IMPACTS OF TECHNOLOGY RESOURCES AWARENESS AND UTILISATION ON ACADEMIC ENGAGEMENT OF ISLAMIC SECONDARY SCHOOL STUDENTS IN KANDAL PROVINCE, CAMBODIA

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BEING A DISSERTATION SUBMITTED TO THE FACULTY OF EDUCATION, INTERNATIONAL OPEN UNIVERSITY, THE GAMBIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER DEGREE (ME.d) IN EDUCATION

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DECLARATION

I, SIM LINAT with ID Number ST10240826, hereby declare that the project work entitled Impacts Of Technology Resources Awareness and Utilization On Academic Engagement Of Islamic Secondary School Students In Kandal province, Cambodia is a record of an original work done by me, as a result of my research effort carried out in the Department of Education, Faculty of Education, International Open University, The Gambia



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AI DECLARATION

I hereby declare that my present Thesis is purely the result of my own efforts, and no other kind of help is involved in this, except where otherwise stated or quoted. I only utilized AI as a supporting tool to enhance the quality of my script. I also affirm that this work has not been previously or concurrently submitted, in whole or in part, for any other degrees at IOU or elsewhere. If the rate of plagiarism and AI-generated content exceeds the standard limits set by IOU, I will accept the penalties outlined in the policy or as determined by the respective educator or examiner. I also understand and agree that the quality of my work will be judged by the educator or examiner, who has full discretion in grading.



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APPROVAL PAGE

I certify that this study was carried out by SIM LINAT with ID Number ST10240826 in the Department of Education, Faculty of Education, International Open University, The Gambia under my supervision.



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DEDICATION

This work is fully dedicated to Almighty Allah for sparing my life and also for granting me the opportunity to complete this program successfully. I also dedicate it to my beloved Parents Sahak Kasim and Mrs Lim Sokhai and my beloved Wife Mrs Ly No Ei.

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All glorify to Allah, the Almighty! It is He who divinely arranged my master degree in Educational Management as the gift of my life. My deeply and indescribably gratitude and appreciation go to my beloved parents: Mr. Sahak Kasim, Mrs. Lim Sokhai and my dear wife, Mrs. Ly No Ei. Without their supports, efforts, and encouragements, I could hardly complete this course. I would pray for them the prosperity of their good deed for this Dunya and Akhirat by the mercy of Allah, the most merciful and gracious. Ya Rab, May You please accept this Dua for them. Amin.

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ABSTRACT

To study how technology resources, awareness, and utilization as forecaster of academic engagement among Islamic secondary school students in Kandal province, Cambodia, is the main purpose of this study. A total of three hundred (300) students are selected as the sample of this study. Technology resource awareness and technology utilization are targeted as the independent variables, while academic engagement serves as the dependent variable. Data were collected using validated structured questionnaires, and the reliability coefficients of the instruments were found to be acceptable. Descriptive statistics and Pearson Product-Moment Correlation (PPMC) were used as the mean to analyze the obtained data to be analyzed. They were formulated and tested at the 0.05 level of significance due to the fact that among the three questions answered, two null hypotheses. The results revealed $r = .542$ and $p < 0.05$, which reflected that there was a significant relationship between technology resource awareness and academic engagement among Islamic secondary school students. It was also found that $r = .572$ and $p < 0.05$, showing a significant relationship between technology utilization and academic engagement of these findings. Based on these findings, one could make a conclusion that technology resource awareness and technology utilization significantly influence academic engagement among Islamic secondary school students. It was therefore recommended that school administrators and policymakers should improve students' awareness of available technological resources and promote the effective utilization of technology to enhance academic engagement in Islamic secondary schools.

CHAPTER ONE

INTRODUCTION

Background to the Study

In the modern educational environment, integration of Information and Communication Technology (ICT) becomes a necessity and a transformation agent. Everywhere in the world, governments, development partners, and schooling institutions have made huge investments in ICT to enhance the quality of teaching, efficiency of learning, and student engagement. As per UNESCO (2021), the enhancement of ICT integration helps expand knowledge access, interactive pedagogy, and lifelong learning. Such shifts in technology are not innovations alone, but also shape equity, inclusion, and relevance of societies, which are driven by digital globalization today.

Academic engagement has three dimensions: Behavior, Emotion, and Cognition (Fredricks et al., 2004), and is a major predictor of successful academic performance. The higher the degree of engagement of the individual student, the more likely they are to be motivated, persistent, and successful in school. Technology offers immense potential for encouraging this interaction when used appropriately. Digital platforms like Google Classroom, Moodle, and Khan Academy are successful for encouraging interactive learning, self-directed learning, and collaborative participation (Selwyn, 2016). However, it depends highly on students' awareness of available technologies by learners and their capability to harness them efficiently for learning activities.

Rapid economic growth in Southeast Asia has been accompanied by different degrees of ICT adoption in education. According to the World Bank (2022), Singapore and Malaysia have made tremendous achievements in ICT-based education, while less-resourced countries, such as Cambodia, Laos, and Myanmar, are still marred by deep disparities, particularly in their rural communities. In Cambodia, programs aimed at blending ICT into pedagogy have been introduced by its Ministry of Education, Youth, and Sport (MoEYS), some of which are Policy and Strategy on ICT in Education (2004-2008) and successive national strategies (MoEYS, 2021). Gaps, however, remain between urban and rural schools; even more serious are discrepancies between technology access, awareness, and utilization.

Kandal province offers a microcosm of such challenges. Islamic secondary schools mixed Cambodia's national curriculum with Islamic studies. On the other hand, their current level of infrastructure is vastly different from one another. Schools in urban areas normally have far better facilities than those in rural areas, which have extremely inadequate infrastructures along with few

computers and teachers that are inadequately trained in ICT (Department of Education, Kandal Province, 2023). In most cases, these students don't have much exposure to digital resources and therefore don't get any opportunities for using those resources as they participate in structured

academic engagement

This unawareness and utilization can potentially adversely affect how far students are behaviorally, emotionally, and cognitively involved in their process of learning. Drawing on other studies (Selwyn, 2016; UNESCO, 2021), it is insisted that equitable access to ICT is instrumental for encouraging a process of academic engagement and learning accomplishment. However, limited evidence exists about how their relationships are going through the Islamic educational context of Cambodia. As a result, ours attracted to explore how technology awareness and technology utilization have impacts on the academic engagement of students of Islamic secondary schools of Kandal province.

Statement of the Problem

The use of ICT in education has been globally recognized to enhance student engagement and academic success. The Cambodian government has implemented different ICT policies to support Cambodian education as per global standards. Despite efforts to bridge the digital divide, the divide between Islamic secondary schools and other schools remains large. The majority of students who attend these schools have minimal understanding of their personal technology infrastructure and what tools they can use in education. Such unawareness results in low confidence and participation levels in technology-based learning tasks. In addition, poor infrastructure, weak educator training cadre, and less institutional commitment to integrate ICT are other reasons that hinder effective technology use in classrooms (MoEYS, 2021; World Bank, 2022).

Consequently, academic engagement, defined as students' active, emotional, and cognitive engagement in learning, is still low in many Islamic secondary schools. Without the knowledge of/or access to technology tools, students cannot meaningfully access and utilize course content. This limits meaningful access, poorer academic achievement, weak motivation, and less lifelong learning capability.

Currently, there is limited empirical research on the impact of technology awareness and utilization on academics for students in Cambodia's Islamic schools. Thus, the current research seeks to fill this void and will investigate the degree to which technology awareness and utilization have an

impact on the academic engagement of students at selected Islamic secondary schools located in Kandal Province.

Purpose of the Study

To discover the impact that technology resource awareness and technology utilization have on

the academic engagement among Islamic secondary school students in Kandal province, Cambodia. In particular, the research indicates that it wants to obtain the:

1. Level of academic engagement among Islamic secondary school students, 2. Level of technology resource awareness among Islamic secondary school students, 3. Level of technology utilization among Islamic secondary school students, 4. Relationship between technology resource awareness and academic engagement among Islamic secondary school students.
5. Relationship between technology utilization and academic engagement among Islamic secondary school students.

Research Questions

1. What is the level of technology resource awareness among Islamic secondary school students?
2. What is the level of technology utilization among Islamic secondary school students?
3. What is the level of academic engagement among Islamic secondary school students?

Significance of the Study

This study is expected to benefit various stakeholders:

Policymakers: The benefit of this finding is to provide the Ministry of Education, Youth, and Sport (MoEYS) with research-based evidence to help refine and improve the ICT in education policy, as well as the overall ICT policy related to national ICT implementations. The evidence presented in this research project will inform potential solutions to the digital divide between rural and urban areas, particularly regarding ICT inequities, primarily within the Islamic school systems.

For school leaders: The results of this research will provide information to help administrators create ICT action plans, improve infrastructure, and assess resource allocation for ICT implementation in Islamic secondary schools.

