



**ADOPTION OF WHATSAPP INSTANT
MESSAGING AMONG STUDENTS IN IPOH
HIGHER EDUCATION INSTITUTIONS**

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ABBREVIATIONS

1. ICT – Information Communication Technology
2. WHATSAPP – WhatsApp Instant Messaging
3. PC – Personal Computer
4. WWW – World Wide Web
5. CD-ROM – CD Read-Only Memory
6. ESL – English As A Second Language
7. EFL – English As A Foreign Language
8. ETC – Et Cetera
9. IT – Information Technology
10. APP – Application
11. M-LEARNING – Mobile Learning
12. E-LEARNING – Online Learning
13. VIA- By Means Of
14. iPad – Internet Protocol Adapter (Tablet Computer)
15. SMS – Short Message Service

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ABSTRACT

The purpose of this research is to investigate the adoption of WhatsApp instant messaging among students in Ipoh higher education institutions. Students' competencies in using ICT applications, attitudes towards WhatsApp mobile learning, practices of WhatsApp in learning and various factors influencing students' adoption of WhatsApp are examined. This study was carried out in tertiary schools with students who used WhatsApp. A number of 30 students took part in the survey. Students were chosen randomly. Data was collected using questionnaire adapted from "The Use of Social Networking Sites in Education: A Case Study of Facebook" by Bicen and Uzunboylu which yielded a Cronbach Alpha of 0.98. Results revealed that students were competent in using various ICT tools. They possessed positive attitudes towards WhatsApp mobile learning. Most of them had great experiences with WhatsApp. However, inaccessibility to Internet had slowed down their adoption of WhatsApp. Finally, recommendations are made about using WhatsApp in education.

CHAPTER 1

INTRODUCTION TO THE STUDY

1.0 Introduction

In recent years, methods of teaching and learning at universities and higher education institutions have developed gradually from the traditional face-to-face classroom to an online learning environment that defies the need for synchronous time and geographical distance. Education has developed with the use of social networking technology. Students increasingly use technological advances to enhance their learning, for the purpose of grasping excellent academic performance (Dror, 2008).

WhatsApp instant messenger has quickly become ubiquitous and popular among college and university students. The rapid adoption of WhatsApp among tertiary students signals that social media technologies are undergoing a paradigm shift. Colleges and universities have explored the potential of WhatsApp for developing a strong presence on social media among students. WhatsApp has been used as a platform for higher education institutions to promote their upcoming events and inform students with campus news (Smith, 2015).

The widespread use of WhatsApp by students in tertiary education has gained attention from the researcher. There is a need to explore how social media applications currently are being used in higher education by focusing on the aspect of students. In order to investigate the largely educational benefits of WhatsApp in distance education, the current research will also emphasize on the attitudes of students towards WhatsApp mobile learning (Brady, Holcomb & Smith, 2010).

1.1 Background of the study

As institutions of higher education integrate technology into classroom curriculum to improve the efficiency of academic standard, university students have

generally been quick to adopt new instructional technology tools in their learning to construct knowledge (Prensky, 2001). They use various educational mobile learning technologies, computer gadgets, electronic devices and ICT tools to support their campus learning (Wylie, 2015). The transmission of text-based messages and general information through use of mobile social applications such as WhatsApp, Facebook, Twitter, YouTube and other application devices are more and more frequent at universities and all tertiary education institutions (Amry, 2014).

From a list of social networking applications, WhatsApp has raised as the most popular messenger application among the college university students (Jadhav, Bhutkar, & Mehta, 2013). It is used by a majority of people, especially youths and adult learners, for the purposes of communication and stay connected (Castells, 2007). Many students are willing to use texts and instant messages as communication tools for academic purposes as they are ideal for educational learning environments (Lauricella & Kay, 2013). Therefore, WhatsApp has become the “communication portal” for social networking, which has rapidly changed the way people communicate (Susilo, 2014).

Higher education students have conducted online discussion activities using WhatsApp within peer groups and online instructors for information sharing (Susilo, 2014). Meaningful student participation in academic is encouraged as WhatsApp helps in fostering knowledge sharing, enhancing peer support on educational affairs and nurturing knowledge communities. Students imagine WhatsApp as a lever for crossing over access to cooperatively-created resources, heightening on assignment conduct and promoting important context-free learning (Rambe & Chipunza, 2013).

1.2 Problem Statement

Information and Communication Technology (ICT) plays a significant role in education. The nature of learning is frequently identified with the utilization of ICT instruments in learning. The integration of WhatsApp in teaching can greatly enhance the quality of learning (Davies, 1997). It is believed that WhatsApp is able to enhance the learners’ critical thinking skills, information handling skills and problem solving

capacity (Bransford, 1994). Therefore, technology utilization in the tertiary classrooms aids students to perform better in the learning process (Snelbecker, 1999).

In spite of the fact that WhatsApp provides different advantages to learning in schools, it is rather important for us to explore the level of acceptance on WhatsApp as a tool to communicate and collaborate among university students (Raman, Sani & Kaur, 2014). We need to inspect the knowledge and ICT competencies possessed by these students. It appears that students from the rural areas of Malaysia have lower level of acceptance towards WhatsApp mobile learning. They are reluctant to use WhatsApp in the classroom (Maloney, 2007). There is a big question if these students are proficient enough to utilize the ICT applications. To address this gap, the readiness and patterns of student learning outside the classroom should be identified. Integrating WhatsApp in learning may enhance their performance in basic subjects (Raman, Sani & Kaur, 2014).

In Malaysia, WhatsApp is being used widely by the school-aged pupils for communication. However, its potential in the academic purposes is still very much debated. There have been research studies which have demonstrated the negative impacts of WhatsApp on student educational performance. WhatsApp has been utilized for recreational activities with less commitment on student achievement and literacy abilities (Raman, Sani & Kaur, 2014). Students' general attitudes towards WhatsApp affect their acceptance of the usefulness of the particular technology and its integration into learning (Baylor & Ritchie, 2002). Students' positive attitudes towards WhatsApp have direct effect on its frequency of usage (Albirini, 2006).

Up to the present time, zero exploration has been done before in developing countries notably in Ipoh, Malaysia. It stays obscure whether WhatsApp ought to be utilized or banned in tertiary education. Despite the fact that a number studies in other countries have revealed that greater part of the social media users are college university students, however, in Ipoh, the number of higher education students who are aware of WhatsApp and adopt it as a learning tool is not clear. Moreover, majority of the past studies tend to depict teachers' perceptions on the selection of ICT instruments in secondary schools, for instance, Facebook, Twitter and YouTube. In contrast, the views and concerns of students about the educational use of WhatsApp in tertiary education

have not been documented. In such a case, researcher is required to conduct a study that investigates the use of WhatsApp among students in Ipoh higher education institutions.

1.3 Purpose of the Study

The present study investigates the widespread use of social media by students in higher education. Many articles have emphasized the positive benefits of WhatsApp mobile learning, as it has the potential to enhance deep student learning and thus improve students' experiences with technology (Apeanti & Danso, 2013). Policy makers, school administrators, educators and learners are urged to pay required consideration on the integration of WhatsApp in education systems (Mikre, 2011).

The motivation behind this study is to measure ICT competence among students in higher education institutions. Besides that, students' attitudes towards WhatsApp mobile learning will be examined too. Moreover, this study will reveal students' experiences of using WhatsApp and instant messaging practices for educational purposes. To wrap things up, this study tends to research different factors influencing students' utilization of WhatsApp along the way of learning.

In another facet, researcher attempts to comprehend the use level of WhatsApp among university students. Various questions of how students access WhatsApp, what they use it for, how frequently they use it and their thoughts about the educational use of WhatsApp will be discussed in the study. Researcher will also evaluate the positive impacts of using WhatsApp in virtual learning. At the same time, the negative effects of the use of WhatsApp may affect learners' academic performance.

Overall, this research is looking at the comfort level, frequency of use, usefulness, reasons for messaging and communication between peers and faculty with the adoption of WhatsApp in pupils' learning (Lauricella & Kay, 2013). Researcher has made good effort to generate accurate results from a list of data obtained. It is trusted that the research findings will document the utilization and level of awareness of WhatsApp among students in Ipoh tertiary education institutions.

1.4 Research Objectives and Research Questions

1.4.1 Research Objectives

This study examines the aspects of knowledge, skills, attitudes, practices and factors influencing the implementation of WhatsApp mobile learning into higher education classrooms. The following are the targeted objectives of the study:

- (i) To explore the level of competence in ICT of the students carrying on learning
- (ii) To examine students' attitudes towards WhatsApp mobile learning
- (iii) To reveal the practices and use of WhatsApp in higher education classrooms
- (iv) To investigate factors affecting students' acceptance of WhatsApp

1.4.2 Research Questions

The questions below have guided this study:

- (1) To what extent is students' competence with ICT applications?
- (2) What are the attitudes of students towards WhatsApp mobile learning?
- (3) What are the educational benefits of WhatsApp to students?
- (4) What are the factors influencing students' participation and adoption of WhatsApp?

1.5 Research Hypothesis

Research hypothesis is used to evaluate the viability of the research questions in the study. It is normally quantitative in nature. The numeric information which is gathered using different research devices will be analysed measurably in order to answer the research questions. It is an important component in the research study. In this manner, to create good research hypothesis, the researcher needs to make note of the connection between independent and dependent variables in the study itself. The following are research hypotheses that could be framed for the research study.

Ho1: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their competencies in computer use.

Ho2: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their gender.

Ho3: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their age.

Ho4: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their academic major (subject area).

Ho5: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their WhatsApp experience for educational purposes.

Ho6: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their year of study (level of study).

1.6 Assumptions and Significance of the Study

1.6.1 Assumptions of the Study

Various assumptions are made. This study is first limited to the higher education students in Ipoh. Students are assumed to have appropriate physical facilities and adequate instructional learning resources. Students should own smartphones which enable them to access to the different mobile applications such as WhatsApp, Facebook, YouTube, Twitter and Instagram.

Other than that, the use of mobile technology apps ought to be free of charge and easy to use. It is to ensure that every student should be able to afford. Students should have fundamental knowledge and abilities of ICT in order to perform better in online learning. What's more, support from school administration is important as well. It is assumed that schools are adopting e-learning and teachers possess great attitudes towards integration of WhatsApp. Respondents are expected to be sincere in responding to the survey given.

1.6.2 Significance of the Study

The findings of research have conveyed significance to the study. This study aims to reveal the use of WhatsApp among college university students. The integration of WhatsApp in learning is essential as it helps to enhance students' learning quality through learner-centred. The study findings enable the government higher education institutions to formulate and improve the national ICT policy on schools. It is of the interests of educational policy makers, school administrators, educators and learners to understand and develop strategies that catapult the adoption of WhatsApp in tertiary education classrooms. Also, this study will encourage and motivate other researchers or bodies of knowledge in the area of e-learning to contribute more literature writings on the practical usage of ICT in higher education.

1.7 Definition of Terms

Adoption : Acceptance of ICT in school education. It may refer to the decision of a group of individuals to make choices about how to use a technological innovation.

Blended learning : A new learning model that combines online with traditional face-to-face learning. Teacher only acts as a facilitator.

Collaborative learning : An ICT-supported learning model that encourages interaction and cooperation among teachers, students and experts. It provides a great opportunity for students to work with others, thereby improving their teaming and communication skills.

Information Communication Technology (ICT) : The computer and Internet access used to manipulate, interpret, communicate and present information for learning purpose.

Learner-centred : A learning domain that highlights learners' knowledge, skills, attitudes, beliefs and personal engagement to the learning activities.

E-learning : An online learning that makes use of social networking system for course delivery. Learning is done using computers with heavy use of Internet in assessing relevant information.

1.8 Scope and Limitations of the Study

1.8.1 Scope of the Study

This study is generally about the adoption of WhatsApp among students in Ipoh tertiary institutions. There is couple of institutions of higher education in the town implementing e-learning system. This study of research is conducted in local universities in which online education has been practised for years. The schools are being selected using simple random sampling technique. The representative samples will provide quantitative data to the research findings. Students are the only respondents for the survey study. The academic research experts will have to make sure the research instrument used is valid and reliable.

1.8.2 Limitations of the Study

This study is greatly emphasizes on the adoption of WhatsApp among younger adolescents. WhatsApp has been treated as a famous mobile chat app which supports its users to exchange and share resources on the social networking activities. However, interaction and collaborative learning using WhatsApp mobile device have restricted the use of computer in school universities. Inaccessibility to Internet is also a big challenge for schools to integrate e-learning. Moreover, in conducting survey study, researcher has to make appointment with the respondents since they are busy occupied with school work. Cooperation from the respondents is important and does not come easily. Therefore, researcher has turned up for the appointments punctually and persisted until all relevant information is collected. At last, private and confidential issues are sensitive as nobody prefers to admit a specific proficiency limitation. In this case, researcher ought to be more alert in leading the study.

1.9 Summary

This chapter contains introduction and background of the study, problem statement, purposes, objectives and questions of the study, research hypothesis, assumptions and significance, scope and limitations as well as definition of terms.

CHAPTER 2

REVIEW OF LITERATURE

2.0 Introduction

In a traditional learning classroom, the educational lectures are normally content-driven, emphasizing conceptual ideas over concrete terms and applications. Classroom assessment techniques are rarely challenge students to perform at higher levels of cognition to increase understanding and retention (Duch, Groh & Allen, 2001). Since year of 2000, a wide variety of ICT tools are utilized in Malaysian schools to bolster the learning of different subjects (Lau & Chia, 2008).

There is a call for students across the nation to make essential adjustments in their day by day learning process so as to adapt to the latest advancement within the field of ICT (Lewin & McNicol, 2015). Effective implementation of ICT will enrich the quality of teaching and promote positive communication between educators and pupils (Becta, 2003). Studies have demonstrated that students in technology rich environment experienced beneficial outcomes on academic achievement (Grinager, 2006).

The usage of ICT for teaching and learning has been greatly emphasized in local schools. Therefore, both teachers and students are expected to fully utilized technology in classrooms (Luaran, Ghazali & Jain, 2014). Implementation of ICT into national educational curriculum involves a number of factors which influence students' adoption of ICT in the academic settings (Mumtaz, 2000). To sum up the above findings, ICT plays a very important role in students' learning.

2.1 Adoption of ICT in Education: A Global Outlook

A literature review focusing on the global context of ICT adoption in education has revealed that most schools in developing nations are moving ahead with the

implementation of various ICT devices into learning classrooms (Komen, 2013). Teachers and pupils in these countries are competent and capable in computer technology with a large portion of the schools are furnished with the latest ICT equipment and facilities such as computers, laptops, wireless Internet service (Wi-Fi), LCD projectors, software and electronic resources (Samuel & Zaitun, 2007).

The British government has guaranteed that each school owns computers. Instructors are trained on the utilization of computer whereas learners are offered chances to build up their ICT skills and abilities (Opie & Katsu, 2000). Large investments in ICT for schooling have been made by UK. The ultimate goal in promoting the use of ICT in schools has been to increase the teaching effectiveness and thus enhance pupils' learning (Higgins, 2003).

The American government has formulated its own ICT policy as well. The national ICT policy includes the provision of computers in school to the ratio of one computer for ten students. It is necessary for all teachers to be computer literate by attending computer courses (Zhao & Cziko, 2001). Almost all students in US have experienced digital technologies by accessing to the computer, Internet and smartphone (Boykin, 2011).

2.1.1 Adoption of ICT in Education: The Malaysian Context

The Malaysian government plans to expand the use of ICT in local education system. Special education programs for national education curriculum have been carried out for future learning. Schools have integrated ICT use and classroom learning is equipped with new instructional technologies (Momanyi et al., 2006) . Students are well-prepared to face real-world problems and thus compete in the global challenges.

