interpretive codes was the recreational use of English language outside the school. This code was generated according to the reported responses from the data sources, including "I often use DMTs in my daily life, especially mobile phone (smartphone) and PlayStation. However, about 90% of my usage is for entertainment, not for learning"; and "most of my usage is for communication, socialising, and entertainment."

In Stage 3 the overarching themes that characterised key concepts in the data analysis were identified. These themes were selected based on the literature review that had been undertaken. Four main themes emerged:

a) perceptions towards recreational usage of DMTs and English

b) the perceived usefulness of DMTs in learning English

c) metacognitive strategies

d) factors determining the choice of DMTs types.

The identified themes shed further light on students' use of DMTs and help tell the story of this usage for intentional English language learning outside the school setting.

3.6.1.1. Qualitative validity and reliability

Although the concepts of validity and reliability are generally associated with quantitative research, it is also argued that they can also be applied to qualitative ones (Golafshani, 2003; Patton, 1990; Stenbacka, 2001). In qualitative research, "validity and

reliability are two factors which any qualitative researcher should be concerned about while designing a study, analysing results and judging the quality of the study" (Golafshani, 2003, p. 601). In this research, to ensure the quality and trustworthiness of the qualitative research and avoid the bias in analyzing the qualitative data, the researcher used an advanced qualitative analysis software (i.e. Nvivo 11). The process of using this software was explained in the previous section. Moreover, the participating students' anonymity was maintained throughout the research to eliminate possible bias and ensure their privacy as well. Coding was performed by the researcher and his supervisors checked the process and provided guidance on assigning codes and organising themes. Comparision between the codes assigned by the researcher and supervisors took place to ensure the precision of the codes.

3.7. Translation

The students in this study were Saudi EFL students with limited English language proficiency. For this reason, two of the main instruments were designed in Arabic (i.e. the online survey and the focus group interviews), and translation of data formed a core part of this study. Chapman and Carter (1979) noted that the translation and validation of the research instruments are important elements of educational research. In particular, collecting data in one language (source language) and reporting the findings in another one (target language) may impact on the validity and trustworthiness of the research reports (Birbili, 2000; Chen & Boore, 2010). In this sense, the present study needed to develop a condensed and appropriate approach to the translation of data. Smith, Chen, and Liu (2008) noted that simply translating an entire corpus of collected data into a target language (i.e. English) runs a high risk of misinterpretation, misunderstanding, and loss of respondents' intended meanings.

According to Campbell, Brislin, Stewart, and Werner (1970), there are four possible techniques of translation:

a) back-translation, in which one bilingual expert translates the script from the source language into the target language, and a second independent bilingual translator back-translates the script in the target language into the source language without reference to the original script; then the two versions are compared. If any discrepancies are found in the back-translated version when compared with the original, these items are again blindly back-translated by another bilingual expert.

b) bilingual technique, by which bilingual experts take two versions of the instruments and identify the discrepancies.

c) the committee approach, in which a committee of bilingual speakers translate separately, and any individual mistakes can be identified.

d) the pre-test procedure, in which a field test is undertaken after the translation by the students to make sure they comprehend the items.

Research has shown that back-translation is one of the most common and most appropriate techniques used in social research (Brislin, 1970; Chapman & Carter, 1979; Harkness & Schoua-Glusberg, 1998; Werner & Campbell, 1970). The researcher therefore applied this technique in this study.

Following the back-translation technique, data were collected in the source language (i.e. Arabic), translated and presented in the target language (i.e. English) and then translated back to the original language (Brislin, 1970; Chapman & Carter, 1979). Ideally, the whole corpus of collected data should be translated into the target language, after which the two versions are analysed separately and then back-translated. However, this would be expensive in terms of both time and cost. Therefore, an adapted procedure of back-translation, as recommended by Chen and Boore (2010), was used in this study. Translation and back-translation were only conducted on the research instruments and the data that was used in the written analysis of the study. However, as Chen and Boore (2010) observed, this procedure

relies on translators having a high level of bilingual competency, as well as significant understanding and familiarity with the areas and topics being studied. Therefore, this researcher has worked with a professional team that comprises two university lecturers. They are both Arabic native speakers and have educational experience. They also have PhD degrees from Australian universities in areas similar to this study.

3.8. Ethical considerations

Ethical issues are very important in the case of dealing with humans. The ethical issues are crucial because "they are connected to the authenticity and validity of the research project" (O'Toole & Beckett, 2010, p. 96). The National Ethics Application Form (NEAF) was completed prior to conducting this study. It was reviewed and approved by the Western Sydney University Human Research Ethics Committee under the number H11513 on 20th of April 2016. The appropriate consent letters, signatures and documentation were obtained to avoid professional and legal violations. Since the researcher was dealing with high-school students, who were generally under the age of eighteen, Parent Consent Forms were required. There was another form to be signed by the students whether they were under, at, or above the age of eighteen. However, those students were at or above the age of eighteen and were able to sign the consent forms for themselves and did not need a parent consent form. In addition, a Participant Information Sheet was distributed to provide all the required details about the study and survey.

Both of the consent forms clearly stated that participation in this study was completely voluntary and that the students had the right to withdraw at any time they preferred. The online survey included a statement reminding students that their submission of the online survey constituted a consent and participation agreement. The information and data compiled for this study was confidential. The students were informed that information shared during the online survey and focus group interviews was to be used solely for this research.

Students were treated with the utmost respect throughout their participation, as the students and the researcher preserved the trust that must exist when conducting research. Data were compiled throughout the study. Nevertheless, the data maintained the anonymity of students to avoid bias. Participant anonymity was maintained throughout both parts of the quantitative and qualitative stages of the research. The online surveys were completed anonymously through the Web feedback website. Students' names were not included. Interviews were recorded and transcribed with pseudonyms to protect the privacy of the participating students. These pseudonyms were also used when reporting qualitative results. Written transcripts of the responses provided during the qualitative interview process were not publicised in any form or context.

3.9. Information management

All the gathered information has been stored in a securely locked safe for a period of five years. Electronic information is saved in the researcher's personal computer and protected by hard drive encryption and a password. Other appropriate measures have been taken to protect the information. These included installing the latest versions of antivirus applications on the researcher's personal computer, keeping the operating system up-to-date and limiting connection with potentially dangerous external media and devices. The raw survey data was stored in an MS Excel file, and the semi-structured interview and journal information were stored in an MS Word file. The files were password-protected so that even if a person gained unauthorised access to the files, they would not be able to access the information because they do not have the password.

3.10. Chapter summary

In this chapter, the details of the research procedure adopted for fulfillment of the research aim, through answering the research questions, are described. The research design consists of a mixed approach of qualitative and quantitative methods.

The survey was used as the quantitative method. A cross-sectional data collection method was employed. Out of the total population of high-school EFL students all over Saudi Arabia, 350 students completed the survey. The qualitative approach consisted of two phases: semi-structured focus group interviews and an online journal. In the case of focus group interviews, 24 students from two schools agreed to participate, while four students participated in the online journal. The Arabic language was used as the medium for this method in the first two approaches (i.e. survey and interviews). In both cases, a valid method of translation from Arabic to English was used for the purpose of analysis.

Parametric methods of quantitative data analysis were used, as the data were proved to be normally distributed. The analysis consisted of descriptive statistics, exploratory factor analysis, correlation and multiple linear regression analysis. Thematic analysis of interview responses was conducted as per the guidelines of Braun and Clarke (2006), and King and Horrocks (2010). The response to the last open-ended question in the survey and online journal responses were also used in the thematic analysis.

All ethical procedures were followed as prescribed by the university and other regulatory authorities of both Australia and Saudi Arabia. Safe and secure information management procedures have been ensured. Informed written consent in prescribed forms were obtained from all students or their parents. They were told of their right to withdraw from participation in the study at any time.

In the next chapter, the findings obtained by using the procedures described above are presented.

CHAPTER FOUR

Results

4.1. Introduction

This chapter presents the findings from both qualitative and quantitative analysis. These findings aim to answer the research questions and achieve the overall purpose of this research. The analysis of qualitative data was the primary source used in this research to address the research questions. The quantitative data were used to support or validate the findings from the qualitative data analysis where necessary. Therefore, the order of analysis was to report findings of the qualitative data analysis first, followed by the findings of the quantitative data analysis. The two types of findings are integrated into Chapter Five to answer the research questions of this study.

4.2. Qualitative findings

The results obtained using qualitative data analysis, as described in Chapter Three, are summarised in Table 2. The output of Nvivo 11 was used for the identification of themes, subthemes and examples of supporting responses from the students were selected from the acutal focus group response data are shown in the table. Coding was done through the software after the English-translated focus group interview transcripts were entered into the. In addition, Table 2 shows how students use DMTs for learning, what strategies they employed for learning, and what factors affected their choices of DMTs. Some additional supporting quotes from interview transcripts are provided in the table.

Table 2: Results of qualitative analysis: main themes, subthemes, and examples of responses from the interviews and the open-ended question in the online survey

Main Themes	Subthemes	Examples of responses
Recreational use	Recreational use of DMTs	"I often use digital media technology in my daily life, especially mobile phone (smartphone) and

Main Themes	Subthemes	Examples of responses
		PlayStation. However, about 90% of my usage is for entertainment, not for learning. I usually learn unintentionally through PlayStation by playing online and chatting with English-speaking players."
	Recreational use of English language	"I usually use English through social media applications such as Twitter and Facebook to communicate with non-Arabic speakers. I also use it with my Arabic friends who speak English fluently, whether when I meet them face to face or online. Apart from the idea that we practise the language with each other, we do it also for fun." "I generally use English for various activities. For example, I use it to watch movies and English series, speak with non-Arabic people in my community, and read some English books and novels. I also use it when I go with my friends to a café or a restaurant."
Perceptions towards English language learning through DMTs	The perceived usefulness of DMTs in learning English language	"I can learn English with DMTs; there are many useful tools, applications, and websites that can help me learn." "I also believe that learning English through DMTs is helpful and way easier than other learning tools … because of the availability of sources and applications and websites. " "iPad is very good and useful in learning ... it is not very expensive and has several useful features such as the wide screen and availability of applications. "
	The Intentional use of DMTs in learning English	"I generally have the intention to learn English outside school through digital media technology… I sometimes go online in some social media applications like Twitter and Facebook to participate and post in English." "When I access the Internet, I generally do not have a big intention to learn. However, when I have homework or find something interesting, I try to look it up and explore deeply in it." "In the beginning of using PlayStation, I did not have a clear intention for learning, but eventually I found out that I can benefit from it in improving my language. Now I also intentionally use the mobile phone (smartphone) for learning."
	The most preferred English language skills when using DMTs	"Reading, speaking, and listening are the most essential language skills that [he needs] to learn because these three skills help [him] retain the information [he has] learned."

Main Themes	Subthemes	Examples of responses
		"They are the most important skills that enable [him] to know English better and they are the key to retain the acquired knowledge." "Reading is a complement to writing, and listening is a complement to speaking."
Metacognitive strategies	Declarative knowledge	"YouTube … to access some language courses and lessons about how to improve [his] English language skills, especially grammar." "Listening to some online dictionaries that provide voice pronunciation."
	Strategic knowledge	"When I watch movies on my laptop, I usually activate the language subtitles in English because they help me follow what is being said and read the spelling." "I intentionally choose movies that do not have Arabic subtitles."
DMTs learning obstacles	DMTs learning obstacles	"I think having more than one meaning is confusing, and ambiguous words are difficult to understand. I usually overcome such difficulties by using my smartphone or laptop to look up the words and also listen to their pronunciation; then I repeat those words and practise them in my daily life." "The big challenge was with the pronunciation and memorising words. I have overcome this by listening to some online dictionaries that provide voice pronunciation."
Factors of choosing the most preferred types of DMTs during their intentional language learning processes.	Students' needs and desires	"I sometimes go online in some social media applications like Twitter and Facebook to participate and post in English to improve my writing. I also use my PlayStation to practise speaking with other English-speaking players. However, practise does not need to be online only. I also sometimes practise with English speakers in my local community, such as in restaurants, hospitals, etc." "I use my smartphone and laptop for various reasons like reading English articles and watching videos. This has helped me learn a lot of vocabulary and improved my reading speed." "In fact, I use more than one type of DMTs. However, I mostly use the smartphone, PlayStation, and laptop. I use them to communicate with English speakers when we play together."
	Learning and entertainment	"I chose mobile phone (smartphone) and laptop because they are both fun and I am learning."

Main Themes	Subthemes	Examples of responses
		"I think the smartphones are the easiest and more fun to use for learning." "He would recommend DMTs for learning to his friends because it could be more interesting for learners and also combines learning with entertainment."
	Learning English using DMTs for future security and success	"English is one of the main requirements in universities and jobs." "Definitely [it would], because fluent English speakers are wanted everywhere … English is a global language."
	Flexibility and mobility	"The good thing with this online application is that I don't have to be in a specific place. I mean that I can use Duolingo wherever I go and wherever I have Internet access." "I can browse the Internet within several tools such as smartphone, laptop, or even the smart TV. Also, I don't need to be home when browsing the Internet; there is no specific time for doing so, too."

4.2.1. The main themes and subthemes

The first main theme and related subthemes focused on recreational uses of digital media technology and the recreational use of English. These results were derived from focus group interviews only. The open-ended question in the survey and the online journal did not ask about students' recreational uses of DMTs. Hence, these two sources of qualitative data are excluded with respect to this main theme. Quotes from the focus group interviews are included to explain the findings of the first main theme.

The second main theme and its subthemes are about the attitudes of students towards learning English through DMTs. This theme consisted of the following subthemes: the perceived usefulness of DMTs in English language learning, intentional use of DMTs in learning English and the preferred language skills to be learned through DMTs.

Metacognitive strategies constituted the third main theme. The subthemes were declarative knowledge and strategic knowledge.

The fourth main theme was challenges of learning and using DMTs outside the classroom context. This theme did not have a subtheme.

The factors behind choosing the most preferred types of DMTs during their intentional language-learning processes make up the fifth and last main theme. The subthemes associated with this theme are students' needs and wants, learning and entertainment, learning English using DMTs for future security and success, and flexibility and mobility.

The findings related to these main themes and subthemes are described below. In quoting the examples of responses, pseudonyms have been used to protect the students' privacy.

4.2.2. Recreational use

Recreational use of DMTs refers to general everyday use without the primary intention of learning English. Qualitative data from the focus group interviews demonstrated how Saudi EFL students are using DMTs in several ways, with each type of DMTs having different applications. The relationship between the use of DMTs and learning is subtle and seems to be an integral part of the students' DMTs usage.

4.2.2.1. Recreational use of DMTs in general

It is evident that Saudi EFL students are using various types of DMTs for a range of purposes. Students' daily engagement with DMTs and their recreational use were key topics in the interviews. The students reported several recreational practices and activities in their daily life. These technology-based activities included playing games, socialising, communicating with family and friends in Arabic, experimenting with new computer applications and browsing the internet. Some of the most frequently used tools for these activities were smartphones, console games (e.g. PlayStation and Xbox) and laptops. Many students were using their laptops to watch films, browse the internet and socialise, while they were using game consoles specifically to communicate with friends using both Arabic and

English and to converse with non-Arabic speakers in English. Students reported using their smartphones for various activities such as socialising and communicating with friends, browsing the internet in a leisurely fashion, reading news, visiting social media websites, using various applications (e.g. YouTube) and playing games.

In the focus group interviews, students' responses regarding the frequency of their daily uses of DMTs varied considerably. Some students in the interviews provided insight into the types of daily recreational use of digital media and engagement with technology. For example, Adeeb from the second group talked about how often and in what manner he used DMTs in his daily life: "I use it every day. Generally, I use it for entertainment, but sometimes I also try to communicate with non-Arabic people or look up some useful information." Othman, from the second group, stated: "I sometimes use my mobile phone (smartphone) or laptop to access the internet and social media applications." Yasser, from the second focus group interview, mentioned that he generally used DMTs for communicating with his friends, and accessing the internet and social media. Other responses suggested very frequent use of technology. For example, Mohammed, from the fourth focus group interview, said: "I use DMTs quite a lot for entertainment; I think I am addicted to technology." Rakan, from the third focus group interview, said: "my mobile phone (smartphone) is [attached] with me almost all of my time." Such frequent attachment to technology seems to be the norm among the younger generation (Ito et al., 2008; Prensky, 2001).

The focus group interviews revealed that there were connections between recreational use of DMTs and the English language. Students mentioned several types of such a relationship. Some of them conveyed that they did not have deliberate intentions to use DMTs specifically for language learning, while others had emerging intentions. For example, Salim, from the first focus group, stated: "When I use digital media technology, my main focus is not on learning." Although Salim's recreational usage of DMTs seemed to have no

connection with language and learning, he pointed out that the largest proportion of his recreational activities through DMTs were communication-related. He said that "most of [my] usage is for communication, socialising, and entertainment." It is evident that Salim did experience implicit learning through his online activities. Similarly, Badr from the second focus group interview said: "I often use DMTs in my daily life, especially mobile phone (smartphone) and PlayStation. However, about 90% of my usage is for entertainment, not for learning. I usually learn unintentionally through PlayStation by playing online and chatting with English-speaking players."

Thus, some of these responses showed that although the students focused on recreational uses of DMTs (i.e. playing and chatting), these activities facilitated some incidental and implicit learning. More information about the students' recreational usages in the context of English language learning is provided in the following second subtheme.

4.2.2.2. Recreational use of English outside the school context

This subtheme explains the students' practices and recreational uses of English outside the school settings. In other words, it shows what students think of the English language and its most common uses in their daily lives. The data from the focus group interviews revealed such common practices. When students were asked about their recreational use of English, they described several uses beyond their general interests in using English, including using English for communicating with non-Arabic speakers in their community, and reading English books and novels for leisure. In the following, some examples of the recreational usages of English language in the students' daily lives will be given.

Communicating with non-Arabic speakers in the students' own internet community was frequently mentioned in the focus group interviews, and students said they used English to communicate with these people. For example, Nayef, from the first focus group interview,

95

discussed how he used general English as an important tool for communicating with non-Arabic speakers: "I believe that English language is an important method to communicate with foreign people." When Nayef was asked about where his common uses of English took place in his daily life, he replied: "I usually use English through social media applications such as Twitter and Facebook to communicate with non-Arabic speakers. I also use it with my Arabic friends who speak English fluently when I meet them face to face or online. Besides the idea that we practise the language with each other, we also do it for fun."