For educators: This research is intended to motivate teachers to develop new and innovative methods of teaching and deliver lessons with the aid of technology in order to provide students with opportunities to participate in an academic environment.

For students: will experience more motivation, a better learning experience, and an improved academic success rate by being aware of factors that affect their participation at school and by using technology as a means of enhancing their overall experience at school.

For scholars and researchers: this paper aids in filling the gap in studies about the

convergence of ICTs with academic engagement in religious schools, in addition to laying the groundwork for future studies in Cambodia and Southeast Asia.

Scope of the Study

A survey was conducted on three Islamic secondary schools located in Kandal province. It was surveyed by students in Grades 7-12, educators, and administrators. The focus on three key variables: technology awareness as independent variable 1, technology utilization as independent variable 2, and academic engagement as the dependent variable. Quantitative approaches will be utilized, and structured questionnaires will be administered among participants in order to gather data. The results will be particularly for the Kandal province scenario, and cannot be generalized to all Islamic schools in Cambodia.

Operational Definition of Terms

The following terms are defined to provide clarity on the context of this study. **Technology**: Refers to the available information and communication technologies (ICTs) such as computers, broadband internet, projectors, and application software that might be used in the study, context, or pedagogical practices in Islamic secondary school settings. **Awareness of Technology**: Refers to the extent to which students in Islamic secondary schools know and understand the technological resources that exist and are available for academic purposes and work practices, and how to go about effectively utilizing them, as perceived by the students.

Utilization of Technology: Refers to the extent of the use and application of information and communication technology by both educators and students in the context of pedagogical practices, such as teaching and learning activities, strategies, tools, modes, materials or resources, and assessments or testing in Islamic secondary schools.

Academic Engagement: Refers to the academic engagement of students in Islamic secondary schools in terms of behavioral, emotional, and cognitive engagement.

Islamic Secondary Schools: Refers to Islamic secondary schools in Cambodia, which are defined as institutions that provide secondary-level education by integrating the national curriculum and Islamic teachings and values.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter deals with the review of relevant literature on the variables in the study. This review is done in three major parts: Conceptual Review, Theoretical Review, and Empirical Review. The following subheadings were discussed in the chapter:

Conceptual Review

Technology Resources in Education

Technology Resource Awareness

Utilization of Technology Resources

Academic Engagement

Theoretical Review

Technology Acceptance Model (TAM)

Constructionist Learning Theory

Engagement Theory

Empirical Review

Technology Resources and Academic Engagement

Technology Awareness and Academic Engagement

Technology Utilization and Academic Engagement

Appraisal of Literature Reviewed

Conceptual Review

Technology Resources in Education

Technology resources used in education are any type of digital resources that assist teachers and students in teaching and learning. These consist of hardware such as computers, tablets, projectors, and interactive whiteboards, software applications, Internet Services, and Learning Management Systems (LMS). Anderson (2010) states that technology resources are critical in education today; they help to increase access to information, enhance how lessons are delivered, and create interactive learning experiences. With this in mind, technology can be thought of as an essential element of effective education systems rather than just an additional tool.

Technological resources have actually changed how traditional, teacher-centered pedagogies have been developed into student-centered pedagogical environments. With the use of digital tools, students are able to participate actively, learning by being able to work with the

various resources that are available to them, work with each other, and perform independent research. In line with UNESCO (2021), ICT enhances the quality of education through new and creative ways to teach, increasing accessibility to knowledge, and promoting continued learning within schools and outside schools. The transformative nature of this change will be most evident in developing countries, where technological advancements are providing opportunities to eliminate unequal access to education and to improve the quality of education that is provided.

The contribution of technology resources is critical in supporting diverse learning styles. Multimedia technologies enable teachers to combine text, audio, and visual images together and help teachers support students' learning through visual, auditory, and kinesthetic methods all at once. Mayer (2014) shows that students will achieve a greater understanding of information when they are exposed to multiple formats of an educational technique. As a result of using technology, it helps create an environment that supports creating inclusive and flexible classrooms. Likewise, using technology does guarantee that there will be improved educational outcomes for all students.

The benefits of technology are dependent on the way it is used within the teaching and learning process. Trucano (2015) explains that successful integration of ICT requires adequate planning from the teacher, adequate training for teachers, and institutional support to be effective. If any of these factors are missing, technology may not be able to reach its full potential or be effectively used.

There are significant differences in access to technology resources in Cambodia. The Ministry of Education, Youth and Sport (MoEYS, 2021) reports that rural and Islamic secondary schools experience numerous constraints, including a lack of sufficient infrastructure, poor availability of internet connectivity, and insufficient numbers of digital devices. As a result, these constraints impact the students' ability to use technologies and develop digital skills in an effective manner. Thus, access to technology resources must be improved to promote educational equity and quality.

Technology Resource Awareness

Awareness of technology resources encompasses students' knowledge and understanding of the information and communication technology (ICT) tools available for their academic pursuits and of their importance in an academic context. Awareness involves knowing about the existence of digital resources, what the tools can do, and how they can help one succeed in their learning

process. According to UNESCO (2021), awareness is a critical precursor to the adoption of technology; if someone does not know that an ICT tool exists, they will be unlikely to use it. Awareness greatly impacts students' perceptions of technology. Mark Warschauer (2003) states that students who understand how to use digital tools are more confident and have positive attitudes toward using them. Further, students who are positive about using technology are more likely to be able to use ICT in their academic work for the purpose of active learning, because they will be better prepared for the integration of technology into their academic work. Technology awareness development is influenced by a variety of factors, including access to resources, teacher assistance and guidance, and institutional support. Ally and Tsinakos (2014) state that having structured exposure to ICT through classroom activities, as well as training programs, helps develop a familiarity with digital tools among students. Schools have an important role in assisting with the development of technology awareness.

In developing nations like Cambodia, there are clear differences in the level of awareness. The World Bank (2022) indicated that students living in urban areas have a much higher level of access to ICT than their counterparts in rural areas. This lack of access to ICT has limited the ability of many students to use these technologies for the purpose of enhancing their learning.

Awareness of technology is strongly connected to students' level of engagement with their academic work. Students who have awareness of how technology can help them learn are much more likely to participate in their academic activities. As Fredricks et al. (2004) assert, increased levels of awareness lead to increased levels of participation (i.e., behavioral participation; additional increased emotional involvement (interest); and deeper levels of cognitive understanding/journey to deeper levels of understanding. Therefore, it can be said that awareness is the necessary foundation upon which all forms of meaningful engagement are built.

Utilization of Technology Resources

Technology utilization refers to the actual use of ICT tools by students to support their learning activities. It involves applying digital resources for purposes such as research, communication, collaboration, and problem-solving. The OECD (2015) emphasizes that effective utilization is determined not by frequency alone but by the quality and purpose of use.

The degree to which technology is used is determined by the digital skills of the student, their level of access to resources, and their motivation. Kozma (2005) asserts that technology should be incorporated into instructional strategies that enhance active learning and promote

higher-level thinking skills. Thus, the greatest effect will occur if technology is viewed as a

supplement to or augmentation of traditional instructional methods rather than as a replacement for those same methods.

The Teachers play a central role to support an effective use of technology in the classroom. Competent teachers are able to design ICT-based learning activities that promote student engagement. In contrast, if teachers do not have sufficient knowledge of the use of technology, the effective integration of technology into the curriculum may be impeded. According to Selwyn (2016), the guidance of the teacher is an important reason for the use of technology in education.

The usage of technology in schools in Cambodia is uneven across the country. Most urban schools exhibit a higher level of ICT integration. However, rural and Islamic secondary schools struggle with limited resources and inadequate training (MoEYS, 2021), resulting in limited student opportunities to utilize technology for their learning.

The effective use of technology has a direct effect on the degree to which students are engaged in learning activities. When learners utilize ICT tools effectively, they are more likely to take part in learning activities, develop positive attitudes towards learning, and to engage in higher order thinking. According to the research of Fredricks et al. (2004), the use of technology in an effective manner also promotes the development of behavioural, emotional, and cognitive forms of engagement, making it a necessary factor for promoting success within education.

Academic Engagement

Academic engagement is the level of involvement, participation, and commitment that a student has in learning activities. It can be viewed as a multi-faceted construct composed of three types of components: behavioral, emotional, and cognitive (Fredricks et al., 2004; Skinner et al., 2009)

Behavioral engagement is defined as students' involvement with academics, including things like attending class, doing assignments, and interacting with each other. In an ICT supported environment, engagement can also include using digital technology to do research and connect with each other through online platforms. Appleton et al. (2008) found that students who are highly engaged behaviourally have a better chance of achieving academic success.

Emotional engagement is a student's emotional response to learning, including a student's sense of interest, enjoyment, and motivation. The use of technology enhances a student's emotional connection to the learning experience through increased interactivity and enjoyment.