The education system of our country plays a vital role in shaping the future of our nation, at the same time, providing students with critical thinking skills, effective communication abilities as well as language proficiency (Mansor et al., 2014). Various on-going teacher trainings on ICT use in education have been carried out by the Ministry

of Education (MoE) to promote ICT.

The Smart School program was first introduced by the government to prepare children for the information age (Smart School Project Team, 1997). The KSSR educational program was produced by the government to demonstrate the significance of ICT in education. Instructors and learners should be ICT savvy (KSSR, 2011). *MySchoolNet* was then set up by the MoE to increase the use of ICT in education. This website provides links to teachers and pupils to access educational resources easily (Chan, 2002).

The Malaysian government stresses on the improvement of the limited ICT infrastructure in order to ensure a successful e-learning integration in higher education institutions (Kituyi & Tsubira, 2013). Recently, Malaysian national curriculum has been rebuilt to meet the increasing demand for knowledge-based society. The Vision 2020 plan has stated that the transformation of Malaysian education system has produced a generation of well-educated with high technology knowledge (Raman & Mohamed, 2013). Education technology has made teaching simpler for teachers and learning fun for students (Raman, 2010).

In Malaysian colleges and universities, students have great exposure to a variety of e-learning resources. Social media tools like email, chat apps, Facebook, Twitter, Instagram and blog are widely used by students. They tend to discuss issues pertaining to their studies with peers in the digital world (Reddy, 2014). Truth be told, multimedia technology has been invested in Malaysian tertiary education to improve the both teaching and learning fields. This depicts the positive move and advance of ICT integration among higher education students in Malaysia (Mansor et al., 2014).

2.2 New Social Media

Social networking sites have become well-known in today's e-community as they provide an open arena for people over the world to communicate, exchange ideas, share knowledge, interests and send messages to each other regardless of geographic

distance (Sawyer, 2011). People are able to interact among themselves and quickly obtain information that is available on the Internet. New social media has brought significant changes to the way people communicate.

With the creation of social networking services, people freely discuss new ideas and express their personal opinions to the public. They engage in the online conversations and dialogues without being face-to-face with other participants. People are used to keep up close relationships with a small number of strong ties as opposed to making new connections with other individuals (Rosen et al., 2010). Social media has conveyed various advantages to the globalized society.

The four common social networks across the world are Facebook, YouTube, Twitter and iPhone. Facebook was created in 2004 by Mark Zuckerberg with the mission to unite people from different backgrounds and encourage communication among them (Facebook, 2010). It advances the exchange of messages between individuals around the world so that they can use the Internet to interact and collaborate with others (Sawyer, 2011). These social networking sites have enriched our social lives and ignored the factor of distance.

YouTube is another video-sharing website which started in 2005. It allows users to interact with the worldwide groups by creating and sharing user-generated video contents (Georgetown University, 2010). People are offered chances to view videos and leave comments. They can even participate in the selected online forums and video conferences. Videos are uploaded to the Internet for the purpose of entertainment, information or persuasion. People are urged to make their own judgements on the issues response to controversial and stereotypes videos (Sawyer, 2011).

Twitter is a social networking site created by Tim Dorsey in 2006. Users are allowed to share and exchange information through micro-blogging. People use it to discuss everyday activities and seek friends, celebrities or musicians on the site (Java et al., 2007). They feel connected with other people and develop a feeling of acceptance for the actions and emotions of others. In such a way, Twitter has impacted on the general population. People worldwide tend to focus on the private lives of others and generate a

sense of desire for interrelationship and knowledge sharing (Sawyer, 2011).

Apple has introduced a multi-function mobile device in 2007. The iPhone combines the elements of a mobile phone, MP3 player, instant messenger, chat room and other social applications like Facebook, YouTube and Twitter (Nowak, 2008). Smartphone such as iPhone allows the world to be constantly and conveniently connected on social media sites. They can communicate on the Internet at whatever time and anyplace. People get actively involved in the social interaction with the help of advanced social technologies (Sawyer, 2011).

2.2.1 The Impact of Social Media on Education

Social networks have gained attention from higher education institutions due to their popularity in the society. In spite of the roles of communicating thoughts and expressing feelings among the individuals, teachers are taking steps to show students the use of social networking sites (Gardner, 2009). With more educators understand the significance of social media for higher education learning, a positive educational impact has been portrayed on students' learning outcomes (Selwyn, 2009). WhatsApp has been the latest trends of learning and it is popular among tertiary students.

WhatsApp as a mobile social application shapes individualised learning among students. It helps them to learn at their own pace. Students are not punished for being slow or fast in their progress of learning as every learner is allowed to move to suit their circumstances (Felder et al., 1996). The role of the teacher as a mentor is to assist students to solve problems. Students are assigned responsibility for their own learning. Students should always monitor and evaluate their learning progress as they have become active and independent learners (MacHemer & Crawford, 2007).

Moreover, the effective use of WhatsApp increases students' sense of community, enhances knowledge sharing and promotes collaboration among peers (Minocha, 2009). It helps students to express themselves, develop self-identities and highlight their talents and experiences of learning (Konetes & McKeague, 2011). Also,

students use WhatsApp not only for leisure and individual socialization, but also as a platform for meaningful deliberations. They make friends, share links, and promote online learning and educational interaction between students and faculties (Gross, 2004).

However, despite all the benefits WhatsApp made in students' learning, there are other research studies remain controversial. They have negatively impacted on students' academic performance. They claim that the use of WhatsApp in education may be valuable but the negative effects on learning should be specified as well. Discussion on argument like WhatsApp could do more and be more impressive with less negative impacts on learning could be carried out in the research itself. Since our youths at tertiary institutions are hooking up to social media, there is a need for educators to clarify the pros and cons of social apps to school achievement (Yeboah & Ewur, 2014).

A few studies have revealed that WhatsApp could potentially be addictive particularly when people engage in specific online activities. Regular users may develop an addiction to Internet and it is hard to control and cure. Specifically, people argue that WhatsApp has taken much of students study time and neglected their personal lives. It results in procrastination due to inability to manage time, lack of concentration during lectures, hard to balance online activities and academic preparation, distract students from completing their assignments and unable to spell and construct grammatical sentences (Janor et al., 2015).

Although there has been evidence shows the inappropriate, non-educational and unethical use of WhatsApp among students, it is important for students to realize the benefits of WhatsApp in enhancing academic performance (Kuppuswamy & Shankar, 2010). In fact, WhatsApp is an advantageous tool to both educators and learners if it is used for knowledge creation and dissemination (Tuckman, 1975). Students should take advantage of the benefits brought by this super learning device.

2.3 Use of Social Media in Higher Education

Majority of higher education students are aware that social media can be used as

a potential source of information for their learning. Students show positive and accepting attitudes for social media use because they believe that it will be fun and creative for their teachers to incorporate social media into learning classrooms (Apeanti & Danso, 2013). Other than that, students feel that they will receive a better grade if they are able to contact the course instructors through online networking sites after lecture hours. Overall, social media sites have empowered students to become active participants in their personal socialization (Urista et al., 2009).

Social media provides beneficial opportunities for higher education interactive learning. Students actually gain benefits from the experience of using social media. They have successfully developed new forms of communication and collaboration. First, students are using social networking sites in interaction with friends, connecting to their peers and teachers for online studies. Online engagement is getting more important for education as students are good at developing a sense of Internet presence (Barker, 2013). Second, social media acts as an informal learning tool by practising peer-to-peer knowledge and skills learning. Online learning contributes to optimising levels of student motivation, arousing interests and addressing student learning needs (Timmis & Cook, 2004).

Social networking sites help to complement and leverage the practice of formal education and improve learning outcomes (Brennan, 2001; Notley, 2010). Instant messaging and Skype are becoming widespread in colleges and universities for students to access information about school work. Facebook helps to enhance the communication of pupils with their instructors and thus expand their self-esteem in educational activities (Blanchard et al., 2007). Email enables young learners with lower level of social skills develop friendship and strengthen individual interpersonal relationships (Besley, 2008).

2.3.1 The Story of WhatsApp

WhatsApp was established by Brian Anton and Ian Koom in 2009. It is a text messaging mobile application for smartphones. Users can exchange text-based chats, images, videos and audio media messages through Internet. It mostly depends on the

active Wi-Fi network system to provide online users the ability to send and receive different social applications. Today, WhatsApp hits 800 million monthly active users (WhatsApp, 2010). WhatsApp is a unified messaging app which is connected directly to one's phone number without any password or login. It has developed become more intimate interpersonal network.

WhatsApp offers several benefits to its users. It is free and easy to use. WhatsApp has been reported as a tool for information sharing and knowledge construction. WhatsApp is used to share learning resources, leave comments, texting as well as messaging. Apart from that, students use WhatsApp to create class publications by publishing their work in the group. Students and instructors engage in meaningful social interaction. WhatsApp facilitates online collaboration and communication and promotes students' school performance (Barhoumi, 2015).

2.4 Roles of WhatsApp in Promoting Higher Education Learning

Couple of years back, teaching and learning have been completed in a traditional classroom setting. Teachers play an active role in conducting instructional activities while students are always the passive recipients of knowledge. Some literature seems to hold the view that university students prefer to be spoon-fed and they are quite well-adapted to this 'spoon-feeding' learning approach (Comrie, 2015). However, with the advancement of computer technology, various social networks have been used to foster online learning. Integrating WhatsApp mobile learning into higher education classrooms has brought significant changes to the conventional education settings (Veerappan et al., 2014).

WhatsApp plays a great role in education. First, it acts as a useful tool for education. As majority of the tertiary students perform online distance learning, more often they concentrate on online studies, hoping that they will achieve targeted learning outcomes. Thus, these learners who are also the active participants in the WhatsApp group portal, make use of interaction with the app as it provides communication and discussion for them to get through (Browne, 2003; Rich & Hilbert, 2004; Rogers, 2000).

Second, WhatsApp as an educational tool in virtual community helps students to contact each other after lecture hours using the specific electronic networking system. Students are able to catch up their studies through the active engagement in WhatsApp with peers and instructors. WhatsApp has removed some of the formality of learning experiences and engaged reluctant learners. It consequently raises their self-confidence (Attewell, 2004).

Other than that, WhatsApp has produced a sense of belonging among these students. Most of the time students feel isolated in a virtual community. They wish to be accepted for being part of a particular learning community. As a result, they want to be connected to all the individuals who have shared the similarities with them. However, the separation such as geographical boundaries and time factor have greatly reduced the sense of community among students and thus giving rise to different feelings of disconnection (Kerka, 1996), isolation, distraction, loneliness and lack of personal attention (Besser & Donahue, 1996). These feelings of being alone are overcome when students join an online community.

Despite the various educational benefits that WhatsApp provides to the higher education classrooms, attention must be paid on how students develop a sense of belonging to their academic community in order for them to have a successful online learning. Previous research proves that strong feelings of classroom community can improve students' persistence in courses, as well as increase the information flow among all learners, high availability of team support, personal commitment to group goals, full cooperation among members, and great satisfaction with group efforts (Bruffee, 1993; Dede, 1996; Wellman, 1999).

Also, learners advantage from being a member of virtual community by experiencing a positive sense of well-being and by having a set of agreeable persons to call on for support when needed (Walker, Wasserman & Wellman, 1994; Wellman & Gulia, 1999). Students' sense of community is generated from their active engagement in online instructional activities, for instance, school students reporting a strong sense of community are less likely to cut class, drop out of school, feel bad when unprepared for classes and feel burned out at school (Royal & Rossi, 1996).

Educator could get people to think of how sense of community can be stimulated in virtual classrooms? Learners are physically separated. They interact with others using text-based messages, with no seeing or hearing from each other and without the necessity to be online in the meantime (Rovai, 2002). The role of WhatsApp as an innovative e-learning measure gives learners a sense of belonging by promoting effective learning community. Accordingly, online classroom community can be defined in terms of four dimensions. They are spirit, trust, interaction, and commonality of expectation and goals.

The first dimension to measure students' sense of classroom community is spirit. Spirit signifies the recognition of membership of the community through friendship, social cohesion and team bond that develop among learners as they appreciate each other and look forward to time together. Learners are able to challenge and nurture each other through community spirit. Hence, a sense of connectedness will be generated for students to feel being personally accepted, respected and included in the group. In contrast, the lack of involvement in social interaction may influence the learners' ability to work well in studies, quite possibly leading to the feelings of loneliness, low self-esteem, isolation and poor motivation (Gibbs, 1995).

Trust, the second dimension, is simply the feeling that the group can be trusted. Doney and Cannon (1997) in their past research have noted that credibility and benevolence are two main elements in trust. Credibility brings a desire for the learners in the community to speak with confidence to other members of the group as their words can be relied on whereas benevolence shows how learners are motivated to help others in learning. Trust is established when members of the group feel safe and secure to give feedback to each other in order to expose gaps in their learning. Without trust, social interaction becomes formal. Learners do not promote diverse and constructive interactions. Thus, it is hard for them to explain new ideas to their peers (Rovai, 2002).

Interaction is the third dimension of classroom community. It is essential in developing sense of community. Peer interaction is important among students because they feel being socially accepted and having a sense of belonging within the learning community (Cuseo, Fecas & Thompson, 2010). High quality of interaction can be

carried out more along the learning process as it helps to foster learners' sense of community (May, 1993). Communication and peer discussion are social activities in distance education for learners to search information and exchange opinions regarding to their studies. However, students may experience a reduced sense of community due to knowledge and personalities, communication styles, reluctance to criticize, fear of criticism and confusion of feedback (Rovai, 2002).

The final dimension of classroom community refers to the common expectations in learning. Learners need a shared faith and most important, they must be committed to the common goals of learning. Members of the community believe that learning occurs through collaboration in which people practise and share purposeful and patterned activities (Lave & Wenger, 1991). Productive social interaction leads to a fruitful learning. Community members grow to feel that their educational needs are being satisfied through active participation in the community (Rovai, 2002). After examining the four dimensions of classroom community, the next section will be focused on how WhatsApp assists distance learning.

WhatsApp as a communication and collaboration tool facilitates higher education learning. With the advanced social networking services, students become active participants in virtual classrooms. They make friends and develop meaningful friendship, as well as being a trusted partner in the e-learning community. These young people have become content creators, managers and distributors in online activities by uploading comments on the sharing sites. They are the good collaborators who always support their own team players. WhatsApp has made them to become great explorers by encouraging them to discover other people who share the similar interests as them. With WhatsApp, students become independent and develop social skills which enable them to interact with others in the community (Raman, Sani & Kaur, 2014).

Over the years, WhatsApp has become the major form of communication among various student groups. Recently, there is growing use of WhatsApp for teachers and students. Teachers use WhatsApp to interact with students in non-school hours (Bouhnik & Deshen, 2014). In the present time, everyone prefers low cost, convenient, fast and easy use social apps. Instead of sending and receiving messages, short dialogues and

conversations can be created through WhatsApp for peer discussion. Teachers and students can also share and upload meaningful audio and video messages on the particular WhatsApp portal. The ability of WhatsApp to lead on-going discussions between teachers and students at anytime and anyplace has brought a sense of community to both groups (Alsaleem, 2013).

Today, WhatsApp is frequently used in online instruction. Teachers can easily cater for individual learning needs and students have the right to freedom of opinions and expressions with no fear of being criticised. Informal learning takes place in the community and expands a better relationship between tutors and pupils. The feeling of being a part of the learning community has effectively adopted among group members. It seems that students are more connected to the class by belonging to a WhatsApp group (Bouhnik & Deshen, 2014). With teacher's presence in the group, a sense of respect appears within the group members.