Mohammed, from the fourth focus group interview, expressed similar thoughts on communicating using the English language and said: "English language is considered as an important means for communication with foreign people, I mean the non-Arabic speakers." Mohammed specified that he typically used English: "to communicate with non-Arabic speakers who also know English, especially when [he needs] to explain an idea or ask about something."

Other common recreational usages of English language discussed in the interviews were online shopping, chatting with non-Arabic-speaking friends, and placing orders from restaurants and cafés. For instance, Fares from the first focus group interview stated that: "I generally use English for various practices. For example, I use it to watch movies and English series, speak with non-Arabic people in my community, and read some English books and novels. I also use it when I go out with my friends to a café or restaurant."

The above were examples of recreational uses of English outside the classroom. In the following section, students' perceptions of English language learning through DMTs are discussed.

4.2.3. Perceptions of English language learning through DMTs

After reviewing the students' recreational uses of DMTs and English, this second major theme deals with the perceptions that students had towards English language learning

using DMTs. This theme provides more insights regarding how the students use DMTs to learn English language outside the school context. It consists of the following subthemes: the perceived usefulness of DMTs in English language learning, the intentional use of DMTs in learning English, and the preferred language skills to be learned through DMTs. Quotes from all the three qualitative data sources are included to support the findings of this second main theme.

4.2.3.1. Perceived usefulness of DMTs in learning English

In all the three sources of qualitative data, students consistently noted how useful they found DMTs in learning English. In the focus group interviews, students talked about the usefulness of several types of DMTs for this purpose. For example, Fares, from the first focus group interview, said: "I can learn English with DMTs; there are many useful tools, applications, and websites that can help me learn." Othman, from the second focus group interview, commenting on digital media, said: "I also believe that learning English through DMTs is helpful and way easier than other learning tools … because of the availability of sources and applications and websites." Sultan from the second focus group interview pointed out that "accessing the internet was very helpful for me to browse online learning materials to enrich my knowledge or for exploring something new." Sultan displayed a similar attitude towards using another DMTs tool for learning English: "iPad is very good and useful in learning ... it is not very expensive and has several useful features such as the wide screen and availability of applications." His peer Badr also underlined the usefulness of the iPad for learning English because it "has many applications and also it is fun to use." Majid from the third focus group interview commented on using social media for learning English, saying that "now there are hundreds of useful accounts and pages for learning English on Twitter and Facebook." Similarly, his colleague Adil expressed how his smartphone has helped him "access several English language-learning tools on social media and websites." The students

97

clearly indicated their belief in the usefulness of DMTs for learning English. This perception was positively and explicitly discussed during the interviews.

Moreover, responses to the open-ended question on the survey provided useful data on the perceived usefulness of DMTs in learning English. For example, one participant believed that DMTs was useful whether inside or outside the school, to the extent of recommending that "digital media technology should be integrated into the curriculum to help students learn in and outside the school classroom context. Our schools should be provided with more technological tools and online English-speaking teachers as well." Another participant wrote: "Smartphones have applications such as Duolingo that are very helpful in learning, listening and speaking." Duolingo is a language-learning platform available in several languages, including English. It offers language lessons that incorporate reading, listening, and speaking. Duolingo also has smartphone applications that enable the user to join live conversations with native speakers of the chosen language. Users can review the tutors' profiles and choose the tutor they would prefer the most, based on their personal preferences. Another participant reported that following accounts on social media in which English articles and stories are posted has been very useful and has helped improve his reading skills.

The above quotes are just some examples from the interviews and responses to the open-ended question of the survey that documented students' perceptions of the usefulness of some types of DMTs in learning English outside the school setting. The responses from the open-ended question in the online survey are consistent with those in the interviews. Such consistency of responses highlights students' strong belief of the usefulness of DMTs.

4.2.3.2. Intentional use of DMTs in learning English

Throughout the focus group interviews and responses gathered from the open-ended question from the online survey, students reported their preferences for intentionally using DMTs for learning English outside school. As mentioned in Chapter One, intentional learning

is generally defined as learning that is motivated by intentions and is goal directed (Blumschein, 2012), and, as Lee et al. (2014) noted, "intentional learning occurs when a learner wants to learn, sees the need to learn, believes in the need to learn, knows what to learn, knows what is needed to learn and knows how to learn." The interview extracts reveal that students reported their intentional application of learning strategies; there was evidence of the intentional use of certain types of DMTs for learning English outside school. However, the nature of the students' intention to learn English using DMTs varied: some students expressed the obvious intention to learn, some indicated a combination or mixed intention to use DMTs for learning and other purposes, while others had no intention at all of using DMTs to learn English. The following quotes illustrate these differences.

Salamah, from the third focus group interview, said: "I have the intention to learn English through technology… this has helped me focus more and improve my language." Salim, from the first focus group interview, said: "I generally have the intention to learn English outside school through digital media technology… I sometimes go online and use some social media applications like Twitter and Facebook to participate in communication and post my comments in English."

Adeeb spoke about how often he used DMTs and for what purposes: "Sometimes I have the intention to learn through technology, but most of my usage is for other purposes" such as "socialising and playing games with friends." Adeeb also reported that this occasional intentional usage had helped him "attend some online courses for English language learning." Sultan, from the second focus group interview, provided another example of intentional uses of DMTs and said: "When I access the internet, I generally do not have a big intention to learn. However, when I have homework or find something interesting, I try to look it up and explore further." Similarly, Fahad, from the first focus group interview, spoke about how intentional his use of DMTs was, saying: "In fact, I do not have a clear intention to use

technology for learning. My intention sometimes comes between learning and having fun."

Although he had not initially intended to use DMTs for learning, Fahad said he had "acquired new vocabulary" through DMTs. Interestingly, Badr from the second focus group interview, mentioned that he had gradually increased his intention to use DMTs for learning English. He described his learning path with DMTs by saying: "In the beginning of using PlayStation, I did not have a clear intention for learning, but now I also intentionally use the mobile phone (smartphone) for learning." This shows that Badr had developed an intention to use DMTs for learning over time as he discovered the usefulness of using DMTs for learning. He was now starting to use his PlayStation and smartphone as tools for learning English outside school. This was adding value to his use of DMTs, causing him to see it as an instrument for learning English outside school rather than perceiving it solely as an entertainment tool.

Moreover, responses from the open-ended question of the online survey documented a subtle connection between the joy of learning and using DMTs for intentional English language learning. One participant said: "I think I can benefit from digital media technology when it is not compulsory. My goal is to learn and have fun doing so, not to get higher grades at school." This seemed to be a common feeling among some students. Another participant from the open-ended question reported a similar attitude: "When I choose my preferred devices for play, I feel free to play and at the same time practise English." When a learner feels that he/she is free to use any type of technology and is not forced to use assigned types of technology for learning, he/she prefers the technology from which he/she would benefit most (Gee, 2004).

From the review of the degree of students' intentional use of DMTs, the interview extracts confirmed the strong intent of some students to use DMTs for language learning. In these interviews, students used phrases such as "strongly believe" and "completely able to" to describe their intentions to use DMTs to learn English. For example, Nayef, from the first

focus group interview, said: "I strongly believe I can learn vocabulary, listening, and reading through DMTs outside of the school." His school friend Salamah reaffirmed this point: "I think I am very good at technology, and I am completely able to learn English through digital media technology." Another participant said, "I think learning English or any other languages through technology necessitates a self-intention rather than depending on others to learn. It is hard to learn without having an intention. I also believe that social media would help me learn English."

4.2.3.3. The most preferred English language skills to learn when using DMTs

Students' responses from the focus group interviews, open-ended question on the online survey and the online journal suggested that particular English skills are being enhanced through using DMTs. During the interviews, students were asked about the English language skills on which they focused when using DMTs to learn English outside the school and why they chose to focus on such skills. The students nominated a range of skills and provided explanations for their choices. For instance, some students believed that mastering specific skills would enable them to retain the information and knowledge that they had gained. For example, Salim, from the first focus group interview, identified three language skills; reading, speaking, and listening. He claimed that they "are the most essential language skills that [he needs] to learn because these three skills help [him] retain the information [he has] learned." Salamah, from the third focus group interview, identified the same three skills because he believed that "they are the most important skills that enable [him] to know English better, and they are the key to retaining the acquired knowledge." It is interesting to note that writing was mentioned less as an important skill to learn through DMTs.

Another major reason for preferring specific skills to be learned via DMTs was that such skills would facilitate the learning of other skills. For example, Sayed, from the first group, said that if he could learn speaking and become very confident, he would be able to

learn other skills such as reading. His colleague in the same group, Fares, claimed that "building strong vocabulary would make [him] speak to others and understand what is said as well." Fares also reaffirmed the importance of learning vocabulary "because [he] cannot speak or understand what is said without having a strong vocabulary background." Furthermore, Othman, from the second group, believed that "reading is a complement to writing and listening is a complement to speaking." These examples demonstrate the strong relationship between English language skills and the extent to which learning one skill can lead to mastering other skills.

Students cited further reasons for their preference for using DMTs to learn some specific skills above others. These reasons varied between the students. For instance, Mohammed, from the fourth focus group interview, reported that he preferred to learn speaking because he "enjoyed chatting with non-Arabic speakers." Yasser, from the second focus group interview, expressed his interest in learning speaking because it "is one of [his] weakest skills," and he needed to improve it. Ali, from the fourth focus group interview, connected improving his reading skills with his future needs, mentioning that "being able to read and comprehend is very useful in learning, especially at the university level." In addition, Nayef, from the first group, pointed out that speaking and memorising as much vocabulary as possible would be a key to conversing with foreign people. He explained his choice by saying: "When I speak to a foreign person, I need to understand what he says and speak to him regardless of the grammar. I only need an understandable conversation."

The English language skills identified were related to the type of DMTs used by the students. For instance, students reported that the use of laptops for watching films in English helped them to improve their listening, reading and vocabulary skills. Other students reported that using some applications over their smartphones (e.g. Duolingo) provided them with opportunities to practise their speaking and listening skills. It is also worth noting that

102

students were able to identify the types of DMTs according to their needs. Such awareness indicates the level of maturity of the students, and the following section further elaborates this finding.

4.2.4. Metacognitive strategies

One of the goals of the focus group interviews was to find out how the students applied DMTs in their language-learning practices.

It was evident that the students employed some strategies for learning English via DMTs outside school. In the following sections, metacognitive strategies and their sub-themes are reviewed.

Although this study did not focus on identifying metacognitive strategies, such have emerged as playing an important role in students' learning in qualitative data analysis. According to Lee, Chai, Tsai, and Hong (2016), metacognitive knowledge and its three sub-components (declarative knowledge, procedural knowledge, and conditional knowledge) are related to the knowledge of learning strategies. Metacognitive knowledge consists of knowing what types of strategies to use, how to use such strategies, and when and why to use such strategies. Interestingly, two of the metacognitive components were identified in this study. Under the first subtheme below, declarative knowledge is discussed, while conditional knowledge is discussed under the second subtheme (referred to as strategic knowledge).

4.2.4.1. Declarative knowledge

Within their declarative knowledge (of oneself and of what types of strategies to use) (Schraw, Crippen, & Hartley, 2006), students expressed their awareness of themselves and the types of strategies that should be used to learn English through DMTs. Several strategies were reported and were already being applied. Those strategies varied according to the students' needs and the skills they wished to learn.

Some students mentioned that they had applied the visual strategies of watching foreign films, TV series, documentaries or YouTube video clips to improve skills such as listening and vocabulary. Othman, from the second focus group, for example, conveyed that he realised that the wide screen of his laptop would better allow him to watch films in English than his smartphone, so this is the strategy he used.

In terms of knowledge of himself, Othman said he knew his listening skills needed to be improved and that watching videos of native English speakers helped him improve in this area. Mohammed, from the fourth group, also recounted how he had improved his listening skills and increased his vocabulary by watching English-language films and documentaries.

Students gave feedback on what they knew of themselves and the strategies they needed to apply to improve their language abilities in general. Such strategies included attending online language courses and studying with private online tutors. Adeeb, from the third focus group, reported that the strategy of going online on YouTube "to access some language courses and lessons has improved [his] English language skills, especially grammar." He expressed his preference for this strategy because he could "learn the pronunciation from teachers who are native English speakers." One of the students in the open-ended question of the survey commented that he "subscribed to a YouTube channel that offers private English tutors."

Some students were also aware of themselves in terms of their weaker skills and the types of strategies required to improve on some of these. Abdulelah, for instance, from the third group, pointed out his weakness in pronouncing and memorising words. He reported a strategy of "listening to some online dictionaries that provide voice pronunciation" that has helped him overcome such weaknesses. Fares stated that he was able to know his needs and could determine his weaknesses in specific skills; he revealed that he needed to improve his speaking and listening. He mentioned that he worked on applying specific strategies to

strengthen those skills, saying: "I usually use my smartphone to go on Duolingo to practise the language with native English speakers; I prefer this application to force myself to talk with them and learn from their pronunciation."

In the above examples, it is evident that students were aware of the learning strategies to be applied, the weaknesses they needed to focus on, and the appropriate DMTs to be used effectively to achieve their goals and learn the main skills of the English language. Several forms of DMTs, such as social media, Google Translate, smartphones, iPads, and laptops, were used for applying these strategies.

4.2.4.2. Strategic knowledge

Apart from the awareness of what strategies to use and how, students were also aware of the strategic knowledge, which is sometimes referred to as conditional knowledge, required to learn English with DMTs. Conditional knowledge is the understanding of when and why a certain strategy or procedure was to be used (Woolfolk, 2008). In this study, the use of strategic knowledge encompasses the aspect of time and the reasons behind the choice of applied strategies for learning English through DMTs. The responses of students indicated that they were aware of when and why they applied specific strategies.

For example, some students reported that when they watched foreign films, they deliberately activated the English subtitles – for example Mohammed, who said: "When I watch movies on my laptop, I activate the language subtitle in English because it helps me follow what is being said and read the word spelling". Abdulelah, from the third group, also used Mohammed's strategy. He said: "My laptop has helped me improve my listening and vocabulary when I watch movies in English by applying English subtitles." In addition, Sayed, from the first group, reported a similar strategy with his laptop: "I intentionally choose movies that do not have Arabic subtitles." Fares, from the first group, said that when he watched English films in his laptop, he would "always activate the English subtitles because it

helps [him] learn vocabulary more and enables [him to] read faster … it is both learning and fun."

Changing the language settings of the digital device from Arabic to English was another commonly reported strategy. Some students mentioned that this strategy forced them to be familiar with the English settings on their devices. For instance, Nayef showed that he had changed the language settings in his smartphone to English, saying, "This has helped me to be forced to deal with its lists and settings in English. I try to force myself to use English as much as possible." One of the students who wrote the online journal described his experience by saying: "I decided to switch my smartphone language into English before beginning this activity. When I first changed it, it was very hard for me to use it, but I forced myself and continued doing so until I gradually got familiar with it." Another participant reported that he had "changed the language of [his] smartphone into English to gain more language exposure." This displays a valuable connection between English language learning and students' recreational uses of technology in daily life.

Since the emergence of social media, the following of educational accounts on Twitter and Facebook has become another substantial strategy to be applied for the intentional learning of English. For instance, Nayef reported that he would "follow some Twitter accounts that teach some English content like vocabulary and listening." Similarly, Badr mentioned that he "followed some Twitter accounts that provide educational English language tweets." His colleague Yasser also said that he "liked some Facebook pages that usually post short English stories as well as audio and video clips …This has helped me improve my vocabulary, listening and reading skills."

Playing online console games (e.g. PlayStation, Wii, Xbox) with non-Arabic speakers to practise the language with them was reported as a strategy used to improve speaking skills. Adil, from the third group, said: "I sometimes try to speak English when I

106

play online games in PlayStation with non-Arabic players." Abraham, from the fourth group, revealed a similar technique, saying: "I play games with non-Arabic speakers and chat with them in English."

Another strategy was instant translation of some unknown content. For example, Fahad mentioned that when he had some unknown English words, he usually used his smartphone to translate them. He said that "Google Translate is easier to use and is faster in learning English words than looking up the word in a dictionary." Khalid described employing the same technique by using his smartphone or iPad to "access Google Translate to learn unknown words and even whole sentences." He claimed that he could also "listen to the word pronunciation from Google Translate."

The extracts revealed that some students used specific types of technology for reading electronic books and PDFs in English language. Rakan, from the third group, reported why he preferred to use his iPad and believed it could be perfect for learning English outside school, saying it "would enable reading English language PDF files with its wide screen."

These strategies demonstrate that the students were able to determine when and why to apply specific strategies, and to know how to benefit from the available technologies to focus on specific skills that needed to be acquired. They were also able to identify some of the challenges posed by their use of DMTs and could use DMTs to find workable solutions to those challenges.

4.2.5. Challenges of learning and using DMTs outside the classroom

The fourth main theme that emerged from the data was the learning challenges students faced when using DMTs outside the classroom context. It was noted above that students in the Saudi context are not allowed to use DMTs within the school premises. Hence, any use of DMTs for learning occurs outside the school context. There is no subtheme identified in this main theme.

Learning independently (e.g. self-learning) outside the school and classroom settings may present challenges and obstacles for students, as they receive no assistance on the use of DMTs for learning from school. Data showed that some of the students participating in the research faced challenges and difficulties during their use of DMTs for learning English outside of the school. Students reported that these challenges included hard and incomprehensible language content, lack of practice, having no syllabus, excessive time consumption and fear of making mistakes. However, data also showed that students were aware of some strategies and techniques to overcome these difficulties successfully while learning English using DMTs. In the following, some of the challenges faced by the students are outlined, followed by the solutions and strategies they applied, where available, to solve their problems.