As outlined by Reeve (2012), the use of multimedia has been shown to increase levels of interest and positive feelings about the learning process.

Cognitive engagement considers how much mental effort and thought students put into their studies, and ICT can help support students' cognitive engagement by giving them access to many different types of information sources and helping them solve problems and think critically. Kuh (2009) states that technology helps students learn deeply by allowing them to actively explore.

The academic engagement of Islamic high schools is based on traditional and innovative pedagogies. Traditional practices do focus primarily on memorization; however, ICT leads towards the development of more interactive and student-focused learning environments. According to Selwyn (2016), engaging students through ICT involves implementing strategies that facilitate interactions between learners and educators, therefore allowing for a greater level of engagement.

Academic engagement is a major contributing factor toward educational achievement in general. The purpose of this study was to determine how technology awareness and utilization impact academic engagement and ultimately learning outcomes, specifically in relation to Islamic secondary school students.

Theoretical Review

Technology Acceptance Model (TAM).

The ways an individual may adopt or utilize technology are based upon two primary determinants: perceived utility and perceived ease of use. This outlines the Technology Acceptance Model (TAM), which was developed by Davis (1989). Perceived utility involves the degree to which a student believes using technology provides value or will improve their academic performance; perceived ease of use involves how much effort a student believes is required to utilize that technology. These two beliefs consist of the student's overall attitude about technology, which ultimately leads to specific intentions and behavior for their actual usage of technology.

Regarding this research, the Technology Acceptance Model(TAM) is highly applicable to how students see technology resources in education. The student's awareness of technology resources will impact whether they see ICT tools in education as useful, and therefore, Islamic secondary school students in Kandal Province, who are aware of digital tools available for use (e.g., education apps, online learning platforms, school ICT facilities), are more likely to see digital tools as being beneficial for academically completing tasks such as reading, assignments and

revision. Their awareness of these digital tools will help to promote their perceived usefulness to the student and thus will serve as a strong predictor of an individual's use of the technology. In addition, the TAM suggests that perceived ease-of-use is an important determinant of actual use. When students know about the availability of technology resources, they might not use them if

they feel that using them would be complicated or difficult. In many secondary school settings in Cambodia, students may lack confidence as a result of limited ICT skills training and infrastructure challenges; therefore, it is essential to increase both technology awareness and basic ICT literacy to increase the actual utilisation of ICT.

TAM provides a clear explanation of the pathway for students from becoming aware of technology, developing positive perceptions of technology and having the intention to use it, to ultimately engaging academically through ICT-supported learning activities. Within this study, TAM serves as a valuable basis for investigating how technology resources relate to student engagement.

Constructionist Learning Theory

According to the Constructivist Learning Theory developed by Piaget (1973) and later expanded upon by Papert (1980), the learner is an active participant in developing their own knowledge base. It is through the process of exploration, experimentation, and interaction with both the external world and with others that one learns. Knowledge is created in a new and more meaningful manner when students are involved in the process of developing and testing their own understanding of what has been learned, rather than simply receiving information passively.

In relation to this study, technology utilization plays a central role in supporting constructionist learning. Information and Communication Technologies (ICT) tools, such as simulations, multimedia, digital storytelling, and interactive learning tools, to actively interact with learning materials. Students in Islamic secondary schools can utilise these tools to explore the content of the subject area, to solve problems, and to create their own understanding of complicated concepts.

Another part of the constructionist theory is that student-centered learning is the primary focus. With the correct integration of ICT, students are no longer passive listeners but instead active participants in the educational setting. This results in increased levels of behavioral engagement as students are much more involved with engaging in tasks involving online research, collaboration with others, and completing digital assignments.

In addition, constructivist learning promotes cognitive engagement through the encouragement of advanced thought processes and problem-solving. By using technology for learning purposes, learners are provided with many types of information that allow them to investigate, evaluate, and combine information to construct their knowledge. Constructing knowledge provides a basis for both comprehension and long-term retention of knowledge.

In this study, Constructionist Learning Theory explains how technology utilization enhances academic engagement by transforming learning into an active and meaningful process. It supports the idea that ICT is not just a tool for information delivery but a medium for knowledge construction.

Engagement Theory

Engagement theory was proposed by Kearsley and Shneiderman (1998) and focuses on the correlation between student participation and collaborative, purposeful, and project-based activities to achieve a creative result. Engagement Theory is divided into three major components: relate, create, and donate. The relating component emphasizes working together, the creating component refers to creating meaningful knowledge, and the donating component focuses on applying the knowledge to the real world.

The significance of this theory to the current research is that ICT tools offer substantial assistance to students in using collaborative and interactive methods of learning; students can share information, voice opinions, and collaborate on projects via digital platforms. Collaboration in Islamic secondary institutions allows for both academic and values-based learning experiences to occur simultaneously.

The "creating" part of engagement theory matches totally with technology utilization. Students who are involved with the use of the tools of ICT(Information and Communications Technology) are more likely to use technology to create digital assignments, presentations, and projects. These activities increased levels of engagement by allowing students control over their academic work and allowing them to express their knowledge in more socially creative ways.

The "donate" principle creates both cognitive and emotional engagement for students through a sense of purpose. When students use technology for meaningful tasks (e.g., completing a research paper or working on a service-learning project), they can connect their education to what happens outside the classroom; this not only has motivational implications but also improves students' commitment to their education.

In the context of this study, Engagement Theory explains how technology utilization promotes all three dimensions of academic engagement: behavioral (participation), emotional (motivation), and cognitive (deep learning). It provides a strong framework for understanding how ICT integration enhances student engagement in Islamic secondary schools.

Empirical Review

Technology Resources and Academic Engagement

Empirical studies demonstrate the link between access to technology resources and a positive impact on student engagement within an academic context. Technology resources include computers, internet access, educational software, and online learning platforms, all of which provide students with different ways to interact with the content of their courses (UNESCO, 2021). These resources enable students to actively participate in academic activities and encourage students to extend their participation into areas outside of the classroom.

As documented in research by Schindler et al. (2017), when students use Information and Communication Technology (ICT), they have a greater level of engagement behaviourally, as measured by submitting their tasks on time, completing their submission of work, and collaborating with other students. Technology resources enable students to learn in an ongoing manner both in school and beyond.

Studies show that technology resources increase the level of emotional involvement with the learner. According to Reeve (2012), interactive digital tools elicit greater enjoyment and positive attitudes toward learning in the learner. In conjunction with being able to use engaging technologies while learning, students feel a greater sense of connectedness to their academic experience.

Cognitive engagement is also facilitated by using technological resources. According to a report from the OECD (2015), digital tools allow for greater access to critical thinking, problem solving, and independent learning capabilities. Students have access to an array of different sources from which to obtain information, compare, and develop a greater understanding of academic content.

Research has shown that not all uses of technology are successful simply because they are available. Technology can be underused or misused if they are used incorrectly or misaligned with the user's needs. Therefore, having access to technology should be combined with awareness of how to use technology in an effective way so that academic engagement levels increase.

Technology Awareness and Academic Engagement

Technology awareness considerably influences academic engagement among students, which is shown by empirical literature. Awareness refers to students' understanding of available ICT tools and their academic functions. Studies have found that students with higher awareness levels are more likely to engage actively in learning activities (Warschauer, 2003).

According to Tinio (2003), awareness of ICT is a significant factor in increasing engagement from students when participating in educational activities by giving them more

confidence to utilize digital resources. Additionally, students who have an understanding of the purpose and benefits of technology also use it in a way that is beneficial academically rather than just for enjoyment.

Awareness also contributes to emotional engagement. As specified by Fredricks et al. (2004), explain that students who are aware of how technology supports learning tend to show greater interest and motivation. The continued support that an interested teacher provides encourages continued involvement in academic activity.

Also, increased student awareness and therefore cognitive engagement by students allows students to utilise technology for research, analysis, and solving problems. Research by the World Bank (2022) indicates that when students are aware of information and communication technologies (ICT), it improves the way students access and evaluate information, and as a result, their academic performance overall will improve.

In Cambodia, there have been significant differences between urban adolescents and rural students regarding technology. According to the Ministry of Education, Youth and Sports (2021), secondary school students who attend rural and Islamic schools have significantly lower levels of access to technology than do those students who go to urban schools, and as a result, students from these schools tend to become less engaged with their education. In order to provide all students with a fair chance at getting a good education, it will be necessary to improve access to and understanding of technology for all students.

Technology Utilization and Academic Engagement

Empirical research strongly supports the positive relationship between technology utilization and academic engagement. Utilization refers to the actual use of ICT tools for academic purposes such as studying, research, collaboration, and communication. Studies show that students who actively use technology are more engaged in learning activities (OECD, 2015).