The integration of WhatsApp into tertiary classrooms has brought positive impacts on interpersonal communication. There is an increase of positive feedback from pupils who claim that WhatsApp has made communication and peer discussion easier and convenient. WhatsApp has been successful in building a mutual sense of belonging to the online learning community. Students perform authentic learning. It has shown that those in the authentic learning environment are motivated to learn (Bere, 2013). WhatsApp has become an accessible e-learning platform for learners to share knowledge, encourage peer cooperation, and intensify motivation to active participation in academic (Chipunza, 2013).

To wrap things up, the rising success of WhatsApp has developed social presence among learners. Social presence within a community enables its group members to express identity-relevant behaviours. In doing so, they begin to accept the presence of the other. As an outcome, students are encouraged to share their interests and ideas in classroom. They feel being supported by people around them. Social equality could then be generated among the group members as everybody in the learning community has a right to interact with others. They have equal opportunities to participate in the peer discussion (Lynch & Baker, 2005).

2.5 Acceptance of WhatsApp among University Students

The proper use of ICT will foster educational learning, motivate students, and enhance enjoyment, interests and sense of achievement among students (Yusuf, n.d.). This study seeks to explore to what extent students are integrating ICT competencies in higher education. The current research will assess students' attitudes and actual usage of WhatsApp in tertiary classrooms. Students are expected to master relevant knowledge and skills of ICT, integrate positive attitudes towards e-learning and adopt WhatsApp into learning. It is believed that students' existing skills and attitudes on ICT may greatly affect their adoption of WhatsApp for learning (Mulwa & Kyalo, 2013).

2.5.1 Students' Knowledge and Skills of ICT

ICT is a must among school students. Students are taught the appropriate ICT knowledge and skills since ICT education has been promoted to them at primary and secondary levels. Students are competent in using ICT applications such as Internet, Email, Facebook, Twitter and YouTube. Integration of appropriate computer technology into classroom practice helps students to create meaningful learning experiences (Daggett, 2010). The higher the level of knowledge and skills on ICT, the higher the level of ICT use in education (Kandasamy & Shah, 2013).

2.5.2 Students' Attitudes towards WhatsApp

Positive attitude towards ICT is a must for successful adoption of WhatsApp in schools. Students should possess interests and motivation in WhatsApp learning in order to improve their academic achievement. Students' attitudes towards WhatsApp are shaped by their personal experiences and value judgements over the use of computer in education (Zigama, 2010). Students' attitudes and computer experiences affect the successful use of WhatsApp. The more positive attitudes students have towards WhatsApp, the more effective the use of WhatsApp in school learning (Capan, 2012).

2.5.3 Students' Practice of WhatsApp

Students nowadays are getting more advanced in handling technology devices and software tools. They are confident and comfortable in using WhatsApp for individual learning. The integration of WhatsApp in school classroom is effective as students are familiar with the technology. It is noted that the more students use WhatsApp as a learning tool, the more confident they gain for educational learning (Albion, 1996). However, computer anxiety may cause students to reject the use of WhatsApp for classroom learning.

2.6 Theoretical Framework

This study has selected Technology Acceptance Model (TAM) as its theoretical model. The TAM model was proposed by Davis in 1989. Essentially, TAM is an information system theory that models how users come to accept and use a technology. This model suggests that when users are presented with a new IT innovation, a number of critical factors influence their decision about when and how they will use it (Davis, 1989).

'Perceived usefulness' is one of the strong factors in determining user acceptance, adoption and usage of a technology (Mathieson, 1991). It is defined as "the degree to which a person believes that using a particular technology system would enhance his or her academic performance" (Davis, Bagozzi & Warshaw, 1989). It assumes that technology will benefit the user in the performance of educational task. The more positive one's attitude towards technology usage, the better he/she performs in education.

'Perceived ease-of-use' is another key factor in technology acceptance. It refers to "the degree to which a person believes that using a technology will be easy and free from effort" (Davis, Bagozzi & Warshaw, 1989). The easier is a technology to be used, the higher is its possibility to be adopted. It is the users' estimation of the effort they will have to put in to use a technology. 'Perceived ease-of-use' is advantageous for the early acceptance of an innovation and it is necessary for technological adoption (Davis, 1989).

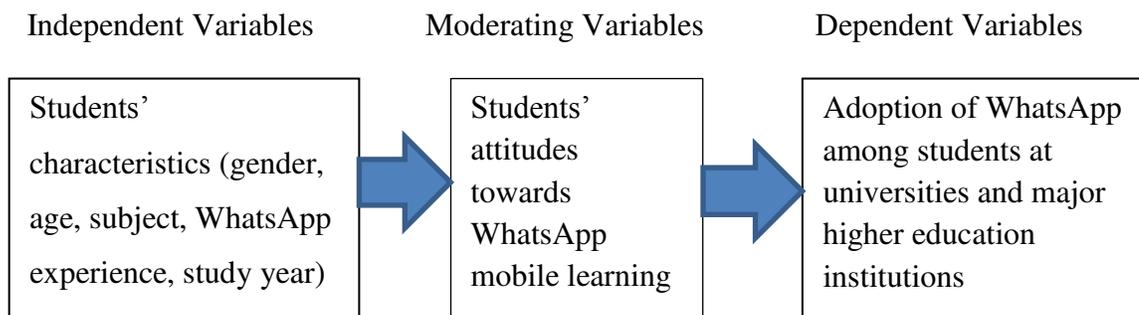
In the present study, TAM investigates the relationships between students' personal characteristics such as gender, age, subject area, WhatsApp experience for educational use, year of study and their adoption of WhatsApp in instructional activities. TMA will also measure students' attitudes towards the WhatsApp use in higher education classrooms. Most past studies have demonstrated that users' characteristics and attitudes may impact the innovation use.

Polizzi (2011) in his past research has found that users' perceptions will influence their attitudes and these attitudes will then affect their intention to use a technology. TMA has been adopted to guide the study of students' characteristics and attitudes towards the adoption of WhatsApp in university. Never forget, the successful integration of any technology into the classroom reflects students' acceptance of the technology usefulness (Jhurree, 2005).

2.7 Conceptual Framework

The term 'conceptual framework' has been defined as a visual or written presentation that explains the main things to be studied. For instance, key factors, concepts or variables, and the presumed relationships among them (Miles & Huberman, 1994). It is a diagrammatic presentation of a theory. The research variables and the relationships between them are translated into a visual picture to illustrate the interconnections between the independent and dependent variables (Onen & Oso, 2009).

Figure 1. Conceptual Framework



Source : Researcher, 2016

In this study, ‘student characteristics and attitudes towards WhatsApp’ is viewed as the independent variables whereas ‘adoption of WhatsApp’ acts as the dependent variables. The independent variables in the research have a strong relation to the dependent variables in the study. The framework tends to guide the relationships between independent and dependent variables, with independent variables directly influence dependent variables in the research study.

2.8 Factors Affecting Students’ Adoption of WhatsApp in Higher Education

Researchers have investigated factors influencing the adoption of WhatsApp among students in collaborative learning. The general objectives of this study are to assess the effects of WhatsApp use on higher education classrooms and identify factors that slow down the adoption of WhatsApp among university students. Understanding the factors that influence the WhatsApp usage on students helps students to take ownership of the learning process.

Personal Characteristics

Students’ characteristics such as gender, age, subject area, WhatsApp experience and year of study will influence their adoption and integration of WhatsApp into learning (Schiller, 2003). In other way, ICT practice takes a back seat to conventional learning mechanisms if students are faced with anxiety, fear, lack of confidence and competence in operating computer tools (Russell & Bradley, 1997). Therefore, schools should always ensure students are well trained on ICT knowledge and skills.

Students’ Attitudes

Students’ attitudes towards technology influence their acceptance of the usefulness of a technology and its integration into learning (Huang & Liaw, 2005). Students’ positive attitudes towards the educational use of technology make the adoption and integration of WhatsApp into learning easy (Buabeng-Andoh, 2012). Moreover, the more computer experiences students have, the more positive attitudes they will show towards WhatsApp learning (Rozell & Gardner, 1999).

Accessibility

Availability and accessibility to ICT infrastructures and resources are required for schools to facilitate ICT adoption (Plomp et al., 2009). Students access to technology resources such as Internet, updated software and hardware tools to ensure effective use of ICT in learning (Yildirim, 2007). If students cannot access ICT resources, for use they will not utilize them. Therefore, it is essential for schools to improve the availability and fairness of access to technology resources (Buabeng-Andoh, 2012).

2.9 Summary

This chapter takes a look at the previous studies about the adoption of ICT in developing countries. A few research articles on general utilization of ICT tools in tertiary education have been conducted by researchers in the local community for the purpose of getting a clear picture on the overall development of educational technology in higher education classrooms. The past research studies have indicated that using social media as an educational tool in academic coursework increases the learning achieved by an individual student. Social media supports collaborative learning. Students' personal characteristics and attitudes can influence their adoption of WhatsApp in university collages. Therefore, this literature review is intended to provide useful insights about students' acceptance for WhatsApp learning.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This study has adopted a quantitative approach to studying students' awareness and acceptance of WhatsApp mobile learning. It is a pure quantitative research in which researcher holds 100% of quantitative methodologies to determine the relationship between dependent and independent variables (Kombo & Tromp, 2006).

Quantitative research gathers numerical data or information that can be converted into numbers and makes use of tools such as questionnaires, surveys, measurements and other equipment to manipulate statistical data using computer techniques (Babbie, 2010).

Data are analysed in order to test hypotheses and answer research questions. A large sample size is used in the quantitative research to obtain statistically meaningful data. The information collected using research tools that are objective helps to generate accurate research findings (Mugenda & Mugenda, 1999).

Quantitative approach is more suitable to be adopted in this study if compared to qualitative. In fact, both methods are appropriate for conducting research since each of them can contribute greatly to the body of scientific knowledge. Researcher should be alert to the types of research methods used in the study.

3.1 Research Design

A research design is a plan, strategy and structure investigation that used to obtain answers to research questions (Kumar, 2002). Researchers are able to answer research questions as validly, accurately and objectively through an appropriate research design (Kerlinger, 1986).

Researcher has employed survey design for this study in which the researcher wishes to get precise information and generalize conclusive research results. A survey research design collects information by administering a questionnaire to a sample of population.

Survey provides accurate data analysis to describe specific characteristics of a large group of population (Jaeger, 1988). A survey is also a descriptive research study which is concerned with hypothesis formulation and testing. It is less costly and study participants are able to follow through the end of the research.

Overall, survey is considered as a method of gathering standardised information using various research instruments such as questionnaires, interviews and observations from the representative samples of that population (Mugenda & Mugenda, 2003). It involves direct contact with the target population.

Researchers are usually interested in a particular issue or phenomenon. They tend to gauge people's opinions about various issues to find out what people think and how they respond to the topic discussed. Consequently, survey is a technique where the general opinion of a population is generalized (Visser, Krosnick & Lavrakas, 2014).

This research has adopted a cross-sectional survey. It involves collecting information from the respondents in a target population at a single period. Cross-sectional survey utilizes questionnaire to ask about a particular topic and it is usually being used to identify the relationship between two variables (Olsen & St George, 2004).

For example, researcher might examine the attitudes of tertiary students towards adoption of WhatsApp in university colleges. At the same time, researcher might ask the students to complete a questionnaire regarding their views and concerns in using WhatsApp as a learning tool.

Cross-sectional study can be conducted relatively quickly. It allows researchers to compare many different variables at the same time. In the present study, researcher could look at gender, age, subject area, WhatsApp experience and year of study in relation to students' attitudes towards WhatsApp (Institute for Work and Health, 2015).

3.2 Population, Samples and Sampling

In a research study, population, samples and sampling are three of the essential elements for the researchers to design and develop appropriate strategies and techniques in order to generalize a systematic research finding.

3.2.1 Population of the Study

There are many remarkable tertiary education institutions in Ipoh town. Majority of the colleges and universities offer distance learning courses that enable educators and learners perform online education. A criterion has been set by the researcher that only students from Ipoh higher education institutions are allowed to participate in this study.

Researcher has taken this measure to make sure that students who take part in this study have accessed to the essential ICT knowledge and skills for supporting their school learning. The respondents are supposed to possess positive attitudes towards ICT use in academic learning since they are emotionally mature enough.

Consequently, among all public higher learning institutions in Ipoh, three are selected as they have met the criterion set. The number of students participating in the survey is thirty. These students are the representative samples of a large population who participate in the survey research.

3.2.2 Sample Size and Sampling Technique

Sampling may be defined as a process of selecting some part of an aggregate or totality, on the basis of making a judgement or inference about that aggregate or totality (Kothari, 2009). The ideal survey sample size recommends a 30% sample or response rate of a target population (Kathuri & Pals, 1993). A large sample size in survey helps to generate valid results for the research study.

Simple random sampling is used to select a representative sample from the group being studied. It is to ensure that every member of the target population has an equal opportunity of being chosen as the sample of the study without bias (Onen & Oso, 2008).

Sampling method enables researchers to study a proportion of the population rather than a whole. Purposive sampling is appropriate for quantitative study.

The main goal of drawing a sample is to obtain information about the study population. Sampling technique can be classified into two categories which are probability sampling and non-probability sampling. In this study, researcher prefers non-probability sampling technique. With non-probability sampling, researcher uses whatever individuals are available rather than selecting from the entire population.

In educational studies, we often observe a convenient sample, for instance, taking available classes as samples. Samples refer to those who voluntarily participate in a survey. Volunteers are responded to a questionnaire asking about questions on various aspects and answer them sincerely. Researcher may send another copy of questionnaire to the non-respondents appeal for their participation.

Researcher will choose samples using his or her knowledge and professional judgement in order to stimulate the production of desired information for the study of research. Sometimes, the researcher's judgement may be wrong. He or she may select a wrong sample and accept the sampling error without being good estimate. Therefore, researcher needs to identify expertise regarding the information obtained.

Researcher aims to have thirty participants as the sample of subjects taken for this study. As many as 30 students from Ipoh higher education institutions are selected at random to participate in the survey. A questionnaire is administered in person to collect research information about a pertinent topic. Samples of thirty are contributed to the reliable data in the study.

3.3 Period of Study

During the early year of 2016, researcher has conducted a study regarding WhatsApp mobile learning among colleges and universities in Ipoh, Perak. A total of 30 students from Ipoh higher education institutions have participated in a self-administered survey, starting March, 2016. Data and sources collected will be analysed the next two months

to generate results for the research findings. A discussion of the study's results will be published in a general report at the end of May. The final project report will be submitted to the School of Education, Languages and Communication, Wawasan Open University in June.

3.3.1 Location of Research

This study is carried out by researcher in Ipoh, the capital city of Perak state. It is bordered in the northern part of Peninsular Malaysia. Many of the colleges and universities around the city provide higher quality educational learning to the local students. Consequently, tertiary education institutions in Ipoh have been selected by the researcher as the subject of study.

3.4 Instrumentation

Data collection instruments refer to the tools researchers use to gather data. Emphasis has been put on how these tools are developed (Onen & Oso, 2008). In this study, information is collected by questionnaire. The questionnaire acts as the measured tool in the research.

3.4.1 Questionnaire

Questionnaire has been considered as the heart of a survey operation (Kothari, 2009). It is a device dealing with questions of psychology, social and education. The respondents should be given a series of questions, with the aim of collecting data with regards to the research problems. Apart from seeking information about certain conditions and issues in educational research, a questionnaire is used to inquire into opinions and attitudes of individuals (Koul, 1993). Questionnaires are important instruments for gathering factual information, generating numerical data and being able to be administered without the presence of the researcher (Cohen, Manion & Morvison, 2000).