One of the reported challenges with learning English was being unable to understand parts of English-language content or the pronunciation of English words. Some students reported that they had used DMTs as a tool to overcome these types of difficulties. In other words, the challenges were not posed by the DMTs itself; rather, the DMTs provided part of the solution for overcoming the challenges with the language. For example, Ahmed, from the fourth group, talked about being unable to understand ambiguous vocabulary: "Words [that] I think [have] more than one meaning [are] confusing, and [I have] difficulty in understanding ambiguity." When asked how he overcame this challenge, he recommended more practise with DMTs: "I usually overcome such difficulties by using my smartphone or laptop to look up the words and listen to their pronunciation, and then [I] repeat those words and practise them in my daily life." In other words, he tried to depend on his own DMTs to overcome this challenge. Similarly, Ali, from the fourth group, said that when he reads online articles, he "sometimes cannot understand some topics; [he has] to ask someone who knows English very well over Duolingo." Abdulelah, from the third group, also spoke of difficulties with word

pronunciation and learning ambiguous words. He said, "the big challenge [was] with the pronunciation and memorising words." He then reported how he had solved the challenge by saying: "I have overcome this by listening to some online dictionaries that provide voice pronunciation." The students all had in common that they used DMTs to overcome the challenges they faced with English vocabulary and pronunciation.

Adil, from the third group, identified a common challenge faced by EFL learners trying to practise their speaking skills with English speakers: the problem of comprehension. "Sometimes when I chat with foreign players on PlayStation, I cannot understand what they say. To overcome this, I ask them to try to speak slowly and clearly. I also try to use my mobile phone (smartphone) to translate some unknown words." Nasser, who had difficulties with practising his listening and comprehension skills, reported a similar problem. "Being unable to understand some of what I hear is a big challenge. I am struggling to overcome such challenges by using my smartphone to do more listening practice and using my laptop for reading more English articles," he said. In these cases, the students indicated that they used DMTs to overcome the issue of not understanding the foreign speakers.

Time consumption was another challenge that students reported when using DMTs. Although it may not seem to be a serious challenge and not directly related to DMTs usage, this challenge was a positive sign that students were aware of the wasted time and tried to manage it. For example, Rakan, from the third group, admitted that he had a problem of not having enough time to study English. He then said he was "trying to manage [his] time." Similarly, Khalid, from the first group, said: "I struggle to overcome this challenge by organising my time." These instances indicate that the problems of time management could not be addressed solely by using DMTs. There was no evidence that using DMTs for learning negatively impacted on the students' time management directly. Rather, they were aware that the main issue was their own management of the time they spent practising English.

Having no syllabus or learning goal could have represented another challenge for the students, but they were able to cope with this challenge by exercising their metacognitive strategies. Saleh, for instance, from the fourth group, reported such a problem: "Sometimes I remain confused and do not know where to start learning." Then he offered a self-monitoring solution by saying: "I have decided to determine my weaknesses first and then focus on how to improve them." Sultan, from the second group, reflected on his "fear of making mistakes", saying he tried "to overcome such difficulties by having more practice [using] PlayStation with non-Arab players. I ask those playing mates to correct me when I do a mistake."

Learning English outside the school context posed several challenges for the students as they struggled to identify their weaknesses and determine their own learning goals and directions. Nevertheless, several strategies emerged in their learning experience that involved using DMTs to cope with such challenges. The following section describes the factors influencing the students' choice of their preferred types of DMTs for learning English outside school.

4.2.6. Factors behind students' DMTs preferences during their intentional language-learning processes

The interview data showed that students were interested in using DMTs for learning three out of the four key skills of the English language, namely: reading, speaking and listening. This theme deals with the types of DMTs preferred by the Saudi EFL students and the factors influencing their choices of DMTs for learning English outside school. Their responses also indicate potential directions for future intentional English-language-learning activities by means of DMTs within the Saudi EFL context. Throughout the data extracts, students reported several factors determining their choice of the preferred types of DMTs during their intentional language-learning processes. This main theme consists of the following subthemes:

1) students' needs and wants

2) learning and entertainment

3) learning English using DMTs for future security and success

4) mobility.

The findings are discussed below under these four subthemes.

4.2.6.1. Students' desires and needs

The students' motivations for choosing particular types of DMTs to learn specific language skills varied according to several factors. One of these motivating factors was their own desires and needs. The status of English as a global language was a strong motivator to use English, especially for overseas travel (McKay, 2002), as Abraham, from the fourth focus group, described: "Whenever I travel with my family to non-English-speaking countries, we need to have someone who can speak English with us because English would be a mediating language. I think English is the second language in every non-English-speaking country." Abdulelah, from the third group, also commented on the importance of knowing English when travelling: "I need to learn [English] because I will use it … when I travel abroad with my family." The respondents believed it is important to speak English even when travelling to a non-English-speaking country, because English functions as a common language everywhere. Several students in the interviews reported that they are more likely to use English when travelling overseas.

Another motivating factor was the need to learn English to understand how to use technological devices, as most of these have operating instructions in English. This need was highlighted by Adil, from the third group, who said: "I use [English] to deal with some electronic devices that have English instructions." Ahmed, from the fourth group, talked about his need and desire to know how to deal with his games: "Sometimes when I purchase a

new digital device, I struggle to read the English instructions; I need to understand how to deal with it."

4.2.6.2. Learning and entertainment

A further factor influencing the students' selection of DMTs devices was the unique features within the devices themselves. One of those unique features was the combination of entertainment and learning. The students discussed this feature regularly in relation to the use of iPads, laptops, and smartphones. As Salamah said, "I chose the mobile phone (smartphone) and laptop because they are both fun and learning." Fares talked about his preference for the iPad: "It is very helpful. It is a combination between learning and entertainment." Badr reported that he preferred using PlayStation "because it is both fun and learning." He also preferred using his iPad for learning because "it is fun to use." When Saleh was asked why he preferred smartphones for learning, he replied: "I think the smartphones are the easiest and more fun to use for learning." Abraham also thought that "watching movies over the laptop is fun and also very helpful in learning vocabulary and listening." Adil stated that he preferred PlayStation because it is "fun and can be used for learning as well." He also said that he would recommend DMTs for learning to his friends because it "could be more interesting for learners and also combine learning with entertainment." Fahad also reported that he would recommend using DMTs to his friends "because it is easy to use and also fun." Furthermore, one of the students mentioned in his online journal that he preferred to use YouTube because it was enjoyable and entertaining to watch English-language content.

4.2.6.3. Learning English using DMTs for future security and success

The awareness of the potential of learning English was another motivating factor for the students. Although it may not be an explicit reason for choosing specific types of DMTs, it represents an important guiding factor for learning the language through technology. Students realised that mastering the English language is very beneficial, and DMTs is a great

vehicle for doing this. They believed that mastering the language would give them greater security about the future and increase their likelihood of success. From the interview extracts and responses to the open-ended question in the survey, students revealed that they were aware of the benefits of learning English. They reported the importance of having good English skills for their future, especially for future careers and university admission. Such awareness is pivotal, especially for this group of students, who were transitioning from high school to the higher institution.

English is a global language and a pre-requisite for many job opportunities in many non-English-speaking countries, including Saudi Arabia. In addition, most of the Saudi universities stipulate English language proficiency as one of the main admission requirements. Throughout the data extracts, the two motivating factors of future career and university admission were reported consistently, more often both together than alone. For example, Nasser, in the second focus group, stated that "English is one of the main requirements in universities and jobs." Salim said: "Most people I know have got their jobs because of their strong English language." Salamah said that "universities require English and [so do] future careers." Adil stated that "a lot of companies and universities require good English skills." Othman also mentioned that "all universities require [that you] have good English skills. English language proficiency helps students in their futures when they graduate." Abraham concluded: "English language proficiency is one of the most important requirements in companies and universities." Rakan, from the third focus group, explained why he was interested in learning the English language in the following words: "It is going to guide my future." When asked to explain what he meant, he said: "English is important when I study at university or find a job." His friend Majid also noted that "the need for English in the future makes me very interested in English." Badr, from the second group, pointed out that English would provide him with good opportunities in his future career. He affirmed this by stating:

"Definitely [it would], because fluent English speakers are wanted everywhere … English is a global language." These potential uses of English are relevant to uncovering the motivating factors leading students to use DMTs for learning English.

Furthermore, English is one of the subjects included in the foundation-level courses offered by Saudi universities to prepare students for university admission. "Most of the universities have foundation levels before entering the university. I want to improve my English language to pass the foundation level and study my preferred major," said Sultan, from the second focus group. Additionally, some of the Saudi universities use English as the medium of instruction for several majors, such as engineering, medicine, and computer science, whether the lecturers are foreign or Arab. Khalid, from the first group, addressed this point: "Lecturers in universities speak English, and I need to understand what they say." Adeeb, from the third focus group, provided a further example: "Mastering the English language is a main requirement for entering my preferred major at university. It will help me because that major is taught in English only." The students' awareness of the importance of English for their future seems to foster their language learning and motivates them to learn English outside the school setting in many interesting ways.

4.2.6.4. Mobility and flexibility

A further significant feature of DMTs is its mobility. DMTs devices can be used anywhere, any time, and in any way. The findings from this study revealed that mobility was one of the main factors that influenced the students' choices of DMTs. Through "simple apps", the feature of mobility can enable students to "facilitate learning activity in the outside world and connect to other peers by connecting to a network" (Jeng, Wu, Huang, Tan, & Yang, 2010, p. 3). Therefore, students preferred to use the DMTs devices that would enable them to do so. This was especially the case with small portable devices such as smartphones, laptops, and iPads.

The feature of mobility relates not only to portable devices that facilitate mobility, but also to apps and websites accessed through the internet. For example, Abdulelah linked his preference for using the online tutoring application Duolingo to the fact that this app could be used anywhere at any time. "The good thing with this online application," he said, "is that I don't have to be in a specific place. I mean that I can use Duolingo wherever I go and wherever I have internet access." One of the students mentioned in his online journal that he preferred Duolingo because it was "not limited within one place." Additionally, Sultan reported that "the availability of all choices in the internet made it [his] preferred one." He explained this by adding: "I can browse the internet with several tools such as my smartphone, laptop, or even the smart TV. Also, I don't need to be home when browsing the Internet; there is no specific time for doing so, [either]."

The data revealed several other aspects of students' preferences among the devices and applications associated with flexibility. For instance, students mentioned that they preferred some of the DMTs devices because they were attached to them and could use them whenever they wanted. Yasser, from the second focus group, preferred using his smartphone, saying, "It is attached [to] me wherever I go." Other features that support mobility were also reported. Nayef mentioned that he preferred using his smartphone for learning because 'it has many features like the availability of hundreds of applications and also the ease of use in any place and [at] any time."

4.2.7. Summary of the qualitative findings

In the first section of this chapter, qualitative results were reported, with qualitative data representing the main source of results. The main themes and subthemes were also elaborated. In reporting these themes and subthemes, several categories of the qualitative variables were outlined, such as the recreational uses of DMTs and English. Following this outline, the students' attitudes towards learning English through the use of DMTs were

described. In addition, the strategies applied by the students for learning English, the challenges of learning English through the use of DMTs, and factors behind choosing the most preferred types of DMTs were discussed in detail. The following section reports the quantitative findings. These represent a secondary source of results; they support the qualitative findings.

4.3. Quantitative findings

This quantitative section presents the analyses and results of the survey data. First, the descriptive statistics with respect to the demographical features of the students who participated in the study are presented and described. Next, the mean response data for each scale are presented and the trends of findings described. Following this, an Exploratory Factor Analysis (EFA) is conducted to identify factor structures in the data. Subsequently, the data on the correlation matrix of strategies and internal factors are presented and described. Finally, some hypotheses are tested using regression analysis.

The source of the quantitative data was the responses obtained in the survey described in the Chapter Three. The survey was administered to the consenting students in electronic form through the online platform Survey Monkey. Quantitative analysis was performed using SPSS statistical software (version 24). The inclusion of missing values (i.e. the items that were not answered and were left blanks in the survey) could potentially bias the results of the statistical analysis (Tabachnick & Fidell, 2007). Consequently, it was imperative to screen the responses for missing values. Any consistent or regular patterns in the missing values were ascertained; as the electronic form has the feature of mandatory answers, this minimises the number of missing values. The proportion of missing values was very small (<1%). There were no instances where the respondents answered less than 80% of the survey items. In view of this, the decision was made to exclude missing values on a case-by-case basis (i.e. the pairwise method). This method attempts to minimise the loss that occurs in list-

wise deletion (i.e. removing all the data for a case that has missing values). The pairwise method maximises all data available on an analysis-by-analysis basis. Overall, the small proportion of missing values had minimal impact on the reliability of the findings of this research.

4.3.1. Descriptive analysis

Demographic data, consisting of age, nationality, place of study, and frequency of using English and DMTs are presented in Table 3.

Table 3: The demographics and reported English language practices among students.

		n	%
1 Age	16	1	0.29
	17	75	21.43
	18	254	72.57
	19	16	4.57
	20	4	1.14
2 Nationality	Saudi	315	90
	Kuwaiti	4	1.14
	Qatari	1	0.29
	Egyptian	7	2
	Syrian	8	2.29
	Jordanian	5	1.43
	Palestinian	2	0.57
	Yemini	4	1.14
	Other	4	1.14
3 Place of study	Riyadh	256	73.14
	Alghat	30	8.57
	Alzulfi	64	18.29
4 Studied in the same city in the last three years?	Yes	338	96.57
	No	12	3.43
5 Frequency of English study outside of school.	Not at all	83	23.71
	1-2 hours a week	107	3.57
	3-4 hours a week	57	16.29
	5-6 hours a week	28	8
	7 hours a week or more	75	21.43
6 Types of activities used for practising English language outside of the school.	Playing online games with non-Arabic users	151	43.14
	Online shopping	81	23.14
	Improving my English language skills	80	22.86
	Programming (e.g. designing applications or	24	6.86

websites)		
Communicating with non-Arabic speakers	90	25.71
Watching films and series in English	246	7.29
Other (e.g. orders from restaurants and coffee shops)	47	13.43

According to the above demographic data, 94 % of the students were in the age range of 17 to 18 years, as all of them were in Year 12 of their studies. The majority of the students identified their nationality as Saudi. The other students were from other Arabic countries but living in Saudi Arabia. In the third question, students were asked about their place of study, as three locations were selected for wider representation of the population.

Moreover, students were asked about how often they practised English outside of school. The answers indicated that about a quarter of students do not practise English at all, while about three-quarters of the students had variable frequencies for learning the English language after school. Almost half the students practised English for four hours or less a week. About one-fifth practised English more than seven hours a week outside their classes.

Students were also asked about the types of activities they usually undertake when practising English outside school. The answers indicated that playing games with non-Arabic speakers, communicating with non-Arabic speakers, online shopping, and investing in improving one's English language skills were the most common activities through which students usually practised English outside school. It was observed that nearly half the students played online games with non-Arabic users.

4.3.2. Self-rated English language proficiency

Table 4 shows the means and standard deviations of self-rating of English language proficiency among the students.

Table 4: The mean and standard deviation of self-rating of the English language

Items	Mean	SD
How would you rate your English language SPEAKING skills?	3.67	1.67
How would you rate your English language LISTENING skills	4.17	1.91
How would you rate your English language READING skills?	4.21	1.88
How would you rate your English language WRITING skills?	3.68	1.83

The self-ratings of English language proficiency ranged from 1 (lowest) to 7 (highest). As can be seen in Table 5, the means for speaking, listening, reading, and writing were all above the average of 3.5.

4.3.3. Owning and using digital media

Table 5 reports the frequencies and percentages concerning ownership and usage of digital media technologies amongst the students.

Table 5: Frequency and percentage of using digital media technology

Items	Response	n	%
Do you use DMTs in your daily life?	Yes	340	97.14
	No	10	2.86
If YES, do you use DMTs to learn English outside school?	Yes	193	55.14
	No	157	44.86
How often do you use DMTs to learn English outside school?	Not at all	100	28.57
	1-2 hours a week	102	29.14
	3-4 hours a week	61	17.43
	5-6 hours a week	31	8.86
	7 hours a week or more	56	16.00
Types of DMTs	Mobile (smart phone)	331	94.57
	Tablet (e.g. iPad, Galaxy Tab)	118	33.71
	Desktop computer	68	19.43
	Smart digital TV	86	24.57
	Laptop computer	183	52.29

	iPod	21	6.00
	Other	58	16.57
	Mobile (smart phone)	333	95.14
	Tablet (e.g. iPad, Galaxy Tab)	117	33.43
How do you access the internet outside school?	Desktop computer	67	19.14
	Smart digital TV	54	15.43
	Laptop computer	198	56.57
	iPod	21	6.00
	Other	30	8.57

The data in Table 5 show that the vast majority of the students reported that they used DMTs in their daily life. Just over half (55.14 %) of these students, who reported using DMTs in their daily lives, stated that they use DMTs specifically to learn English outside school. Nearly half (44.86 %) of the students used DMTs only for recreational purposes.

The results show that the top three most preferred types of DMTs for learning English language outside of the school were smartphones (94.57 %), laptop computers (52.29 %), and tablets (33.71 %). These findings are consistent with the qualitative findings.

4.3.4. Skills for learning English outside school using DMTs

Regarding the skills that students focus on when learning English outside school using DMTs, students (n= 350) were asked to choose their preferred skills from the four main skills of speaking, listening, reading, and writing. The frequencies are shown in Table 6 below. Students were asked to choose all those skills that apply to them. They focused predominately on speaking and listening skills. Writing was the skill students focused on the least. This finding is consistent with the qualitative finding that students clearly prioritised the skills of speaking, listening and reading.

Table 6: Frequency and percentage of the English skills learned outside school using DMTs

Skill	n	%
Speaking	235	67.1
Listening	229	65.4
Reading	184	52.6
Writing	130	37.1

Students rated their perceived ability (i.e. self-efficacy) for using DMTs to improve their English language skills (1-10 rating). The mean and standard deviation for each skill are shown in Table 7. As can be seen in the table, the self-efficacy ratings were highest for listening and lowest for writing.

Table 7: The means and standard deviations of students' self-efficacy for using DMTs to learn English language skills

Items	Mean	SD
52 I can use digital technology to improve my SPEAKING skills in English.	7.85	2.88
53 I can use digital technology to improve my LISTENING skills in English.	8.40	2.69
54 I can use digital technology to improve my READING skills in English.	7.90	2.72
55 I can use digital technology to improve my WRITING skills in English.	6.82	2.95

The next table comprises students' ratings of their knowledge in using DMTs to improve their English language skills, on a scale of 1 to 7. "I know the best tool to use" was the highest-rated item, while the least-rated item was "I know what English content I need to learn outside school." All the mean ratings were above midpoint, and the means and standard deviations for each skill are shown in Table 8. Again, these findings resonated with the qualitative findings.