According to Kozma (2005), if appropriately utilized, information and communication technology (ICT) will allow students to engage more effectively by motivating them to participate in interactive learning activities. Therefore, when technology is used meaningfully in the classroom, it can cause students to be more engaged in horseplay during discussions and online assignments, and in collaborative projects.

Using technology helps students to create a lot of emotional engagement with other students. For example, research done by Schindler et al. (2017) suggests that students use technology much more often than anyone else and have higher levels of motivation. Furthermore,

having interactive activities that use technology (e.g., videos, simulations, and apps) increases student enjoyment when it comes to learning.

Cognitive engagement also improved from ICT utilization. According to the OECD (2015), technology creates conditions such that students develop higher-order thinking skills such as analysis, evaluation, and problem solving. When digital tools are used for learning, students develop a deep level of engagement with the academic content that they study.

Research carried out in Cambodia has demonstrated that students are using ICT mostly for non-educational purposes (MoEYS, 2021); hence, as students do not have sufficient knowledge or direction on how to use technology, having access to technology will not encourage students to engage academically. Therefore, if the ICT is integrated into the curriculum correctly, the students will realise the maximum benefit from using ICT for educational purposes.

Appraisal of Literature Reviewed

The literature examined in this study shows that there is a consistent and well-supported conceptualisation of the interrelationship among: technology resources; awareness of technology resources; use of technology resources; and academic engagement. Across the many conceptual, theoretical, and empirical literature bases, there is considerable consensus that technology transforms educational systems through its extensive impact on the way that education is delivered. Technology resources include ICT tools, digital platforms, and internet-assisted learning environments. Technology resources are considered to have a positive impact on teaching and learning outcomes, particularly when they create interactive, student-centred learning environments that facilitate increased levels of engagement from students (UNESCO, 2021; Anderson, 2010). However, all of the literature reviewed indicates that technology does not

automatically lead to increased levels of academic engagement, unless it is properly incorporated and used in an appropriate manner for the purposes intended within the educational context.

These theoretical frameworks that support this study illustrate the relationships between technology awareness and its use for supporting student academic engagement. The Technology Acceptance Model (Davis, 1989) states that a student's perception of how useful and easy to use any particular technology directly leads them to adopt it. Therefore, technology awareness is the first step towards actual use of technology. Likewise, Constructivist Learning Theory (Papert, 1980; Piaget, 1973) supports the belief that the act of construction of knowledge, through the use of ICT tools, occurs best through interaction, exploration, and problem solving. Meaningful

learning occurs through activities that are collaborative, creative, and purposeful, all enhanced through technology use as stated by Engagement Theory (Kearsley & Shneiderman, 1998). Therefore, these three theories give us the entire framework by which we can demonstrate that the first step in using technology is awareness, and the second step in using technology is to enhance student engagement academically.

Studies have established a significant correlation between technology-related influences and student academic involvement. Students with access to different technologies and frequent use of those technologies will exhibit higher levels of behavioral, emotional, and cognitive involvement than students without technology access (Schindler et al., 2017; Fredricks et al., 2004). ICT use promotes higher levels of participation in academic tasks, increased motivation, and a greater ability for critical thinking (OECD, 2015). Technology awareness has also been positively related to student confidence and willingness to engage in digital learning activities (Warschauer, 2003). Together, these studies support both awareness and use of the variables as major predictors of academic engagement, showing the importance of the variables studied.

Despite these positive findings, the literature contains many limitations and inconsistencies. One major gap in the research is that many studies examining technology access or use do so in isolation from how awareness and use interact and affect academic engagement in an integrated model. In addition, the vast majority of current studies have been completed in developed countries or technologically advanced educational systems, which may not accurately represent the realities of developing countries like Cambodia. Most importantly, very few studies in the area of technology have considered Islamic secondary schools and how cultural, religious, and institutional factors influence students' perceptions of and use of technology. In addition, most

studies conducted in Cambodia have focused primarily on infrastructure and policy development rather than actually measuring students' awareness levels and usage patterns as they relate to engagement outcomes (MoEYS, 2021; World Bank, 2022).

Based on the identified gaps, this study is needed and timely as it aims to investigate how technology resource awareness and technology utilization collectively affect the academic engagement of Islamic secondary school students in Kandal Province, Cambodia. By considering both of these variables together, the student provides a more complete picture of the impact ICT has on education. It also provides evidence of how ICT is used in an educational setting that is specific to Islamic secondary education, because students' access, awareness, and use of technology may vary from those in mainstream schools. The overall findings from this research

are expected to help teachers, policymakers, and school leaders develop effective strategies for using technology in order to increase students' overall academic success.

CHAPTER THREE

METHODOLOGY

This chapter presents the research design, population, sample, sampling technique, instrumentation, validity of the instruments, reliability of the instruments, data collection, and data analysis.

Research Design

A quantitative survey research design is adopted to study the correlational (ex-post facto) type. This appropriate design is used to seek and examine the existing relationships among variables without manipulating them. Specifically, the study investigated the relationship between technology resource awareness, technology utilization, and academic engagement among Islamic

secondary school students.

The ex-post factor design is suitable when the independent variables have already occurred and cannot be controlled or manipulated by the researcher. In this study, students' levels of technology awareness and technology utilization already existed before data collection, and the researcher only measured their influence on academic engagement. This design allows for the examination of associations among variables and supports statistical analysis such as correlation and regression.

Population

The participants in this study are 1,450 students enrolled at three Islamic Secondary Schools in Kandal Province, Cambodia, as determined by the total number of students across those three schools that provide both Islamic religious education and Khmer formal education as specified by the output of the Ministry of Education, Youth and Sport (MoEYS). The students from grades 7 through 12 were randomly selected, as they represent students who receive formal educational instruction as well as religious education and, therefore, have an opportunity to learn through the use of technology for learning purposes

Sample and Sampling Procedure

A sample of 300 randomly selected students from three Islamic secondary schools (CIC, NICS, and ACS) located in Kandal province was surveyed for this study. The sample consisted of 120 students from the Cambodian Islamic Center (CIC), 122 students from Norol Iman Chroymetrey School (NICS), and 58 students from An-Nikmah Chroymetry School (ACS). The

sample size is sufficiently large to conduct meaningful statistical analyses and corresponds with samples used for comparable educational research that employed a correlational research design. A multistage sampling technique was used in this sampling procedure. The purposive sampling procedure was the first stage used to choose the schools that had both the National Curriculum and an Islamic education programme, according to the criteria established. The second stage was stratified random sampling, which groups students by grade level to obtain a representative sample of the different grade levels (7 to 12); therefore, it provides representation from all the grade levels of students in the selected sample of students. Simple random sampling was used as the third stage of sampling. A simple random sample was utilized for selecting the number of samples at each school of the three grades, with the same proportion as that of the three grades. Therefore, 304 total surveys were sent out, with only 300 being returned as complete and usable in the data collection and analysis process.

Three parts of the instrument included 21 total items, which consisted of 7 items measuring Technology Resource Awareness, 7 items measuring Technology Usage, and 7 items measuring Academic Engagement. Each part used a 5-point Likert Scale, where 1 meant "Strongly Disagree" and 5 meant "Strongly Agree". The use of a 5-point Likert Scale enabled data collection to be completed quickly and also allowed for accurate, reliable, and easily analyzable quantitative data through statistical methods.

Research Instruments

The following instruments have been adopted and re-validated for the study:

Awareness of Technology Resources Scale

Researchers developed a Students' Educational Technology Awareness Scale to measure how much students know about technology resources. This scale was previously used as a digital literacy tool (Ng, 2012) and also measured ICT competence(Aesaert et al., 2014), computer self efficacy(Compeau & Higgins, 1995), and technology acceptance (Davis, 1989). The 7 items on this scale were administered using a 5-point Likert scale, which ranged from Strongly Disagree (SD), Disagree(D), Neutral (N), Agree(A), Strongly Agree (SA). The scale was shown to have adequate internal consistency reliability, as demonstrated by a Cronbach's alpha coefficient of .73.

Utilization of Technology Resources Scale

To measure individuals' use of technology resources, the researcher developed a Utilization of Technology Resources Scale (UTRS), which used Theories of Digital Literacy (Ng, 2012), ICT

Competency (Aesaert et al., 2014), Computer Self-Efficacy (Compeau & Higgins, 1995), and The Technology Acceptance Model (Davis, 1989). The scale contained a total of 7 items, which were rated on a 5-point Likert scale (i.e., SD, D, N, A, SA), and the scale had adequate internal consistency reliability as demonstrated by a Cronbach's alpha of .79.