In this study, the questionnaire for students consists of five sections. Section 1 comprising structured questions concerned with the demographic details of students such as gender, age, subject area, WhatsApp experience and year of study. Respondents are required to provide background information on demographic characteristics as it is useful in finding the nature of respondents. Section 2 of the questionnaire has sought information related to the competency level of knowledge and skills the respondents required in ICT learning. This section consists of a four point rating scale comprising “Very competent, Competent, Somehow competent and Not competent”. Respondents are asked to indicate their levels of computing abilities.

Section 3 is to seek information on students’ attitudes towards WhatsApp adoption. A five point Likert scale with options of “Strongly agree, Agree, Undecided, Disagree and Strongly disagree” is used to indicate the level of acceptance among respondents in terms of awareness and motivation in utilizing WhatsApp. Section 4 of the questionnaire has sought information on the level of usage of WhatsApp among university students. Respondents are asked to tick on the alternatives provided and rank the benefits of using WhatsApp. Section 5 reveals the various factors influencing students’ adoption of WhatsApp. Respondents are required to select the related answers.

3.5 Validity and Reliability of the Research Instruments

In conducting an educational research, validity and reliability are two important issues for the selection of measures. Therefore, researchers should take care in making sure that the results of findings are valid and reliable. The study results will be standardized if instruments used in the research are highly reliable and scientifically valid.

3.5.1 Validity of the Research Instruments

Validity refers to the ability of an instrument to measure what it purports to measure. It is the accuracy, meaningfulness and the degree to which results obtained from the data analysis actually represent the phenomenon under study (Mugenda & Mugenda, 2003). To ensure validity, researcher has sought help from the academic experts to standardize

the research instruments. Judgement and advice are used to improve questionnaire. Researcher hopes the findings of study will meet the requirement of validity.

3.5.2 Reliability of the Research Instruments

Reliability is defined as a measure of how consistent the results from a test are (Kombo & Tromp, 2006). A measure is said to be reliable if it is consistent, stable, accurate, dependable or predictable (Kerlinger, 1973). Cronbach Alpha Reliability Coefficient is the most common measure of internal consistency. It helps to reduce time calculate a reliability coefficient in other methods. It is a more conservative method to estimate reliability. Therefore, a value of 0.7 and above reliability coefficient is acceptable and it proves an instrument is reliable. It implies that a set of items that correlate highly among themselves. Hence, there exists consistency among the items in measuring the concept of interest (Mugenda & Mugenda, 1999).

3.6 Data Collection

A survey study involves data gathering techniques such as personal face to face interview, telephone survey, mail questionnaire, direct survey and online questionnaire. Information is collected from a group of individuals in order to describe the sociological aspects of group behaviours. These include the abilities, attitudes, opinions, beliefs and knowledge of the particular population.

The main mode of data collection is through asking questions. The respondents are required to answer the questions provided. Meanwhile, researcher should always remind the respondents about the confidentiality in the information given while responding to the items in the questionnaire. It is to make sure that the private and sensitive issues of respondents are secure.

In the conducting study, researcher first obtains a letter of introduction from WOU. A research permit is applied from the Ministry of Higher Education. Authorization letter is used for accessing the university colleges in Ipoh. Researcher then

visits to the selected higher education institutions to conduct a survey. After delivering research instruments, researcher administers and collects data for analysis.

3.7 Data Analysis

Statistical Package for Social Science (SPSS) is a software package used for statistical analysis. Data obtained will be coded, edited and imputed before it is transferred to computer for analysis. The research findings are analysed using SPSS 22. A good first step in the data analysis is to summarize the data using descriptive statistics, in which the researcher counts the responses for each level of a given variable. The counts or frequencies are then being converted into percentages to describe the demographic details of the respondents.

The second step involves the selection of appropriate statistical test. Researcher should check that the data meets all assumptions that are required for the test. This study has adopted t-test and ANOVA to find the valid results. The t-test is used to test differences in means between two groups whereas ANOVA is used to compare the means of more than two groups. The value obtained from both tests is used to reject or validate the hypothesis stated in the research questions. Six hypothesis questions are to be tested out in the research. An accurate research finding leads to a fair and proven discussion.

3.8 Ethical Considerations

To conduct a research study, researcher must first get approval from the university by informing the respected supervisor and course coordinator about the start of the study. There should be approval from other authorities as well, for instance, the Ministry of Higher Education. Moreover, researcher should explain in clear to the respondents on the purpose of study, methods adopted for the study and maintain confidentiality while presenting information to the respondents. It is important for researchers to have ethical considerations in conducting a study.

3.9 Summary

This chapter presents the descriptions of research design and different methodological approaches adapted to the study in order to obtain accurate research findings. Overall, chapter three outlines the population of study, the sample size and sampling techniques, the study area, the period of study, the research instrumentation, the validity and reliability, the data collection procedures, the data analysis, the ethical considerations and the summary of chapter 3.

CHAPTER 4

FINDINGS AND DISCUSSION

4.0 Introduction

A sample size of 30 university students has been chosen randomly to participate in the survey enrolled by the researcher. The study collects data from the sample groups using questionnaire. All respondents have completed and returned the questionnaire correctly. There is a 100% of response rate among the participants. Descriptive analysis is conducted, t-test and ANOVA are used to analyse the research questions in the study. The validity and reliability of the questionnaire are reviewed by the project supervisor.

This study is carried out to investigate the adoption of WhatsApp instant messaging among the higher education students in Ipoh. The objectives of the study are to identify the various categories of social networking sites used by students, to examine the extent of usage and level of ICT competencies of university students carrying on learning, to determine the educational benefits of using WhatsApp and to reveal the factors slow down the adoption of WhatsApp mobile device at tertiary education.

Accordingly, this study aims to explore the attitudes of students towards the use of WhatsApp mobile learning in the higher education institutions. It measures the learners' attitudes through their perceiving of usefulness using WhatsApp in the context of the educational environment. The differences in attitudes among the representative samples lead to an understanding of the required WhatsApp learning characteristics for learners to increase their intention towards the use and acceptance of such technology.

Different hypotheses have been examined to test whether there is a significant difference among students' attitudes towards the use of WhatsApp mobile learning in terms of gender, age, subject area, WhatsApp experience for educational purposes and year of study. The results of findings are used to indicate the acceptance or rejection of the stated hypotheses. An interpretation of the findings and a presentation of the results will be done based on the decision made on the hypotheses.

4.1 Demographic Characteristics of the Respondents

This section presents the background information of students' characteristics. The respondents are required to provide personal information on gender, age, subject area, WhatsApp experience for educational use and year of study in order for researcher to test hypotheses on these variables. This demographic information is also useful in finding the nature of the respondents.

4.1.1 Distribution of Respondents by Gender

Table 1. Gender of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	15	50.0	50.0	50.0
Female	15	50.0	50.0	100.0
Total	30	100.0	100.0	

Results indicated that the sample was comprised of 50% male and 50% female respondents. This representation reflects that both male and female students possess equal opportunities to learn regardless of gender.

4.1.2 Distribution of Respondents by Age

Table 2. Age of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 15-25	10	33.3	33.3	33.3
26-35	10	33.3	33.3	66.7
36-45	9	30.0	30.0	96.7
above 46	1	3.3	3.3	100.0
Total	30	100.0	100.0	

Results indicated that the two age groups, 15 to 25 and 26 to 35, made up 66.6% of the sample. About 30% of the respondents aged between 36 and 45 years old. Only 3.3% or one person whose age was 46 years old and above. This explains that most university students access to higher education at a young age. Many middle-aged adults returning to college for continuous professional learning as they wish to expand their knowledge.

4.1.3 Distribution of Respondents by Subject Area

Table 3. Subject area of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Science&Technology	6	20.0	20.0	20.0
Account&Finance	11	36.7	36.7	56.7
Education&Psychology	13	43.3	43.3	100.0
Total	30	100.0	100.0	

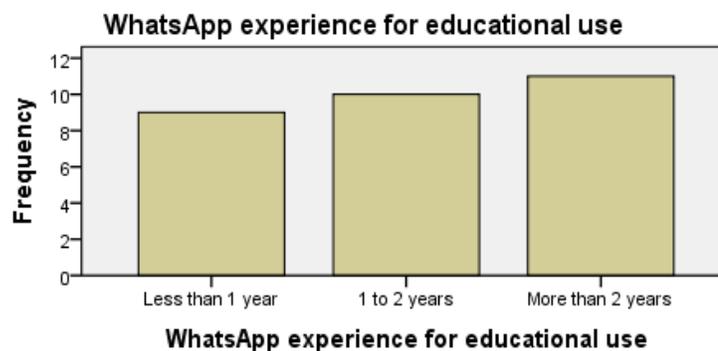
Results indicated that 43.3% of the respondents were from Education and Psychology majors while students in Account and Finance, Science and Technology were 36.7% and 20% respectively. All respondents have already picked their academic majors starting their first semester and most of them have selected traditional majors.

4.1.4 Distribution of Respondents by WhatsApp Experience for Educational Use

Table 4. Whatsapp Experience for Educational Use

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 1 year	9	30.0	30.0	30.0
1 to 2 years	10	33.3	33.3	63.3
More than 2 years	11	36.7	36.7	100.0
Total	30	100.0	100.0	

Results indicated that most of the respondents (36.7%) reported using the WhatsApp for more than 2 years, one-third of the respondents (33.3%) having experience using WhatsApp for 1 to 2 years and 30% of them used WhatsApp less than 1 year. As regards to user experience, majority of the students are the early adopter of WhatsApp. **Figure 2.**



4.1.5 Distribution of Respondents by Study Year

Table 5. Study year of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	16.7	16.7	16.7
	2	10	33.3	33.3	50.0
	3	8	26.7	26.7	76.7
	4	7	23.3	23.3	100.0
	Total	30	100.0	100.0	

Results indicated that the second year respondents were rated the highest for 33.3%, about 26.7% of respondents were in their third year, followed by the fourth year respondents (23.3%). Only 16.7% of the respondents were in their first year of college. It can be concluded that students who enter for second, third and fourth years are more mature and more informed about the survey options compared to those in first year who have just left school and started university.

4.2 Respondents' Basic Information on ICT

Question 6 on the questionnaire required the respondents to specify the various ICT devices they used to connect to the Internet. 46.7% of the students owned smartphones and connected to the Internet from mobile devices. Desktop and iPad Internet users made up of 20% each and 13.3% preferred laptops. The availability of Internet is convenient and students are easy and comfortable to access ICT resources.

Question 7 on the questionnaire referred to the specific location the respondents accessed Internet. Of the respondents to the survey, 36.7% of the students accessed the Internet from home, 20% from Internet café, 16.7% from computer lab on campus and 13.3% each from workplace and hotspots on town. Students have high exposure to Internet and location such as home offers favourable environment for ICT learning.

Question 8 on the questionnaire concerned with the number of times the respondents accessing Internet. 36.7% of the respondents accessed Internet several times per day, 30% of them got online once a day, 16.7% browsed the web once a week

whereas 10% of the respondents spent several times per week to explore Internet. Only 6.7% of them viewed online content several times per month. Frequency of Internet use determines students' efficiency in ICT affairs and helps in building ICT competence.

Question 9 on the questionnaire posed to the respondents if they had any social networking profiles. A total of 73.3% of the respondents indicated that they possessed various social network profiles and participated actively on social networks. The rest of the respondents (26.7%) claimed that they did not have any social media accounts since they had never created them before. Most of the students are consistently keep up with the latest social media trends while those who have not are encouraged to do so.

Question 10 on the questionnaire was necessary for the respondents to reveal different social networking sites used by students. Almost half of the respondents (46.7%) had accessed to a WhatsApp account, 20% of them preferred Facebook, and 13.3% were active users of YouTube. About 20% of the students were most likely to use other platforms like Twitter and Instagram. WhatsApp has become one of the most popular social applications among students since it is free of charge and user-friendly.

4.3 Level of Adoption of ICT among Tertiary School Students

This section tends to establish the level of ICT skills possessed by students in higher education learning. An ICT competence scale adapted from Algozzine and Flowers (2000) is used to measure the students' perceived ICT competence. Respondents were required to rate their competency levels in operating basic computer applications such as Words, Excel, Power Point, Email, Internet, Blog, Wiki and Instant Messenger. The four point rating scale comprises the following items:

Very Competent – Able to teach others the right way to perform an ICT task

Competent – Able to complete an ICT task

Somehow Competent – Able to perform an ICT task with assistance

Not Competent – Not able to perform an ICT task

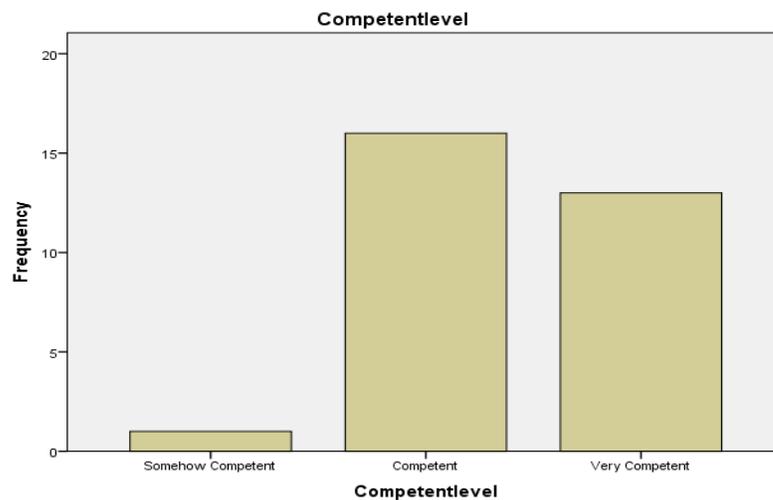
Research Question 1: To what extent is students' competence with ICT applications?

Table 6. Overall Competent level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somehow Competent	1	3.3	3.3	3.3
	Competent	16	53.3	53.3	56.7
	Very Competent	13	43.3	43.3	100.0
	Total	30	100.0	100.0	

Results indicated that the overall percentages of students' competence level in using ICT were 53.3% for 'Competent', 43.3% for 'Very Competent' and 3.3% for 'Somehow Competent'. Surprisingly, none of the respondents fell into the category of 'Not Competence'. This shows that majority of the students (either 'Competent' or 'Very Competent') are competent in handling the basic ICT applications. They are fully ICT literate and have great potential in ICT learning. Their perceived ICT competence is a direct consequence of effective ICT access, relevant training programs, supportive computer technology and their persistence over time on ICT.

Figure 3.



All eight items below have relations with students' ICT competence. The distribution of frequencies and percentages of these items are measured using a four point rating scale comprising 'not competent', 'somehow competent', 'competent' and 'very competent'.

Table 7. Word processing of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somehow competent	5	16.7	16.7	16.7
	Competent	15	50.0	50.0	66.7
	Very competent	10	33.3	33.3	100.0
	Total	30	100.0	100.0	

Results indicated that 50% of the respondents were competent and possessed good knowledge on using MS Word. It is a common application used by students in their studies. 33.3% of them reported very competent in word processing as they had excellent skills in typing notes, making documents and presenting texts in various formats. Only 16.7% of the students regarded themselves had little capability in operating Word. They were somehow competent and required assistance from others to complete the given tasks.

Table 8. MS Excel of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not competent	4	13.3	13.3	13.3
	Somehow competent	11	36.7	36.7	50.0
	Competent	9	30.0	30.0	80.0
	Very competent	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

Results indicated that 50% of the respondents (either ‘not competent’ or ‘somehow competent’) were less competent in using MS Excel. Many of them have little experience with Excel as it is usually used for data analysis and graphic presentation. It even takes time for students to develop a new skill. However, another half of the respondents (50%) made up of ‘competent’ and ‘very competent’ users were fast learning Excel as they were introduced early to this application in the primary education and they had mastered the relevant skills associated with Excel. Due to the usefulness of such application, students are encouraged to learn and acquire Excel as it helps them to achieve effective learning outcomes.