Table 8: The means and standard deviations for gaining knowledge to learn English through DMTs

Items	Mean	SD
36 I know how to use it to learn English outside of the school.	4.67	1.84
37 I know what English content I need to learn outside of the school.	4.54	1.89

38 I know what English skills I am learning.		4.73	1.88
39 I know the best tool that I should use.		4.96	1.93
40 I know how to improve specific skills.		4.56	1.93

When students were asked about the technical skills that would enable them to master DMTs, they rated their skills on a scale of 1 to 7, with 1 indicating poor and 7 indicating expert. Their responses are shown in Table 9, with the majority of the responses closer to the "expert" end of the scale.

Table 9: Frequency and percentage of technical skills in using DMTs

Items		n	%
	1 (poor)	1	0.3
	2	6	1.7
	3	10	2.9
How good are your technical skills at using digital media technology?	4	20	5.7
	5	58	16.6
	6	106	30.3
	7 (expert)	149	42.6
	Total	350	100.0

When students were asked about the extent to which they intended to use DMTs for learning English outside school, their intentions were rated on a scale ranging from 1 (*very low*) to 7 (*very strong*). The frequencies and percentages are presented in Table 10. The majority of the responses were at the "*very strong*" (7) end of the scale. This indicated that the students intended to use DMTs to learn English outside the classroom context.

Table 10: Frequencies and percentages of student's intention to use DMTs for learning English

Items		n	%
My intention to learn	1 (poor)	13	3.7
English outside the school	2	14	4.0

		n	%
is	3	22	6.3
	4	40	11.4
	5	46	13.1
	6	37	10.6
	7 (very strong)	178	50.9
	Total	350	100.0

Table 11 reports the students' ratings of their knowledge of how DMTs can be used for learning English outside school. Students rated their knowledge on a scale from 1 (*very low*) to 7 (*very high*). More than half of the students (56.6 %) indicated that they had high levels of knowledge (i.e. rating 6 or more) about how DMTs could be used for learning English outside school. The majority of the responses were closer to the 'high' end of the scale. This shows the extent to which the students feel confident about how to use DMTs for learning the language outside school.

Table 11: Frequency and percentage of students' knowledge of how DMTs could be used for learning English

Items		n	%
	1 (low)	13	3.7
	2	22	6.3
My knowledge of how digital media technology can be used to learn English outside the school is	3	23	6.6
	4	35	10.0
	5	62	17.7
	6	67	19.1
	7 (high)	128	36.6
	Total	350	100.0

Students were provided with a list of types of DMTs and were asked to choose all the ones they used in their daily lives. The most commonly used type of DMTs was the

123

smartphone. Smartphones scored the highest mean compared to other devices. This finding is consistent with the literature. Smartphone use by young people and university students has been found to be at relatively high levels compared to their use of other forms of DMTs (Gökçearslan, Mumcu, Haşlaman, & Çevik, 2016; Haug et al., 2015). The students' use of DMTs devices is presented in Table 12.

Table 12: Freqency of students' use of types of DMTs outside school

	Mean (Rating 1–7)	SD
Console games, e.g. PlayStation, Wii, Xbox	3.80	2.07
TV	2.87	1.91
Desktop computer	2.34	1.88
Mobile (smartphone)	4.62	2.02
Laptop computer	3.56	2.17
Tablet (e.g. iPad. Samsung, Service.)	2.31	1.76
iPod	1.48	1.20
Audio player	2.48	1.97
Video player	2.90	2.13

The following table shows the frequency with which students use different kinds of DMTs applications and programs to learn English outside school. Video websites and applications such as YouTube, and educational apps such as Dictionary, were reported to be used with above-average frequency with all types of DMTs. In fact, the students explicitly noted their use of such DMTs applications in the interviews.

Table 13: Freqency of students' use of DMTs applications and programs outside school to learn English

| | Mean | SD |
	(Rating 1–7)	
Video websites and applications (e.g. YouTube)	4.34	2.16
Blogs	1.93	1.61
Educational websites (e.g. Khan Academy)	1.88	1.50
Social media websites and applications (e.g. Twitter, Facebook)	3.83	2.20
Educational Apps (e.g. dictionary)	4.27	2.10
Radio channels	1.89	1.54
Chat rooms in English	2.47	1.97

4.3.5. Validity and reliability of measurements

Validity refers to what the instrument intends to measure (Lynn, 1986). The accuracy and the generalisability of the measurement are based on validity (Wiersma & Jurs, 2009). Construct validity is one of various statistical methods for calculating validity; it can be used to estimate the validity of the measurement scales.

Construct validity refers to the relationship among measurement items and shows the content of the scale representative. Schwab (1980) described construct validity as "representing the correspondence between a construct (conceptual definition of a variable) and the operational procedure to measure or manipulate that construct" (p. 5). One of the calculation methods for construct validity is Exploratory Factor Analysis (EFA) (O'Leary-Kelly & Vokurka, 1998; Taks, Meagan, Wiood, & Snelgrove, 2015).

EFA is a statistical procedure for examining a set of correlated items or statements to reveal the underlying structure of the data. As Tabachnick and Fidell (2007) stated, applying EFA is an efficient way to summarise data. EFA was employed so that the researcher could assess the extent to which the data that was collected meaningfully reflected the variables of

interest to the study. The following section reports a set of items analysed by EFA to extract the underlying structure of the data.

To ensure consistency, the scale items were subjected to reliability tests utilising the Cronbach alpha as a measure. The value of Cronbach's alpha is on a continuum from zero to one. A Cronbach alpha close to one suggests there is high consistency among the scale items (Muijs, 2010). A Cronbach alpha of .70 or above is considered desirable (Santos, 1999). The Cronbach alpha values for the scales are presented corresponding to each factor on the EFA.

An examination of the Cronbach alphas indicates that the Cronbach alpha values of all the scales, with the exception of 'Using DMTs for various English skills', were above the minimum value that is commonly considered acceptable (α = .70) (Perry, Charlotte, Isabella, & Bob, 2004, p. 363). Although the alpha reliability score for 'Using DMTs for various English skills' was relatively low (α=.66, n=3), it was decided to retain this factor for possible further analyses because it was DMTs to be theoretically coherent, and Cronbach alpha reliability measures tend to be sensitive to small numbers of items (Cortina, 1993).

4.3.5.1. Students' use of DMTs scale

In the online survey questionnaire, items 15 to 30 asked the students to indicate their use of DMTs (types of DMTs and frequency of use) based on a Likert-scale of 1 (*strongly disagree*) to 7 (*strongly agree*). The correlation matrix of the items was above the recommended value of .3. The Kaiser-Meyer-Olkin measure of sampling adequacy was .80 and greater than the recommended minimum value of .60. Moreover, Bartlett's test of sphericity ($\chi 2$ (350) = 646.86, p < .01) was significant, which means the sample size was adequate for applying EFA. The results of the EFA are presented in Table 14.

Table 14: Factor loadings of student usage of different types of DMTs

Items	Factors	
	Specific use	Multiple use
18 Mobile (smartphone) (translation: reading)	.886	-.100
24 Video websites and applications, e.g. YouTube (listening, writing)	.805	-.027
27 Social media websites and applications, e.g. Twitter, Facebook (listening, speaking)	.758	.036
15 Console games, e.g. PlayStation, Wii, Xbox (listening, speaking)	.514	.031
28 Educational apps, e.g. dictionary (listening, speaking)	.505	.081
21 iPod (multiple use)	-.114	.763
20 Tablet, e.g. iPad, Samsung, Service (multiple use)	. 067	. 693
26 Educational websites, e.g. Khan Academy (iPod) (multiple use)	. 166	. 436

The results of the EFA suggested two factors. The first factor had an eigenvalue of 3.16, explaining 39.54% of the total variance. The second factor had an eigenvalue of 1.20, together with the first factor, explaining 54.54% of the total variance. The first factor included the items "15 Console games e.g. PlayStation, Wii, Xbox (listening, speaking)", "18 Mobile (smartphone) (translation: reading)", "24 Video websites and applications, e.g. YouTube (listening, writing)", "27 Social media websites and applications, e.g. Twitter, Facebook (listening, speaking)", and "28 Educational Apps, e.g. dictionary (listening, speaking)" with factor loading ranging from .666 to .888. The content of the items shows that the tools and applications have specific usage (e.g. for listening, reading or writing), so this factor was labelled as *Using DMTs for specific English skills*. The Cronbach alpha for this factor was .82. The second factor comprised items "20 Tablet, e.g. iPad, Samsung, Service (multiple use)", "21 iPod (multiple use)" and "26 Educational websites, e.g. Khan Academy (iPod) (multiple use)" with factor loadings ranging from .632 to .881. These items were related to multi-purpose uses, which means that each DMTs can be used for learning and practising several different skills. For example, the iPad could be used for improving reading, listening,

or speaking, depending on the iPad's applications. This factor was therefore labelled *Using DMTs for various English skills*. The Cronbach alpha for this factor was .66.

4.3.5.2. Self-efficacy scale for using DMTs to learn English

Items number 52 to 55 on the online survey asked the students to rate their perceived personal capabilities (i.e. self-efficacy) regarding the extent to which they can use DMTs to improve their English language skills. The correlation matrix of the items was above the recommended value of .30. The Kaiser-Meyer-Olkin measure of sampling adequacy was .69 and greater than the recommended minimum value of .60. In addition, Bartlett's test of sphericity ($\chi 2$ (350) = 654.33, $p < .01$) was significant, which means that the sample size was adequate for applying EFA. Therefore, it was DMTs appropriate to proceed with an EFA. The results of the EFA are presented in Table 15.

Table 15: Factor loadings of the self-efficacy items

Items	Factor 1
54 I can use digital technology to improve my READING skills in English.	.757
52 I can use digital technology to improve my SPEAKING skills in English.	.725
53 I can use digital technology to improve my LISTENING skills in English.	.842
55 I can use digital technology to improve my WRITING skills in English.	.677

A single factor, titled "Self-efficacy in using DMTs to learn English" was identified, with an eigenvalue of 2.69, explaining 67.19% of the variance. Self-efficacy for using digital technology to learn English reflects the students' beliefs in their perceived capacities to use DMTs to improve their English skills. The Cronbach alpha for this factor was .83.

4.3.5.3. Scale for intentional learning of English

The intentional English learning related items on the online survey included items 31–34, 36–41 and 57–62 and 64 (17 items in total). The inter-correlation matrix of the 17

items was above the recommended minimum value of .3. The Kaiser-Meyer-Olkin measure of sampling adequacy was .91 and greater than the recommended minimum value of .60. Moreover, Bartlett's test of sphericity (χ^2 (350) = 3200.79, p < .01) was significant, meaning that the sample size was adequate for applying EFA. Therefore, EFA was conducted to examine the student's intentional use of DMTs with 17 items. The summary of the EFA is presented in Table 16.

Table 16: Factor loadings on a principle components analysis with Oblimin rotation

Items	Intentional learning with DMTs outside school in the context of EFL			
	1	2	3	4
39. I know the best tool that I should use.	.785	.032	-.008	-.011
38. I know what English skills I am learning.	.760	-.001	.070	-.031
40. I know how to improve specific skills.	.744	.026	.004	-.063
37. I know what English content I need to learn outside school.	.699	-.022	-.023	.118
36. I know how to use it to learn English outside school.	.532	-.045	.085	.286
57. I only focus on what is in the curriculum when I use digital media technologies outside school.	.035	.750	-.123	-.050
58. I search for information to just do my homework when I use digital media technologies outside school.	-.002	.595	.111	.049
32. My desire to explore how these technologies can help me learn English outside school is	-.079	.066	.937	-.032
33. My preference for specific types of digital media technology to learn English outside school is	.127	-.014	.658	.132
31. My intention to learn English outside of the school is	.111	-.063	.634	.007
62. I believe that online content can be useful for learning English language when I use digital media technology outside school.	-.025	.049	.027	.800

Items	Intentional learning with DMTs outside school in the context of EFL			
64. I believe that digital media technology has made it easier for me to learn English language outside school.	.067	-.008	-.052	.792
61. I have learned new things beyond the curriculum when I have used digital media technology outside school.	.009	-.143	.055	.744
60. I have found it better to learn English when I use digital media technology outside school.	-.004	.070	.017	.741

Four theoretically interpretable factors emerged from the EFA procedure. The first factor had an eigenvalue of 7.55 and explained 39.72 % of the variance. The second factor had an eigenvalue of 1.80 and together with the first factor explained 49.20 % of the variance. The third factor had an eigenvalue of 1.38 and together with the first two factors explained 56.46 % of the variance. Finally, the fourth factor had an eigenvalue of 1.18 and together with all the other factors explained 62.72 % of the variance.

The first factor comprised five items related to knowing what to learn about English using DMTs outside school. Some of these items were: "39. I know the best tool that I should use"; and "38. I know what English skills I am learning". This factor was named "Knowing what to learn", with a Cronbach's alpha of .89. The second factor comprised two items associated with knowing how to learn English using DMTs outside school. These items were "57. I only focus on what is in the curriculum when I use digital media technologies outside school", and "58. I search for information to just do my homework when I use digital media technologies outside school." This factor was named "Knowing how to learn", with a Cronbach's alpha of .71. Since this factor has only two items, interpretation of results needs to be made with caution, as was suggested by Young and Pearce (2013). The third factor comprised three items about wanting to use DMTs for learning English outside school. The

strongest loading item was "32. My desire to explore how these technologies can help me learn English outside school." This factor was labelled, "Wanting to use DMTs", with a Cronbach's alpha of .83. The fourth and last factor comprised four items related to students believing in the utility value of DMTs for learning English outside school. These items included: "64. I believe that digital media technology has made it easier for me to learn English outside school"; and "60. I have found it better to learn English when I use digital media technology outside school." As a result, it was named "The utility value in using DMTs", with a Cronbach's alpha of .86.

In conclusion, the EFA analyses revealed that the scales of "self-efficacy in using DMTs to learn English", "DMTs specific and multiple usages", and four subscales of "intentional English language learning" scales have significant support as valid instruments. This means the scales are measuring what they claimed to measure among the sample of students in this study.

4.3.6. Normality test

Before applying the parametric statistics to quantitative data analysis, it is essential to test the underlying assumption of normal distribution of continuous variables from the survey. The Kolmogorov-Smirnov statistic (K-S) compares the variance between the empirical cumulative and theoretical distributions. If the K-S result shows a significant difference between the two distributions, it means that the distribution of the composited variable is not normal. The results of the K-S test are presented in Table 17.

Table 17: Kolmogorov-Smirnov statistic (D) of intentional factors and strategies

Variable	Dimensions	n	Mean	SD	Min	Max	Skew.	Kurt.	K-S test
DMTs	Self-efficacy	350	7.74	2.30	1	11	-.45	-.45	.08
	Specific	350	4.17	1.61	1	7	-.23	-.97	.09
	Multiple	350	1.89	1.16	1	7	1.79	3.80	.22
Intentional	Utility value	350	5.29	1.40	1	7	-.71	-.12	.11
	Knowing how	350	3.37	1.37	1	7	.47	-.38	.12
	Knowing what	350	4.64	1.53	1	7	-.43	-.60	.07
	Wanting to use	350	4.92	1.64	1	7	-.55	-.67	.10

According to the data presented in Table 17, none of the K-S test values were at significant levels. As such, the distribution of composited variables could be assumed to be normal, and parametric inferential statistics can be applied to the quantitative data of this research.

4.3.7. Correlation analysis

Correlation analysis is useful for gaining insights into the strength and direction of the relationship between a pair of variables. Pearson's correlation coefficients were calculated between all the variables from the quantitative dataset to identify statistically significant relationships. Table 18 shows the correlation coefficient between the pairs of variables. The following guidelines by Harris, Taylor, and Taylor (2005)

Table 18: Pearson correlations of all factors

	Self-Efficacy	Utility Value	Knowing how	Knowing what	Wanting to use	DMTs (specific uses)	DMTs (various uses)
Self-Efficacy	1						
Utility Value	.666**	1					
Knowing how	-.045	-.135*	1				

Knowing what	.554**	.686**	.097	1		
Wanting to use DMTs	.472**	.623**	.052	.634**	1	
Specific Usages DMTs	.510**	.616**	.028	.637**	.546**	1
multiple Usages	.247**	.257**	.243**	.293**	.245**	.530**	1

An examination of the correlations presented in Table 18 shows that three of the four intentional learning variables – utility value, knowing what, and wanting to use – have statistically significant relationships with DMTs (Specific Uses). Moreover, all of the intentional learning variables had small, but statistically significant positive relationships with DMTs (various uses), thus providing support for hypothesis 1. The table of correlations provides support for the proposed positive relationship between self-efficacy and DMTs usage (Hypothesis 2), with the factor self-efficacy moderately correlated with DMTs (specific use) and a low but still statistically significant relationship with DMTs (various uses). That is, the more self-efficacious students were in using DMTs, the more likely they were to report using DMTs for both specific and various usages, and vice versa. This result is consistent with self-efficacy theory, in that people are more likely to choose and engage in activities in which they are self-efficacious than in those in which they are not (Bandura, 1997). Generally speaking, statistically significant positive correlations were observed between the various aspects of English language learning, indicating interrelatedness between factors. The results of the correlation analysis indicate that there are significant interrelationships between the various aspects of learning English outside the classroom using DMTs.

4.3.8. Multiple linear regression analysis

A series of multiple regression analyses were also used to test the hypotheses. To test hypothesis 1: *Intentional learning of English will be positively related to student use of DMTs*

for learning English, and hypothesis 2 *Self-efficacy for DMTs will be positively related to student use of DMTs for learning English*, two mixed-procedures multiple regression analyses were conducted. A mixed procedures approach involves a combination of hierarchical and stepwise multiple-regression estimation methods to test relationships between variables of interest in this study. A hierarchical approach was used when there was a clear theoretical reason to enter a variable in at a particular step. When there was no clear theoretical reason for entering independent variables in a specific order, these variables were entered in a stepwise manner.