Academic Engagement Scale

The Technology-Supported Academic Engagement Scale (TSAES) is a scale developed by the researcher to measure student academic engagement. (Fredrick et al. 2004), The TSAES is based on existing literature on student engagement (Bond et al.2020) usage of technology to facilitate learning. The TSAES was also designed based on the existing literature concerning motivation and acceptance of technology (Davis, 1989; Schindler et al., 2017). The TSAES is made up of 7 items, which were all measured using 5-point Likert-type scales and included options of Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). The

TSAES scales showed an acceptable level of reliability, with an internal consistency established using Cronbach's alpha of .80.

Validity of the Instrument

The research instrument, questionnaire, is created by conforming to the validity of content and interface from the review and comments of educational research, educational technology, and Islamic educator experts. Using the comments and suggestions provided, the process of approving the instrument revised the clarity, wording, and relevance of each item.

The validation of the testing instrument ensured that it sufficiently and adequately covered the instrument's study variables as well as that it was culturally and contextually relevant to Cambodian Islamic secondary students.

Reliability of the Instrument

The pilot testing method is conducted to determine the reliability of the questionnaire. It was administered to 30 students from an Islamic secondary school among the three-chosen Islamic secondary schools outside the main study sample. The data of the respondents was analyzed by using Cronbach's Alpha to determine internal consistency.

Above 0.70 for all sections of the questionnaire was obtained from the analysis of the coefficient reliability, which indicates that the instrument was reliable and suitable for the main study.

Procedure for Data Collection

The approval from the three administrators of the selected Islamic secondary schools must be gained by sending a letter asking permission before the commencement of data collection to those targeted schools. When the approval is granted, the researcher and his/her trained assistants should work with the questionnaire in order to explain clearly the purpose of the study to the respondents, and to ensure that their responses are treated with strict confidentiality and anonymity. This will lead the survey smoothly in data collection from those students.

Researcher, along with trained research assistants, directly provided participants with well defined guidelines on how to correctly complete each of the survey instruments to ensure accurate recording of data from each participant, and all completed survey instruments were immediately collected to decrease chances of being lost or turned in incomplete.

Method of Data Analysis

The collected data were coded and analyzed by using the Statistical Package for the Social Sciences (SPSS) in line with the research questions and hypotheses of the study. Determining the distribution and levels of technology resource awareness, technology utilization, and academic engagement among the three Islamic secondary school students were used Percentages to address the research questions. While the Pearson Product-Moment Correlation (PPMC) was conducted to test the research hypotheses and to examine the nature and strength of the relationships between technology resource awareness and academic engagement, as well as between technology utilization and academic engagement. All hypotheses should obtain a 0.05 level of significance when it is tested.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the results and discussion of the findings of the study. The study investigated technology resource awareness and technology utilization as factors related to academic engagement among Islamic secondary school students in Kandal province, Cambodia. Among the five questions of the research questions, three questions were raised to guide the study, and two null hypotheses were formulated and tested. Descriptive statistics (frequency, mean, and standard deviation) to answer the research questions, and Pearson Product-Moment Correlation (PPMC) to test the hypotheses were used to analyze data. The results of the analyses are presented in the sections that follow:

Demographic Data of the Respondents

Table 1: Gender Distribution of Respondents

Variables Frequency Percent

Male 148 49.3

Female 152 50.7

Total 300 100.0

Table 1 shows that the respondents' gender was distributed as follows: Of 300 participants, 152 (50.7%) were females, and 148 (49.3%) were males; therefore, there was almost equal representation of both genders with a slight excess of females. This balance of respondents makes this sample representative of both genders, reducing the risk of gender-related bias and increasing the overall validity of the study's findings

Table 2: Grade Level Distribution of Respondents

Variables Frequency Percent

Grade 7 47 15.7

Grade 8 53 17.7

Grade 9 50 16.7

Grade 10 49 16.3

Grade 11 53 17.7

Grade 12 48 16.0

Total 300 100.0

Table 2 indicates 300 respondents across all grade levels. The data show much similarity across all grades, with only small differences between grade levels. Grades 8 and 11 each have the highest number of responses (53 respondents, 17.7%) of total grade-level responses; grade 9 is next with (50 respondents, 16.67%); followed by grade 10 with (49 respondents,16.3%); then grade 12 with (48 respondents, 16.0%); while grade 7 had the lowest number of responses at (47 respondents, 15.7%). Given relatively equal representation across grade levels in this study, the sample is the most representative of both lower and upper grades of secondary school students. A balanced representation of this sample minimizes any potential biases that may arise from unequal representation and strengthens the validity of the findings regarding technology resource awareness, technology resource utilization, and academic engagement from each grade level across all grades of the selected participants.

Table 3: Age Distribution of Respondents

Variables Frequency Percent

10-13 60 20.0

14-17 189 63.0

18-21 51 17.0

Total 300 100.0

Table 3 presents the age distributions of the respondents. The largest group of respondents is (189 respondents, 63.0%), falling into the age group between 14–17, followed by 10–13 (60 respondents, 20.0%), and lastly, 18–21 (51 respondents, 17.0%). The majority of respondents fall within an appropriate age range for being students who are attending a standard high school (consisting of mid-adolescent students). Additionally, having two other age groupings of respondents increases sample representativeness and allows for a more thorough assessment of respondents' knowledge of how to utilize technology resources, use technology resources for academics, and remain engaged academically through the use of technology resources.

Answering of Researh Questions

Research Question One: What is the level of technology resource awareness among Islamic secondary school students?

Table 4: Descriptive Statistics of Technology Resource Awareness

Items	N	Minimum	Maximum	Mean	Std. Deviation
I know what technology resources are available in my school.	300	1	5	3.53	1.089
I am familiar with how to use computers for learning activities.	300	1	5	3.10	1.128
I know how to access online learning platforms or digital libraries.	300	1	5	3.35	1.045
I am aware of mobile applications that can support my studies.	300	1	5	3.81	1.014
My educators have informed me about the available educational technologies.	300	1	5	3.74	1.060
I understand how technology can help improve my learning performance.	300	1	5	3.67	.954
I can identify the different digital tools I can use for academic tasks.	300	1	5	3.25	1.064
Valid N (listwise)	300				

Table 4 provides the descriptive statistics of students'technology resource awareness derived from responses from a sample of 300 participants. Mean scores range from (3.10 - 3.81) using a five-point Likert scale, which suggests students have moderate awareness of technology resources at this time. Though students know some things about ICT tools, their level of total awareness regarding them is below advanced levels. The values for the standard deviation (0.954 - 1.128)

further reflect moderate variability in student responses, which represents differences in the level of awareness amongst students regarding technology resources. The highest average score for mobile app awareness (M = 3.81, SD = 1.014) indicates that students are always aware of how to use mobile technologies, as they use them so often in their everyday lives. The high scores associated with teacher support (M = 3.74) and understanding the benefits of technology (M = 3.67) suggest that students are made aware of and/or understand the value of mobile technology through instructional use and perceived benefits associated with the use of mobile technology. The low average scores for using computers (M = 3.10) and identifying digital tools for completing academic work (M = 3.25) suggest that they lack the skills or experience to effectively use mobile technologies and also lack the ability to identify proper mobile technologies for completing academic work. Likewise, the moderately low average score of awareness of school resources (M = 3.53) and online learning platforms (M = 3.35) shows that students are not very aware of the resources available to them. Indications from this research demonstrate that there is a level of awareness among students about technology resources. Students have a greater familiarity with mobile technologies than they do with using computers

or academic resources online, for which there is a need for additional training and increased support from the college/university to help students use technology competently. **Research Question Two:** What is the level of technology utilization among Islamic secondary school students?

Table 5: Descriptive Statistics of Technology Utilization

Items	N	Minimum	Maximum	Mean	Std. Deviation
I use technology (computer, mobile phone, internet) to complete assignments.	300	1	5	3.71	1.138
I use the internet to search for academic information.	300	1	5	3.87	.954
I use technology to collaborate with classmates on schoolwork.	300	1	5	3.76	1.052
I use digital tools to prepare for tests and exams.	300	1	5	3.22	1.114
Technology is integrated into classroom lessons by my educators.	300	1	5	3.61	1.091
I use online learning platforms or educational apps for studying.	300	1	5	3.62	1.042
I regularly use technology to create or submit academic work.	300	1	5	3.34	1.129
Valid N (listwise)	300				

Table 5 evaluated Technology Utilization available for learning via ICT tools by 300 respondents through descriptive statistics and provided on a 5-point Likert-type scale (mean score of 3.22 - 3.87). ICT tool use by student respondents was moderate but not yet significantly high enough to

be classified as either fully intensive, optimally integrated, or consistently used; this is reflected in each of the standard deviations (0.954 - 1.138) reported for the individual response. Results indicate that students primarily utilize technology to access information, communicate with peers, and complete tasks. Searching for academic information online was the most highly utilized technology function (M = 3.87, SD = 0.954), followed by collaborating with classmates (M = 3.76) and completing assignments (M = 3.71), with moderate levels of use also found for educator's use of technology in lessons (M = 3.61) and using online learning platforms or educational apps (M = 3.62), suggesting only a partial use of ICT integration within teaching and learning processes. Conversely, lower levels of usage were identified when creating or submitting academic work (M = 3.34) and preparing for exams using digital tools (M = 3.22), indicating limited participation in using more advanced types of academic applications of technology. The research results show that overall use of technology is moderate, lower when used for higher-level academic tasks than when used for basic learning activities. The research study also shows that students know about technological resources; however, they tend to be more familiar with mobile tools than they are

competent at using a computer or are able to identify academic digital resources. As such, there is a need for improved training or assistance from the college on how to use technology efficiently.