Table 9. Power Point of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somehow competent	3	10.0	10.0	10.0
	Competent	17	56.7	56.7	66.7
	Very competent	10	33.3	33.3	100.0
	Total	30	100.0	100.0	

Results indicated that 90% of the respondents acquired good knowledge on Power Point. It is a major skill used by students in making lesson presentation during classroom studies. Only 10% of the respondents were somehow competent in using this application. It may due to the reasons that they are struggling with the complicated procedures in preparing Power Point slides and lack of guidance and support from the experts.

Table 10. Emailing of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somehow competent	8	26.7	26.7	26.7
	Competent	13	43.3	43.3	70.0
	Very competent	9	30.0	30.0	100.0
	Total	30	100.0	100.0	

Results indicated that 43.3% of the respondents were competent in sending emails to their peers and instructors. 30% of them even performed excellent skills in emailing tasks. They created emails to inform educational agenda. As compared to those were good at this application, 26.7% of the respondents were somehow competent in dealing with emailing as they were not familiar with it and requested help from others.

Table 11. Internet browsing of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Competent	7	23.3	23.3	23.3
	Very competent	23	76.7	76.7	100.0
	Total	30	100.0	100.0	

Results indicated that all of the respondents felt competent in browsing Internet. 76.7% of the respondents were knowledgeable in conducting various online activities such as sharing ICT resources, engaging in discussion forums and developing meaningful communication among the learners. 23.3% of them were comfortable and satisfied in using such application as it offered unlimited information to the users.

Table 12. Blog of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not competent	10	33.3	33.3	33.3
	Somehow competent	15	50.0	50.0	83.3
	Competent	3	10.0	10.0	93.3
	Very competent	2	6.7	6.7	100.0
	Total	30	100.0	100.0	

Results indicated that most of the respondents fell into the categories of ‘not competent’ and ‘somehow competent’. Their rating (83.3%) reflected that they were incompetent in using blog. Blog is not common among the students; hence, they spend less time on it. In contrast, only 16.7% of them possessed knowledge on blog application. It may be because they have experience in writing personal blogs and posting microblogging.

Table 13. Wiki of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not competent	17	56.7	56.7	56.7
	Somehow competent	8	26.7	26.7	83.3
	Competent	3	10.0	10.0	93.3
	Very competent	2	6.7	6.7	100.0
	Total	30	100.0	100.0	

Results indicated that 83.3% of the respondents felt least competent in using Wiki. They may think that Wiki has less contribution to their studies and do not consider any educational benefits. On the other hand, a number of 16.7% of the respondents used Wiki to search learning materials in order to present them in their daily lessons. Wiki has been a useful source of information for them.

Table 14. Instant messenger of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Competent	11	36.7	36.7	36.7
Very competent	19	63.3	63.3	100.0
Total	30	100.0	100.0	

Results indicated that a total of 100% of the respondents were good at using instant messenger. It is one of the most popular social networking applications among the university students since it is convenient and easy to use. Youths were fast adapted to this application due to the latest trends of social media. They were familiar with it and used it to interact with their peers.

4.3.1 Knowledge Possessed by Students in Using ICT Applications

Section 2 of the questionnaire designs to assess the students' knowledge of some basic concepts in applying ICT applications. Students' knowledge of different computer applications has positive impacts on their academic achievement. Generally, the results indicated that students' ICT knowledge was adequate and showed good abilities in using ICT applications.

Results showed that majority of the respondents (93.3%) preferred using email to send learning resources as it was quick and convenient. Due to the popularity of various categories of social media tools, 96.7% of the students used social networking sites to assist their studies. With online discussion boards and forums, 90% of them were able to share ideas between participants.

Moreover, the study showed that 90% of the students contacted their lecturers and peers online after school hours. 60% of them used to upload learning materials from websites while 56.7% learned English online with interactive audios and videos. 53.3% of the respondents had written electronic essay and experienced a computer-based exam. Results lastly indicated that 73.3% of the students had received certain types of computer training at schools.

4.4 Students Perceived Attitudes towards WhatsApp

This section tends to establish the attitudes of students towards WhatsApp mobile learning in higher education classrooms. An attitude scale adapted from Bicen and Uzunboylu (2013) is used to measure the learners' perceived attitudes and opinions regarding WhatsApp. A list of statements implying both positive and negative attitudes towards WhatsApp was given to the respondents. They were required to rate their extent of agreement on those attitudes portrayed to them. A five point Likert scale was used and each item was rated from 'Strongly Agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly Disagree'.

Research Question 2: What are the attitudes of students towards WhatsApp mobile learning?

Students showed positive attitudes towards ICT and majority of them agreed with the positive statements concerning the attitudes towards adoption of WhatsApp. The results indicated that 80% of the respondents (either agree or strongly agree) affirmed that WhatsApp as an important educational tool. 70% of them agreed that WhatsApp supported their learning with addable materials. 86.6% said that WhatsApp helped learners to develop team work skills. 73.3% of the students posited that WhatsApp enabled them to share information and comment ideas within peers. Another 83.3% felt that WhatsApp had greatly increased their learning interests and motivation.

53.3% of the respondents stated that WhatsApp helped learning better whereas 66.7% believed that WhatsApp learning made them excited. 76.7% of them completely agreed that WhatsApp increased their participation in learning, helped them understanding difficult concepts and consequently changed the way they learned. A number of 63.3% claimed that WhatsApp enhanced study grades and considered it as a useful tool for online discussion. A total of 90% respondents strongly agreed that WhatsApp promoted a sense of belonging among them. All students found out that WhatsApp maintained social relationship and made communication effectively.

Despite various positive statements made, there were other negative statements in which students disagreed with. 80% of the respondents (either disagree or strongly disagree)

refused to accept the statements that WhatsApp made lessons uninteresting and did not allow learners to express thoughts openly. 83.4% of them disagreed that WhatsApp stressed them out as it was not easy to use. Lastly, 86.6% of the students did not show agreement on the fact that WhatsApp created technical problems for them. Overall, the presentation of the findings indicated that students portrayed positive and acceptable attitudes towards WhatsApp mobile learning.

4.4.1 Attitude Mean Scores for the Frequency Counts from the Statements

Section 3 of the questionnaire distributed 20 attitude items to indicate students' opinions towards WhatsApp mobile learning. Mean scores for each statement was calculated and the overall mean scores for the entire list of statements were used to symbolize the favourable or unfavourable feelings of the respondents in adopting WhatsApp in higher education. The mean scores ranged 1 to 3 indicated an unfavourable feeling among the respondents whereas 3 to 5 represented their favourable feelings towards WhatsApp.

Table 15. Attitude mean

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2.80	1	3.3	3.3	3.3
2.90	2	6.7	6.7	10.0
3.05	1	3.3	3.3	13.3
3.10	2	6.7	6.7	20.0
3.15	1	3.3	3.3	23.3
3.30	4	13.3	13.3	36.7
3.35	1	3.3	3.3	40.0
3.40	4	13.3	13.3	53.3
3.50	3	10.0	10.0	63.3
3.55	4	13.3	13.3	76.7
3.60	1	3.3	3.3	80.0
3.75	1	3.3	3.3	83.3
3.80	2	6.7	6.7	90.0
3.85	1	3.3	3.3	93.3
4.00	1	3.3	3.3	96.7
4.05	1	3.3	3.3	100.0
Total	30	100.0	100.0	

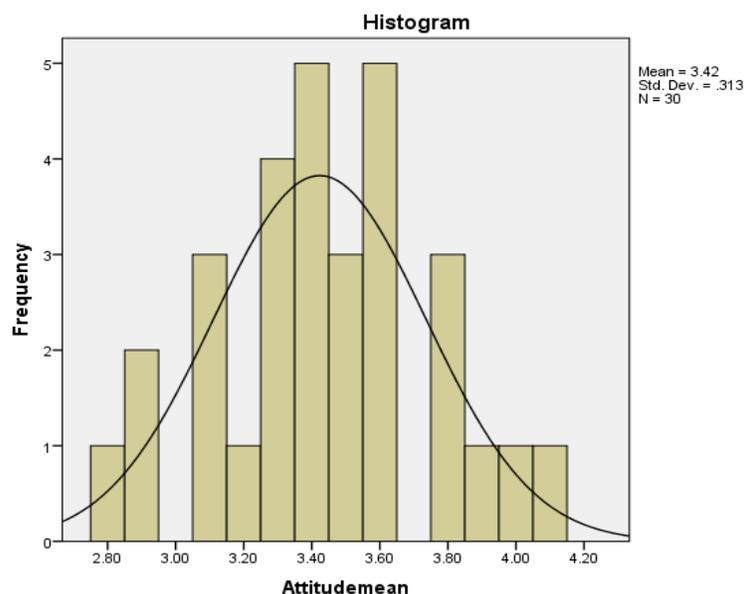
The results revealed that out of the total respondents, only 3 (10%) showed unfavourable feelings towards adoption of WhatsApp. Their individual range of means was below 3 which implied that they were not positive in adopting WhatsApp. Suggestions such as peer supports and cooperative learning were given to them in order to promote their adoption of WhatsApp in studies. On the other hand, the mean scores for favourable feelings ranged from 3.05 to 4.05 which indicated that 90% of the students possessed positive attitudes towards WhatsApp mobile learning. Students' attitudes towards WhatsApp greatly affected the successful integration of WhatsApp into schools.

Table 16. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Attitudemean	30	2.80	4.05	3.4233	.31287
Valid N (listwise)	30				

An overall mean score of 3.4233 deciding that students were favourable in adopting new social media tools such as WhatsApp mobile device to enhance their learning. They should display more efforts in promoting the use of ICT as they would gain different advantages from using such technology.

Figure 4.



4.5 Benefits of WhatsApp for Educational Purposes

This section tends to establish the various advantages of using social networking sites. Students in higher education experienced WhatsApp mobile learning and developed self-directed and independent learning. A summary of benefits on using WhatsApp adapted from Zanamwe, Rupere and Kufandirimbwa (2013) is used to explore the benefits students acquire from using such technology. Respondents would have to rank the benefits according to their importance in education. Rank 1 was considered the most important while 10 referred to the least important among those all.

Research Question 3: What are the educational benefits of WhatsApp to students?

Students used WhatsApp mobile device for educational learning and majority of them gained a lot of benefits from using it. The creation of WhatsApp had brought significant impacts on students' learning. Students should take advantage of these awesome benefits in order to enhance their studies. The results indicated that 43.3% of the respondents believed that WhatsApp fostered learning. They had ranked it as the most important benefit students acquired along learning process. 40% of the respondents realized that WhatsApp enhanced social skills. They had ranked it as the second important benefit students obtained through WhatsApp. 36.7% of the respondents thought WhatsApp improved creativity and innovativeness. It was ranked as the third important benefit. 33.3% of the respondents agreed that WhatsApp learning could extend beyond classroom. Therefore, students ranked it as the fourth important benefit. 30% of the respondents found out that WhatsApp improved technology proficiency. It was the fifth important benefit in the list. 26.7% of the respondents stated that WhatsApp encouraged collaborative problem solving. It referred to the sixth important benefit in WhatsApp education. 23.3% of the respondents pointed out that WhatsApp enabled students to communicate in new ways with new people and facilitated group projects. They were the next two important benefits WhatsApp provided to the students. 20% of the respondents reflected that WhatsApp improved receptivity to new ideas and allowed students to learn new things in new ways. Students had ranked them as the last two important benefits in WhatsApp mobile learning. Overall, students' active engagement in WhatsApp mobile learning increased their educational performance.

4.5.1 Students Experiences of WhatsApp Mobile Learning

Section 4 of the questionnaire focuses on the practice of WhatsApp among students in higher education institutions. 90% of the respondents used WhatsApp before. However, not all of them owned WhatsApp account. Only 76.7% created user profiles. Out of these users, 46.6% used WhatsApp on a daily basis, 33.3% weekly and 20% monthly. 36.7% of them spent more than 3 hours per day on WhatsApp, 26.7% for 1 to 3 hours, 23.3% for 30 to 60 minutes and 13.3% for less than half hour.

Students used WhatsApp for different reasons. 30% of the respondents considered peer influence as the major factor in adopting WhatsApp. 23.3% of them used WhatsApp to communicate instantly with a group of people such as friends and family. 20% reflected WhatsApp as a convenient and user friendly tool. 16.7% of the students thought WhatsApp was free of charge and easy to use. Only 10% of the respondents used WhatsApp to express personal feelings.

Students used WhatsApp for certain purposes. 86.6% of the respondents used WhatsApp for education and social activities while 13.4% used WhatsApp for e-commerce and job hunting. 30% of them spent more than 20 hours per week for WhatsApp, 26.7% for 15 to 20 hours, 20% for 10 to 15 hours, 13.3% for 5 to 10 hours and 10% for less than 5 hours. It indicated that those spent more time on WhatsApp activities were more competent in completing ICT educational tasks.

Generally, 86.7% of the respondents agreed that WhatsApp should be used in education. Students were encouraged to conduct educational activities to improve their academic studies. Survey had showed that 43.3% of the students used WhatsApp to share learning resources. 23.3% of them performed online group discussion with peers and instructors. 20% of the respondents had formed online study groups as WhatsApp was used as a platform for virtual group studies. 13.3% used WhatsApp to inform educational agenda.

As a whole, students' experiences of WhatsApp mobile learning were valuable as they promoted self-learning among students and developed social presence in a learning community. They helped learners to interact more intimately and enhance educational performance.

4.6 Factors Affecting the Adoption of WhatsApp among Students

This section tends to establish the various factors influencing students' adoption of WhatsApp in colleges and universities. A list of factors adapted from Apeanti and Danso (2013) is used to investigate the major concerns of students about using WhatsApp. Participants were asked to respond to the statements given.

Research Question 4: What are the factors influencing students' participation and adoption of WhatsApp?

Table 17. Factors influencing adoption item 1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	30.0	30.0	30.0
	Yes	21	70.0	70.0	100.0
	Total	30	100.0	100.0	

Results indicated that 70% of the respondents were concerned about their personal privacy. They might feel unsecured and worried about the issues of confidentiality.

Table 18. Factors influencing adoption item 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	8	26.7	26.7	26.7
	Yes	22	73.3	73.3	100.0
	Total	30	100.0	100.0	

Results indicated that 73.3% of the respondents were concerned about their personal information being explored and misused by others.

Table 19. Factors influencing adoption item 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	8	26.7	26.7	26.7
	Yes	22	73.3	73.3	100.0
	Total	30	100.0	100.0	

Results indicated that 73.3% were concerned about their limited skills in computing.

Table 20. Factors influencing adoption item 4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	23.3	23.3	23.3
	Yes	23	76.7	76.7	100.0
	Total	30	100.0	100.0	

Results indicated that 76.7% of the respondents were concerned about the inaccessibility of Internet. Schools might not able to provide regular Internet access to students.

Table 21. Factors influencing adoption item 5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	16.7	16.7	16.7
	Yes	25	83.3	83.3	100.0
	Total	30	100.0	100.0	

Results indicated that 83.3% of the respondents were concerned about the high cost of Internet connectivity. Students might not able to afford it.

Table 22. Factors influencing adoption item 6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	36.7	36.7	36.7
	Yes	19	63.3	63.3	100.0
	Total	30	100.0	100.0	

Results indicated that 63.3% of the respondents were concerned about having too many ICT application tools. They might adopt different social networking sites.

Table 23. Factors influencing adoption item 7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	12	40.0	40.0	40.0
	Yes	18	60.0	60.0	100.0
	Total	30	100.0	100.0	

Results indicated that 60% of them were concerned about too busy and having no time.

Table 24. Factors influencing adoption item 8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	14	46.7	46.7	46.7
	Yes	16	53.3	53.3	100.0
	Total	30	100.0	100.0	

Results indicated that 53.3% of the respondents were concerned about the lack of personal benefits in using social media.