Because the exploratory factor analysis revealed two factors regarding DMTs usage, *Using DMTs for specific English skills* and *Using DMTs for various English skills*, two mixed procedures multiple regression analyses were conducted. The rationale for the order of entry of the independent variables for both models is as follows: Self-efficacy was entered first because self-efficacy beliefs have been shown across multiple academic and non-academic domains to predict student effort, engagement and choice of activities (Schunk et al., 2002). Thus, one may reasonably expect self-efficacy to predict the use of DMTs for both specific and various English skills. Studies have suggested that intentional learning is positively related to the use of DMTs for language learning (Hung, 2015; Wastiau et al., 2013). Language learners who are exposed to the different types of technologies and knowing their affordances for learning are likely to utilise specific technology to meet their learning needs. In terms of the four intentional learning variables (knowing how, knowing what, wanting to use, utility value), there was no clear theoretical reasoning as to the order in which these variables should be entered, and as such, these variables were entered using the stepwise procedure. The results for the two mixed-procedures analyses are shown in Table 19 and Table 20.

Table 19: *Mixed-procedures regression analysis with "Using DMTs for specific English skills" as the dependent variable*

Step	New variable entered into the model	R^2	ΔR^2	B	SE B	β
1	Self-efficacy	.26	.26	.52	.05	.51***
2	Knowing what	.44†	.18	.51	.05	.51***
3	Utility value	.47†	.03	.28	.06	.28***
4	Wanting to use	.48†	.01	.14	.05	.14**

† entered stepwise
** $p < .01$
*** $p < .001$

In this model, *Self-efficacy for using DMTs to learn English* was the strongest predictor of the dependent variable, accounting for 26% of the variance. This result provides support for hypothesis 2, in that the more self-efficacious students were in using DMTs to learn English, the more likely they were to choose DMTs devices for learning specific English skills such as reading, writing and listening. *Knowing what to learn* was the next best predictor, accounting for 18% of the variance. That is, the more students knew exactly what to learn, the more likely they were to choose DMTs devices for learning specific English skills. When students have identified the English knowledge or skills to learn, they are more likely to strategically select DMTs devices that can meet their learning needs. *Utility value of DMTs* was the next statistically significant predictor, accounting for 3% of the variance. That is, the more students believed in the utility value for acquiring English skills outside of the classroom, the more likely they were to use DMTs for specific English skills. Believing in the value of learning the language propelled the students to identify specific DMTs tools to learn the language better. Although the factor *Wanting to use* was also a statistically significant predictor, albeit accounting for a very small percentage of the variance (1%), it suggested that when students themselves wanted to learn, they would identify DMTs devices to help them master the language. The fact that three of intentional learning variables were statistically significant predictors provides partial support for hypothesis 1. Both utility value and wanting

to use had low explanation power. So, these two need not be considered as predictors. Therefore, only self-efficacy and knowing what are the predictors of DMTs use for specific English skills.

Table 20: *Mixed procedures regression analysis with "Using DMTs for various English skills" as the dependent variable*

Step	New variable entered into the model	R^2	ΔR^2	B	SE B	β
1	Self-efficacy	.06	.06	.23	.05	.25***
2	Knowing what	.13†	.07	.27	.05	.26***
3	Utility value	.15†	.02	.20	.06	.22**

† entered stepwise
** $p < .01$
*** $p < .001$

In this model, Knowing what, was the strongest predictor of the dependent variable, accounting for 7% of the variance. That is, the more students knew what to learn for English, the more likely they were to use DMTs for practising various English skills in general. In other words, students would use a combination of types of DMTs to help them learn the language when they have identified what to learn. *Self-efficacy for using DMTs to learn English* was the next best predictor, accounting for 6% of the variance and thus providing support for hypothesis 2. Utility value accounted for a small but nevertheless statistically significant amount of variance (2%). When students acknowledge the value of learning English, they tend to use various DMTs tools to achieve their learning goal. With two intentional variables predicting the dependent variable, there is partial support for hypothesis 1.

4.4. Chapter summary

Overall the findings from the analysis indicated the following. The Saudi EFL students in the study use DMTs to intentionally learn the main skills of English through both recreational and intentional use of DMTs. The students use metacognitive strategies to intentionally learn English by using DMTs. They have indicated that the factors that influence their choice of DMTs in learning English outside the school context are driven by the students' purpose or need at a point in time, together with entertainment value, future security and potential, and mobility. Finally, the various aspects of, and factors behind, intentional DMTs use for learning English are positively and significantly correlated. The quantitative findings were aligned with the qualitative data, thus providing strong support for the key findings.

CHAPTER FIVE

Discussion

5.1. Introduction

In this chapter, the quantitative and qualitative results presented in Chapter Four are interpreted and integrated. The chapter begins with a discussion of the overall findings and their significance. Each research question is then examined and discussed with respect to how it has been answered by the findings of this study. Finally, the findings leading to the applications, and the practical utility of the research findings, are synthesised and recommendations made. The limitations of this research are also identified and discussed. A summary of the key points closes this chapter.

5.2. Overall findings

The overall aim of this research was to understand the use of digital media technology (DMTs) for fostering the learning of English as a foreign language (EFL) outside the school in the Saudi context. After analysing the data from various sources, several important results emerged from both the quantitative and qualitative data collected in this research. The main findings can be summarised as follows:

1. There was less use of DMTs among the Saudi students inside than outside school for learning, due to the teacher-centred instructional approach and the ban on students bringing the personal DMTs devices (e.g. mobile phones and tablets) to school.

2. DMTs were extensively used outside the school context. This phenomenon aligned with the technological trends among youth all over the world, including Saudi students. It was evident that DMTs was used outside the school for both recreational and educational purposes.

3. DMTs were used for intentional English language learning outside school. Furthermore, it was found that students focused on learning specific language skills through DMTs outside school, predominantly speaking, listening, reading, and vocabulary-building. Moreover, students' desire to learn English is driven and influenced by several factors, including university admission, overseas travel, and future career requirements.

4. Students were self-efficacious for using DMTs. Students expressed that they can use DMTs successfully to learn English language skills outside school. They were aware of when, how, and why to use some of the strategies and techniques when learning English language skills outside school. In fact, the results showed that students were already applying several strategies through DMTs.

The main message of this research is that there is widespread use of DMTs by Saudi Year 12 EFL male students outside the classrooms; a very good portion of that usage reflects the intentional learning of English language skills. This is substantiated by the main findings of this study. The results of this study support the idea that learning is most effective when students consciously and actively use DMTs for learning. This finding is congruent with studies done by Livingstone (2012) and Selwyn (2011), who believed that DMTs can be used for language learning, and the works of Norqvist, Leffler, and Jahnke (2016) and Greenhow and Lewin (2016), who discussed the use of DMTs for intentional language learning.

Over the past two decades, in which the use of technology has increased noticeably, the younger generation (10-20 years old) tend to use DMTs widely for many purposes. In this study, almost 97 % of students (n=340) indicated that they used DMTs, with about 29 % of them (n=100) not using DMTs for learning English (as shown in table 6, Chapter Four). Thus, 70% of grade 12 students used DMTs extensively outside classrooms to learn English. In the literarure review chapter, Darling-Hammond et al (2014) and Khamkhien (2014) were cited to

show that students in countries leanring English as second language or foreign language knew the importance of learning English language acts as an important driver for using DMTs for learning the language. As the findings of Eto et al (2013) and Kolb (2008) showed, students used DMTs for educational purposes outside the classroom in many non-Saudi contexts. The work of Eto et al (2013) was a compendium of efforts on the use of DMTs for learning in many countries for connected learning. Kolb (2008) also discussed the opportunities mobile phones present as a powerful technology for students in terms of learning. Currently, schools from different parts of the world disallowed students from using mobile phones in the classroom. However, the use of mobile phones is now an intergral part of students and it might be strategic to assess the use of it for learning and explore possible pedagogies to foster learning.

Furthermore, students' intentional practices of DMTs outside the school context was determined by their purpose for using DMTs, their need, how they perceived the entertainment value and flexibility of the DMTs, and their perception of their future job prospects. Clearly, purpose or need at the point of time the device is used out of school is determined by the nature of the course-related work the students are attempting and its urgency. Unless the DMTs has an entertainment value, the user will be less likely to focus on the learning activity and, consequently, unable to use it constructively as a learning tool. Ito et al (2013), Kolb, (2008) and Sait et al (2003) had pointed out that young people are highly likely to intentionally use technologies for a range of tasks like completing assignments and homework. The work of Sait et al (2003) was related to internet applications of learning in Saudi contexts.

We now turn to the extent to which each research question has been answered by the findings of this study.

5.3 RQ1

How are Saudi EFL students using digital media to intentionally learn the four main skills of the English language (i.e. reading, writing, speaking, and listening) outside the school context?

The data in this study suggested that Year 12 EFL male students were using DMTs in the following ways: recreational and educational practices. When they used it for recreational purposes, learning does happens incidentally. When DMTs is used intentionally for learning purposes, they are motivated by their own learning intentions and driven by goals Blumschein (2012). The intention may be to obtain better grades and the goal for this is university admission in the preferred subject. Data in Table 4 of the Results chapter showed that about 74% of students used to study English outside classroom. However, only about 23% were using DMTs specifically for practising English and they were intentionally using DMTs for learning English language. Other types of DMTs uses only indirectly helped students to improve their communications in English when they engaged in online shopping, chatting or playing games with non-Arabic persons. So, Saudi students used DMTs more for other purposes and English language learning is most likely to occurr incidentally rather than intentionally.

Indicated in Table 6, most of the Saudi students (about 97%) used DMTs outside the class mainly because they were not allowed to use it inside the classrooms. About 55% students said that they used DMTs for learning English outside classrooms. Whether for daily life or for learning English, the Saudi students can only use DMTs outside the classrooms. This is much different from the 23% students using DMTs specifically to practise English as refletced in Table 4. The tendency was to use DMTs less frequently, as there was a steady decline in the number of DMTs users as the frequency of use increased. Almost all students used DMTs at least one hour per week. Out of the 350 students who responded, only 100 of them indictaed that they do not use DMTs for outside learning of English in this table. Many

students used more than one DMTs tool, usually smartphone and computer as these two DMTs were mostly used by students.

5.3.1. Students' recreational practices

When using DMTs for recreational practices, Saudi EFL students preferred to use particular types of DMTs. Such preferences seem to be logical, considering the high engagement of students with digital technology (Annetta, Minogue, Holmes, & Cheng, 2009) and the fact that digital technologies are becoming a significant part of students' daily lives (Merchant, 2012; Pillay, Brownlee, & Wilss, 1999). In the work of Annetta et al (2009), there was no improvement in learning; but student engagement in learning genetics from teacher-created video games improved significantly. The quasi-experimental work was done in four general biology classes, taught by the same teacher in an American high school. Judgmental sampling was done to select the participants in control (28 male +35 female= 63 students) and intervention (35 males+31 females= 66 students) roughly equivalenced groups of 14 to 18 years old students. Most students had not played any video games so far. Whether genetics was a suitable text for video games teaching or whether the video games was lacked clarity in teaching genetics at the intended levels were some questions discussed by the authors themselves. Here, the use of DMTs (video games or any other) to improve engagement is informs this research. In the Australian (QUT) qualitative work of Pillay et al (1999), it was highlighted how cognitive processes are associated with playing video games by the students. When 21 students were exposed to computer games-integrated educational software, they were found to apply complex cognitive processes including interpreting explicit and implicit information, inductive reasoning, metacognitive analysis, and problem solving to play the games actively. The two findings together explain how DMTs (video games in particular) can be successfully applied to different learning contexts. Although both works do not focus on

learning English, the principles of using DMTs for learning are still applicable across any subject area.

Merchant (2012), in his conceptual paper, applied social practices theory to examine the use of mobile phones in classrooms for learning. In his view, smartphones need to be allowed inside classrooms for exclusive use of predetermined learning activities based on social learning primciples.

In this study, one of the most frequently used types of DMTs was the smartphone and other DMTs such as iPads and laptops to a lesser extent. This pattern of DMTs use is common with the global trend among young generation (Agrebi & Jallais, 2015). The multiple features of these devices play role in many people's strong attachment to technology. They use mobile devices for many recreational or non-learning practices in their daily life.

It was pointed out in the review of literature that students may use DMTs for recreational practices for incidental or intentional learning. Some informal learning may also occur. The type of learning depends on whether the student is using DMTs for recreation only, for learning only or for both. Within the reported types of DMTs used for recreational usage, data shows that Saudi EFL students engaged in several recreational practices through DMTs in their daily lives. Among those students who reported that they usually used DMTs in their daily lives (See Table 6), nearly half (44.86 %) of them also mentioned that they used DMTs only for recreational and not educational purposes. This percentage shows that the students' practices were almost equally distributed between recreational and educational practices. When students have better self-efficacy in the use of DMTs, they may be more willing to invest in intentional EFL learning. Students tend to exert effort and engage deeply in tasks for which they have relatively strong self-efficacy. Conversely, students tend to apply minimal effort and have little engagement in tasks for which they have relatively weak self-efficacy (Schunk, Pintrich, & Meece, 2002).

Use of DMTs for recreational practices implies the use of technology for entertainment. According to the results of this study, the type of recreational practices involving DMTs varied among the participating students. Most notably, DMT was used mainly for entertainment as the recreational activity. The forms of entertainment included watching films online, playing online games, online shopping, and communicating with friends who were non-Arabic speakers. In the case studies reviewed by Motterram, (2013), inclusion of film making software, cartoons, photography in field trips and slideshows enhanced the entertainment aspect of DMTs yielding better motivation and interest for learning. However, there was no information on whether these results were translated into better learning performance. Clearly, entertainment effect of DMTs is higher motivation and interest in using the tool for learning through entertainment, but not learing as such.Along the same vein, the focus of this study was on the patterns of DMTs use for EFL, learning outcomes or improvement in the skills as a result of DMTs were not the focus of this research.

Even using DMTs for recreational practices has a subtle connection with the use of English. The results showed that English played a role in several of the students' recreational practices. For example, English was used for communicating with friends who were non-Arabic speakers, for reading English novels, or for ordering from restaurants and cafés. Although these uses were not purposely educational, students reported that they were accustomed to using English as a means of connection and communication. This could be explained by the fact that English is a global language and is understood almost everywhere. Thus, whilst many students reported using DMTs for recreational purposes, which in many cases might not evoke intentional learning, it is important to acknowledge the fact that students could still develop their English language unintentionally and in an unplanned manner in the form of a by-product of the activity they engaged in. For instance, students use

DMTs for social purposes such as communicating with non-Arabic-speaking friends or using English in cafés and restaurants could lead to incidental improvement in language skills. Thus, some incidental learning could happen during the use of DMTs purely for entertainment. Socal media like Facebook (Wodzicki, Schwämmlein, & Moskaliuk, 2012 on StudiVZ, the German equivalent of Facebook) or Twitter (Lin, Hoffman, & Borengasser, 2013) which are meant for entertainment might still help students to improve their language writing skills in an unconventional way.

5.3.2. Students' educational practices using DMTs

Apart from using DMTs for recreational purposes, the data in this study indicated that some students used DMTs intentionally to learn English outside school. The purpose of their use of DMTs was specifically educational, that is, to increase their language skills. Students reported that they focused on learning specific language skills when using DMTs. Intentional learning is motivated by intentions and is driven by goals (Blumschein, 2012). The components of intentional learning are: want to learn, there is a need to learn and believes in learning, knows what to learn and what is required to learn and how to learn (Lee et al 2014).

Generally, in this study, students'rating of their language skills was above the mid-point (Table 5). However, relative means show that they were more confident in terms of listening and reading skills. Perhaps, speaking and writing English require the students to put in more effort than just listening or reading English. In this sense, students could be intentionally seeking DMTs to improve their speaking and writing skills. But it was interesting to note that students were less likely to use DMTs for learning the skill of writing in English outside the school context. At this stage, we do not really know why this was the case but it could be due to the way students perceive the usefulness of such skill for their daily usage. The interview data showed that students were interested in learning the language for several purposes, such as obtaining better grades in English, studying their choice subjects

when entering higher education, improving their communication skills, acquiring better career and travelling overseas. Students paid more attention to learn skills that could enable them to use English to serve these purposes. Such findings indicated the need for educators to understand and examine these needs. From their perspectives, writing skill would be less beneficial for their reported reasons for learning English, which could explain why the students were less interested in learning how to write. Moreover, students might have limited opportunities to use the skill of writing in English in their daily life. This finding echoed what Lu (2008) and Plana et al. (2003) had found when they reported that in the studies they have conducted, reading, listening, and vocabulary of EFL learners improved after they used mobile devices and applications but not writing. It was very difficult to learn writing skill using the small screen of mobile phones. Although these studies were conducted years ago, the findings are still relevant and provided good reference for the current study.

In focus group interviews, students reported intentional learning practices involving DMTs. They would try to use appropriate vocabulary and correct grammar for communication through chatting using their mobile devices. Students also developed listening skill by listening to podcasts or music. As for improving reading skill, they would carefully read other people's online comments. Students improved their writing skill through writing blogs or writing comments for articles they come across. These findings confirmed the general trend of DMTs use among the younger generation. For instance, in a survey conducted on 31000 school students in Abu Dhabi, Badri, Alnuaimi, Al Rashedi, Yang, and Temsah (2017) found that students of Grade 6 or higher generally used DMTs (mainly, the social networking sites – SNS) for several purposes but mainly to keep in touch with friends and find general information. They also used SNS to share photos, videos and music, and to pass time, or just because other friends were using it. However, time spent on SNS was negatively correlated with their performance in certain subjects. In a similar study, Lu, Hao,

and Jing (2016) found that students used the internet predominantly for sharing general content and learning, on social media outside the school context. In school, students used the internet for creating course-related content. The importance of sharing with peers was the most significant positive determinant of their social media activities both in and out of school. These authors' observations are closely aligned with what was found in this study.