Research Question Three: What is the level of academic engagement among Islamic secondary school students?

Table 6: Descriptive Statistics of Academic Engagement

Items	N	Minimum	Maximum	Mean	Std. Deviation
I pay attention and participate actively in class activities.	300	1	5	4.10	.758
I feel motivated to learn when technology is used in lessons.	300	1	5	3.93	.951
I feel more connected to my educators and classmates when digital tools are used.	300	1	5	3.79	1.071
I am willing to spend extra time learning with the help of technology.	300	1	5	3.81	.998
I find it easier to understand difficult concepts when technology is used.	300	1	5	3.91	.996
I actively participate in online learning activities or discussions.	300	1	5	3.64	1.087
Technology helps me stay focused and engaged during lessons.	300	1	5	3.77	1.097
Valid N (listwise)	300				

Table 6 presents the results of descriptive data gathered from 300 students regarding the behavioral, emotional, and cognitive involvement with learning as it relates to the use of technology as representatives of academic engagement by individuals using a five-point Likert scale. On average, students' overall mean scores ranged from 3.64 to 4.10 across all categories,

which is indicative of a moderately high level of academic engagement. The results indicated that the majority of respondents were actively involved, motivated, and engaged in their learning, while the corresponding standard deviations from the mean (0.758–1.097) indicate that there was a moderate amount of variability in the answers provided by students. The highest mean score of 4.10 (SD = 0.758) for students participating actively in class activities shows a very high level of behavioral involvement. Other mean scores indicate relatively high levels of emotional and cognitive engagement due to increased motivation from technology use (M = 3.93) and improved ability to understand difficult concepts through the use of technology (M = 3.91). Additionally, digital tools encourage motivation, attention, and connection with teachers and peers. The mean scores for the willingness to spend more time on learning through technology (M = 3.81), attention

in lessons (M = 3.77), and connection with teachers and classmates via internet tools (M = 3.79) are indicative of the fact that ICTs foster motivation, attention, and connection with teachers and classmates via internet tools. The mean score of M = 3.64, SD = 1.087, for participation in online learning indicates that students engage less with digital learning environments than with face-to face classrooms. The findings reveal that, in traditional classrooms, there is moderate engagement by the majority of students; however, in comparison to traditional classrooms, there is a low level of student engagement with online learning, showing the need for teachers to increase the number of students who participate in online learning.

Answering Research Hypotheses

Research Hypothesis One : There is no significant relationship between technology resource awareness and academic engagement among Islamic secondary school students. **Table 7:**

Relationship between Technology Resource Awareness and Academic Engagement

Items		Technology Awareness	Academic Engagement
Technology Awareness	Pearson Correlation	1	.542**
	Sig. (2-tailed)		.000
	N	300	300
Academic Engagement	Pearson Correlation	.542**	1
	Sig. (2-tailed)	.000	
	N	300	300

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7 illustrates the way Pearson correlation analysis evaluated the relationship between

technology resource awareness and academic engagement of Islamic secondary school students. The correlation value indicates a moderate positive relationship ($r = 0.542$, $p < 0.01$) between how knowledgeable a student is about technology resources and their level of engagement in school activities (eg, extracurriculars), and hence, would suggest that there is likely some correspondence between a student having access to specific technologies and their engaging with or demonstrating motivation to engage with academic tasks at school. Because the p-value ($p = 0.000$) is smaller than 0.01, we can confidently state statistically significant results from our analysis; therefore, proving our null hypothesis was rejected . Findings demonstrate that increasing knowledge about

available technological resources can contribute towards the creation of a more engaged student body; therefore, providing increased access to and knowledge about ICT tools is essential in any learning environment.

Research Hypothesis Two: There is no significant relationship between technology utilization and academic engagement among Islamic secondary school students.

Table 8: Relationship between Technology Utilization and Academic Engagement Items

		Technology Utilization	Academic Engagement
Technology Utilization	Pearson Correlation	1	.572**
	Sig. (2-tailed)		.000
	N	300	300
Academic Engagement	Pearson Correlation	.572**	1
	Sig. (2-tailed)	.000	
	N	300	300

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8 illustrates the relationship between technology utilization and academic Engagement for secondary school students studying Islamic Studies using Pearson's Correlation Analysis. There was a moderate positive relationship ($r = 0.572$, $p < 0.01$) that indicated students were likely to have physical activity via the use of technology to assist in learning; thus, there is a statistically significant relationship between using technology and being involved academically. The p-value ($p = 0.000$) being less than 0.01 also provides enough evidence of the statistical significance of this correlation. Overall, while the value of the correlation coefficient proves to be greater than the amount of actual use of technology, this indicates that the two are related more than either factor could be related to the other alone. Accordingly, students who actually use technology for

assignments, collaboration, and studying tend to have greater participation, motivation, and cognitive involvement in learning activities. The data collected from the sample rejected the null hypothesis that stated that there is no significant correlation between the utilization of technology and student academic engagement; therefore, the alternative hypothesis was accepted as valid. The findings of the study suggest that the utilization of technology within the educational system enhances the level of students' engagement with school. This also indicates that school systems

should not only promote the notion of utilizing technology resources for educational purposes, but that staff and students should actually utilize those resources for meaningful educational purposes. **Discussion of Findings**

The first research question indicated that the level of technology resource awareness in Islamic secondary schools was moderate, meaning that students do have a basic understanding of the types of available technology and how to use them for education, but have not developed these fully. Many of these students are aware of the existence of various digital tools and the advantages of using them; however, their understanding of how to use specific technologies for academic reasons is still lacking. According to the research done by Mark Warschauer (2003), having knowledge of ICTs includes not only having access to them but also being able to comprehend and use ICTs in an effective manner for educational purposes. Additionally, the World Bank (2022) stated that moderate levels of student awareness usually have resulted from limited opportunities and/or unequal access to digital learning environments in developing parts of the world.

The result of the second research question suggests that there is a moderate-to-high level of technology utilization by Islamic secondary school students in their education. Specifically, the result showed that students have used technology to accomplish academic tasks such as completing homework assignments, researching school materials, and working together with classmates. However, using technology to study for exams and produce sustained schoolwork was not as frequent. Organisation for Economic Co-operation and Development (2015) stated that technology is most useful when used with a clear purpose and with appropriate support. Further, Sokchea Un (2017) found that although most students have access to digital devices, the majority of their usage was for basic academic activities rather than pursuing advanced academic activities.

The third research question of the study has shown that the Islamic secondary school students have a high level of academic engagement. That means student are highly engaged in classroom activities, motivated to learn, and emotionally and cognitively engaged when using technology as part of their learning experience. The students have also stated that using technology

helps them better understand and learn complicated concepts, and stimulates their interest in learning. These results are consistent with Jennifer Fredricks et al.'s (2004) definition of academic engagement (as a multidimensional construct involving behavioural, emotional, and cognitive

components). In addition, George Kuh (2009) notes that students' engagement and success in their studies can be enhanced by interactive technology-enhanced learning environments. The result of the first research hypothesis indicated that technology resource awareness has a significant impact on academic engagement among Islamic secondary school students. In addition to influencing students' levels of academic engagement, the degree to which they are aware of available technological resources affects their ability to engage with their learning. This finding is consistent with Fred Davis's (1989) Technology Acceptance Model, which states that both the users' awareness of technology and its perceived usefulness contribute to their degree of participation in technology use. Similarly, Mark Warschauer (2003) identified awareness as a critical component of the successful integration of ICT into the classroom and of stimulating student participation.

The result of the second research hypothesis of the study, there is a significant association between the utilization of technology and the academic engagement of Islamic Secondary School students; therefore, the use of technology affects how much students engage in their studies. When students use technology to learn, they often have higher levels of motivation, participation, and cognitive engagement. This finding was corroborated by Jean Piaget (1973) and Lev Vygotsky (1978), who both believed that learning can take place through interactive and active engagement with tools and with the environment. In addition, Greg Kearsley and Ben Shneiderman (1998) provided support for this through the Engagement Theory, which states that meaningful learning takes place when students are actively engaged in collaborative activities using technology.

The overall results indicate that both awareness of technology resources and how those resources are used have significant impacts on the academic engagement of Islamic secondary school students. However, the use of technology has a more pronounced direct impact on student engagement than does awareness of technology resources. This suggests that although the availability of technology resource awareness is an important factor, using technology as part of the learning process is the most effective way of increasing student engagement.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary of findings, implications of the study, recommendations, limitations of the study, suggestions for further research, and conclusion.

Summary of Findings

The following results were obtained:

According to the results from Table 4, students at the Islamic Secondary School have moderate levels (M range: 3.10–3.81) of awareness of available Technology Resources™ that can assist in their education. This indicates that while students possess a general knowledge of the different types of technologies available to support their learning experience, there still exists a gap in the level of understanding and knowledge of many specific digital tools.

Table 5 indicates that students who attend Islamic secondary schools generally show a moderate to high level of technology utilization (M range = 3.22-3.87). Thus, students regularly use technology in purposeful ways to complete assignments and do research, with some collaborative use of technology as well; however, there is still limited use of advanced technology in academic settings among these students.

As shown in Table 6, academic engagement level among participating students from Islamic High Schools was also at a high level (M range = 3.64 - 4.10), indicating that most of the students had a great deal of involvement and commitment to participating in class and a great deal of motivation to learn and utilize technology to assist them while learning.

Table 7 shows a positive relationship between academic involvement in secondary Islamic School students and their technology resource awareness ($r = .542$; $p < 0.01$), meaning that as their level of awareness of technology resources increases, so does their level of academic engagement.

In Table 8, academic engagement in relation to the level of technology utilization has also been shown to be positively correlated ($r = .572$; $p < 0.01$), indicating that technology impacts student academic engagement.

Overall, both technology resource awareness and technology utilization were shown to have a significant relationship with the academic engagement of Islamic secondary school students. Technology utilization has a somewhat greater correlation with academic engagement than technology resource awareness.

Implications of the Findings

Secondary schools in Cambodia need to make every effort to create an environment conducive to the effective use of technology resources for teaching and learning purposes, to help improve the academic engagement levels of students. Implementing a framework for schools to enhance the use of ICT among students requires providing awareness of what ICT is, as well as creating opportunities for students to be engaged (by actively participating) in the learning process via the use of technology.

Instruction on how to properly use technology to complete class work, conduct research, and collaborate is a critical component to creating an environment in which technology can be effectively utilized in schools. By doing this, it is anticipated that students will become more competent at using ICT tools meaningfully and productively, and thus will be more engaged academically through their use of said technologies.

Training for teachers on how to use ICT in instruction is needed so that they can help their students become more aware of the resources that are available to them and allow students to become more engaged in their own learning.

Educational leaders and school administrators should make sincere attempts to offer training programs/initiatives, seminars/workshops that address the value of being aware of how technological tools can be used as resources, and how these resources impact student academic motivation and achievement.

In addition to the above, it is the responsibility of education stakeholders and policymakers to provide adequate technological infrastructure, such as internet connectivity, available computers/internet-capable devices, and digital learning platforms in schools; This will ultimately create an environment that supports learning through ICT by providing effective ICT integration and consequently encourages student academic engagement.

Recommendations

Based on the findings in this study, the following were recommended:

1. Islamic secondary schools should provide technology resources to all Muslim students regardless of previous access by facilitating classroom demonstrations and regularly scheduled orientation programs to promote ICT awareness and academic engagement.
2. School leaders need to incorporate ICT into daily teaching and learning activities so that students will have consistent access to technology for completing projects, doing research,

collaborating with others, and completing other educational activities in addition to using it for entertainment and non-educational purposes.

3. Teachers require continuous professional development and ICT Integration Training on methods to help them effectively support students when using a digital tool to create meaningful learning experiences that will help to improve behavioral, emotional, and cognitive engagement.
4. Educational institutions need to enhance the accessibility and availability of ICT facilities, including laboratories, internet connections, and digital learning environments, to guarantee that students are given enough chances to learn and practice their technology utilization skills.
5. The MoEYS (Ministry of Education, Youth and Sport) must provide the necessary funding and resources to address the growing gap between urban and rural Islamic high schools in having the same opportunities for students to access quality education through improved technology infrastructure.
6. Principals and heads of Departments (HODs) must develop, implement, and sustain an ICT integration policy that outlines clear guidelines for effective use of technology by teachers and students in their classrooms. They also need to develop and establish a system to evaluate and monitor the effective use of technology in classes through the use of student outcomes over time.
7. Education policymakers require the development and strengthening of ICT in the education policies of Islamic high schools in Cambodia, to facilitate an increase in digital literacy, equitable access to ICT, and to develop the ongoing capabilities of teachers and students with ICT throughout Cambodia.
8. Students need to play an active role in increasing their ICT capabilities by using digital tools for academic purposes, participating in online learning, and not misusing ICT for non-academic/service, or recreational purposes.

Conclusion

Based on the findings, it can be concluded that students' awareness of the technology resources is at a moderate level. Meaning that most students are aware of the various types of ICT tools, such as computers, mobile applications, and online learning platforms, but students are still not fully aware of what these tools are capable of in a way that can be utilized for academic

purposes. Similarly, the level of technology utilization is also at a moderate level, indicating that students typically use technology to support basic academic tasks for searching for information and completing assignments, but there are only limited uses of advanced academic technology utilization.

The findings further that students exhibited moderate-to-high levels of academic engagement, which means students were active participants in classrooms, and had a desire to learn and were able to utilize technology effectively when integrated into teaching and learning. This indicates that the integration of technology within education positively impacts student participation, motivation, and comprehension of academic subject matter.

In addition, the study concluded that there is a significant positive correlation between technology resource awareness and academic engagement which means that students with more awareness of available ICT tools exhibit a greater degree of engagement in their learning; similarly, there is a significant positive correlation between technology use and academic engagement which indicates that students who actively use technology during learning activities, as opposed to just being aware of it, exhibit higher levels of engagement

This research conclusion implies that both technology resource awareness and technology use are associated with increasing students' academic engagement in Islamic secondary schools. It was found that moderate resource awareness and moderate degrees of technology use require additional integration of ICTs, improved training, and increased institutional support to allow students to take full advantage of their educational experience through technology.

Limitations to the Study

All research projects have limitations, and the present one is no exception; therefore, the limitations are stated below:

- The research on Islamic Secondary School Students was conducted in the Kandal Province of Cambodia. Due to this location aspect of study, the results cannot be considered generalizable for students across other provinces, nor can they be generalized for non Islamic Schools where students have different accessibility to, awareness, and engagement with ICTs than students within Kandal Province.
- The total number of subjects in this research was 300, which may be small when compared to all secondary school Islamic students in Cambodia, and thus limits the ability to generalize these results.

- The methodology of this study is quantitative and uses self-reported questionnaires, and

because they rely on individual student perception and the level of honesty, it is also subject to response bias, social desirability, or misunderstanding of some items/topics present in the responses provided as they relate to students.

· The investigators of this research solely used two independent variables (technology resource awareness and technology utilization) to determine the level of academic engagement. Other influencing factors (e.g., parental support, teachers' skill level, socioeconomic status, etc.) are excluded and may affect a student's use of technology.

· Since a cross-sectional design was used in the research study, the results are limited by the single-point data collection procedure, and, therefore, cannot be used to determine whether a true cause-and-effect relationship exists among these variables.

· As a result of not conducting qualitative research interviews or observations, the research may not adequately explore the full range of experiences, barriers, and other contextual factors that affect ICT integration in Islamic secondary education settings. **Suggestions for Further Research**

The research explores students' knowledge of technology resources and technology utilization as contributing factors to academic engagement at an Islamic secondary school in Kandal Province, Cambodia. Further research into other Cambodian provinces will produce more representative data if it includes Islamic and non-Islamic secondary school students to create more generalizable data across the many educational contexts within which they exist.

Academic engagement and its connection with teacher competence when using Information and Communication Technology (ICT), parental support, school climate, socioeconomic status, and access to technology are all areas of future research that have yet to be fully explored through these previously mentioned variables; therefore, future research should include these variables to explore the relationship between them and academic engagement further.

Not only can researchers use a mixed-method approach by conducting surveys and interviews, but they can also look at the different types of information communication technology (ICT) that are used in schools. Researchers may also want to look at the effectiveness of ICT by subject area; for example, to determine whether ICT makes for better teaching in Islamic Studies or English. The impact of professional development programs that offer teachers and students

training on how to effectively use technology and promote academic success through increased use of technology should also be studied.

Finally, research still needs to measure how culture, including its religious aspects and beliefs, affects technology acceptance of Islamic secondary schools (some may refer to them as 'Islamic schools'), along with using longitudinal research designs to measure any changes over time (in these areas) regarding technology awareness, technology usage, and academic engagement.

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APPENDIX I

INTERNATIONAL OPEN UNIVERSITY, THE GAMBIA

FACULTY OF EDUCATION

DEPARTMENT OF EDUCATION

Dear Respondents,

This questionnaire is designed to collect information about students' awareness and application of technology resources, and how these relate to their academic engagement. Your responses are nonpublic and will be used for exploration purposes only. Please tick(✓) the option that best represents your opinion.

Thanks

SECTION A (DEMOGRAPHIC INFORMATION)

Please tick (√) the appropriate option and fill in the gap where necessary.

1. Gender: Male ( ), Female ( )
2. Age: _____
3. Grade Level: 7 ( ), 8 ( ), 9 ( ), 10 ( ), 11 ( ), 12 ( )

SECTION B (AWARENESS OF TECHNOLOGY RESOURCES)

INSTRUCTION: Please tick (√) in the appropriate column

NOTE: SA means Strongly Agree (5), A means Agree (4), N means Neutral (3), D means Disagree (2), and SD means Strongly Disagree (1)

S/N	ITEMS	SA	A	N	D	SD
1.	I know what technology resources (computers, internet, projectors, software) are available in my school.					
2.	I am familiar with how to use computers for learning activities.					
3.	I know how to access online learning platforms or digital libraries.					
4.	I am aware of mobile applications that can support my studies.					
5.	My educators have informed me about the available educational technologies.					

6.	I understand how technology can help improve my learning performance.					
7.	I can identify the different digital tools I can use for academic tasks.					

SECTION C (UTILIZATION OF TECHNOLOGY RESOURCES)

S/N	ITEMS	SA	A	N	D	SD
1.	I use technology (computer, mobile phone, internet) to complete assignments.					
2.	I use the internet to search for academic information.					
3.	I use technology to collaborate with classmates on schoolwork.					
4.	I use digital tools to prepare for tests and exams.					
5.	Technology is integrated into classroom lessons by my educators.					
6.	I use online learning platforms or educational apps for studying.					
7.	I regularly use technology to create or submit academic work.					

SECTION D (D: ACADEMIC ENGAGEMENT)

S/N	ITEMS	SA	A	N	D	SD
1.	I pay attention and participate actively in class activities.					
2.	I feel motivated to learn when technology is used in lessons.					
3.	I feel more connected to my educators and classmates when digital tools are used.					

4.	I am willing to spend extra time learning with the help of technology.					
5.	I find it easier to understand difficult concepts when technology is used.					
6.	I actively participate in online learning activities or discussions.					
7.	Technology helps me stay focused and engaged during lessons.					

APPENDIX II

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Frequencies

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Statistics

Gender

N	Valid 300
	Missing 0
Mean	1.51
Std. Deviation	.501
Minimum	1
Maximum	2

Gender

				Cumulative
	Frequency	Percent	Valid Percent	Percent
Valid Male	148	49.3	49.3	49.3
Female	152	50.7	50.7	100.0
Total	300	100.0	100.0	

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Frequencies

Statistics

Grade

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Mean	3.51
Std. Deviation	1.693
Minimum	1
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Grade

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Grade 7	47	15.7	15.7	15.7
Grade 8	53	17.7	17.7	33.3
Grade 9	50	16.7	16.7	50.0
Grade 10	49	16.3	16.3	66.3
Grade 11	53	17.7	17.7	84.0
Grade 12	48	16.0	16.0	100.0
Total	300	100.0	100.0	

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Frequencies

Statistics

Age_Sp

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Mean	1.97
Std. Deviation	.609
Minimum	1
Maximum	3

Age_Sp

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 10-13	60	20.0	20.0	20.0
14-17	189	63.0	63.0	83.0
18-21	51	17.0	17.0	100.0
Total	300	100.0	100.0	

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Case Processing Summary

		N	%
Cases	Valid	300	100.0
	Excluded[a]	0	.0
	Total	300	100.0

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Reliability Statistics

Cronbach's Alpha	N of Items
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Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item	Total Correlation	Cronbach's Alpha if Item Deleted
AW1	20.92	15.285	.487	.685	
AW2	21.35	15.667	.412	.704	
AW3	21.10	16.241	.390	.708	
AW4	20.64	16.152	.421	.701	
AW5	20.71	15.951	.418	.702	
AW6	20.78	16.052	.478	.689	
AW7	21.20	15.478	.479	.687	


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Reliability

Scale: ALL VARIABLES

Case Processing Summary

	N	%
Cases Valid	300	100.0
Excluded[a]	0	.0
Total	300	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
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Item-Total Statistics

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UT1	21.41	18.016	.570	.747
UT2	21.26	19.255	.556	.752
UT3	21.37	18.882	.529	.756
UT4	21.91	18.791	.496	.762
UT5	21.52	20.485	.319	.795
UT6	21.50	18.592	.573	.747
UT7	21.79	18.180	.557	.749


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Reliability

Scale: ALL VARIABLES

Case Processing Summary

	N	%
Cases Valid	300	100.0
Excluded[a]	0	.0
Total	300	100.0

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Reliability Statistics

Cronbach's Alpha	N of Items
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Item-Total Statistics

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AE1	22.85	19.263	.235	.800
AE2	23.02	16.284	.548	.751
AE3	23.16	15.789	.524	.755
AE4	23.14	15.541	.618	.736
AE5	23.05	16.499	.483	.763
AE6	23.32	15.503	.551	.750
AE7	23.19	15.118	.596	.740


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Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
AW1	300	1	5	3.53	1.089
AW2	300	1	5	3.10	1.128
AW3	300	1	5	3.35	1.045
AW4	300	1	5	3.81	1.014
AW5	300	1	5	3.74	1.060
AW6	300	1	5	3.67	.954
AW7	300	1	5	3.25	1.064
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Descriptives

Descriptive Statistics

N Minimum Maximum Mean Std. Deviation

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Descriptives

Descriptive Statistics

N Minimum Maximum Mean Std. Deviation

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Correlations

Correlations

		AW_SP	AE_SP
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	Sig. (2-tailed)		.000
	N	300	300
AE_SP	Pearson Correlation	.542**	1
	Sig. (2-tailed)	.000	
	N	300	300

**. Correlation is significant at the 0.01 level (2-tailed).

```
CORRELATIONS
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 /MISSING=PAIRWISE.
```

Correlations

Correlations

		UT_SP	AE_SP
UT_SP	Pearson Correlation	1	.572**
	Sig. (2-tailed)	.000	
	N	300	300
AE_SP	Pearson Correlation	.572**	1
	Sig. (2-tailed)	.000	
	N	300	300

**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX III

INTERNATIONAL OPEN UNIVERSITY

Directorate of Research and Publications

Ref. No. ETHICS/25/11-25

Date: 4/11/2025

To,

Sim Linat
Student ID: ST10240826
Program: Master's of Research in Education
Contact Email: linatsim1983@gmail.com

Subject: Ethical Approval

Dear Sim Linat,

With reference to your application dated 23/10/2025 regarding the Ethical Approval of your research proposal, I am pleased to inform you that our International Open University Board of Research and Publications (IOUBRP) is satisfied with the documents you submitted. After a critical evaluation of your papers, the IOUBRP has decided to accept your research topic entitled "Impacts of technology resources awareness and utilisation on academic engagement of Islamic secondary school students in Kandal Province, Cambodia," along with your proposal.

Therefore, you are permitted to conduct the research according to your proposal and submit the report on time as well.

Barak Allahu Feek!

Prof. Dr. Afroza Bulbul
Chairperson, Board of Research and Publications
International Open University

APPENDIX IV

International Open University
DEPARTMENT OF EDUCATION

Ref Number: IOU/EDU/PJ/1001 **Date: 23/October/2025**

Cambodian Islamic Center (CIC)

Norol Iman Chroy Metrey School (NICS)

An-Nakmah Chroy Metrey High School (ACHS)

As-Salamu Alaikum, Dear Sir/Ma,

LETTER OF INTRODUCTION

I hereby write to introduce ***Mr. Sim Linat*** with Matriculation Number ***ST10240826*** as Postgraduate student in the Department of Education who is undergoing research Thesis entitled: ***Impacts of technology resources awareness and utilisation on academic engagement of Islamic secondary school students in Kandal Province, Cambodia***

Kindly allow the student to collect data from the respondents in your schools as the outcomes of the study is strictly for research purpose. Thank you for your usual cooperation.

.....

Prof. (Dr.) K. O. Muraina
Head of Department
hod.edu@iou.edu.gm or +2348034592046

Date: 19-11-2025
MOHA KHALIL
Director
Cambodian Islamic Center

Date: 19-11-2025
Date: 19-11-2025
SLEH KRIYA
Director
NOROL IMAN CHROY METREY SHOOL

Date: 19-11-2025
LY SAKHANI
Director
AN-NAKMAH CHROY METREY HIGH SCHOOL

APPENDIX V