Table 25. Factors influencing adoption item 9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	36.7	36.7	36.7
	Yes	19	63.3	63.3	100.0
	Total	30	100.0	100.0	

Results indicated that 63.3% of the respondents were concerned about the lack of educational benefits of WhatsApp.

4.7 Results of Hypothesis Testing

This section presents the findings to the hypotheses tested.

H₀₁: There is a significant difference between the students' attitudes towards the use of WhatsApp mobile learning and their competencies in computer use.

Table 26. Mean and standard deviation for students' attitudes in terms of their competencies in computer use

Attitudemean	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Somehow Competent	1	3.4000	.	.07606	.	.	3.40	3.40
Competent	16	3.3156	.30426	.07606	3.1535	3.4778	2.80	3.85
Very Competent	13	3.5577	.29286	.08123	3.3807	3.7347	2.90	4.05
Total	30	3.4233	.31287	.05712	3.3065	3.5402	2.80	4.05

Table 27. Differences among students' attitudes in terms of their competencies in computer use

Attitudemean	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.421	2	.210	2.350	.115
Within Groups	2.418	27	.090		
Total	2.839	29			

To determine if there is any significant difference among the students' attitudes towards the use of WhatsApp mobile learning with regard to their competencies in computer use, means and standard deviations for the students' competencies in computer use, including somehow competent, competent and very competent, are calculated as shown in Table 26. A one way analysis of variance (ANOVA) is performed to examine if there is any statistical significant difference between mean values. As shown in Table 27, results revealed that there is no statistical significant differences ($p = 0.115$, $p > 0.05$) among the students' attitudes with regard to their competencies in computer use and the F value is (2.35). The result of this hypothesis could refer to reason that almost all the students were using their mobile devices to access Internet, send email, view video contents and chatting on social media. Therefore, they were competent in using computer applications. Students' competencies in computer use demonstrated positive attitudes towards the adoption of WhatsApp in education (Al-Emran, Elsherif & Shaalan, 2015).

Ho2: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their gender.

Table 28. Differences among students' attitudes in terms of their gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Attitudemean	Equal variances assumed	2.753	.108	1.619	28	.117	.18000	.11118	-.04774	.40774
	Equal variances not assumed			1.619	22.790	.119	.18000	.11118	-.05010	.41010

Table 29. Mean and standard deviation for students' attitudes in terms of their gender

	Gender of respondents	N	Mean	Std. Deviation	Std. Error Mean
Attitudemean	Male	15	3.5133	.21996	.05679
	Female	15	3.3333	.37017	.09558

An independent samples t-test was carried out to examine if there is any statistical significant difference among the students' attitudes towards the use of WhatsApp mobile learning with regard to their gender. As shown in Table 28, the results implied that the mean values for both male and female students did not indicate any significant differences among the students' attitudes in terms of their gender. The computed value

of t is (1.619) and the significance level is ($p = 0.108$, $p > 0.05$). The results of this hypothesis could be attributed to the fact that male students in higher education institutions received education training just as the female students and both of them had equal education background. The results also indicated that gender did not reflect students' positive attitudes towards WhatsApp mobile learning (Al-Emran, Elsherif & Shaalan, 2015).

Ho3: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their age.

Table 30. Mean and standard deviation for students' attitudes in terms of their age

Attitudemean	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
15-25	10	3.6200	.28402	.08981	3.4168	3.8232	3.30	4.05
26-35	10	3.3350	.33003	.10436	3.0989	3.5711	2.80	3.75
36-45	9	3.2944	.25304	.08435	3.0999	3.4889	2.90	3.80
above 46	1	3.5000	3.50	3.50
Total	30	3.4233	.31287	.05712	3.3065	3.5402	2.80	4.05

Table 31. Differences among students' attitudes in terms of their age

Attitudemean	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.620	3	.207	2.423	.089
Within Groups	2.218	26	.085		
Total	2.839	29			

To determine if there is any significant difference among the students' attitudes towards the use of WhatsApp mobile learning with regard to their age, means and standard deviations for the students' age groups, including (15 to 25, 26 to 35, 36 to 45 and above 46), are calculated as shown in Table 30. A one way analysis of variance (ANOVA) is performed to examine if there is any statistical significant difference between mean values. As shown in Table 31, results revealed that there is no statistical significant differences ($p = 0.089$, $p > 0.05$) among the students' attitudes with regard to their age and the F value is (2.423). The result of this hypothesis could refer to the fact that the age groups were distributed into four groups (15 to 25, 26 to 35, 36 to 45 and above 46) and the differences in age did not influence the integration of WhatsApp in higher education classrooms. It concluded that age factor had no impact on students' adoption of WhatsApp as it was a useful educational tool for students to enhance learning (Al-Emran, Elsherif & Shaalan, 2015).

Ho4: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their academic major (subject area).

Table 32. Mean and standard deviation for students' attitudes in terms of their major

Attitudemean	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Science&Technology	6	3.1500	.26646	.10878	2.8704	3.4296	2.80	3.50
Account&Finance	11	3.3955	.31738	.09569	3.1822	3.6087	2.90	4.00
Education&Psychology	13	3.5731	.24632	.06832	3.4242	3.7219	3.15	4.05
Total	30	3.4233	.31287	.05712	3.3065	3.5402	2.80	4.05

Table 33. Differences among students' attitudes in terms of their major

Attitudemean	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.748	2	.374	4.833	.016
Within Groups	2.090	27	.077		
Total	2.839	29			

To determine if there is any significant difference among the students' attitudes towards the use of WhatsApp mobile learning with regard to their academic major, means and standard deviations for the students' academic major, including Science & Technology, Account & Finance and Education & Psychology, are calculated as shown in Table 32. A one way analysis of variance (ANOVA) is performed to examine if there is any statistical significant difference between mean values. As shown in Table 33, results revealed that there were statistical significant differences ($p = 0.016$, $p < 0.05$) among the students' attitudes with regard to their academic major and the F value is (4.833). The result of this hypothesis could refer to reason that almost all the students were using their mobile devices to interact with peers and instructors. Social media had gained its popularity among these students. Social networks had made communication efficient and increased self-esteem. Students enjoyed and satisfied with what social applications brought to them. However, due to the technological resources availability in various subjects and technology awareness performed by students from different academic majors, a lack of positive attitudes towards WhatsApp mobile learning had shown by the students from Science & Technology, Account & Finance and Education & Psychology (Al-Emran, Elsherif & Shaalan, 2015).

Ho5: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their WhatsApp experience for educational purposes.

Table 34. Mean and standard deviation for students' attitudes in terms of WhatsApp experience

Attitudemean	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than 1 year	9	3.0944	.20683	.06894	2.9355	3.2534	2.80	3.40
1 to 2 years	10	3.5650	.21991	.06954	3.4077	3.7223	3.30	4.00
More than 2 years	11	3.5636	.25893	.07807	3.3897	3.7376	3.15	4.05
Total	30	3.4233	.31287	.05712	3.3065	3.5402	2.80	4.05

Table 35. Differences among students' attitudes in terms of their WhatsApp experience

Attitudemean	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.391	2	.695	12.967	.000
Within Groups	1.448	27	.054		
Total	2.839	29			

To determine if there is any significant difference among the students' attitudes towards the use of WhatsApp mobile learning with regard to their WhatsApp experience for educational purposes, means and standard deviations for the students' WhatsApp experience for educational purposes, including (less than 1 year, 1 to 2 years and more than 2 years), are calculated as shown in Table 34. A one way analysis of variance (ANOVA) is performed to examine if there is any statistical significant difference between mean values. As shown in Table 35, results revealed that there were statistical significant differences ($p = 0.000$, $p < 0.05$) among the students' attitudes with regard to their WhatsApp experience for educational purposes and the F value is (12.967). The result of this hypothesis could refer to reason that students with different WhatsApp experiences had different technological awareness. Not all of them were ready to the implementation of WhatsApp mobile learning into learning classrooms. It seemed that students with more than 2 years experiences on WhatsApp were more positive towards m-learning compared to those who were not (Al-Emran, Elsherif & Shaalan, 2015).

H06: There is a significant difference between students' attitudes towards the use of WhatsApp mobile learning and their year of study (level of study).

Table 34. Mean and standard deviation for students' attitudes in terms of their year of study

Attitudemean	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	5	3.6600	.34533	.15443	3.2312	4.0888	3.30	4.05
2	10	3.3950	.34193	.10813	3.1504	3.6396	2.90	3.85
3	8	3.3750	.30472	.10774	3.1202	3.6298	2.80	3.80
4	7	3.3500	.22913	.08660	3.1381	3.5619	3.10	3.80
Total	30	3.4233	.31287	.05712	3.3065	3.5402	2.80	4.05

Table 35. Differences among students' attitudes in terms of their year of study

Attitudemean	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.344	3	.115	1.197	.330
Within Groups	2.494	26	.096		
Total	2.839	29			

To determine if there is any significant difference among the students' attitudes towards the use of WhatsApp mobile learning with regard to their year of study, means and standard deviations for the students' year of study, including year 1, 2, 3 and 4, are calculated as shown in Table 34. A one way analysis of variance (ANOVA) is performed to examine if there is any statistical significant difference between mean values. As shown in Table 35, results revealed that there is no statistical significant differences ($p = 0.330$, $p > 0.05$) among the students' attitudes with regard to their year of study and the F value is (1.197). The result of this hypothesis could refer to reason that almost all the students had potential capability to incorporate mobile technology into their learning regardless of level of study. Therefore, no difference had been reported (Al-Emran, Elsherif & Shaalan, 2015).

4.8 Reliability Statistics on Attitude Variables

An instrument is said to have a high internal value when the reliability of Cronbach Alpha is more than 0.8 and not less than 0.6 (Henseler et al., 2009; Nunnally & Bernstein, 1994). The attitude variables used for this study were adapted from Bicen & Uzunboylu (2013) in their past research "The Use of Social Networking Sites in Education: A Case Study of Facebook" which yielded a Cronbach's alpha of 0.98.

4.9 Summary

This chapter involves the interpretation of analysed data. The results of the descriptive statistical analysis of the data are presented with a discussion of the findings. Basically, this chapter covers the introduction, background information, students' characteristics, level of adoption of ICT among students, attitudes towards adoption of WhatsApp, experiences of using WhatsApp for educational purposes, factors slow down the adoption of WhatsApp, hypothesis testing, reliability issues and a summary of chapter 4.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

5.0 Introduction

This study investigates the adoption of WhatsApp among students in Ipoh higher education institutions. The findings of the results obtained from the data analysis in the previous chapter have been used to draw conclusions and recommendations for further research in order for any possible actions to be taken to improve the use of social media among students. Therefore, there is an urgent need for researcher to structure the summary of findings in order to come out a discussion on the understanding of how WhatsApp supports students' learning.

The main objectives of this study are reviewed. It first examines students' competencies in ICT by assessing their current knowledge and skills in computing. The results obtained may reveal that not all learners are competent in using social media tools as a minority of them have limited skills in ICT. It then explores the perceived attitudes students possessed towards the adoption of WhatsApp in higher education. The research findings may indicate that most of the young adults show acceptable or positive attitudes towards the integration of WhatsApp into academic learning.

The study next evaluates students' experiences of WhatsApp mobile learning by looking at their past habits and practical contact with WhatsApp group. The findings of this research show that students reflected a positive learning experience with WhatsApp. WhatsApp has been treated as an educational tool and learners gain various benefits from using it. Students have rather experienced the positive impacts of using WhatsApp compared to those negative effects. The research last investigates the factors influencing the adoption of WhatsApp. The results of the study reveal that most of the schools do not provide regular Internet access to students. Consequently, students are not able to afford the high costs of Internet connectivity.

5.1 Summary of Findings

Overall, the research findings are summarized into four section headings. They are divided as ‘Level of adoption of ICT among tertiary school students’, ‘Students’ attitudes towards the adoption of WhatsApp mobile learning’, ‘Educational benefits of using WhatsApp’ and ‘Factors affecting students’ adoption of WhatsApp’. All these findings are important and useful for further research. They provide a basic understanding of the conducted research and guide the future researchers who plan to develop and implement this research issue. Therefore, researcher has now been presenting with all the information about the topic.

The first finding shows students’ competencies in ICT use. Research question one tends to explore the knowledge level students possessed towards ICT and their perceived skills in using computer applications. The results of the study indicate that students are knowledgeable on ICT as they have excellent skills in using certain ICT applications such as word processing, emailing, Internet and instant messenger. The findings of the results are in line with research done by Gross (2014) where it reflects that students with high competencies in ICT tend to use social media to make friends, share links and promote online learning.

The second finding demonstrates students’ attitudes towards WhatsApp mobile learning. Research question two examines students’ perceived attitudes towards adoption of WhatsApp. The results of the study indicate that students possess positive attitudes towards WhatsApp learning. This result is in compliance with research carried out by Capan (2012). This study has stated that students with more positive attitudes towards ICT have more use on WhatsApp as they believe that WhatsApp is easy to use and they do not have to put much effort in utilizing it. The Davis Technology Acceptance Model (TAM) corresponds well with this study.

The third finding concerns about students’ experiences of WhatsApp mobile learning and the various educational benefits gained. Research question three investigates different advantages students obtained from using WhatsApp educational tool. The results of the study indicate that WhatsApp foster students’ learning, enhances

social skills, improves technology proficiency, promotes collaborative learning, increases self-confidence and develops social presence. These findings are parallel to studies done by Brennan (2001) in which the use of WhatsApp enhances learning outcomes and Blanchard et al. (2007) claimed that WhatsApp learning expands students' self-esteem in educational activities.

The last finding reveals the factors affecting students' adoption of WhatsApp into tertiary education learning. Research question four evaluates reasons slow down the participation and adoption of WhatsApp among students. The results of the study indicate that most of the students are too busy with school work and have limited technical support on how to make full use of WhatsApp. Students are burdened with the high costs of Internet connectivity since they do not have regular Internet access. This finding is in line with study done by Buabeng-Andoh (2012) which reports that availability and accessibility to technology resources are essential to facilitate the adoption of WhatsApp mobile learning.

5.2 Conclusion of the Findings

This paper highlights students' attitudes towards the use of WhatsApp mobile learning in the higher education institutions. This study tends to explore students' attitudes which in turn will support the adoption of WhatsApp into educational learning. Many factors have been taken into consideration when examining those attitudes. Students' characteristics such as gender, age, subject area, WhatsApp experience, year of study and competency in computer use are taken into concern.

Different statistical analyses are used to test whether there is any significant difference among the students' attitudes towards WhatsApp learning with regard to the factors concerned. Findings indicated that there are statistical significant differences among the students' attitudes with regard to their subject areas and experiences of using WhatsApp. Those significant differences could be considered by the administration of academic institutions for future integration of WhatsApp mobile learning.

Although no significant difference has been noticed in the other factors, the mean scores were very promising for such factors. Results indicated that students' gender has positive attitudes towards WhatsApp mobile learning with non-significant differences. It can be concluded that WhatsApp mobile learning can be adopted by both genders without any additional special features. Results also indicated that students' age has positive attitudes towards WhatsApp mobile learning with non-significant differences. It can be concluded that WhatsApp mobile learning can be adopted by students from different age groups without any additional special features.

Results revealed that students' year of study has positive attitudes towards WhatsApp mobile learning with non-significant differences. It can be concluded that WhatsApp mobile learning can be adopted by students from different levels of study without any additional special features. Results also indicated that students' competencies in computer use have positive attitudes towards WhatsApp mobile learning with non-significant differences. It can be concluded that WhatsApp mobile learning can be adopted by students with different levels of ICT competence without any additional special features.

5.3 Implications of the Study

The findings of this study have implications on students, educators and policy makers. Social networking sites are viewed as sources of information. Students can share learning resources and interact with peers easily. This study motivates learners to adopt advanced social media tools such as Internet, YouTube and Facebook. Most important, WhatsApp mobile device has assisted students' learning and expanded their self-confidence. They become active participants in online group discussion and satisfied with the enjoyment WhatsApp brought to them.

With the rise of technology education, educators are more concerned with their competencies of ICT use. They must be able to use ICT applications effectively and well equip themselves in order to be on par with students. This study has reflected teachers' knowledge and skills in using certain computing applications such as using Excel to

record students' marks, prepare Power Point slides for class presentations and browse Internet for teaching resources. Teachers should possess positive attitudes towards ICT learning and upgrade the relevant skills.

Policy makers should formulate appropriate national ICT policy that responsive to the demand of knowledge-based society. They must be aware of the latest trends of social media use in education in order to train teachers on new ICT skills and enhance students' learning outcomes. This study informs the local researchers and academic experts about the use of WhatsApp in higher education institutions. It provides a platform for sharing and exchanging ideas relating to ICT pedagogy. This study is significant to Ipoh academic institutions.

5.4 Recommendations

Based on the findings drawn from this study, researcher has made the following recommendations to the respective policy makers, university authorities, educators, parents and students.

Recommendations to Policy Makers

1. Ministry of Education (MOE) should consider allocating more funds towards the connectivity of Internet in all tertiary education schools. Internet access is essential for successful adoption of WhatsApp mobile learning.
2. The government should enact a new law that would guide the users of the social network sites with the do's and don'ts. The enactment of social media use act is necessary to prevent students from engaging in cyber crimes.

Recommendations to University Authorities

1. University councils and senate should enforce the prohibition of the use of phones during lectures. It is advisable that students should stop accessing social networking sites during lectures as it would disturb others.

2. Higher education institutions should organize more seminars and conferences to enlighten students on the negative impacts of using social networking sites since most of the students get addicted with the Internet use and thus neglected their studies.

Recommendations to Educators

1. An assessment that addresses teachers' inadequacies in ICT should be carried out to ensure teachers' effective use of computers .

2. Senior or elder teachers require more ICT training as they are incompetent in ICT affairs.

Recommendations to Parents

1. Parents should possess positive attitudes towards the adoption of ICT by preparing their children in ICT competence.

2. Parents should improve the limited ICT facilities and resources at home in order for their children to adopt ICT learning.

Recommendations to Students

1. Students who are heavy users of Internet should moderate the use of social networking sites to avoid addiction.

2. Students should realize the benefits and dangers associated with the use of social media sites and create a balance between their online and offline lives.

5.5 Summary

This chapter presents a summary of research findings. Conclusions are made based on the findings of the study. Overall, chapter five outlines an introduction for the topic discussed. It then follows by the implications of the study which explains the contribution of this study to the students, educators as well as policy makers. Finally, recommendations to the local policy makers, university authorities, educators, parents and students are made. The summary of Chapter five is listed at the end of the study.

References

- Aamri, A. & Suleiman, K. 2011. *The Use of Mobile Phones in Learning English Language by Sultan Qaboos University Students: Practices, Attitudes and Challenges*. Canadian Journal of Scientific and Industrial Research, 2(3), 143-152.
- Albion, P.R. 1996. *Student-teachers' Use of Computers during Teaching Practice in Primary Classrooms*. Asia-pacific Journal of Teacher Education, 24(1), 63-73.
- Albirini, A. 2006. *Teacher's Attitudes towards Information and Communication Technologies: the Case of Syrian EFL Teachers*. Journal of Computers and Education, 47, 373-398.
- Al-Emran, M., Elsherif, H.M., & Shaalan, K. 2015. *Investigating Attitudes towards the Use of Mobile Learning in Higher Education*. Computers in Behaviour, 56(2016), 93-102.
- Algozzine, B., & Flowers, C.P. 2000. *Development and Validation of Scores on the Basic Technology Competencies for Educators' Inventory*. Educational and Psychological Measurement, 60(3), 411-418.
- Alsaleem, B.I.A. 2013. *The Effect of WhatsApp Electronic Dialogue Journaling on Improving Writing Vocabulary Word Choice and Voice of EFL Undergraduate Saudi Students*. Arab World English Journal, 4(3), 213-225.
- Amry, A.B. 2014. *The Impact of WhatsApp Mobile Social Learning on the Achievement and Attitudes of Female Students Compared with Face to Face Learning in the Classroom*. European Scientific Journal, 10(22), 116-136.
- Apeanti, W.O. & Danso, E.D. 2013. *Students' Use of Social Media in Higher Education In Ghana*. Journal of Current Engineering and Maths, 3(1).
- Attewell, J. 2004. *Mobile Technologies and Learning. A Technology Update and M-learning Project Summary*. Learning and Skills Development Agency.
- Babbie, E.R. 2010. *The Practice of Social Research*. 12th ed. Belmont, CA: Wadsworth Cengage.
- Barhoumi, C. 2015. *The Effectiveness of WhatsApp Mobile Learning Activities Guided by Activity Theory on Students' Knowledge Management*. Journal of Contemporary Educational Technology, 6(3), 221-238.
- Baylor, A.L. & Ritchie, D. 2002. *What Factors Facilitate Teachers Skill, Teacher Morale, and Perceived Student Learning in Technology-using Classrooms?* Journal of Computers and Education, 39(4), 395-414.
- Becta. 2003. *What the Research Says about Using ICT in Maths*. British Educational Communications and Technology Agency. Retrieved from http://www.becta.org.uk/page_documents/research/wtrs_maths.pdf.

- Bere, A. 2013. *Using Mobile Instant Messaging to Leverage Learner Participation and Transform Pedagogy at A South African University of Technology*. British: Journal of Educational Technology, 44(4), 544-561.
- Besley. 2008. *Cyber Bullying: An Emerging Threat to the "Always On" Generation*. Canadian Teacher Magazine, 18-20.
- Besser, H. & Donahue, S. 1996. *Introduction and Overview: Perspectives on Distance Independent Education*. America: Journal of Information Science, 47(11), 801-804.
- Bicen, H. & Uzunboylu, H. 2013. *The Use of Social Networking Sites in Education: A Case Study of Facebook*. Journal of Universal Computer Science, 19(5), 658-671.
- Blanchard, M., Metcalf, A., & Burns, J.M. 2007. *Bridging the Digital Divide: Creating Opportunities for Marginalized Young People to Get Connected*. Report for the Inspire Foundation and Orygen Youth. Australia: University of Melbourne.
- Bouhnik, D. & Deshen, M. 2014. *WhatsApp Goes to School: Mobile Instant Messaging between Teachers and Students*. Journal of Information Technology Education: Research, 13, 217-231.
- Boykin, K.M. 2011. *Professional Development, Literacy, and Technology Integration at Socio Economically Different Schools*. Retrieved October 21, 2011 from <http://www.isteconference.org>.
- Brady, K.P., Holcomb, L.B., & Smith, B.V. 2010. *The Use of Alternative Social Networking Sites in Higher Educational Settings: A Case Study of the E-learning Benefits of Ning in education*. Journal of Interactive Online Learning, 9(2), 151-170.
- Browne, E. 2003. *Conversations in Cyberspace: A Study of Online Learning*. Journal of Open Learning: 18(3), 245-260.
- Bruffee, K.A. 1993. *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*. Baltimore: John Hopkins University Press.
- Buabeng-Andoh, C. 2012. *Factors Affecting Teachers' Adoption and Integration of Information and Communication Technology into Teaching: A Review of the Literature*. International Journal of Education and Development using Information and Communication Technology, 8(1), 136.
- Capan, S.A. 2012. *Teacher Attitudes towards Computer Use in EFL Classrooms*. Frontiers of Language and Teaching, 3, 248-254.
- Castells, M. 2007. *Mobile Communication and Society: A Global Perspective*. Cambridge, Mass: The MIT Press.

- Chan, F.M. 2002. *ICT in Malaysian Schools: Policy and Strategies*. Malaysia: Kuala Lumpur.
- Chipunza, P.R.C. 2013. *Using Mobile Devices to Leverage Students Access to Collaborative-generated Resources: A Case of WhatsApp Instant Messaging at a South African University*. International Journal Conference on Advanced Information and Communication Technology for Education.
- Cohen, L., Manion, L. & Morvision, K. 2000. *Research Methods in Education*. London: Routledge Falmer.
- Comrie, C. 2015. *International Student Experience Report*. Project Report. University of the West of England, Bristol, UK. Retrieved from <http://eprints.uwe.ac.uk/26501/>.
- Cuseo, J., Fecas, V.S., & Thompson, A. 2010. *What All First-year Students should Know: The Most Potent, Research-based Principles of College Success*. Dubuque, IA: Kendall/Hunt.
- Daggett, W.R. 2010. *Preparing students for their Technological Future*. International Center for Leadership in Education. Retrieved from <http://www.leadered.com/pdf/PreparingStudentsforTechFuturewhitepaper.pdf>.
- Davies, F.D. 1989. *Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology*. MIS Quarterly, 13(3), 319-340.
- Davis, F.D, Bagozzi, R.P., & Warshaw, P.R. 1989. *User Acceptance of Computer Technology: A Comparison of Two Theoretical Models*. Journal of Management Science, 35(8), 982-1003.
- Dede, C. 1996. *The Evolution of Distance Education: Emerging technologies and Distributed Learning*. American Journal of Distance Education, 10(2), 4-36.
- Doney, P.M. & Cannon, J.P. 1997. *An Examination of the Nature of Trust in Buyer-seller Relationships*. America: Journal of Marketing, 61, 35-51.
- Dror, I.E. 2008. *Technology Enhanced Learning: the Good, the Bad, and the Ugly*. Pragmatics & Cognition, 16(2), 215 -223.
- Duch, B.J., Groh, S.E. & Allen, D.E. 2001. *The Power of Problem-based Learning*. Sterling, Virginia: Stylus Publishing LLC.
- Facebook. 2010. *Statistics*. Retrieved November 4 from <http://www.facebook.com/press/info.php?statistics#/press/info.php?statistics>.
- Felder, R.M. & Brent, R. 1996. *Navigating the Bumpy Road to Student-centered Instruction*. Journal of College Teaching.

- Georgetown University. 2010. *Bridging Babel: New Social Media and Interreligious and Intercultural Understanding*. Retrieved from <http://www.repository.berkeleycenter.georgetown.edu/UGFNewSocialMedia.pdf>.
- Gibbs, J. 1995. *Tribes*. Sausalito, CA: Center Source Systems.
- Grinager, H. 2006. *How Education Technology Leads to Improved Student Achievement*. National Conference of State Legislatures, 1-11.
- Gross, E. 2004. *Adolescent Internet Use: What We Expect, What Teens Report*. Journal of Applied Developmental Psychology, 25(6), 633-649.
- Henseler, J., Ringle, C.M. & Sinkovics, R.R. 2009. *The Use of the Partial Least Squares Path Modeling in International Marketing. New Challenges to International Marketing*. Advances in International Marketing, 20, 277-319.
- Higgins, S. 2003. *Does ICT Improve Learning and Teaching in Schools?* Retrieved August 12, 2011 from <http://www.bera.ac.uk/tiles/views/ict>.
- Huang, H.M. & Liaw, S.S. 2005. *Exploring Users' Attitudes and Intentions toward the Web as a Survey Tool*. Journal of Computers in Human Behaviour, 21(5), 729-743.
- Institute for Work and Health. 2015. *Cross-sectional Studies*. Issues 81, Toronto.
- Jadhav, D., Bhutkar, G., & Mehta, V. 2013. *Usability Evaluation of Messenger Applications for Android Phones using Cognitive Walkthrough*. New York: ACM Digital Library, 9-18.
- Jaeger, R.M. 1988. *Survey Methods in Educational Research*. Washington D.C.: Brooking Institution Press.
- Janor, H., Hashim, N.A., Abdullah, N.L., & Isa, R.M. 2015. *WhatsApp Messenger Application among Business Students in Malaysia- An Exploration*. Journal of Education, 18(2), 130-141.
- Java, A., Song, X., Finin, T. & Tseng, B. 2007. *Why We Twitter: Understanding Microblogging Usage and Communities*. Retrieved from [http://www.ebiquity.umbc.edu/paper/html/id/367/Why- We-TwitterUnderstanding-Microblogging-Usage-and-Communities](http://www.ebiquity.umbc.edu/paper/html/id/367/Why-We-TwitterUnderstanding-Microblogging-Usage-and-Communities).
- Jhuree, V. 2005. *Technology Integration in Education in Developing Countries: Guideline to Policy Makers*. International Education Journal, 6(4), 467-483.
- Kandasamy, M. & Shah, P.B.M. 2013. *Knowledge, Attitude and Use of ICT among ESL Teachers*. Retrieved on Feb 10, 2014 at http://www.worldconferences.net/proceedings/gse2013/papers_gse2013/247%20moganashwari%20Kandasamy_Parilah%20Bt%20Hj%20Mohd%20Shah.pdf914-930.

- Karthuri, N.J. & Pals, A.D. 1993. *Introduction to Educational Research*. Egerton: Egerton University Educational Book Series.
- Kerka, S. 1996. *Distance Learning, the Internet, and the World Wide Web*. ERIC Digest. ERIC Document Reproduction Service No. ED 395214.
- Kerlinger, F.N. 1973. *Foundations of Behavioral Research*. New York: Holt, Rinehart and Winston, Inc. 445-452.
- Kerlinger, F.N. 1986. *Foundations of Behavioral Research*. 3rd ed. Holt Rinehart & Winston.
- Kerlinger, F.N. 2002. *Foundations of Behavioural Research*. New Delhi: Surjeet Publications.
- Kituyi, G. & Tusubira, I. 2013. *A Framework for the Integration of E-learning in Higher Education Institutions in Developing Countries*. International Journal of Education and Development using Information and Communication Technology, 9(2), 19-36.
- Kombo, D.K. & Tromp, D.L.A. 2006. *Proposal and Thesis Writing*. Nairobi: Paulines Publications Africa.
- Kothari, C.R. 2009. *Research Methodology: Methods and Techniques*. New Delhi: New Age International Publishers.
- Koul, L. 1993. *Methodology of Educational Research*. New Delhi: Vani Educational Books.
- Kumar, A. 2002. *Research Methodology in Social Science*. KL: Samp & Sons.
- Kuppuswamy, S. & Shankar, N. 2010. *The Impact of Social Networking Websites on the Education of Youth*. International Journal of Virtual Communities and Social Networking. Retrieved from <http://www.igiglobal.com/article/internationaljournal-virtual-communities-social/43067>.
- Lauricella, S. & Kay, R. 2013. *Exploring the Use of Text and Instant Messaging in Higher Education Classrooms*. Journal of the Association for Learning Technology, 21.
- Lau, B.T. & Chia, H.S. 2008. *Exploring the Extent of ICT Adoption among Secondary Teachers in Malaysia*. International Journal of Computing and ICT Research, 2(2), 19-36.
- Lave, J. & Wenger, E. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.
- Lewin, C. & McNicol, S. 2015. *Supporting the Development of 21st Century Skills through ICT*. KEYCIT 2014: Key Competencies in Informatics and ICT, 7.

- Luaran, J.E., Ghazali, A.D.M., & Jin, J. 2014. *ICT Integration in Classrooms: The Educators' Perspective based on their School and Home ICT Use*. ESTEEM Academic Journal, 10(1), 66-74.
- Lynch, K. & Baker, J. 2005. *Equality in Education: An Equality of Condition Perspective*. Theory and Research in Education, 3(2), 131-164.
- MacHemer, P.L. & Crawford, P. 2007. *Student Perceptions of Active Learning in a Large Cross-disciplinary Classroom*. Journal of Active Learning in Higher Education.
- Maloney, E. 2007. *What Web 2.0 can Teach us about Learning?* Chronicle of Higher Education, 53 Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric Theory* (3). New York: McGraw-Hill.
- Mansor, N., Ibrahim, S.H., Ahmad, N.M., Salam, W.H.W., Zulkanain, M., & Jamaluddin, H.N.I. 2014. *Social Media in ESL Classroom: Exploring the Impact on Language Learning*. Journal of Business and Social Development, 2(1), 14-18.
- Mathieson, K. 1991. *Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behaviour*. Information Systems Research, 2(3), 173-191.
- May, S. 1993. *Collaborative Learning: More is not Necessary Better*. America: Journal of Distance Education, 7(3), 39-50.
- Mikre, F. 2011. *The Roles of Information Communication Technologies in Education: Review Article with Emphasis to the Computer and Internet*. Ethiopian Journal of Education and Science, 6(2), 109-126.
- Miles, M.B. & Huberman, A.M. 1994. *Qualitative Data Analysis*. 2nd Ed. Thousand Oaks, CA: Sage Publications.
- Minocha, S. 2009. *A Case Study Based Investigation of Students' Experiences with Social Software Tools*. New Review of Hypermedia and Multimedia, 15, 245-265.
- Momanyi, L., Norby, R., & Strand, S. 2006. *The Need for Integration of Technology in K-12 School Settings in Kenya, Africa*. AACE Journal, 14(2), 154-177.
- Mugenda, O.M. & Mugenda, A.G. 1999. *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- Mugenda, O.M. & Mugenda, A.G. 2003. *Research Methods Qualitative Approaches*. Nairobi: Africa Centre for Technology Studies.
- Mulwa, A.S. & Kyalo, D.N. 2013. *The Influence of Principals', Teachers' and Students' Attitudes on Readiness to Adopt E-learning in Secondary Schools in Kitui District, Kenya*. European Scientific Journal, 9(5), 183-202.

- Mumtaz, S. 2000. *Factors Affecting Teachers' Use of Information and Communications Technology: A Review of the Literature*. Journal of Information Technology for Teacher education, 9(3), 319-341.
- Motiwalla, L.F. 2007. *'Mobile Learning: A Framework and Evaluation'*. Journal of Computers and Education, 49(3), 581-596.
- Nowak, A. 2008. *IPhone Description-Part 1*. Retrieved from <http://www.articlesbase.com/computers-articles/iphone-description-part-1-420010.html>.
- Olsen, C. & St. George, D.M.M. 2004. *Cross-sectional Study Design and Data Analysis*. College Entrance Examination Board.
- Opie, C. & Katsu, F. 2000. *A Tale of Two nation al Curriculum Issues in Implementing the National Curriculum for Information and Communications in Initial Teacher Training*. Journal of Information Technology for Teacher Education, 9(91), 79-93.
- Onen, W.Y. & Oso, D. 2009. *A General Guide to Writing Research Proposal and Report: A Handbook for Beginning Researchers*. Kampala: Makerere University.
- Plomp, T., Anderson, R.E., Law, N., & Quale, A. 2009. *Cross-national Information and Communication Technology: Policies and Practices in Education*. Charlotte, N.C.: Information Age Publishing.
- Pollizi, G. 2011. *Measuring School Principals' Support for ICT Integration in Palermo, Italy*. Journal of Media Literacy Education, 3(2), 113-122. Retrieved March 6, 2012 from <http://www.jmle.org>.
- Prensky, M. 2001. *Digital Natives, Digital Immigrants*. NCB University Press.
- Raman, A. 2010. *ICT in Education*. Kedah: University Utara Malaysia Press.
- Raman, A. & Mohamed, A.H. 2013. *Issues of ICT Usage among Malaysian Secondary School English Teachers*. Journal of English Language Teaching, 6(9), 74-82.
- Raman, A., Sani, R.M., & Kaur, P. 2014. *Facebook as a Collaborative and Communication Tool: A Study of Secondary School Students in Malaysia*. Journal of Social and Behavioral Science, 155(2014), 141-146.
- Rambe, P. & Chipunza, C. 2013. *Using mobile Devices to Leverage Student Access to Collaboratively-generated Resources: A Case of WhatsApp Instant Messaging at A South African University*. International Conference on Advanced Information and Communication Technology for Education. South Africa: Atlantis Press.
- Reddy, V.P. 2014. *The Influence of Social Media on International Students' Choice of University and Course*. Queensland University of Technology.
- Rich, S. & Hilbert, K. 2004. *Designing an Online Course for Distance Education Course Instructors and Authors*. Wisconsin: University of Wisconsin.

- Rogers, J. 2000. *Communities of Practice: A Framework for Fostering Coherence in Virtual Learning Communities*. Journal of Educational Technology and Society, 3(3), 384-392.
- Rosen, D., Stefanone, M.A., & Lackaff, D. 2010. *Online and Offline Social Networks: Investigating Culturally-specific Behaviour and Satisfaction*. New Brunswick: Institute of Electrical and Electronics Engineers, Inc.
- Rovai, A.P. 2002. *Building Sense of Community at a Distance*. The International Review of Research in Open and Distributed Learning, 3(1).
- Royal, M. A. & Rossi, R.J. 1996. *Individual-level Correlates of Sense of Community: Findings from Workplace and School*. Journal of Community Psychology, 24(4), 395-416.
- Rozell, E.J. & Gardner, W.L. 1999. *Computer-related Success and Failure: A Longitudinal Field Study of the Factors Influencing Computer-related Performance*. Computers in Human Behavior, 15(1), 1-10.
- Russell, G. & Bradley, G. 1997. *Computer Experience, School Support and Computer Anxiety*. Journal of Educational Psychology, 17(3), 267-284.
- Samuel, R.J. & Zaitun, A. 2007. *Do Teachers have Adequate ICT Resources and the Right ICT Skills in Integrating ICT Tools in the Teaching and Learning of English Language in Malaysian Schools?* The Electronic Journal on Information Systems in Developing Countries, 29(2), 1-15.
- Sawyer, R. 2011. *The Impact of New Social Media on Intercultural Adaptation*. Senior Honors Projects. University of Rhode Island. Retrieved from <http://www.digitalcommons.uri.edu/srhonorsprog/242>.
- Schiller, J. 2003. *Working with ICT: Perceptions of Australian Principals*. Journal of Education Administration, 41(3), 177-185.
- Smart School Project Team. 1997. *The Malaysian Smart School: A Conceptual Blueprint*. Kuala Lumpur: Government of Malaysia.
- Smith, R. 2015. *The Role of Social Media in Higher Education Marketing*. Retrieved May 12, 2015 from <http://www.bostoninteractive.com/blog/industries/social-media-higher-education-marketing>
- Snelbecker, G.E. 1999. *Some Thoughts about Theories, Perfection and Instruction*. New Jersey: Lawrence Erlbaum.
- Susilo, A. 2014. *Exploring Facebook and WhatsApp as Supporting Social Network Applications for English Learning in Higher Education*. Kuala Lumpur: Open University Malaysia Press.

- Timmis, S. & Cook, J. 2004. *11 Motivating Students towards Online Learning: Institutional Strategies and Imperatives*. Papers Track 2: Teaching and Learning Models, 73-79.
- Urista, M.A., Dong, Q., & Day, K.D. 2009. *Explaining Why Young Adults Use MySpace and Facebook through Uses and Gratifications Theory*. Journal of Human Communication, 12, 215-229.
- Veerappan, V., Wei, H.S., Wong, S.P., & Paramasivan, S. 2014. *Mobile Assisted Teaching and Learning in an Institute of Higher Education*. International Review of Social Sciences and Humanities, 8(1), 68-79.
- Visser, P.S., Krosnick, J.A., & Lavrakas, P.J. 2014. *Chapter Nine: Survey Research*. Handbook of Research Methods in Social and Personality Psychology, 223-252.
- Walker, J., Wasserman, S., & Wellman, B. 1994. *Statistical Models for Social Support Networks*. Thousand Oaks, CA: Sage, 53-78.
- Wellman, B. & Gulia, M. 1999. *The Network Basis of Social Support: A Network is more than the Sum of its Ties*. Boulder, CO: Westview Press.
- WhatsApp. 2010. *BlackBerry App World*. Retrieved from: <http://www.appworld.blackberry.com/webstore/content/2360>.
- Wylie, J. 2015. *Mobile Learning Technologies for 21st Century Classrooms*. Retrieved 28 March, 2016 from <http://www.scholastic.com/browse/article.jsp?id=3754742>
- Yeboah, J. & Ewur, G.D. 2014. *The Impact of WhatsApp Messenger Usage on Students Performance in Tertiary Institutions in Ghana*. Journal of Education and Practice, 5(6), 157-164.
- Yildirim, S. 2007. *Current Utilization of ICT in Turkish Basic Education Schools: A Review of Teachers' ICT Use and Barriers to Integration*. International Journal of Instructional Media, 34(2), 171-186.
- Yusuf, A. n.d. *An Analysis of the Influence of ICT on Student Learning Process in UOUS Sokot*. Retrieved from http://www.academia.edu/6943820/An_analysis_of_the_influence_of_ICT_on_students_learning_process_in_UOUS_Sokot.
- Zanamwe, N., Rupere, T., & Kufandirimbwa, O. 2013. *Use of Social Networking Technologies in Higher Education in Zimbabwe: A Learners' Perspective*. International Journal of Computer and Information Technology, 2(1), 8-18.
- Zhao, T. & Cziko, G. 2001. *Teachers' Adoption of Technology: A Perceptual Control Theory Perspective*. Journal of Technology and Teacher Education, 9(1), 15-30.
- Zigama, J.C. 2010. *Factors Affecting Primary School Teachers' Attitude towards the Use of ICT in Education in Rwanda: A Case of Kigali city*. Unpublished D. Phil. Thesis, Eldoret: Moi University.

SURVEY QUESTIONNAIRE ON USE OF WHATSAPP AMONG STUDENTS IN IPOH HIGHER EDUCATION INSTITUTIONS

I am a researcher from Wawasan Open University. I am surveying the adoption of WhatsApp instant messaging among Ipoh student population (tertiary). I will be grateful if you could kindly fill up this questionnaire for the survey. You are rest assured that all information will solely be used for academic purposes and will be treated confidentially.

SECTION 1: DEMOGRAPHICS

1. What is your gender?

Male Female

2. How old are you?

15-20 21-25 26-30 31-35
 36-40 41-45 46-50 51 above

3. What is the name of your university? _____

4. Which year of study are you in?

1 2 3 4

5. What is your subject area?

Science&Technology Account&Finance Education&Psychology
 Other (_____)

6. Which of the following devices do you use to connect to the Internet? (You may tick more than one box)

Laptop Desktop computer Cell phone
 Smart phone iPad Other (_____)

7. Where do you usually access the Internet from? (You may tick more than one)

Home Internet café Computer lab on campus
 Workplace Hotspots on town Other (_____)

8. How often do you access the Internet?

Several times per day Once a day Several times per week
 Once a week Once a month Several times per month

9. Do you have a social networking account or profile?

Yes No

10. Which of the following accounts do you have? (You may tick more than one)

Facebook Twitter WhatsApp YouTube Instagram
 Other (_____)

SECTION 2: KNOWLEDGE AND SKILLS WITH VARIOUS COMPUTER APPLICATIONS

Research Question 1: What is the extent of competency among students in using WhatsApp and other ICT applications based on their current knowledge level on ICT?

Item	Very Competent	Competent	Somehow Competent	Not Competent
Word Processing				
MS Excel				
Power Point				
E-mailing				
Internet Browsing				
Blog				
Wiki				
Instant Messenger				

2. Have you ever used various ICT applications for your learning?

Questions	Yes	No
Have you ever used a webpage, blog or wiki to present learning materials?		
Have you ever used email to send learning resources?		
Have you ever used video or audio to learn English?		
Have you ever uploaded any materials for learning?		
Have you ever go through a computer-based exam?		
Have you ever used write an essay electronically?		
Have you ever used any social network sites to study?		
Have you ever receive any kind of computer training?		
Have you ever contact your lecturers and peers online?		
Have you ever share ideas through online discussion forums?		

SECTION 3: PERCEPTIONS AND ATTITUDES TOWARDS ICT

Research Question 2: What are the students' perception and attitude towards WhatsApp learning?

Item	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I think WhatsApp is important for educational learning					
I prefer using WhatsApp because of its addable materials					
Having lessons on WhatsApp helps me to develop team work skills					
WhatsApp enables me to share information and connect ideas with peers					
WhatsApp increases my interests and motivation in lessons					
Tagging my peers in helpful posts helps me to learn better					
WhatsApp increases my participation in learning					
I feel WhatsApp learning is a waste of time					
Chatting on WhatsApp helps me to maintain social relationships					
WhatsApp does not increase my self-esteem because I am not able to express my thoughts openly					
WhatsApp increase my communication with friends more efficiently					
I feel a sense of belonging using WhatsApp					

Item	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
WhatsApp is new to me and I am not comfortable using it					
The use of WhatsApp stresses me out					
My grades would be better if I could contact tutors through WhatsApp after school hour					
The use of WhatsApp in learning excites me					
I realize that WhatsApp has changed the way I learn					
WhatsApp is not conducive to my learning because it is not easy to use					
WhatsApp helps me to understand concepts in more effective ways					
I find that WhatsApp is not conducive to good learning because it creates technical problems					

SECTION 4: PRACTICES AND USAGE OF WHATSAPP

Research Question 3: To what level and extent are students integrate WhatsApp into learning process?

1. Have you ever used WhatsApp before? Yes No
2. Do you have a WhatsApp account? Yes No
3. How long do you have the experience of using WhatsApp?
 Less than 1 year 1 to 2 years More than 2 years
4. Specify the frequency of visit or number of times you log to your account.
 Several times per day Once a day Several times per week
 Once a week Once a month Several times per month

5. Specify the length of the session or time you spend logged on.

- Less than 30 minutes 30 to 60 minutes
 1 to 3 hours More than 3 hours

6. Why do you use WhatsApp? (You may tick more than one)

- Free of charge Convenient and user friendly
 Peer influence Communicate instantly with a group of people
 Express feelings Other (_____)

7. What do you use WhatsApp for? (You may tick more than one)

- Education purposes Social activities E-commerce
 Job hunting Other (_____)

8. Do you think Whatsapp should be used for education?

- Yes No

9. What kinds of education activities do you conduct with the use of WhatsApp?

- Group discussion Group studies Sharing resources
 Informing educational agenda Other (_____)

10. How many hours per week do you spend in WhatsApp education activities?

- Less than 5 hours 5 to 10 hours 10 to 15 hours
 15 to 20 hours More than 20 hours

11. What are the benefits of using WhatsApp in students' learning?

Benefit	Your Ranking
Improve technology proficiency	
Enhance social skills	
Foster learning	
Improve creativity and innovativeness	
Learn new things in new ways	
Communicate in new ways with new people	
Collaborative problem solving	
Facilitate group projects	
Learning can extend beyond classroom	
Improved receptivity to new ideas	

SECTION 5: FACTORS INFLUENCING ADOPTION OF WHATSAPP

Research Question 4: What are the factors affecting students' adoption of WhatsApp for educational purposes?

1. What are your concerns about using WhatsApp in your learning?

Concern	Yes	No
I am concerned about my personal privacy		
I am not sure who can access my personal information and what it will be used for		
I have limited skills in computing		
I do not have regular Internet access		
Cost of Internet connectivity is high		
I already get too many emails and online communications application tools		
I am too busy and do not have time to use social media		
I do not see any personal benefits		
I do not see any educational benefits		

Thank you for your cooperation.