The use of DMTs for combining recreational and educational practices could enable students to learn more effectively and increase their English language skills. This finding has important implications for learning due to the seamless linkage between recreational and educational purposes of DMTs. As long as technology is an attractive trend in people's lives, it may also represent an encouraging tool for learning. When students spend most of their free time using their personal technological devices, this activity may prove to be an opportunity for acquiring or improving their language skills (Selwyn, 2009) by providing the much required space. Selwyn did an in-depth qualitative analysis of the Facebook 'wall' activity of 909 undergraduate students in a UK university. In this study, some of the students who were interviewed emphasised that they used mobile devices for fun as well as for learning English language skills. Several types of recreational activities were reported, such as watching films in English, or playing online games and chatting with non-Arabic speakers. Students indicated that while using DMTs they gained new vocabulary and practised their English. This is in line with the conclusions of Watkins and Wilkins (2011), who, in their conceptual paper, opined that watching a YouTube video or chatting online could enhance listening and speaking skills, without any deliberate effort to learn these skills, making these activities incidental methods of learning that could support what students learn at school and enhance their intentional learning. It can improve students' skills of engaging in conversation, listening, and pronunciation.

If DMTs is used deliberately for learning one or more skills of a language, it becomes intentional learning. Thus, the use of DMTs for intentional learning, combining both recreational and educational practices emerges as a good option to increase the possibility of incidental learning of language even if DMTs is used for non-academic purposes, as Ito et al. (2008) noted. As long as technology becomes an integral part of students' lives, investment in the combination of recreational and educational practices for improving students' education in general and learning English language skills in particular seems highly rewarding.

Using DMTs for educational purposes, whether intentionally or incidentally, and especially for English language learning, may require a level of technical knowledge. In this study, the students were already experienced using DMTs and knew how to manipulate technology for their desired purposes. The benefits of possessing technical knowledge of DMTs were evident, implying that because of their technical prowess the students may have been automatically implementing incidental methods of learning. (Gikas & Grant, 2013) argued that having technical knowledge of the device, or knowing how an application works, could enable the user to reap benefits from these DMTs tools and learn incidentally.

Findings from this research also point to the changing role of students and teachers in terms of determining the appropriate DMTs for learning. Although it is still vital for teachers to assess the affordances of DMTs for learning, students now assume the subtle role of co-assessors of the usefulness of DMTs (Waycott, Bennett, Kennedy, Dalgarno, & Gray, 2010). In their qualitative study conducted in Australia, through focus group and individual interviews, with 46 first year students and 31 academic staff, they found that students were able to devise metacognitive strategies to cope with challenges they face when using DMTs for language learning and such efforts seem to have emerged from students' experience with DMTs outside the classroom. The emerging roles of students highlight the need for educators to look into ways of collaborating with students in determining types of DMTs and associated

148

strategies that are relevant to students' daily life and yet play a vital role in facilitating their learning.

In summary, the Saudi high-school EFL students used DMTs outside school for educational purposes, intentionally learning the English language skills of listening, speaking and reading with some effort, but not writing. As shown in the data, students did not express as strong a desire to learn writing as they did with the other skills (see Table 7). This weakness in motivation to learn writing skills in English could be seen to derive from the fact that writing usage is not very relevant to daily intended use of English in Saudi context. It might be also be due to students' most preferred types of DMTs not being suitable for learning writing skill or that the students in question might not know how to use DMTs effectively for learning this skill. Therefore, possible strategies could be developed and suggested so that students could exploit the advantages of the technological tools to learn all the language skills.

It is evident that neither the use of DMTs exclusively for EFL learning purposes, nor intentional strategies of explicit learning while using DMTs for purposes other than active learning alone, can work in order for the student to learn English language skills out of school. An appropriate combination of both is likely to be the most effective. In addition, it is not necessary that a specific type of DMTs needs to be used solely to learn one language skill. Some types of DMTs can be utilised to learn multiple skills. This finding implies that language skills can be developed effectively and simultaneously through a variety of DMTs, as suggested by Kasapoğlu-Akyol (2010), who reviewed a number of studies and concluded that combining a number of digital technology tools could enhance language learning skills, including writing. The Saudi students need to implement this strategy and use it to acquire all the skills of learning English. After all, the skill of writing is necessary for higher education aspirations expressed by some participants.

149

Following a review of how the Saudi students used DMTs in their daily lives, and the extent to which this use was connected to intentional English language learning, the first hypothesis was posited:

H1. *The intentional learning of English will be positively related to students' use of DMTs for learning English.*

To find out the relationship between the students' intentional learning and their use of DMTs in learning English, results from the multiple regression analyses were used. A key component of intentional learning, *knowing what to learn*, predicted DMTs usage. Thus, if students were clear about what they needed to learn with respect to English language, they would use the appropriate type of DMTs.

Like many forms of domain-specific knowledge, acquiring knowledge of what to learn is likely to require expert guidance from teachers and more experienced or knowledgeable peers. Although the use of DMT by students inside classrooms is currently prohibited in Saudi schools, appropriate pedagogical approaches with regard to the types of DMTs for improving their English language skills outside the classroom would be beneficial. One such potential use might be on homework assignments. When engaging in homework assignments that require research, specific digital technologies or applications might be beneficial in helping students to build their English language skills. Not only that, DMTs could also have the potential to help students become autonomous and self-difected learners.

While *knowing what to learn* is important, in the literature on intentional learning, *wanting to learn* has been ranked more highly compared to other aspects of intentional learning such as *knowing what to learn* and *knowing how to learn*. As stated by Mollman and Candela (2018), "by practicing intentional learning skills, learners first choose to learn then choose what and how to learn" (p. 107). *Wanting to learn* reflects a motivational disposition

150

regarding the desire to acquire knowledge. In this study, the intentional learning variable, *wanting to use*, which reflects students' desire to explore how digital technologies can help them learn English, had a small but statistically significant association with their reported use of DMTs for learning specific language skills. The lower than the reported importance for wanting to learn might be due to students not adequately clear about the meaning of wanting to learn. However, focus group interviews revealed that students' wanting to learn prompted them to test different methods of using DMTs for learning and ultimately selecting the most useful DMTs based on their competence in using DMs and the language ability.

Other components of intentional learning contributed only by explaining small percentages (3% or less) variations on the DMTs use data.

5.4 RQ2

What are the strategies students used to intentionally learn English using the digital media preferences they nominated outside the school context?

In this study, the Year 12 Saudi male students reported several challenges while using DMTs for learning English language skills, as shown in Chapter 4. They also reported using a number of possible strategies involving DMTs to overcome their challenges. The following sections review such challenges and the types of strategies the students applied to help them overcome these challenges. In general, the students were found to be able to identify such strategies.

5.4.1. Overcoming challenges through appropriate strategies

Across the results of this study it has been shown that the participating students faced some challenges when using DMTs for learning English outside school. However, those reported challenges were not with using DMTs itself, but with language-learning practices. As those Saudi students are passionate and engaged in using different types of DMTs (Al-

Asmari, 2005), they would hesitate to report any challenge of DMT itsekf. Many students would have already accumulated ample experience using technology. Students reported difficulties and challenges specifically with English learning practices might imply their seriousness about learning English and were already practising it, as highlighted in a review by Wu, Lee, Chang, and Liang (2013) on the use of augmented reality as a DMTs for languahe learning. Moreover, while reporting these challenges, they also reported the strategies they had applied in order to manage these difficulties.

The students in this study applied several strategies and techniques to overcome their challenges. Although how such strategies emerged and developed was unknown, findings showed that the students were able to deal with the challenges in a positive manner and apply appropriate strategies. They reported that when assessing information through DMTs, they often faced difficulties in understanding highly dense content and ambiguous vocabulary written in English. These types of challenge are common with both technology-based learning methods and traditional (non-technological) learning methods (Chen & Li, 2010). To overcome such challenges, the students initiated some solutions that could be applied to both methods of learning, such as using online dictionaries to learn the correct pronunciation and going online to look up new words. Thus, learning becomes a context-aware process. Other challenges reported were not having a curriculum for learning language skills through DMTs outside school, lack of experience to apply some of the relevant curriculum; not knowing what to begin with and how to learn, a fear of making mistakes in learning English outside school. Some students reported that they did not tend to practise the language, especially when they were with friends.

This study also highlights the fact that metacognitive strategies are highly contextualised. In fact, some researchers have emphasised that "action" and "contextualisation" are two key aspects of DMTs, especially mobile learning (Chung, Hwang

& Lai, 2019). Some of the students used metacognitive strategies to overcome challenges, such as adopting deliberate mental processes for language learning. Some students used English subtitles when watching films to help them recognise and memorise English words. When students decide to solve such problems and challenges themselves, they seemed to depend on their existing metacognitive knowledge, which is the learners' knowledge of their own memories and the way they learn (Sperling et al. 2002), before implementing plans or decisions (Lee & Koh, 2016). Lee and Koh (2016) examined the role of metacognition in children's monetary decision making; but the concept is also applicable to this context. Specifically, two components of metacognitive knowledge (declarative knowledge and strategic knowledge) were used by students when they used specific online sites and strategies for learning English (Lee & Koh, 2016) outside school. Within each of these two components, students in this current study indicated their awareness and application of strategies through DMTs.

Within the component of their declarative knowledge (Schraw et al., 2006), the students demonstrated self-awareness and their knowledge of strategies that could be used to learn English through DMTs in self-regulatory learning. However, because declarative knowledge simply means knowing of the required strategies, it does not necessarily imply that students know when and how to use these strategies. In fact, in this study, students did describe several strategies. After reporting weaknesses in English language learning, such as in pronouncing and memorising words, and difficulties speaking with non-Arabic-speakers in English, the students described how they devised suitable strategies to overcome these weaknesses. For example, online dictionaries and Duolingo were useful to improve users' speaking and pronounciation skills. These accounts are supported by the findings of Jarvis and Achilleos (2013), who reported that the EFL students in UK used a range of strategies when employing DMTs and successfully improved their language skills. The authors used

mixed methods which comprised of a survey and semi-structured interviews. However, such study was conducted with a sample size and lacks the power of generalisation and thus its findings were mainly used as a reference for this current study. Nevertheless, this study provided insights on students' metacognitive strategies related to DMTs.

Referring to the component of strategic knowledge, which refers to the understanding of when and why a certain strategy or procedure was to be used (Woolfolk, 2008), the students' responses, in this study indicated that they were aware of when and why to apply specific strategies. The students were able to decide when to use specific strategies to solve some of their difficulties. For instance, it was reported that activating English subtitles when watching foreign films had helped improve their vocabulary knowledge, spelling, and reading skills. Moreover, the students reported that playing online games with non-Arabic-speakers had helped them improve their speaking and listening skills. These examples of applied strategies demonstrate how the students could initially determine when and why to apply specific strategies and show that they knew how to benefit from the available technologies to focus on specific skills that needed to be acquired or improved outside the school context. Paris and Paris (2001) pointed out that for learners to be more strategic, they must be aware of potential strategies, attribute success to good strategies, and choose and monitor appropriate strategies. Although their study focused on in-classroom self-regulated learning, it might also apply to learning outside classrooms. Such awareness is especially critical in this context, given that the high school students were transitioning to higher institutions, where students were expected to be even more self-directed in their learning. In this study, the participants seem to have demonstrated such capabilities at least to some extent.

It is interesting to note that students were able to initiate strategies to overcome their challenges in learning English outside the classroom. Perhaps because these were Year 12 students transiting to the university, they were more mature in self-regulating their learning

and thus were able to devise contextual strategies. However, this triggers a question as to how their metacognitive strategies were developed. Could they have transferred the skills from classroom learning to learning outside the school context? If so, this implies that teachers could facilitate the transferability of metacognitive skills to enhance students' learning in the informal setting (Veenman, Wilhelm, & Beishuizen, 2004).

5.5 RQ3

What are the factors that influence the choice of the identified digital media in learning English outside the school context?

Students in this study chose specific types of DMTs for learning outside school based on their personal preference. Some students found the iPhone better than other brands of smartphones, although the features of different smartphones may be almost identical. Apart from personal preferences, several motivating factors were reported in this study. For instance, students discussed the need to use English when travelling overseas with their families, and this influenced their decision to focus on learning English. Students also revealed that they preferred to play online games with non-Arabic speakers. Some students regularly played online games using Play Station or X-Box which provided a good opportunity for them to practise English with non-Arabic speakers. A further influencing factor was the future potential of mastering English as it was associated with greater future job and increased the likelihood of success given that English is increasing being used by the Saudi community. Accordingly, students perceived that learning English would help them secure good career. It would also facilitate their university admission, as English is an essential university entry requirement.

All these factors influenced the students' choice of learning methods and led them to find ways of improving their English outside school. Self-efficacy denoted students' confidence in their abilities to improve their skills using the chosen types of DMTs. Along

with the students' belief that they could improve various skills using DMTs, students knew what skills to learn, how to learn the required skills, and what DMTs to use for learning specific skills. All of these factors influenced the students' choice of the identified types of DMTs.

5.5.1. The importance of DMTs in learning English outside school

DMTs has undoubtedly played a very important in the students' learning. In fact, "technology has in many ways increased the focus on pedagogic skills" (Knight, 2009), especially for English language learning. The importance of EFL has been recognised in many countries. The accelerated improvements in several types of DMTs such as ICT "have simultaneously been seen to offer new opportunities for enhancing the quality and effectiveness of language teaching and learning" (Maghfiroh, 2016).

The qualitative and quantitative findings of the current study have shown that DMTs played a crucial role in the students' English language learning outside school. From the interviews it was clear that the students realised the importance of DMTs in their lives in general, and specifically in learning practices. The majority of the students expressed how they spend most of their time on their own technological devices. Students also revealed how DMTs has helped them learn English language skills. This role of DMTs has influenced the students' self-ratings of the skills that they learned through the technology. For instance, from the quantitative data, the perceived self-ratings of students' skills were comparatively higher (above midpoint) for reading (M = 4.21) and listening (M = 4.17) than for speaking (M = 3.67) and writing (M = 3.68). Overall, student ratings for reading and listening were only just above average for all four skills on a scale of 1 to 7, on which 1 was the lowest and 7 the highest.

In this study, several practices of learning English language skills outside school through DMTs were reported. Students reported that they had applied DMTs in learning

language skills such reading, speaking, listening and vocabulary building. However, reading, speaking and listening were the skills most commonly practised using DMTs. A number of the students interviewed talked about why they used DMTs to improve these three skills. Some of the students believed that mastering specific skills, such as listening and speaking, would enable them to retain the information and knowledge they had gained.

DMTs were important to these EFL students in learning English language skills. The importance attached to DMTs was a major factor in students' choice of specific types of DMTs over others to learn these skills. In fact, several factors influenced the students' choice of DMTs. For instance, it was reported that using laptops to watch English films with subtitles had enabled the students improve their reading and listening skills. For this type of DMTs, students reported that using English subtitles while watching films or documentaries on laptops enabled them to learn more English vocabulary, while at the same time increasing their reading speed and improving their listening skills.

Particular features of different types of DMTs represented another factor influencing students' preferences. Small, portable and advanced devices, for example, were very attractive. Some students reported that they preferred using the iPad for reading because it has a wider screen than the smartphones. On the other hand, being able to access unique learning applications via the smartphones, enabling the students to learn more effectively, caused students to choose these devices. The smartphone application Duolingo was nominated as one of the best tools to improve speaking and listening skills. This application gives access to online native speakers with whom learners can practise speaking and listening live; the native speakers are paid to practise specifically with such learners. Other types of DMTs mentioned as effective tools in learning English language skills were Google Translate, social media applications, online dictionaries, and online gaming consoles. These findings related to the improvement of language skills are in line with those of other studies. Lu (2008) and Plana et

al. (2003) found that EFL learners' reading, listening, and vocabulary skills improved after using certain mobile devices and applications.

These are not the only effective tools. There are many other types of DMTs through which EFL learners can practise and improve their English outside school. Technology is expanding rapidly with highly innovative ideas and devices. If educators are able to tap into the affordances of various types of DMTs for EFL teaching and develop pedagogies that help students to successfully use DMTs for learning in and out of the classroom, this will perhaps alleviate the pressure on students to spend time and effort trying to unravel such affordances on their own.

After reviewing the factors influencing students' choice of the identified types of DMTs and discussing the importance of DMTs in learning English language skills, the second hypothesis was posited:

H2. "*Self-efficacy in the use of DMTs will be positively related to student use of DMTs for learning English.*"

Self-efficacy theory (Bandura, 1997, 2001, 2012), which is one of the guiding theoretical frameworks in this thesis, is a theory that can be employed by teachers to nurture intentional learners. In this study, students showed their self-efficacy in learning English outside school. Their confidence in their abilities influenced their learning style in terms of what they choose to do or not to do.

In both multiple-regression models, self-efficacy was a key predictor of reported DMTs usage (both specific and multiple usages), which resulted in hypothesis 2 being supported. Although there is a considerable body of research on the relationships between self-efficacy and technology use (including intention to use), it appears that most of the research has focused on university students (Han, Shin, & Ko, 2017; Teo & Zhou, 2014;

Yerdelen-Damar, Boz, & Aydın-Günbatar, 2017). The findings from this study are important, as they show that self-efficacy beliefs are also relevant for predicting technology use among high-school students. In general, the more learners perceive themselves capable of using DMTs for learning English, the more likely they actually use DMTs for this exact purpose. This implies that if students are expected to use DMTs with the explicit aim of acquiring English language competencies, then we need to tap into the sources known to influence self-efficacy. Self-efficacy beliefs are fluid and can change over time. Because self-efficacy beliefs are malleable, teachers may strategically target the different sources named in the theory as influencing self-efficacy. Because mastery experiences are the most powerful source of self-efficacy, it is important that learners are given learning tasks that are somewhat difficult but ultimately achievable for them to experience some level of mastery. As such, teachers need to be aware of the capabilities of their students for using DMTs for learning English and set homework tasks accordingly. For example, students may be asked to read an online article and then extract a list of new vocabulary, then apply the vocabulary in new complete sentences. As self-efficacy beliefs can also be influenced through observing others (i.e. vicarious experiences), teachers should think of strategies in which students have opportunities to observe others using DMTs to acquire specific English language skills. In addition, given that verbal persuasion can also serve as another source of influence on self-efficacy, when appropriate, teachers should praise students about their knowledge and skills in using DMTs and emphasise the potential of using DMTs for further improving their English language competencies. Lastly, we know that learners' interpretations of their physiological state can influence self-efficacy. It is probable that some learners will have some form of anxiety when using technology. Teachers may encourage students to reflect on how they feel when they use DMTs to acquire English and offer some strategies that will assist them to manage their anxiety.

5.6. Chapter summary

The aim of this chapter was to synthesise the quantitative and qualitative findings obtained by using the procedures outlined in Chapter Four. The discussion responded to research questions and constituted an evaluation of the extent to which the research aim was fulfilled.

The Saudi students recognised the need for developing English language skills for use in various contexts. They used their DMTs devices to access digital media predominantly for social purposes and sometimes for learning.

The students were confident about their ability to use DMTs for improvement of their skills and were very intentional in their use of DMTs for learning. They also possessed technical knowledge about DMTs. However, they lacked the ability to use DMTs specifically for learning English.

The usefulness of DMTs was widely acknowledged. However, the question of whether students knew how to use DMTs for learning English is a critical one. The availability of many DMTs sources to regular students or self-directed learners increases the possibility of using DMTs for learning. Although currently, in Saudi Arabia, mobile devices are not allowed in schools, the scope for using them productively in class might best be examined in future research, since it is beyond the scope of this study.

The study identified that the use of DMTs for EFL-related work within the curriculum was limited. This was largely due to lack of knowledge regarding methods of using DMTs specifically for learning language skills. There is a need to promote the intentional learning of English, in which DMTs can be very helpful. Students who do not want to learn English outside school need to be motivated to use DMTs to learn English in that context. Many methods are available for this, and they would be well worth pursuing.

Self-confidence and self-efficacy in learning English improved with use of DMTs. However, there was no direct evidence of students achieving improved skills by using DMTs.

Synthesising both quantitative and qualitative results, it was found that the research questions were answered by the findings of this study; hence, the research aim has been achieved. The study was based on the theoretical concept of intentional learning supported with self-efficacy theory.

In the next chapter, some concluding remarks are offered; a number of implications of the research are listed for high schools and other educational institutions and organisations, researchers and the national government, and resulting recommendations are made. Some limitations of this research are also listed and explained.

CHAPTER SIX

Conclusions

6.1. Introduction

In the previous chapters, the background of this study, an extensive review of the existing literature on the topic, the methodology followed, and the results obtained were presented, along with explanations, interpretations and a discussion of these results.

This research was undertaken to investigate how Saudi high-school students use technology for learning English outside the classroom. This study focused on the use of DMTs given its prominent role in learning.

The study was undertaken in the high-school context. The use of DMTs by high-school students for learning English was examined through mixed-method research. Various sources of data were analysed and triangulated to provide in-depth analysis of the phenomena being studied.

The study context was the Saudi Arabian educational environment. The educational environment of Saudi Arabia contains a mix of both modern and traditional Islamic cultural ingredients. Although many similar studies have been carried out on Saudi university students, very few have been conducted on high-school students, which is why this category of students was chosen for the research.

In the final chapter of this thesis, the conclusions obtained from the findings, implications and recommendations, and some limitations of this work are outlined and discussed.

6.2. Conclusions from the study

The above-mentioned research aim was converted into research questions to facilitate the devising of a suitable research methodology. It has been shown in the discussion chapter that the research questions were answered by qualitative findings with the support of quantitative results. Answering the research questions also achieved the research aim, as the questions were derived from the aim. Hence, conclusions are based on results.

The responses of the students to questions indicated that they had the technological knowledge to use DMTs, but they did not know how to use DMTs for the improvement of their English language skills.

The first research question was: how are Saudi high-school students using DMTs for the intentional learning of English skills outside the classroom?

Saudi students use a variety of DMTs outside the classroom, mainly for recreational purposes. It was found that intentional learning happened when the students discovered that certain types of DMTs could enhance certain skills in the English language (which they wanted to improve), and they deliberately increased the use of those specific types of DMTs. Thus, they used social media for improving speaking skills, YouTube for watching English films to improve their listening skills, and other online sources of fiction and interesting articles for improving their reading skills. There was practically no mention of improving writing skills using any specific type of DMTs, although the students identified writing skills as their weakest skills. There were rare instances in which some of the students in this study used DMTs for school assignments and homework.

The second research question was concerned with the learning strategies used by the students for the intentional learning of English skills outside class. It was revealed that students discovered that a specific DMTs was able to improve certain language skills in which they were weak. Students applied a particular learning strategy of using the identified

DMTs more frequently to improve such weak skills. For instance, they used strategies that involved supportive sources such as online dictionaries with voice pronunciation to learn difficult words. They used DMTs to practise what they learned in their daily lives. For example, it was reported that they tried to insert some newly learnt vocabulary in their daily lives within several scenarios, such as talking in English when going shopping. As most of the use of DMTs outside the classroom was not related to curricular requirements, students' use of DMTs to learn English was largely independent work that received no guidance from school teachers. There was no evidence to suggest that they sought the help of their school teachers when doubts arose regarding learning certain content found with the help of DMTs. For that matter, the students did not even know whether the sources they used were authentic. If they had in fact made meaningful interactions with teachers through DMTs use during classes, this would support the argument that allowing the use of mobile devices inside classrooms should also be considered. However, such a discussion is beyond the scope of this thesis.

The particular types of DMTs devices being used have implications for students' learning of the language. Apart from laptops, the most commonly used devices were smartphones, iPads and PlayStations. Laptops are less portable, which is why other more portable devices were favoured for DMTs activities outside the classroom. The advantages of usability at any time and in any place, together with affordability and the mobility of the learning process itself, determined the students' choice of devices.

The third research question was related to the factors influencing the choice of specific DMTs by the students. This was found to be a matter of personal preference. Some students found the iPhone is better than other brands of smartphones, although smartphones may have almost identical features. Apart from personal preferences, other factors influenced their decisions to use specific DMTs. Self-efficacy denoted students' confidence in their

abilities to improve their skills using DMTs. Along with their belief that they could improve various skills using DMTs, they knew what skills to learn, how to learn the required skills, and what DMTs to use for learning specific skills. These were identified as the factors influencing the choice of specific DMTs. Students already knew that they were weak in certain language skills. When they discovered that weak skills could be improved by using certain DMTs, it meant that they knew how to learn. Furthermore, from their experience of using DMTs to improve specific skills as well as their technological backgrounds, students also knew which DMTs was the most suitable for learning a specific skill. Thus, all the factors influencing the choice of specific DMTs were identified in this study.

Two hypotheses were posited in this study. The first hypothesis was: "*Intentional learning of English will be positively related to student use of DMTs for learning English.*" The second one was "*Self-efficacy for DMTs will be positively related to student use of DMTs for learning English.*" Results of the multiple linear regression analysis and correlations provided insights that aided in responding to these two hypotheses.

The above conclusions lead to the following implications and recommendations, aimed at addressing the problems identified in this research.

6.3. Implications and recommendations

The findings of this study have several implications for research, curricula and policies. In the following sections, implications will be discussed followed by associated recommendations.

6.3.1.1. Implications for curricula

This research revealed that although students identified the skills that needed to be improved, it was not evident that they addressed these needs using DMTs. For instance, the

skill of writing was one of the skills identified in this study as needing to be improved. The perceived self-rating of students' writing skills was the lowest compared to that of the other skills. Even with the use of DMTs, the students did not show noticeable interest in learning writing. The online survey and also interviews revealed that writing was the most problematic skill identified by the students; they tended to use DMTs to improve other English language skills other than writing. Although there was a tendency to use several types of DMTs for developing multiple skills, and the students believed they were able to improve certain skills by this approach, there was a gap in learning writing skills. The way students apply to learn writing might be the major obstacle. Studeents' lack of knowledge regarding methods of using DMTs specifically for learning language skills represented a major element in such weakness. The reported intentional learning practices outside the school by the students were generally personal. None of their reported practices with DMTs, which specifically aimed at improving language skills, was aligned with a curriculum or teachers' consultations. Purcell et al. (2013), reported that teenagers with the help of their teachers were able to improve their language skills with the Internet and types of DMTs such as social networking sites, mobile devices and texting. These tools broadened the audience for their written material, thus inducing them to write more often in a variety of formats. However, they tended to practise informal language, which is detrimental to formal writing, and they also lacked the knowledge of academic integrity. Nevertheless, these and other forms of DMTs that the students were using have the potential to develop writing skills. Despite this, the students in this research were either not aware, or were wary, of using DMTs to improve writing skills specifically. After all, DMTs was not extensively used in the school and their usage is tightly controlled by educational policies. In general, having a learning intention by itself did not seem to be enough to master a skill. Random learning practices may not be completely successful unless guided by a curriculum or teacher's help. As shown in the findings of

Purcell et al. (2013) in cases in which the writing skills of students in their research improved should be improved, it was rather the students' informal writing that had developed, due to their texting in social media and similar uses of DMTs, rather than the students' own attempts to develop their skills in formal writing.

6.3.1.2 Recommendations for curricula

In this study, it was evident that students were engaging in incidental English language learning using DMTs outside the classroom. However, most of such engagement for learning English language skills was unguided with specific curricula; students in this study did not report following any specific learning curriculum outside the school while learning language skills. Therefore, schools and institutions could capitalise on this fact to improve the learning outcomes of students. Using DMTs for specific learning of EFL could be integrated into the curricula for a broader learning context.

The intended purpose of this research was to measure the intentional use of DMTs for EFL, as the first research question indicates. However, the findings showed incidental learning to be more widespread than direct learning. This result points to the dire need for encouraging students to spend more time on DMTs specifically for learning English, as an intentional learning method. Moreover, students may need to be consulted and directed to using a more organised learning and to follow suggested curricula. Some strategies may need to be considered when designing such curricula. For instance, there may be a need to integrate learning content with entertainment components to engage the learners. Some types of DMTs, such as Facebook and Twitter, have been mentioned frequently in this study in terms of their potential for improving the learning of English language skills. Hence, designing curricula with specific content for the use of DMTs would be required. Other learning strategies might also be considered. Course websites with interaction platforms,

specific pages in social media, and assignments that necessitate the use of DMTs are some of the methods that could be used.

6.3.2.1. Implications for policymaking

Out-of-school use of DMTs for learning English depends on whether children are allowed by their parents to own and use these devices. Fear of misuse is one problem that concerns parents and educators alike, along with other ethical issues. In conjunction with this hurdle, the current educational policies and practices do not provide much flexibility in the use of DMTs in the school context. However, it was found that students habits of using DMTs outside the school and they were taking initiatives to learn English through harnessing the features of various DMTs. Instead of continuing to ban students from using DMTs in schools, perhaps it is now time for the policy makers to consider alternative policies for integrating DMTs in teaching and learning. More concerted efforts need to be invested in the use of personal DMTs devices inside the school for educational purposes. Policymakers should pay more attention to the students' widespread desire to use DMTs. The pervasiveness of using DMTs for learning outside the school context needs to be seriously considered. Some researchers (Motiwalla, 2007; Naismith et al., 2004) have suggested that allowing DMTs such as mobile devices inside classrooms can facilitate lively interactions between the teacher and students during lessons. However, the desirability of these interactions and devices is not certain, and any outcomes would need to be examined. In Saudi Arabia, DMTs has been widely used for learning currently. However, most of the activities involving DMTs inside the classroom are guided and used by the teacher only; students are not allowed to bring and use their own DMTs devices. The findings form this study implies that DMTs certainly has implications on students' EFL learning.

6.3.2.2 Recommendations for policymaking

A number of countries, including Singapore, Hongkong, and Vietnam, have developed policies for integrating technology into learning. Singapore, for instance, has developed a Master Plan for ICT. Three phases of this plan have so far been enacted: Master Plan 1 in 1997, Master Plan 2 in 2002, and Master Plan 3 from 2012 onward. In general, the Master Plans have four main goals: building the capacity of school leaders and teachers, integrating ICT into the school curriculum, ensuring the ethical and responsible use of ICT, and encouraging innovative ICT practices in schools. Further ethical concerns are taken into considerations by policymakers. This example of implementing policies for integrating technology into learning should lead to wider application of technology around the world, and specifically in Saudi Arabia.

Recently, Saudi Ministry of Education has established some enhancing learning online programs, such as the National Education Portal (EIN), which consists of 13 learning TV channels, a website, and mobile applications. EIN provides the users (i.e. teachers, students, or parents) with supplementing content to what the students study in their school curricula, including English language. However, EIN is still emerging and needs more development. Therefore, Saudi educational policymakers should develop more new and relevant policies that propel the use of DMTs for learning. As seen in the results of this study, Saudi EFL students are well engaged with intentional learning practices outside of the school. Hence, new policies should take into the consideration of practices and skills for fostering intentional learning with the use of DMTs in the formal school setting as well as the transferability of such practices and skills to the informal learning settings. Any emerging ethical or cultural issues should also be addressed in such policies to ensure that students cultivate responsible conduct in the use of DMTs. Moreover, Saudi policymakers should focus on how to educate Saudi students in terms of identifying or creating suitable, high

quality and authentic sources from the internet. Providing students with suitable and useful sources over the internet would accelerate their intentional learning processes. Such sites need to be designed to be interactive, with interesting content, and the aim should be to encourage usage with a level of enjoyment for learning. In addition, providing guidance in using DMTs for learning purposes is crucial for students, so that they are aware of the affordances of various DMTs. It would be useful for them to focus on activities which best support their English language learning. At the same time, caution should be exercised so as not to make the content devoid of 'fun' and 'entertainment' value, as this is one of the elements that motivates the students to use DMTs for learning.

6.3.2.3. Contributing to policy: Saudi Vision 2030

In late 2016, the Saudi government launched the Saudi Vision 2030 with a strategic plan for the coming fifteen years. There were several programs among the strategic plan. The Saudi Vision 2030 announced that "we will not rest until our nation is a leader in providing opportunities for all through education and training" (SaudiVision2030, 2017, p. 7). According to Alshuaibi (2017, p. 52), technology plays an important role in the Saudi Vision 2030, which has several components; it represents "a primary component of all the set goals of the country, starting with trade connectivity, communication, security, education, and mining." Moreover, education is a fundamental building block of the Vision as a whole, and its progress is likely to be scrutinised carefully. The Ministry of Education has taken several steps to improve its programs to keep pace with the vision. One of its plans is "Shifting to digital education to support teacher and student progress" (MoE, 2017). Thus, the findings of this study are a contribution to building the new future of technological education in Saudi Arabia, especially in the field of EFL learning. The Saudi government could help implement some of the recommendations that have surfaced from this research. This could be in the form

of introducing relevant regulations and providing funding to initiatives that improve the learning outcomes of Saudi EFL students, in turn contributing to the Saudi Vision 2030.

6.3.3.1. Implications for research

Intentional learning was used as the theoretical framework for this study. As defined by Lee et al. (2014), in intentional learning, the learner perceives the need to learn and believes in it, so he/she wants to learn, knows what to learn, what DMTs is required in order to learn, and how to use DMTs to learn. Moreover, intentional learning is crucial in learning processes because it leads to a deeper learning rather than an incidental one, especially with the integration of DMTs. As Lee et al. (2014) also argued, technology can play an important role in fostering intentional learning. And as reported in the results of this study that Saudi EFL students used DMTs in their intentional learning practices as well as in their incidental learning practices outside school; therefore, there should be a connection between intentional learning and the implementation of DMTs to foster students' English language learning. This research also revealed that these students already expressed eagerness in using DMTs for learning in general, and specifically for intentionally learning English language skills. However, research is still lacking in the area of using DMTs for intentional learning outside school, especially in the Saudi context. Although the students in this study expressed their motivation to use DMTs both outside and inside schools, the phenomenon still needs more comprehensive research. Researchers should benefit from other studies worldwide to investigate the extent to which DMTs can enhance EFL in Saudi Arabia.

Moreover, Self-efficacy represents an essential personal factor and refers to individuals' beliefs that they can organise and execute plans of action in order to successfully carry out tasks, as defined by (Bandura, 1997, 2001). Therefore, Self-efficacy can influence the learner's behaviour, such as whether or not the learner will exercise effort when undertaking tasks or persevere when faced with difficulties. Self-efficacy beliefs in using

DMTs for acquiring English language skills are associated with students' beliefs that they have control over their language learning. In educational research, a relationship between self-efficacy and technology use was established (Moos & Azevedo, 2009). In this study, students were self-efficacious for using DMTs and they can use DMTs successfully to learn English language skills outside school.

6.3.3.2 Recommendations for research

In relation to the theoretical framework for intentional learning, it could be worthwhile to further explore whether Saudi EFL students apply intentional learning while using DMTs for developing their English skills. Longitudinal research using rigorous mixed methods may help to fill this gap. It might be useful for research to examine how high-school students' learning experiences, intentional learning, self-efficacy and metacognition change and evolve as they transit to institutions of higher education. Having such understanding will bring insights to the instructional design of learning in the formal and informal settings. In addition, it is perhaps necessary to examine whether learning skills learned in the classrooms are transferred into the informal setting or vice-versa.

The results revealed that students had weaknesses in learning some language skills (i.e. writing skills) outside school with DMTs and thus they did not make any attempt to improve their skills using DMTs. It would be necessary for further research to explore ways to foster students' writing skills with appropriate DMTs and associated strategies. Interventions in research may help to explore such phenomenon and determine the best possible approach to enhance students' writing skills and their learning motivation with DMTs.

Given the importance of self-efficacy in learning, it is also critical for future research to examine ways in developing Saudi students' self-efficacy for using DMTs in English language learning. In particular, it would be pivotal to study how self-efficacy influences the

use of DMTs for language learning by various age group students. With the pervasiveness of technology, it might not take long before much younger learners in the Saudi context begin to use DMTs for learning outside the school spontaneously. Hence, studies must be initiated to examine the learning behaviours of younger learners and devise appropriate curricula to ensure that practical learning outcomes are achievable for all learners.

6.4. Limitations of this research

No research is without limitations. Some of these are discussed in the following sections.

One of the limitations in this study was having few locations. This study was conducted in three locations (Riyadh, Alghat, and Alzulfi), which are all located in the middle of Saudi Arabia, and other locations were not included. Saudi Arabia is a large country with different cultures and practices in schools and exploring the use of DMTs in more areas would benefit the research, providing a more complete picture of how students in other areas are using DMTs for English language learning. There is a need to examine what happens in other parts of Saudi Arabia. Although the researcher tried to include more locations, it was not possible, due to several factors. One reason was that conducting this study in schools in other remote parts of Saudi Arabia would be both challenging and demanding. More extensive studies would be required to overcome this limitation.

A second limitation was that this study used a self-reported measure of students' English language skills. Students' self-ratings may not necessarily be objective and reliable. It is possible that their actual skills were different from their self-rated skill levels. Therefore, the students' skill ratings could have been more objectively assessed through standardised testing. Future research could also involve observational methods, in which students' actual behaviours using DMTs could be directly recorded by researchers. The other limitation relates to the use of the online journal as a data collection tool. Although the researcher attempted to

use online journal entries to capture students' language learning experience with DMTs, this attempt was met with significant challenges. The participation rate was low, and by the time the researcher had completed the first two phases of the study (i.e. the online survey and focus group interviews), it was almost the end of the semester and students were entering into their final examination. Most of the students expressed their apologies and ceased their participation because they needed time to prepare for the examination. There was not enough time to conduct the third phase of the online journal with a sufficient number of participating students. Therefore, ensuring that the researcher has sufficient time to thoroughly conduct his or her studies should be a priority for any future research in this area. In addition, the students were not able to express their thoughts fully in English when writing their online journal entries despite scaffolding questions being provided. This perhaps echoed the fact that students reported the use of DMTs mainly for speaking, reading and listening, and writing was not perceived as an important skill to learn. It is recommended that should online journal be used as a data collection tool; it is definitely appropriate to include more structured scaffolding to help them reflect upon their experience. This may also help the researchers to observe how their experience changes over time.

The Saudi sociocultural system is based on Islamic principles, which means that gender segregation is practised (Ahmad, 2014). For this reason, participation in this research was limited to male students only. The researcher tried to include the female students, but it was not feasible to conduct face-to-face interviews with female students inside their schools. Moreover, no males are allowed in all-female schools. Including female students would require working with female researchers, which was beyond the scope of this research. Future studies could be conducted with schools of each gender to provide a better picture of how DMTs is used for learning in general. Understanding the expectations and learning

experience of both genders may provide insights into how policies and curricula could be tailored to the needs of the greater community of learners.

6.5. Chapter summary

The aim of this chapter was to outline the conclusions of the findings, implications and recommendations, and some limitations of this work. First, some implications were reviewed and recommendations provided that were obtained from the findings. This initial part of the chapter included a discussion of the learning of EFL using DMTs. It was followed by a review of the research into the use of DMTs for learning EFL. Finally, policy considerations and contributions were elaborated with reference to the Saudi Vision 2030 and how it relates to technology and education.

In the second part of this chapter, the limitations of this research were reviewed. In this section, some of the most significant limitations experienced by the researcher while conducting the study, and indications of and how he tried to overcome these limitations, were discussed. Suggestions were made concerning possible ways of overcoming the limitations when conducting similar research in the future.

The current study has key findings. These key findings indicate that the use of DMTs for intentional learning in the Saudi out-of-school context is still in its infancy. In terms of the use of DMTs for EFL there are obvious gaps between the practice of schools and those of students outside the school context. Another key finding was that the students were self-efficacious for using DMTs in learning English language. Students were aware of what to learn, how to learn, and what technological means to be used for learning purposes. To fully exploit the use of DMTs for fostering intentional learning in the field of EFL, more related studies are encouraged to improve our understanding of the terrain.

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Appendices

Appendix 1

The Online Survey

This questionnaire is used for a study to understand the students' use of digital media to learn English language in Saudi high schools. Within this study, digital media means the technological devices, applications and programs. Moreover, digital media may include various types, for instance, computers, TVs, the Internet, mobile phones, audio and video players, just to mention a few.

HOW TO FILL IN THIS SURVEY

There are 4 parts of the survey.
Part 1 asks about demographic information; part 2 asks about ownership of digital media technologies; part 3 asks about your intention in using digital media technologies; and part 4 asks about your purposes of using digital media technologies in learning English language outside the school.

• Please read each question carefully and select the answers you prefer.

• Please follow the instructions next to each question; they will tell you how to respond.

• Please make sure you read all of the instructions before each question, these are really important in helping you understand the questions.

• Just ask the instructor if you have any questions as you fill in the survey, however small. This survey is all about you so it is really important that you are as honest as possible. Please don't worry about other people you know seeing your answers – that won't happen.

• The survey will take you approximately 20 minutes to complete.

Thanks for your support and participation!

Section 1 Demographic Information

This section asks about some demographic questions about you. Your identity will remain anonymous.

* 1. How old are you?

[   ]

* 2. what is your nationality?

[   ]

Other (please specify)

[   ]

* 3. Currently, where do you study?

[   ]

* 4. During the last three years, have you been studying in the same city? (Please tick one)

[   ]

If NO, please specify

[   ]

* 5. How often do you practice English outside of the school?

○ Not at all

○ 1-2 hours a week

○ 3-4 hours a week

○ 5-6 hours a week

○ 7 hours a week or more

* 6. If you practice English outside of the school, what do you use it for? (Please tick all those apply to you)

- ☐ Playing online games with non-Arabic users

- ☐ Online shopping

- ☐ Improving my English language skills

- ☐ Programming (e.g. designing applications or websites)

- ☐ Communicating with non-Arabic speakers in my community

- ☐ Watching movies and series in English language

- ☐ Other (please specify)

Section 2 Owning digital Media Technologies

This section asks about the types of digital media technologies that you own or use for learning English language outside of the school.

* 7. Do you use any digital media technologies in your daily life?

◯ Yes

◯ No

* 8. if YES, do you use any of those digital media technologies to learn English language outside of the school?

◯ Yes

◯ No

* 9. How often do you use them to learn English language outside of the school?

◯ Not at all

◯ 1-2 hours a week

◯ 3-4 ours a week

◯ 5-6 hours a week

◯ 7 hours a week or more

* 10. What kinds of digital media technology do you use in your daily life? (Please select all those apply to you)

☐ Mobile (smart phone)

☐ Tablet (e.g. iPad, Galaxy Tab)

☐ Desktop computer

☐ Smart digital TV

☐ Laptop computer

☐ iPod

☐ Other (please specify)

192

* 11. How good are your technical skills at using digital media technology?

Poor						Expert
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 12. How do you access the Internet outside of the school? (Please select all those apply to you)

☐ Mobile (smart phone)

☐ Tablet (e.g. iPad, Galaxy Tab)

☐ Desktop computer

☐ Smart digital TV

☐ Laptop computer

☐ iPod

☐ Other (please specify)

[   ]

* 13. How often do you use the Internet outside of the school?

○ Less than an hour a day

○ 1-2 hours a day

○ 3-4 hours a day

○ 5-6 hours a day

○ 7 hours or more a day

* 14. How good are your technical skills at using the Internet?

Poor						Expert
1	2	3	4	5	6	7
○	○	○	○	○	○	○

From the given list of these digital media devices, how often do you use / have you used them to LEARN ENGLISH LANGUAGE OUTSIDE of the school? (Please rate from 1-7, 1 is the lowest and 7 is the highest)

* 15. Computer games e.g. PlayStation, Wii, Xbox, etc.

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 16. TV

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 17. Desktop Computer

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 18. Mobile (smart phone)

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 19. Laptop Computer

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 20. Tablet (e.g. iPad, Samsung, Service, etc.)

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 21. iPod

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 22. Audio player

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 23. Video Player

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

From the given list of these digital media APPLICATIONS AND PROGRAMS, how often do you use / have you used them to LEARN ENGLISH LANGUAGE OUTSIDE of the school? (Please rate from 1-7, 1 is the lowest and 7 is the highest)

* 24. Video websites and applications (e.g. YouTube)

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 25. Blogs

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 26. Educational websites (e.g. Khan Academy)

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 27. Social media websites and applications (e.g. Twitter, Facebook, etc.)

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 28. Educational Apps (e.g. dictionary)

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 29. Radio channels

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 30. Chat rooms in English

I NEVER use it						I ALWAYS use it
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Section 3 The intentional use of digital media

This section asks about your intention to use digital media technologies to learn English language outside of the school

(Please rate from 1-7, 1 is the lowest and 7 is the highest)

* 31. My intention to learn English outside of the school is

Very low						Very high
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 32. My desire to explore how these technologies can help me learn English outside of the school is

Very low						Very high
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 33. My preference of specific types of digital media technology to learn English outside of the school is

Very low						Very high
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 34. My knowledge of how digital media technology can be used to learn English outside of the school is

Very low						Very high
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 35. My knowledge of my weakness in English language is

Very low						Very high
1	2	3	4	5	6	7
○	○	○	○	○	○	○

198

Please rate your self according to these statements.

When I use the MOST PREFERRED TYPE of digital media technologies to learn English outside of the school,

* 36. I know how to use it to learn English outside of the school

Strongly disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 37. I know what English content I need to learn outside of the school

Strongly disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 38. I know what English skills I am learning

Strongly disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 39. I know the best tool that I should use

Strongly disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 40. I know how to improve specific skills

Strongly disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 41. I use the most appropriate tool to learn English outside of school

Strongly disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 42. What skills do you mostly focus on when you learn English through digital media technologies outside of the school? (Please tick all those apply to you)

- [ ] Speaking
- [ ] Listening
- [ ] Reading
- [ ] Writing

* 43. How would you rate your English language SPEAKING skills?

Poor						Excellent
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 44. How would you rate your English language LISTENING skills?

Poor						Excellent
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 45. How would you rate your English language READING skills?

Poor						Excellent
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 46. How would you rate your English language WRITING skills?

Poor						Excellent
1	2	3	4	5	6	7
○	○	○	○	○	○	○

In this section, the items refer to how well you think digital media technologies CAN HELP YOU LEARN ENGLISH. Please mark the percentage that best represents how confident you are that digital technologies can help you with a particular aspect of English.

* 47. To what extent do you think digital media technology have helped you learn English outside of the school?

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 48. I am confident that Digital Media Technology can help me improve my SPEAKING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 49. I am confident that Digital Media Technology can help me improve my LISTENING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 50. I am confident that Digital Media Technology can help me improve my READING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 51. I am confident that Digital Media Technology can help me improve my WRITING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

201

In this section, the items refer specifically to your confidence in YOUR PERSONAL ABILITY TO USE Digital Media Technology to learn different aspects of English. Please mark the percentage that best represents how confident you are that you can use Digital Media Technologies in these various ways.

* 52. I can use digital technology to improve my SPEAKING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 53. I can use digital technology to improve my LISTENING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 54. I can use digital technology to improve my READING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

* 55. I can use digital technology to improve my WRITING skills in English

Not at all confident					Moderately confident					Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

When I use digital media technologies outside of the school,

* 56. I intend to learn general English language when I use digital media technology outside of the school.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 57. I only focus on what is in the curriculum when I use digital media technologies outside of the school.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 58. I search for information to just do my homework when I use digital media technologies outside of the school.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 59. I keep practicing what I learn when I use digital media technologies outside of the school.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 60. I have found it better to learn English language when I use digital media technology outside of the school.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 61. I have learned new things beyond the curriculum when I use digital media technology outside of the school.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 62. I believe that online content can be useful for learning English language when I use digital media technology outside of the school.

Strongly Disagree
1   2   3   4   5   6   Strongly agree 7

○   ○   ○   ○   ○   ○   ○

* 63. When I use digital media technology outside of the school to learn English language, I still need the help from my English teacher.

Strongly Disagree
1   2   3   4   5   6   Strongly agree 7

○   ○   ○   ○   ○   ○   ○

* 64. I believe that digital media technology has made it easier for me to learn English language outside school

Strongly Disagree
1   2   3   4   5   6   Strongly agree 7

○   ○   ○   ○   ○   ○   ○

* 65. I believe that it was hard for me to practice English inside the school when I use digital media technology outside of the school.

Strongly Disagree
1   2   3   4   5   6   Strongly agree 7

○   ○   ○   ○   ○   ○   ○

Section 4 - The factors and purposes of using digital media technology in learning English language

Please rate the following according to your FACTORS AND PURPOSES OF LEARNING ENGLISH when using digital media technologies.

* 66. Learning English would help me build a good career in future

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 67. In general, learning English is important for me.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 68. Learning English would enable me to study my desired major at the university.

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 69. Learning English would help me when I travel abroad

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 70. Many of the adults I know are in occupations that require good English skills

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 71. Learning English is interesting to me

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 72. Digital media technology makes it easier to learn English language outside of school

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 73. Most of the best jobs require English language skills

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 74. Using digital media technology outside of the school to learn English would help me get better grades at school

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

* 75. Learning English through digital media technology could enable me to communicate with others in English

Strongly Disagree						Strongly agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

76. OPTIONAL QUESTION

In what ways do you think that digital media can foster your English language learning outside of the school?
(PLEASE WRITE YOUR OPINION / SUGGESTIONS)فضلًا اكتب رأيك ومقترحاتك

This project is interested in how you use the digital media technology to learn English language outside of your school. We would like to re-contact you to ask you more about your views in an interview.

* 77. Would you be willing to be re-contacted for an interview about how you use digital technology and how these help you learning English more effectively?

◯ Yes

◯ No

78. If you agree to be interviewed, please provide your contact details.

School

City

Appendix 2
Focus Group Interviews

Focus Group Interviews

Background Information:

1. Could you tell us what you know about Digital Media Technology? According to your understanding what is Digital Media Technology?
2. What are the most common kinds of digital media you know?
3. What is your level of interest in learning English language? Why?

Digital Media in you daily life

1. How often do you use Digital Media Technology in your daily life? In what ways?
2. How confident are you in using digital technologies? Explain.
3. What is/are your preferred kind/s of digital media technologies? Why?

Using Digital Media Technologies to learn English Language

1. How do you use digital media technologies to learn English language outside of the school?
2. To what extent do you think that you can learn English language outside of the school with digital media technologies?
3. What kinds of digital media technologies do you think would mostly help you learn English language outside of the school? Why? In what ways? Can you give me an example? Can you show me how you would use it?
4. Why did you choose these specific type/types of digital media technology to learn English outside of the school?
5. When you use digital media technologies outside of the school, do you have the intention to learn English language? How has this helped you?
6. When you use digital media technologies outside of the school to learn English language, what challenges do you face? How would you overcome them?
7. What kind of English language skills do you mostly focus on when using digital media technologies to learn English outside of the school? Why?
8. Do you think having good English skills would enable you to get better future jobs or study your preferred major at the university? Why? In what ways?
9. What is the best type of digital media that has better helped you learn English language outside of the school? How has it helped you? How long have you used it?

Suggestions and feedback for better future use of Digital Media Technologies to learn English Language

1. Would you recommend using digital media technologies to your friends or family members? Why?
2. What kinds of digital media technologies would you mostly prefer to be applied in your school for teaching English language? Why?

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Appendix 3
Informed Consent Form (English)

I ...., consent to participate in the research project titled: **Exploring how digital media technologies can foster Saudi EFL students' English language** **learning**.

I acknowledge that I have read the Project Information Sheet [or where appropriate, 'have had read to me'] and have been given the opportunity to discuss the information and my involvement in the project with the researcher/s.

The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.

Yes ☐	No ☐	I confirm that the purpose of the study has been explained and that I have understood it.
Yes ☐	No ☐	I have had the opportunity to ask questions and they have been successfully answered.
Yes ☐	No ☐	I understand that my participation in this study is voluntary and that I am free to withdraw from the study at any time, without giving a reason and without consequence.
Yes ☐	No ☐	I understand that all data are anonymous and that there will not be any connection between the personal information provided and the data.
Yes ☐	No ☐	I understand that there are no known risks or hazards associated with participating in this study.
Yes ☐	No ☐	I confirm that I have read and understood the above information and that I agree to participate in this study.
Yes ☐	No ☐	I confirm that I am over 16 years of age.
Yes ☐	No ☐	I consent to my data being transcribed and wish to be referred to anonymously in written forms of dissemination.
Yes ☐	No ☐	I consent to my data being transcribed and to be identified by name and job title in written forms of dissemination.

By submitting this questionnaire, I agree that my answers, which I have given voluntarily, can be used anonymously for research purposes.
Signed:
Name:
Date:

Appendix 4
Informed Consent Form (Arabic)

لجنة أخلاقيات البحوث البشرية
مكتب خدمات البحوث

نموذج موافقة المشارك

نموذج الموافقة ادناه خاص بمشروع معين. حيث أنه يقيد استخدام البيانات التي تم جمعها لمشروع محدد الاسم ومن قبل باحثين معروفين بالإسم.

عنوان المشروع: كيف يمكن لتقنيات الإعلام الرقمي أن تعزز التعلم المقصود للغة الانجليزية في المدارس السعودية..

أنا، ....، أوافق على المشاركة في المشروع البحثي استخدام التكنولوجيا والطريقة التواصلية وفق مفهوم معاصر لتدريس القراءة.

وأقر بالتالي:

لقد قرأت ورقة المعلومات العامة للمشاركين في البحوث [أو عند الاقتضاء، ' قد تم قراءتها لي '] ولقد أعطيت الفرصة لمناقشة هذه المعلومات وكذلك مشاركتي في هذا المشروع مع الباحث.

لقد تم شرح الإجراءات اللازمة للمشروع والوقت الذي يتطلب لعمل المقابلة، ولقد تم الإجابة على جميع الأسئلة التي تم طرحها عن المشروع من قبلي إجابة شافية.

أوافق على المعلومات التي تم جمعها عن المشاركين والتي تتضمن العمر والدرجة العلمية والمؤهلات والوظيفة، والخبرة العملية.

أوافق على تسجيل المقطع الصوتي للمقابلة مع الباحث لمدة قد تصل إلى ساعة واحدة وبذلك أنا على استعداد للمشاركة في هذا البحث، مع العلم أنني أستطيع الانسحاب منه في أي وقت أشاء، دون أن يؤثر ذلك على علاقتي مع الباحث أو الباحثين سواء الآن أو في المستقبل. أنا أفهم أن مشاركتي في هذا البحث سرية وأفهم كذلك انه عند عرض او نشر هذا البحث فإنه لن يتم استخدام أي من معلوماتي الشخصية بأي حال من الأحوال ولن يتم كشف هويتي.

التوقيع:
الاسم:
التاريخ: