HAWASSA UNIVERSITY INSTITUTE OF TECHNOLOGY

FACULTY OF INFORMATICS

DEPARTMENT OF INFORMATION TECHNOLOGY

INTEGRATING MOBILE LEARNING TO ENHANCE STUDENT ICT DIGITAL SKILL IN RURAL HIGH SCHOOLS IN ETHIOPIA: (CASE OF GOLOLCHA WOREDA SECONDARY SCHOOLS)

BY: Ketema Sime

Advisor: Degif Teka (PhD)

THESIS SUBMITTED TO INSTITUTE OF TECHNOLOGY
DEPARTMENT OF INFORMATION TECHNOLOGY HAWASSA UNIVERSITY

HAWASSA, ETHIOPIA

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DECLARATION

Declaration I declare that this thesis entitled "**integrating mobile learning to enhance student ICT digital skill in rural high schools in Ethiopia: (case of Gololcha woreda secondary schools)**", is a result of my own investigation, except where otherwise stated. I have undertaken the study independently with the guidance and support of my research advisors. Other sources are acknowledged by citations giving explicit references. A list of references is appended. The thesis has not previously been accepted for any degree and is not being concurrently submitted in candidature for any degree in any university in the country. Declared by:

Name: KETEMA SIME

Signature _____

Date _____

This thesis has been submitted for examination with any approval as thesis advisor.

Advisor: DEGIF TEKA (PhD)

signature _____

Date _____

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We, the undersigned, members of the Board of Examiners of the final open defense by **Ketema Sime Tola** have read and evaluated his/her thesis entitled "**integrating mobile learning to enhance student ICT digital skill in rural high schools in Ethiopia: (case of Gololcha woreda secondary schools)**", and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree.

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Final approval and acceptance of the thesis is contingent upon the submission of the final copy of the thesis to the School of Graduate Studies (SGS) through the Department/School Graduate Committee (DGC/SGC) of the candidate's department.

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Abstract

There is growing recognition of the benefits of using ICT to enhance instruction and learning. Information technologies have advanced tremendously in the modern era, increasing interest in using technology to suit human needs. In the past, the use of technical devices was confined to a certain region or environment; however, in more recent times, these locations and environments have acquired their own specialties, and mobile phone usage has increased significantly, even in rural areas of the nation. A single device in the palm of one's hand may now access an ever-expanding range of information thanks to mobile technology. Cell phones, smartphones, palmtops, and handheld computers are common examples of devices used for mobile learning; tablet PCs, laptops, and personal media players can also be included in this category. The term "mobile learning" (M-Learning) describes the use of wireless or mobile devices for learning while on the go or wherever you go. to close the current technological divide in education, particularly in poor nations like Ethiopia. Problems with inadequate ICT infrastructure in Ethiopian rural high schools include a shortage of computers, computer labs, internet connectivity, and electricity. Both the study's selected secondary schools and Ethiopian rural secondary schools in general had these problems. Therefore, the primary goals of the study were to improve the educational process and create a model for incorporating M-learning to increase students' ICT digital skills in rural secondary schools. The Gololcha woreda secondary school served as the study location, and a descriptive analytic approach was chosen as the research strategy. Specifically: Temamo, Dinsa, and Gololcha Secondary School, situated in the Oromia region's east Bale zone. There were 515 people in the study's overall population, and there were 216 responses, or 216 pupils chosen by simple random sampling and 24 interview subjects chosen by deliberate sampling. Here, 32 questionnaire questions for 216 students, interview questions for 6 interviewees, and four observation criteria were used to gather data from the respondents. Descriptive analysis and the SPSS 27 software package were then used as the data analysis mechanism. The majority of results obtained from the three instruments indicate that rural secondary schools lacked ICT digital skills. In this instance, the dependent variable was actual use of mobile learning, behavioral intention to use is intermediate variable and the independent factors were perceived usefulness, perceived ease of use and facilitating conditions. Individuals' intentions to use new technology have been influenced by the five factors stated. The main conclusions were that there was a lack of focus on enhancing ICT digital skills in rural secondary schools, as well as a deficiency in the way ICT resources were positioned and students' skill development was lacking.

Keywords: - ICT digital Skill, M- learning, new technology

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Abbreviations and Acronyms

ICT---------- Information and communication technology

IT ---------- Information Technology

PCs ---------- personal computer

PDA ---------- personal digital Assistance

UTUAT ----------Unified theory of acceptance and use of technology

TAM ---------- Technology acceptance model

M-learning ---------- mobile learning

e-Learning ----------electronic learning

TRA ---------- Theory of Reasoned Action

TPB ---------- Theory of Planned Behavior

PEOU ---------- perceived ease of usage

PU ---------- perceived usefulness

ATU ---------- attitude toward use

BIU ---------- behavioral intension to use

PE ---------- Performance expectancy

EE ---------- Effort expectancy

FC ---------- facilitating condition

SPSS ---------- Statistical Package for Social Sciences

CHAPTER ONE

1.1 INTRODUCTION

This chapter contains with background of the study, statement of the problem and research question, objectives of the study, significance of the study, delimitation of the study, limitation of the study and definition of key terms

1.2 Background of the Study

Despite the fact that learning and education are thought to be the most important pillars of a flourishing economy, the educational system requires both significant technical advancements and drastic changes.[1]. The potential of information and communication technology (ICT) to improve education is becoming more widely recognized[2]. This concept helps the researcher realize how important information and communication technology may be in supporting instruction and learning. The modern period has seen enormous advancements in information technologies, which has raised interest in utilizing technology to meet human needs. In the past, using technological gadgets required a certain environment or setting, but in more recent times, these environments and locations have developed their own specialty[3].

A single gadget in the palm of one's hand may now access an ever-expanding range of information thanks to mobile technology [4]. The researcher understands that this explanation explains how various devices and mobile applications can be used to access and use social network technology, texting, the Internet, virtual realities, and online learning tools, among other things, to help rural students develop their digital skills.

According to [5] Both the student activities that take place in educational institutions and the improvements that mobile technology devices have brought to the traditional classroom environment are referred to as "mobile learning" (M-Learning). Mobile learning, as defined by [6], is the use of wireless or mobile devices to learn while on the go or wherever you go. Common examples of mobile learning devices include cell phones, smartphones, palmtops, and handheld computers; tablet PCs, laptops, and personal media players can also be included in this category.

It is well known that Ethiopia is a developing nation and that the world has become a global village. Learning ICT skills has become commonplace to make life easier in every situation, and

new technologies, strategies, skills, wisdom, and inventions are becoming well-known worldwide. The increasing use of different mobile devices, such as iPads, smartphones, tablets, and PDAs, is a global trend. These devices are carried by people to help and support their daily activities.[7]. Mobile phone technology is now developing rapidly and permeates every aspect of daily life. Many professionals and academics have used mobile technology into their teaching and learning environments as these gadgets become more widely used [6]. Because mobile devices and related technologies can be utilized in a wide range of disciplines, their use has grown dramatically in recent years. PDAs, smartphones, and cell phones are just a few of the devices that have entered the field of education and learning [8]. [9] claims that educational technology has developed into a more essential component of teaching and learning in the modern era.

ICT proficiency is necessary to improve students' digital skills, which makes it easier for them to use computers and other technology for improved instruction and training both inside and outside of the classroom. The digital gap, which is commonly discussed in relation to industrialized or western nations, also affects developing nations' urban and rural environments. Urban communities and students are more exposed to ICT. However, there are no sufficient ICT resources, such as computers, labs, networks, electricity, and other ICT tools, in Ethiopia's rural areas to teach computer-based integrated laboratory ICT. Therefore, mobile phone learning has started to take up a significant portion of our life due to the quick growth of technology and advancements in electronic learning technologies. Additionally, there is a significant increase in mobile smartphones in rural areas, particularly Ethiopian rural areas.

The process of gaining knowledge through study, skill, or both is called learning, and it is essential for people to develop their abilities in order to satisfy their wants and realize their goals [10]. This idea allows us to define learning as a relatively long-lasting change in behavior brought about by experience. It is the process of acquiring information, skills, and knowledge. Learning is frequently linked to the formal education one receives as a child or young adult. But learning is a lifelong process that takes place both inside and outside of the classroom.

A new technology called mobile learning, or "m-learning," is being used to support and enhance education. It is seen to be a possible tool that could bring creative new methods to the field of education, especially in places with limited funding[11].

Mobile learning refers to the capacity to access educational resources on personal portable devices, including PDAs, smartphones, and cell phones. Digital learning materials that can be accessed and shared on any personal electronic device are referred to as educational content in this context[12]

Numerous terms, including M-Learning, personalized learning, ubiquitous learning, anytime/anywhere learning, and portable learning, are used to describe mobile learning[13]. According to the definition, mobile learning is applicable anywhere and at any time, which means it could benefit the teaching and learning process in secondary rural schools. There is little integration of mobile learning in rural secondary schools because of the lack of computers, the internet, and other necessary infrastructures in rural areas, particularly in rural Ethiopia. It is beneficial to develop this integration by teaching ICT using mobile phones and learning laboratory-based ICT to improve students' digital skill development.

Many recently opened secondary schools in Ethiopia's rural areas lack the necessary ICT resources to teach computer-based laboratory-based ICT. Due to a lack of exposure and practice, children in rural areas have lower digital skills than their urban counterparts. Additionally, secondary schools in rural areas lack sufficient ICT resources. ICT has made it easier and faster to create digital skills and to access, process, and share information. Both learning new talents and comprehending how these procedures are carried out are necessary to engage in this skill. In order to address this, the educational system must incorporate knowledge of ICT, its effects on society, and the opportunities for ICT-based learning into the curriculum. At the same time, it is highly desired to develop in pupils the abilities necessary to function and respond to an ICT-shaped society.

Fundamental skills that increase employability should be had by secondary school students (grades 9–12) as this will prepare them for life after graduation. Proficiency in information and communication technology (ICT) is a crucial element of fundamental skills. These abilities might range from the fundamental ability to use digital tools and devices in daily life to computational thinking, programming, and coding[14].

ICT resources like desktop PCs, the Internet, and other computing infrastructures are not readily available to secondary school pupils in our country's rural areas.

1.3 Statement of Problem

The tools people use to carry out certain tasks or as different types of human productive activity, as well as the strategies they use to change various aspects of their surroundings, are examples of technology[15]. The majority of individuals have access to digital technology in our technologically advanced society, and mobile devices are among the new digital tools that many students use on a regular basis[16]. How teachers support and encourage students utilizing mobile gadgets is a crucial question to comprehend the role of educators in the mobile age[6]. Students have embraced mobile technology not only for social networking but also to help tailor their education to meet their individual learning demands[1]. Therefore, when computers and other ICT infrastructure are few in rural regions, integrated mobile learning, learning laboratory-based ICT, and other disciplines are utilized to improve students' digital skills, such as accessing, sharing, storing, and printing text material using a cell phone. It is also well known that many rural Ethiopian schools lack sufficient ICT resources, such as computers, computer labs, internet connectivity, and electricity. Therefore, the project aims to explore ways to use smart mobile phones to successfully integrate M-learning in rural locations where ICT tools are scarce.

1.4 Research Question

The study will attempt to answer the following research questions:

1. What are the factors that impact the rural students and schools in integrating and using ICT based education?
2. How to integrate M-learning for enhanced educational process to enhance the performance of student digital skill in the context of rural secondary school (in case of selected three Gololcha woreda secondary school)?
3. What can theories imply in integrating M-learning in rural high schools?

1.5 OBJECTIVES

1.5.1 General Objectives

The general objective of this thesis is developing a model for integrating M-learning to enhance students' digital skill and educational process improvement.

1.5.2 Specific Objectives

1. To review related literature to better understand the theoretical and practice of M-learning integrating in the teaching learning process
2. To explore the factors impeding rural High schools from using M-learning in the teaching and learning process
3. To identify the contextual factors affecting M-learning in the teaching-learning process
4. To develop a model for integrating M-learning in the context of rural Ethiopia

1.6 Significance of the Study

Students' digital skills will be improved and ICT use in education will be improved when mobile learning is incorporated into the teaching and learning process, especially in rural areas. To use ICT resources, students' digital skills need to be improved. Thus, the goal of this study is to enhance mobile phone integrations in ICT digital skill teaching and learning. This entails developing the integration of mobile phones into ICT digital skills education through the use of various mobile applications and supporting pre-service learning programs for students, such as enhancing their proficiency with computer fundamentals and document creation, editing, access, and saving skills through the use of various mobile phone applications, such as Microsoft Office suite members' applications and browsers. Improve student academic performance through the use of mobile devices in instruction.

In rural areas of the nation where PCs and other computing infrastructures are few, this project intends to improve digital skills through the integration of mobile phone learning and ICT education. Students, school administrators, and educational specialists who wish to enhance the teaching and learning process by incorporating ICT into it will find the study to be significant.

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1.7 limitations of the study

The research's sample size may not be representative of the entire population of Gololcha Woreda secondary school instructors, principals, and students. Since English was the academic language used in all Ethiopian secondary schools, it was used to prepare each questionnaire. Consequently, every participant in the research was selected based on their ownership of a smartphone.

It is true that a research project will always have limitations. As a result, several were too busy to complete the surveys before the deadline. Additionally, some students and teachers were uncooperative in their efforts to finish the questionnaires on time. However, the study's limitations were addressed by carefully speaking with principals and teachers.

1.8 Delimitation of the study

The goal of the project was to create a model for incorporating M-learning to improve the educational process and digital skills of rural pupils. The study would have been good if it had included all of the woreda's secondary schools as well as the nation's rural secondary schools, but it was restricted to three governmental secondary schools in the Gololcha woreda, Eastern Bale Zone Oromia, Regional state, in order to keep it manageable and finish it on schedule. Teachers' and students' ICT digital skills were developed through the use of mobile phone applications in the classroom to incorporate mobile devices into the teaching and learning process. Future research may benefit from the information this study has supplied, and the findings may be applicable to other Ethiopian rural secondary schools.

1.9 operational definitions of terms

Mobile learning: - is the practice of learning on the go or wherever you go using wireless or mobile devices. Common examples of these devices include cell phones, smartphones, palmtops, and handheld computers; tablet PCs, laptops, and personal media players can also be included in this category**.**

Secondary School: The institution often offers general, technical, and college-preparatory courses at the middle, elementary, and college levels.

Performance expectancy: The extent to which a person thinks mobile learning would help him get to school facilities.

Effort expectancy: The degree is merely related to the use of mobile learning resources.

Social influence: The extent to which someone feels that significant people think they ought to utilize the new system.

Facilitating conditions: The perceived extent to which maintenance of mobile learning services was necessary for secondary schools' technical infrastructure.

Behavioral intention: - outlines people's intentions or desires to embrace and employ mobile learning tools.

1.10 Organization of the Thesis

In the first chapter, the introduction is covered, including the study's background, problem statements, fundamental research questions, aims, significance, delimitations, and structure. Second, the literature study on integrating M-learning to improve the digital skills of rural students and challenges connected to educational process improvement will be presented in chapter two. Furthermore, information on data collection methods and procedures, including research design, methodology, data sources, sampling strategies, data gathering instruments, and data analysis, will be covered in the third chapter. Following this, a qualitative and quantitative discussion would be used to convey the data analysis and interpretation for the replies that were gathered. The conclusion, summary, and recommendation would be included in the last chapters, which would then be followed by the references and appendices.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews a variety of literature, including conceptual, theoretical, and related works, which have been useful in identifying gaps and gaining knowledge and expertise regarding study design, methodology, and evaluation of research findings.

2. 1 Theories and Models on Integration of Mobile learning and Utilization of ICT

2.1.1 Theories on mobile Learning

In the modern world, information and communication technologies are employed in many different businesses, but their usage in education is also continuously expanding[18]. Many theories of learning have been put forth over the 2500 years between Confucius and the present, but almost all of them are predicated on the idea that instruction is provided by a skilled teacher in a classroom. Therefore, a theory of mobile learning must account for the significant amount of learning that takes place outside of lecture halls and classrooms as individuals design and implement their own activities to support educational processes and results.[19]. However, mobile devices are widely used all over the world. However, their use has outpaced that of PCs in several countries. For instance, mobile devices are widely available in Ethiopia and can be used for a variety of tasks, including phone calls, SMS messaging, email checking, and internet surfing. Teachers are looking for ways to improve learning by integrating mobile devices into collaborative learning environments as a result of the widespread use of handheld technology.[20]. Since mobile technologies are evolving and mobile technology is a new field of education that is rapidly expanding for the most advanced technology available to everyone, rich or poor, educated or uneducated, many definitions of what m-learning is have been developed, but they are no longer accurate. [21]. For instance, a lot of academics have called mobile learning an extension of e-learning. [22] describes m-learning as a type of e-learning that may be done anywhere, at any time, with the use of a mobile communication device, such as an iPod, PDA, cell phone, or other small portable device.

Numerous benefits that mobile phones may offer the educational industry are highlighted in the literature on m-learning. For heuristic reasons, the impacts of mobile phones on educational achievements that are reported in the M-Learning research can be categorized into two major

groups. On the surface, mobile devices are thought to have an impact on educational results by increasing access to learning resources while preserving the caliber of instruction provided. On the other hand, mobile devices are said to have an impact on educational results by enabling different approaches to teaching and learning, which are collectively referred to as new learning.

What is intended to demonstrate the significance of cutting-edge technology is the ongoing usage of information technology.[23]. The concept of mobile learning, often known as M-Learning or learning using mobile phones, is becoming more and more popular in developing nations.[24]. According to [3] Without taking into account location or time, mobile learning as a point interaction to offer Internet-based learning and mobile computing technologies is to embrace the road to create learning style "every time, everywhere." Mobile learning is a sort of learning when the student is predetermined, not in a certain place, or takes advantage of the opportunities provided by mobile technologies everywhere and at any time.[25]. In the integration of mobile learning and use research, theories and related literature have been very important. Models and theories offer frameworks that help researchers plan and analyze the findings of their studies. Numerous theories and models were used to examine both individuals and groups. The primary theoretical foundation of the theories and models is people's intention to participate in a particular performance. The fundamental tenet of both the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) is that individuals intentionally choose whether or not to engage in a certain behavior. According to this statement, mobile learning integration in rural secondary schools is typically thought of as primarily an outcome variable that is impacted by independent variables. By incorporating mobile learning into secondary schools in rural locations nationwide, the researcher hopes to eliminate the digital gap that separates pupils in urban and rural communities.

2.1.2 The Role of Mobiles in Improving Access to Education

Theoretically, m-learning makes educational resources more accessible to those who are unable to physically attend schools. These individuals would not be able to finish courses in a traditional educational setting because of time constraints brought on by their jobs, daily activities, or other demanding commitments.[26]. By enabling students to do their coursework on their own schedule, m-learning makes education more accessible.[27]. According to[26] Geographical barriers are removed by mobile learning technology, which also offer international groups a

collaborative learning environment. Additionally, improvements in handheld devices have made it easier to use multimedia in mobile applications, providing mobile learners with access to a multitude of widely varied learning resources, Smartphones and other mobile devices have become more and more popular because they make it simple for individuals to keep in touch and access information at any location or moment[26].

Mobile learning, or m-learning, is a form of learning technique that allows students to access educational resources from anywhere at any time via wireless handheld devices, such as tablets, PCs, PDAs, mobile phones, and wireless laptops, according to the linked works mentioned above. Mobile phones have more potential as a tool for mobile learning than other portable devices since they are accessible to all, have inexpensive service costs, are recognizable devices, and have a vast mobile network coverage area.

2.2 Technology Acceptance Model (TAM)

Due to the rapid advancement of innovation, people are more likely to use developing technologies in their daily lives, experiences, and jobs.[28]. Davis (1989) developed the technology acceptance model (TAM), which was based on the theory of reasoned action (TRA).[29]. The Acceptance of Technology Issue The new technology was being modeled. Perceived utility and perceived ease of use are two factors that TAM believes are crucial to the adoption of technology. According to TAM, a user's attitude toward using a technology, their subsequent behavioral intentions, and their actual usage are all predicted by how easy or helpful they believe the technology to be. The perceived usefulness of technology was also thought to be influenced by perceived simplicity of use.[29].

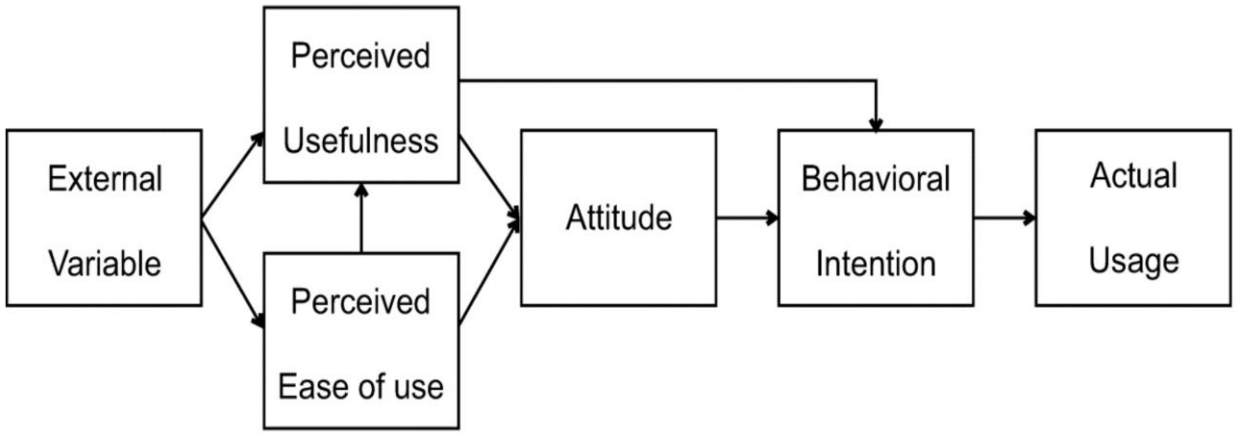

Figure 1The TAM models [21]

The TAM model states that four factors—perceived usefulness (PU), attitude toward use (ATU), behavioral intention to use (BIU), and perceived ease of usage (PEOU)—determine the adoption of developing technologies..[30].

The model was created by conceptualizing perceived utility, perceived usability, and influence on behavioral intention.

The degree to which users think that utilizing a system enhances their capacity to complete tasks is indicated by **the perceived utility of IT**.

The degree to which they think a certain system is simple to use is indicated by the **perceived ease of usage.**

Perceived utility and perceived ease of use are directly impacted by external factors.

As perceived In predicting usage, usefulness is significantly more significant than simplicity of use since it directly **influences behavioral intention** and has a greater impact on attitude.

Attitude toward Usage: This characteristic clearly indicates if a user feels good or bad about engaging in the behavior. The three basic constructs of attitude are attitude toward conduct, attitude toward importance, and attitude toward the fundamental construct. "The degree to which an individual evaluates and associates the target system with his or her job" is how Davis (1993) defines attitude toward utilization**.**

2.3 Unified theory of acceptance and use of technology (UTAUT)

When integrating mobile learning into teaching and learning activities, there are many success elements. Technology is fundamentally altering how we teach and learn, and it holds a great deal of promise to address some of the issues facing education in the twenty-first century.[31]. The UTAUT paradigm has been used in a variety of fields, including mobile learning, and its linkages with teaching and learning have mostly been validated.[31]. Alongside the quick advancement of digital technologies, education has increased since mobile phones allow learning to happen anywhere, at any time, and without regard to time or place. One of the most popular models in the field of information and communication technology acceptance modeling is the Unified Theory of Acceptance and Use of Technology (UTAUT), which was created by Venkatesh et al. (2003).[32]. The UTAUT is seen as an attempt to standardize the nomenclature of variables across various technology acceptance models and theories..[33]. These are covered in these works using the UTAUT paradigm that follows.

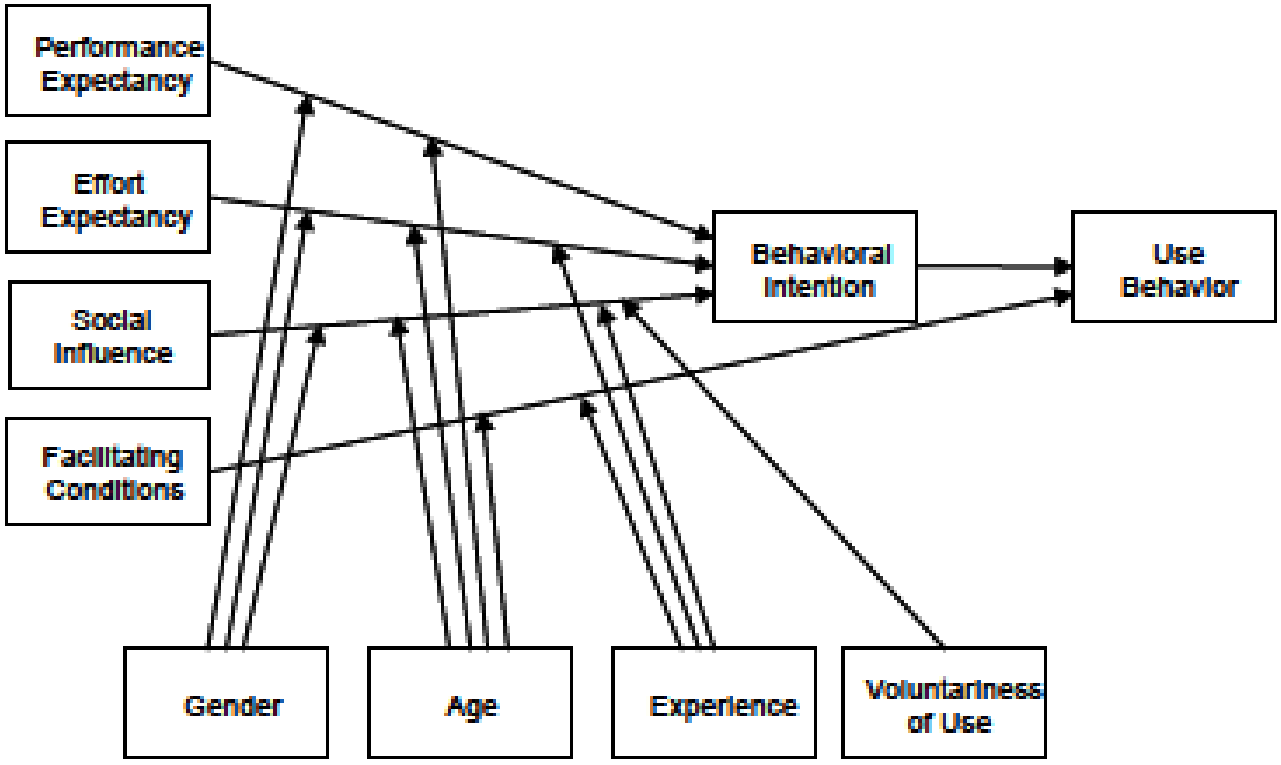

Figure 2 Unified theory of acceptance and use of technology (UTAUT: Venkatesh et al., 2003)

Gender, age, Experience, and voluntariness of use are other characteristics that impact the factors' performance. Performance expectancy, effort expectancy, and social influence variables all directly affect behavioral intention, which in turn influences use behavior in the unified technology of acceptance and usage. Nonetheless, the variable of facilitating conditions has a direct impact on the behavior of usage.

Performance Expectancy (PE) : is the extent to which a person believes that utilizing the system will enable them to improve their performance at work.[33]. Effort expectancy, social influence, facilitating conditions behavioral Intentions Use Behavior gender and age

Effort Expectancy (EE): how simple it is to utilize the system [33]. Effort anticipation is thought to be sufficient to alter behavioral intent based on gender and age. as well as experience.

Facilitating Conditions (FC) :- The extent to which a person thinks that there is a technological and organizational infrastructure in place to facilitate system use is known as "facilitating situations" [33]. The concept of "facilitating conditions" refers to a person's perception that organizational and technical factors have an impact on behavior. based on experience and age.

Social Influence is the extent to which a person feels that significant others think they need to utilize the new method [33]. The degree to which a person feels that significant individuals think they should use the new technology is known as the social effect. Social influence is thought to have a sufficient impact on behavioral intention by age, gender, experience, and voluntary use.

2.4 Related literature review on mobile learning

A new integrated model to explore factors that influence the adoption of mobile learning in higher education, [34] on Using Mobile Technology to Enhance Undergraduate Student Digital Information Literacy Skills, [36] on Adoption of Mobile Applications for Teaching-Learning Process in Rural Girls, and [37] on The Effect of Mobile Learning on Learning Performance are just a few of the numerous studies performed on the adoption of m-learning. This research examined the several approaches that have been used to investigate the use of mobile learning in higher education, including examining student demands, creating low-cost m-learning use tactics, and encouraging campus interaction through mobile devices. observed that more focus has to be placed on the importance of m-learning and university students' use of it because it provides a variety of services from anywhere at any time. The results showed that m-learning technologies have become one of the most important learning support technologies because they allow learning to happen from anywhere at any time. This study indicates that m-learning will significantly enhance teaching and learning in the future.

Another study [38] investigated the effects on students' learning outcomes of incorporating mobile devices into instruction. The focus of this study was m-learning delivery courses, which provide students with a way to continue their education outside of the classroom. To help them with the online distance learning program, the teachers were provided with iPads. Enhancing Indonesian teachers' ICT proficiency was the primary objective of another study on mobile learning for ICT training[39]. Teachers' confidence in incorporating ICT into the classroom will increase if they have the requisite ICT abilities. The location, timing, cost, and opportunity of teacher training are the primary obstacles to teacher involvement in Indonesia, according to this study.

The report recommends a mobile phone-based ICT training program for educators to solve these problems. According to the statistics, most instructors said iPads were essential for peer knowledge exchange and favored using them over computers for teaching and learning.

The Malysia-based study, "Investigating Students' Perceptions on Mobile Learning Services,"[8]. With an emphasis on the use of mobile wireless technologies that enable students to easily access learning resources whenever and wherever they choose, whether they are on or off campus, this study was particularly concerned with how students perceive mobile learning. This creates a new flexible learning environment in the context of different learning circumstances. How students perceive this type of technology is one of the most important factors in the successful implementation of m-learning in higher education.

Another study [40] examined the use of mobile learning technologies at the University of Gold Coast in Australia. The study's main conclusions imply that mobile technologies have changed the way that society, education providers, and students learn. Mobile learning is now a crucial component of modern education as a result. Implementing mobile learning tools does not, however, guarantee that students will utilize them and do so with a positive behavioral intention. Research on system success and technology acceptability has increased as a result.

In a similar vein, every technology has its advantages and disadvantages, so mobile devices are not an exception. According to another study on M-Learning, "Implications and Challenges"[41], there are three main categories of challenges for mobile devices: the first one is related to physical attributes; the second is related to technology or operating system attributes; and the third major challenge seems to be the lack of correlations between mobile software and mobile learning. These products are now inexpensive, convenient in terms of time and location, and affordable.

According to the researcher, mobile learning is connected to teachers' ICT skill development, students' perceptions of mobile learning, and the delivery of educational resources. By incorporating mobile learning, the teaching and learning process improves the quality of the learning and teaching environment. Other studies on mobile learning and the previously mentioned related study support this.

Studies on mobile learning are typically conducted to enhance learning environments by using pocket mobile devices anywhere, at any time, and without regard to time or location. According to the related research mentioned above, there are other factors or challenges affecting the integration of mobile learning into the teaching and learning process in rural high schools.

2.4.1 Research Gap

In universities in Indonesia, Malaysia, Saudi Arabia, and other research areas, studies have been conducted on mobile learning for ICT skill training, its implications and challenges, students' perceptions of mobile learning, the adoption of m-learning, and the effects of integrating mobile devices with teaching and learning on students' learning performance. The researcher looked through relevant literature, but she couldn't find any studies on mobile learning in secondary schools in rural Ethiopia that were selected to enhance the teaching and learning process. The aforementioned studies don't go into great depth about how mobile learning is integrated into the classroom. Consequently, there are gaps in context.

2.5 Conceptual Reviews

One of the strategic policy priorities of the Ethiopian government is the improvement of information and communication technology (ICT) [42]. New paradigms for teaching and learning are being challenged by digital technologies and the knowledge-based society, which aim to improve cognitive functions and increase student participation in group projects or individualized settings [43]..

The capacity to access or offer educational resources and material via personal handheld devices, like PDAs, smartphones, and cell phones, is known as mobile learning. Digital learning materials that may be accessed on any personal electronic device are referred to as educational content (resource) in this context [12]. It is reasonable to assume that there will be more opportunities in the future to use mobile devices as a teaching tool. "Using mobile devices in education has many advantages. M-learning offers a great educational opportunity at any time and from any location, fostering collaborative learning, facilitating social interaction, and providing individualized instruction." Students that use M-learning are more motivated, interested in their studies, and at ease in the classroom [44].

Smartphones and other mobile phones are becoming more and more popular these days, especially among rural residents, which makes them useful tools to consider when there is a lack of a fixed line connection for the Internet and computer devices for laboratory-based learning in a rural setting. Using a variety of mobile applications that are accessible and utilized anywhere, at any time, is a good way for students to improve their digital skills.

2.5.1 Mobile learning for ICT skill Training

Planning and methodical work to improve or promote knowledge and skills through skill acquisition and to attain successful performance in a variety of activities is called training. The geographical location and time constraints that rural students experience limit their ability to attend training sessions. A mobile device can be used for learning at any time and from any location, regardless of time or place. Conversely, perceived ease of use (PEOU) measures how much a person believes a particular item will be effortless to use.[45]. As a result, mobile learning may offer a solution to training issues. The issue of providing ICT training may be resolved by mobile learning given the significant advancements in mobile technology and the growing prevalence of wireless mobile devices in daily life.[46]. Mobile learning has many benefits for educational institutions, including increased accessibility, flexibility, and motivation as well as a more efficient learning process due to the approachability and mobility of mobile devices [34]. Based on the aforementioned idea, experts believe that mobile devices can be a useful tool for enhancing ICT digital skills. They can also be incorporated into learning activities and make educational resources accessible everywhere, both inside and outside of the classroom. Additionally, the researcher examined the integration of mobile learning in Ethiopian rural high schools using the TAM (technology acceptance) and UTUAT (Unified Theory of Acceptance and Use of Technology) models as lenses.

2.5.2 Mobile Learning for Rural Student Digital Skill Development

Mobile learning, or m-learning, is a novel approach to education that began as a laid-back method. Due to lower ownership costs for more sophisticated mobile devices and tactics like "Bring Your Own Device," m-learning has evolved into not just a learning style but also a field of study in elementary, secondary, and university education to better understand how it challenges and enhances current learning styles.

[43]. Teachers and students benefit from mobile devices because they enable them to make efficient use of "dead time." Therefore, mobile devices can offer opportunities for meaningful engagement with learning materials when traveling, waiting for a bus, waiting for a lecture, or waiting for a conference to begin.[45].

For students training and teaching various course areas, mobile learning offers a number of benefits that can improve performance and increase access to educational resources. Due to their geographic location and the dearth of ICT resources available in their communities, secondary school students in rural areas confront numerous challenges. Using a variety of wireless handheld devices, including smartphones, tablets, PDAs, wireless laptops, and personal computers, mobile learning is a type of learning model that enables students to access learning resources at any time and from any location, both online and offline. [46].

In order for students learning ICT in rural schools to overcome the dearth of ICT resources in rural secondary schools, this study aims to investigate the role that mobile learning plays in improving students' digital skills in rural locations. Mobile learning is another form of learning that can be done anywhere, at any time, and with a student's pocket device. It allows them to improve their digital skills.

2.5.3 Mobile Applications Used to Learn ICT Digital Skill in Rural Secondary School

Emerging technology, mobile devices are equipped with many software programs for creating, accessing, processing, storing, and sharing data. In rural secondary schools, ICT digital skills are developed through software that is integrated with mobile hardware. Software or a collection of platforms that operate on mobile devices are referred to as mobile applications. Mobile applications are a cutting-edge and rapidly evolving technology.

Mobile applications are simple, intuitive, downloadable, and compatible with the majority of mobile phones, even entry-level and budget models. Mobile devices are thought to be beneficial because they provide students with quick access to a variety of instructional websites, graphics, video simulations, and educational films, as well as simple means of connecting with online study groups [45]. While many mobile applications must be downloaded and installed in order to access and exchange educational materials for teaching and learning, some come pre-installed. [12]

On a mobile device, you can use the various teaching apps and tools for free. Acrobat readers, word processors, spread sheets, text-to-speech engines, book readers, scientific calculators, and a variety of educational games, such as word puzzles, are a few examples. [47].

The mobile application in mobile learning includes:

A. Microsoft Word, Excel, PowerPoint, and Access are examples of applications that are part of the Microsoft suite. used to improve digital skills in rural students and to create, process, store, and produce document assets.

B. Browsers such as Opera, Mozilla Firefox, Internet Explorer, and Google Chrome, among others. used to build rural students' digital skills by connecting to the internet and conducting online searches for instructional content.

C. kids and teachers can exchange knowledge via social media apps like Facebook, Telegram, Twitter, and others to help rural kids improve their digital literacy.

2.5.4 Factors Affecting the Integration of Mobile learning in teaching and learning

There are many applications for mobile learning in teaching and learning, but there are drawbacks to the system as well. There are a number of difficulties with using mobile phones for teaching and learning, and the situation gets more complex every day as new technologies are developed. There are numerous pedagogical problems with mobile learning that could negatively affect both teachers and students.[25]. Depending on how technology is used, m-learning can have both beneficial and bad effects on pupils. The researcher also highlights the drawbacks of mobile phones, pointing out that they can be a major distraction from studying. For example, if not rigorously regulated, students who are addicted to their phones are likely to check for updates or notifications nearly every minute. As a result, even during lecture time, when a lecturer is at the height of their teaching, this takes their attention away from their studies. The researcher came to the conclusion that there are a number of issues with mobile phones' impact on kids' learning or academic achievement. In the worst situation, mobile phones are also seen to be utilized for other undesirable activities, such as exam cheating. Due to their addictive nature, the majority of applications like WhatsApp, Facebook, Telegram, and games have a negative impact on pupils at all levels, making the incredible learning benefits of mobile phones a double-edged sword. Therefore, it unintentionally wastes students' time, which has an impact on their academic

achievement. On the other side, excessive mobile phone use causes a number of problems, such as musculoskeletal issues, vascular permeability, neck pain, and brain damage in mice. If there is no monitoring system in place to detect cheating, students may use mobile learning to cheat in exam classes. They may cheat by sending and receiving exam questions and answers via Facebook, WhatsApp, Telegram, and other social media platforms using their mobile phones. Students, however, find it fascinating and lose themselves in it for hours on end. It's also deceptive and unclear. Students who are addicted to their phones also become distracted from their academics and athletics because they want to use their phones more than their books. The use of mobile phones by students in class activities demonstrated how these gadgets enhanced their academic achievement. For instance, they provide helpful background information on lab safety, administrative requirements, and offline or online access to educational materials. They also help people learn general knowledge and ICT digital skills.

2.5.5 The role of Mobile phones in supporting teaching and learning

Since more individuals can now afford them, mobile phones are quickly becoming the most popular. Their use has expanded beyond ordinary communication to include assisting with teaching and learning. The majority of students in all grades, from elementary school to university, may accept mobile devices in various forms and models with a variety of applications, making mobile learning a huge and indispensable contribution to the availability of teaching and learning for students through the most widely used communication tool among students, the mobile phone [48]. For people who are mobile or unable to physically attend educational institutions, m-learning expands access. These individuals would not normally be able to follow courses in a typical educational context because of time limits imposed by work, household duties, or other competing demands.[24]. Because it allows students to follow their studies at their own pace, m-learning contributes to the accessibility of education. The use of m-learning guarantees flexible course delivery, enables learners to access online learning platforms, access course materials, and facilitates digital interaction at any time and from any location. Making learning more accessible and convenient is the main objective of M-learning, which enables students to acquire new information and abilities at any time and from any location despite hectic schedules.

2.5.6 The Role of integrating mobile learning in the context of Rural Ethiopia

Nowadays, mobile technology is advancing quickly and permeates every part of daily life. Many people, including youngsters, utilize devices including PDAs, smartphones, tablets, laptops, convertible devices, smart watches, and other readers.[49]. A few years ago, users could only read and edit most data types on desktop or laptop computers, and they were essentially restricted to a single device. However, with the current generation of smartphones, tablets, and other mobile devices, you may work with documents in any format and use various mobile phone programs to access, edit, and generate any data. As is well known, Ethiopia is a developing nation, and many new secondary schools have recently opened in remote areas where there is a dearth of ICT infrastructure. However, since the globe has become a global village, learning ICT skills has become commonplace in order to make life easier in

. Due to their lack of access to desktop and laptop computers, electricity, the Internet, and other computing infrastructures, secondary school students in rural areas of our nation lack the ICT resources necessary to learn laboratory-based ICT. On the other hand, smartphones are now easily accessible to local residents and young schoolchildren. Therefore, using smartphones to teach ICT and other disciplines through mobile learning could help students in rural parts of the nation build their digital abilities.

2.6 Conceptual Framework

Research is supported and informed by a conceptual framework, which is a system of ideas, presumptions, expectations, beliefs, and hypotheses. A conceptual framework was established in order to ascertain the link between the variables being examined. The integration of mobile learning into the teaching and learning process is the dependent variable actual usage of mobile learning and intermediate variable of behavioral intention to use in the conceptual framework, and which also includes the independent variables of, perceived usefulness, perceived ease of use and facilitating condition (FC). The four factors(variables) that mean independent and intermediate variables listed above have affected the person's decision to adopt the new technology described in the literature. Therefore, in order to determine whether these characteristics might affect the desire to use integrating mobile learning into the teaching and

learning process in a chosen secondary school in the East Bale Zone, this study will use them to propose a research model. Woreda Gololcha

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The arrows' direction indicates a component of the mobile learning impact that integrates mobile learning in a single direction into the teaching and learning process. This has to do with the variables' general framework.

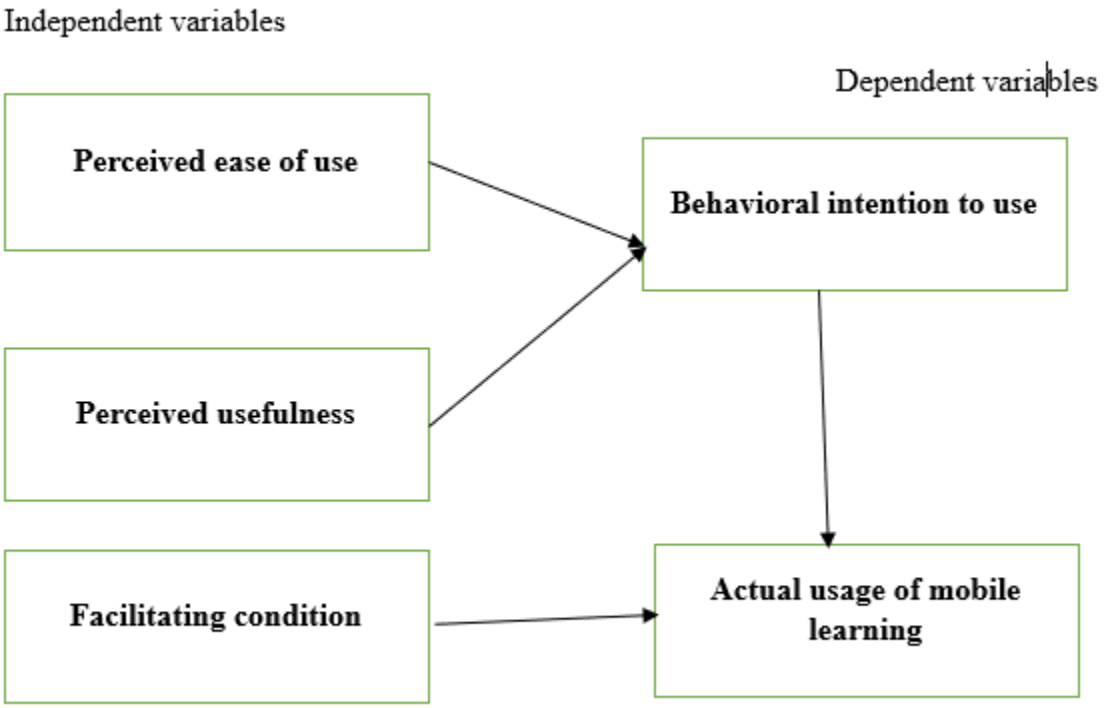

Figure 3 the conceptual frame work

These conceptual frameworks' primary benefits include the ability to incorporate additional independent variables to investigate the ideas, presumptions, expectations, beliefs, and theories that underpin and guide studies on the variables influencing the integration of mobile learning and utilization from the local context in a chosen secondary school in the East Bale Zone. Gololcha woreda

CHAPTER THREE

MATERIAL AND METHODS

The study's methodology was the main topic of this chapter. The research design, research methodology, data source, sample and sampling technique, sampling population, data collection tools, data collection processes, data analysis method, and ethical considerations are all covered in detail in the sections that follow.

3.1 Research design

A common method for gathering data is descriptive analysis, which is the research methodology chosen for this study. The researcher employed primary data and carefully chosen purposive sampling in this study design, as well as questionnaires, interviews, and observation to get the necessary information. Furthermore, both quantitative and qualitative methods were employed in the study. The purpose of this descriptive survey study is to improve teaching and learning processes in a chosen secondary school in the Oromia regional state by integrating mobile learning. Descriptive research aims to determine the what, where, and how of a phenomenon.

3.2 Description of the study area

The regional state of Oromia Zone East Bale The study was carried out in the Gololcha Woreda area. East Bale Zone in Gololcha Woreda was chosen because the researcher and students were familiar with the area and because it was easily accessible, allowing the researcher to quickly establish a rapport with the respondents and reducing the burden of data collection. It was selected because to its perfect location, which is in line with the researcher's interests, conveniently accessible, and enables the rapid development of understanding with respondents. The study was carried out at the Gololcha Secondary Schools in the East Bale Zone of Oromia Regional State.

3.4 Data Sources

Information for this study came from both primary and secondary data sources. The main data sources in this case are the respondents' answers to the questionnaire, the interview, and the

observation checklist they completed. In a similar vein, the study's secondary materials included reference books and past research projects.

3.5 Study population

There are five secondary schools in the Gololcha woreda, according to a report by the East Bale Zone Gololcha Woreda Educational Bureau. A total of three rural secondary schools in the woreda's rural areas were chosen for this study using purposive sample procedures; two of these schools are in the town. The chosen schools are situated in the woreda's rural districts, which provide an ideal setting for the study. 145 students from Dinsa Secondary School, 225 students from Gololcha Secondary School, and 135 students from Temamo Secondary School were chosen for this study. The population of this study consists of 505 students in grades 9 and 10, along with three principals and seven ICT teachers. In conclusion.

3.6 Sample size and sampling techniques

Three secondary schools in Gololcha Woreda provided the sample for this investigation. Temamo Secondary School, Gololcha Secondary School, and Dinsa Secondary School were specifically chosen because the researcher had enough time and opportunity to learn about each secondary school's integration of mobile learning to improve the teaching and learning process. The sample individuals from each of the chosen areas were then chosen using a straightforward random sampling procedure. 505 pupils in grades 10 and 9 out of the total population in the three schools were chosen to complete the study's questionnaire. Using sample size at the same time. Kothari's determination formula

$n = \frac{z^2 * p * q * N}{e^2(N-1) + z^2 * p * q}$ Where N=size of population

n= sample size

P= Estimate characteristic of the population (p=0.5) q=1- p,

Z= Confidence level (1.96)

e= Acceptable (marginal) error (0.05)

The study sample size was 216 students, including three principals and three ICT teachers, based on the Kothari formula. All of the students were chosen through a deliberate sampling process.

3.6 Data collection Instruments

Three secondary schools in the east Bale zone were chosen in order to gather the necessary data on the integration of mobile learning into the teaching and learning process for improved teaching and learning. Dinsa Secondary School, Gololcha Secondary School, and Temamo Secondary School were among them. The researcher employed interviews, questionnaires, and classroom observations.

3.6.1 Questionnaire

The survey was created using closed-ended rating scale items. 216 target students were given the questionnaire, which had 32 items. highly disagree, disagree, partly true of me, agree, and highly agree were the responses to these likert scale questions. As a result, three secondary schools' worth of responders would receive a survey. Of these, 32 questionnaires were returned, and every respondent returned every questionnaire. This demographic is appropriate for this study because of the delicate nature of the research topic.

3.6.2 Interview

Additionally, the researcher created four open-ended interview guide questions with short answer items. The researcher then personally presented the prepared interview guide questions to the three principals and three ICT teachers of the target schools, i.e., one principal and one ICT teacher at Temamo Secondary Schools, one principal and one ICT teacher at Gololcha Secondary Schools, and one principal and one ICT teacher at Dinsa Secondary Schools. A total of twenty-four interviewees were collected.

3.6.3 Classroom Observation

66 students from Temamo Secondary School, 80 students from Gololcha Secondary School, and 70 students from Dinsa Wearda Secondary School were included in the observation checklist created for this study, which evaluated the integration of mobile learning in a few East Bale Zone secondary schools for improved teaching and learning. The researcher had personally made the observations in each region for three weeks in a row.

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3.7 Procedures of data collection

The researcher created the instruments in accordance with the study's goals. The respondents promised that their answers would be kept private, and the researcher verified that their answers would only be utilized for scholarly research. The researcher only knew who answered the questions that were raised; all other questionnaires were coded, distributed, and collected from the responder. In order to gather primary data, the coding technique was solely used to match completed questionnaires that were returned with those that were given to the respondents. Last but not least, the researcher personally carried out the observation in the chosen part for four weeks in a row.

3.8 Data analysis

Both qualitative and quantitative methods were used to analyze the study's findings. The questionnaire was created and revised for consistency and completeness prior to processing the answers. The Statistical Package for the Social Sciences (SPSS) version 27 software was used to analyze, interpret, and present the quantitative descriptions of the questionnaire responses that were gathered from the reflections.

3.9 Ethical Consideration

The results were analyzed using both qualitative and quantitative techniques. Before processing the responses, the questionnaire was developed and edited for completeness and consistency. The quantitative descriptions of the questionnaire responses collected from the reflections were analyzed, interpreted, and presented using the Statistical Package for the Social Sciences (SPSS) version 27 software.

CHAPTER 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The outcomes of data analysis using both mixed research type methodologies are presented in this chapter. A quantitative analysis of the information gathered from the questionnaire is presented in Section 4.1 of this chapter. The fundamental data obtained from the examination of every variable and displayed using descriptive statistics is covered in this part.

There are seven components to the quantitative data collection tool. Its first part was created to gather the respondent's demographic data. The purpose of part two was to gather information on behavioral intention to use mobile learning. The purpose of part three was to gather information about mobile learning's performance expectations. The purpose of part four was to gather information about social influence on mobile learning. The purpose of part five was to gather information about the conditions that facilitate mobile learning. Data on the Effort Expectancy of Mobile Learning was collected in Part 6, and data on the use of mobile phones to acquire ICT digital skills was collected in Part 7. There are 32 items in all on the questionnaire. All 32 items without part one was measured on a five-point Liker-type scales ranging from "strongly disagree", "disagree", "neutral", "agree" and "Strongly agree".

In order to respond to the research question, Section 4.2 summarizes and explains the results of the qualitative data analysis that was conducted during the interview.

4.1 Characteristics of the Respondent

Respondent characteristics provide some basic information about the study's sample composition. As a result, table 4.1 below details the respondents' basic sex-related features, whereas table 4.2 lists the respondents' age-related characteristics. Consequently, 112 of the 216 students who responded were male, and 104 of them were female.

4.1.1 Demographic status of the student respondent

Gender of respondents		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	112	51.9	51.9	51.9
	Female	104	48.1	48.1	100.0
	Total	216	100.0	100.0	

Table 4.1 gender of the respondents

In accordance with table 4.1 above, out of the 216 respondents, 112 (51.9%) were men and the remaining 104 (48.1%) were women. This table indicates that men made up the majority of responders.

Age of respondents		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-18	45	20.8	20.8	20.8
	19-23	105	48.6	48.6	69.4
	24 -30	66	30.6	30.6	100.0
	Total	216	100.0	100.0	

Table 4.2 Age of the respondents

The ages of the respondents were 45 (20.8%) for those aged 15–18, 105 (48.5%) for those aged 19–23, 24–30, and 66 (30.6%), as shown in table 4.2 above. The majority of respondents were in the 19–23 age group, as this table shows, with the bulk of respondents having been born between those years.

4.1.2 perceived ease of use

This study examines the impact of mobile phones on secondary school students' academic performance and how they are used to improve ICT proficiency in a few rural secondary schools.

Table 4.3 shows Mobile learning resources are easy to use.

Mobile learning resources are easy to use.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	106	49.1	49.1	49.1

	Agree	68	31.5	31.5	80.6
	Neutral	19	8.8	8.8	89.4
	Disagree	9	4.2	4.2	93.5
	strongly disagree	14	6.5	6.5	100.0
	Total	216	100.0	100.0	

Of the 216 respondents in the entire population, 106 (49.1%) gave a highly agree response, and 68 (31.5%) gave an agree response, as shown in table 4.3 above. Nine (4.2%) disagreed, 14 (6.5%) strongly disagreed, and 19 (8.8%) respondents were not allowed to comment. The majority of respondents strongly agreed that mobile learning resources are straightforward to use, as shown in table 4.3 above.

Table 4.4 shows the I find it easy to learn how to use educational mobile apps

I find it easy to learn how to use educational mobile apps					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	54	25.0	25.0	25.0
	Agree	114	52.8	52.8	77.8
	Neutral	29	13.4	13.4	91.2
	Disagree	13	6.0	6.0	97.2
	strongly disagree	6	2.8	2.8	100.0
	Total	216	100.0	100.0	

From the total population of 216, as shown in table 4.4 above, 54 (25.0%) of the respondents gave strong agree responses, 114 (52.8%) gave agree responses, 29 (13.4%) gave restricted responses, 13 (6.0%) gave disagree responses, and the remaining 6 (2.8%) gave strongly disagree responses. According to table 4.4 above, the majority of respondents believed that using educational mobile apps is easy for them to learn.

Table 4.5 indicates Navigating mobile learning apps is easy for me.

Navigating mobile learning apps is easy for me.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	63	29.2	29.2	29.2
	Agree	68	31.5	31.5	60.6
	Neutral	62	28.7	28.7	89.4
	Disagree	14	6.5	6.5	95.8
	strongly disagree	9	4.2	4.2	100.0
	Total	216	100.0	100.0	

According to table 4.5 above, out of the 216 respondents in the total population, 63 (29.2%) strongly agreed, 68 (31.5%) agreed, 62 (28.7%) were constrained in their ability to respond, 14 (6.5%) disagreed, and the remaining 9 (4.2%) strongly disagreed. According to table 4.5 above, the majority of respondents agreed that using mobile learning apps is simple for them.

Table 4.6 show It's simple to incorporate mobile learning into my study regimen

It's simple to incorporate mobile learning into my study regimen					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	6	2.8	2.8	2.8
	Agree	15	6.9	6.9	9.7
	Neutral	4	1.9	1.9	11.6
	Disagree	54	25.0	25.0	36.6
	strongly disagree	137	63.4	63.4	100.0
	Total	216	100.0	100.0	

The aforementioned table 4.6 shows that, out of the 216 respondents in the total population, 6 (2.8%) strongly agreed, 15 (6.9%) agreed,.4 (1.9%) were not allowed to respond, 54 (25.0%) disagreed, and the remaining 137 (63.4%) strongly disagreed. Table 4.6 above shows that the

majority of respondents strongly disagreed. Including mobile learning in my study routine is easy.

4.1.3 Perceived usefulness

Table 4.7 shows My comprehension of ICT subjects is improved by mobile learning.

My comprehension of ICT subjects is improved by mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	88	40.7	40.7	40.7
	Agree	99	45.8	45.8	86.6
	Neutral	23	10.6	10.6	97.2
	Disagree	5	2.3	2.3	99.5
	strongly disagree	1	.5	.5	100.0
	Total	216	100.0	100.0	

As can be seen in table 4.7 above, out of the 216 respondents in the entire population, 99 (45.7%) agreed and 88 (40.7%) strongly agreed.Five respondents (2.3%) disagreed, one respondent (0.5%) strongly disagreed, and twenty-three respondents (10.6%) were not allowed to comment. Table 4.7 above shows that the majority of respondents were in agreement with I can better understand ICT subjects thanks to mobile learning.

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Table 4.8 shows the I do homework more quickly because to it.

I do homework more quickly because to it.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	70	32.4	32.4	32.4
	Agree	88	40.7	40.7	73.1
	Neutral	22	10.2	10.2	83.3

	Disagree	22	10.2	10.2	93.5
	strongly disagree	13	6.0	6.0	99.5
	Total	216	100.0	100.0	

Table 4.8 above shows that, out of the 216 respondents in the total population, 70 (32.4%) strongly agreed, 99 (45.7%) agreed,.88 (40.7%) were not allowed to respond, 22 (10.2%) disagreed, and the remaining 13 (6.0%) responded strongly disagreed. According to table 4.8 above, the majority of respondents felt that I complete my assignment more quickly as a result of.

Table 4.9 shows My total learning productivity is increased by mobile learning.

My total learning productivity is increased by mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	81	37.5	37.5	37.5
	Agree	82	38.0	38.0	75.5
	Neutral	28	13.0	13.0	88.4
	Disagree	9	4.2	4.2	92.6
	strongly disagree	16	7.4	7.4	100.0
	Total	216	100.0	100.0	

Table 4.9 above shows that, out of the 216 respondents in the total population, 81 (37.5%) strongly agreed, 82 (38.0%) agreed, 28 (11.0%) were not allowed to respond, 9 (4.2%) disagreed, and the remaining 16 (7.4%) strongly disagreed. According to table 4.9 above, the majority of respondents agreed that mobile learning increases their overall learning productivity..

Table 4.10 show the Using mobile learning helps me strengthen my ICT skills.

Using mobile learning helps me strengthen my ICT skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	79	36.6	36.6	36.6
	Agree	87	40.3	40.3	76.9

	Neutral	27	12.5	12.5	89.4
	Disagree	11	5.1	5.1	94.4
	strongly disagree	12	5.6	5.6	100.0
	Total	216	100.0	100.0	

Table 4.10 above shows that, out of the 216 respondents, 79 (36.6%) strongly agreed, 87 (40.3%) agreed,.27 (12.5%) were not allowed to respond, 11 (5.1%) disagreed, and the remaining 12 (5.6%) strongly disagreed. Table 4.10 above shows that the majority of respondents agreed with I can improve my ICT abilities by using mobile learning..

4.1.4 Facilitating condition

Table 4.11 shows the equipment required for mobile learning are provided by my school.

The equipment required for mobile learning are provided by my school.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	128	59.3	59.3	59.3
	Agree	53	24.5	24.5	83.8
	Neutral	18	8.3	8.3	92.1
	Disagree	7	3.2	3.2	95.4
	strongly disagree	10	4.6	4.6	100.0
	Total	216	100.0	100.0	

Table 4.11 above shows that, out of the total population of 216, 128 (59.3%) of the respondents strongly agreed, 53 (24.5%) agreed, 18 (8.3%) were not allowed to respond, 7 (3.2%) disagreed, and the remaining 10 (4.6%) strongly strongly disagreed. The majority of respondents strongly agreed that my institution provides the necessary equipment for mobile learning, as shown in table 4.11 above.

Table 4.12 indicates that Mobile learning activities are supported by internet connectivity

Mobile learning activities are supported by internet connectivity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	68	31.5	31.5	31.5
	Agree	87	40.3	40.3	71.8
	Neutral	31	14.4	14.4	86.1
	Disagree	17	7.9	7.9	94.0
	Strongly disagree	13	6.0	6.0	100.0
	Total	216	100.0	100.0	

Table 4.12 above shows that, out of the total population of 216, 68 (31.2%) of the respondents strongly agreed, 87 (40.3%) agreed, 31 (14.4%) were told they could not answer, 17 (7.9%) disagreed, and the remaining 13 (6.0%) strongly disagreed. The majority of respondents agreed that internet connectivity supports mobile learning activities, as shown in table 4.12 above.

Table 4.13. Indicates The usage of mobile learning is widely promoted by educators.

The usage of mobile learning is widely promoted by educators.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	88	40.7	40.7	40.7
	Agree	63	29.2	29.2	69.9
	Neutral	28	13.0	13.0	82.9
	Disagree	25	11.6	11.6	94.4
	Strongly disagree	12	5.6	5.6	100.0
	Total	216	100.0	100.0	

Out of the 216 respondents in the total population, 88 (40.7%) strongly agreed, 63 (20.2%) agreed, 28 (11.0%) were unable to respond, 25 (11.6%) disagreed, and the remaining 12 (5.6%) strongly disagreed, according to table 4.13 above. The majority of respondents strongly agreed that educators broadly promote the use of mobile learning, as seen in table 4.13 above. This demonstrates that pupils in rural secondary schools have learned how to use their phones rather than computers to improve their practical ICT skills.

Table 4.14 indicates My surroundings are conducive to incorporating mobile learning

My surroundings are conducive to incorporating mobile learning					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	88	40.7	40.7	40.7
	Agree	84	38.9	38.9	79.6
	Neutral	14	6.5	6.5	86.1
	Disagree	10	4.6	4.6	90.7
	Strongly disagree	20	9.3	9.3	100.0
	Total	216	100.0	100.0	

Out of the 216 respondents in the total population, 88 (40.7%) strongly agreed, 84 (30.8%) agreed, 14 (6.5%) were not allowed to respond, 10 (4.6%) disagreed, and the remaining 20 (9.3%) strongly disagreed, according to table 4.14 on the above page. The majority of respondents strongly felt that their circumstances are conducive to adopting mobile learning, as seen in table 4.14 above.

4.1.5 Behavioral intention to use

Table 4.15 shows that I plan to make frequent use of mobile learning resources.

I plan to make frequent use of mobile learning resources.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	90	41.7	41.7	41.7
	Agree	68	31.5	31.5	73.1
	Neutral	15	6.9	6.9	80.1
	Disagree	22	10.2	10.2	90.3
	Strongly disagree	21	9.7	9.7	100.0
	Total	216	100.0	100.0	

Table 4.15 above shows that, out of the 216 respondents, 90 (41.7%) strongly agreed, 68 (31.5%) agreed, 15 (6.9%) were not allowed to respond, 22 (10.2%) disagreed, and the remaining 21 (9.7%) strongly disagreed. According to table 4.15 above, the majority of respondents strongly agreed that they intended to use mobile learning resources frequently.

Table 4.16 indicates that I intend to keep teaching ICT through mobile learning.

I intend to keep teaching ICT through mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	95	44.0	44.0	44.0
	Agree	88	40.7	40.7	84.7
	Neutral	12	5.6	5.6	90.3
	Disagree	8	3.7	3.7	94.0
	Strongly disagree	13	6.0	6.0	100.0
	Total	216	100.1	100.0	

As can be seen in table 4.16 above, out of the 216 respondents in the total population, 95 (44.0%) strongly agreed, 88 (40.7%) agreed, 12 (5.6%) were not allowed to respond, 8 (3.7%) disagreed, and the remaining 13 (6.0%) strongly disagreed. The majority of respondents strongly agreed with the statement, "I intend to continue teaching ICT through mobile learning," as seen in table 4.16 above. This indicates that in the future, students in rural secondary schools will be able to use their own mobile phones for independent ICT practical learning rather than a computer.

Table 4.17 indicates I'm inspired to look into further mobile learning resources

I'm inspired to look into further mobile learning resources					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	94	43.5	43.5	43.5
	Agree	94	43.5	43.5	87.0

	Neutral	7	3.2	3.2	90.3
	Disagree	15	6.9	6.9	97.2
	strongly disagree	6	2.8	2.8	100.0
	Total	216	100.0	100.0	

Table 4.17 above shows that, out of the 216 respondents in the total population, 94 (43.5%) strongly agreed, 94 (43.5%) agreed, 7 (3.2%) were not allowed to respond, 15 (6.9%) disagreed, and the remaining 6 (2.8%) strongly disagreed and agreed. The majority of respondents agreed and strongly agreed with the statement, "I'm inspired to look into further mobile learning resources," as seen in table 4.17 above.

Table 4.18 shows that I advise my peers to use mobile learning.

I advise my peers to use mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	101	46.8	46.8	46.8
	Agree	75	34.7	34.7	81.5
	Neutral	18	8.3	8.3	89.8
	Disagree	11	5.1	5.1	94.9
	strongly disagree	11	5.1	5.1	100.0
	Total	216	100.0	100.0	

Table 4.18 above shows that, out of the 216 respondents, 101 (46.8%) strongly agreed, 75 (34.7%) agreed, 18 (8.3%) were not allowed to respond, 11 (5.1%) disagreed, and the remaining 11 (5.1%) strongly disagreed as a result of the restriction. According to table 4.18 above, the majority of respondents strongly agreed that I should encourage my classmates to adopt mobile learning.

4.1.6 Actual usage of mobile learning

Table 4.19 shows that I study every day using mobile learning resource

I study every day using mobile learning resources.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	63	29.2	29.2	29.2
	Agree	116	53.7	53.7	82.9
	Neutral	14	6.5	6.5	89.4
	Disagree	12	5.6	5.6	94.9
	strongly disagree	11	5.1	5.1	100.0
	Total	216	100.0	100.0	

As can be seen in table 4.19 above, out of the total population of 216, 63 (29.2%) of the respondents strongly agreed, 116 (53.7%) agreed, 14 (6.5%) were not allowed to respond, 12 (5.6%) disagreed, and the remaining 11 (5.3%) strongly disagreed. The majority of respondents stated that I use mobile learning tools to study every day, as shown in table 4.19 above.

Table 4.20 shows the My ICT learning activities include mobile devices

My ICT learning activities include mobile devices					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	122	56.5	56.5	56.5
	Agree	51	23.6	23.6	80.1
	Neutral	24	11.1	11.1	91.2
	Disagree	7	3.2	3.2	94.4
	strongly disagree	12	5.6	5.6	100.0
	Total	216	100.0	100.0	

Table 4.20 above shows that, out of the 216 respondents, 122 (56.5%) strongly agreed, 51 (23.6%) agreed, 24 (11.1%) were not allowed to respond, 7 (3.2%) disagreed, and the remaining 12 (5.6%) strongly disagreed across the entire population. According to table 4.20 above, the

majority of respondents strongly agreed that mobile devices should be a part of my ICT learning activities.

Table 4.21 show I use mobile learning to finish my assignments.

I use mobile learning to finish my assignments.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	117	54.2	54.2	54.2
	Agree	58	26.9	26.9	81.0
	Neutral	18	8.3	8.3	89.4
	Disagree	12	5.6	5.6	94.9
	strongly disagree	11	5.1	5.1	100.0
	Total	216	100.0	100.0	

As can be seen in table 4.21 above, out of the 216 respondents in the total population, 117 (54.2%) strongly agreed, 58 (26.7%) agreed, 18 (8.3%) were not allowed to respond, 12 (5.6%) disagreed, and the remaining 11 (5.1%) strongly disagreed. The majority of respondents strongly agreed that I use mobile learning to complete my assignments, as seen in table 4.21 above.

Table 4.22 shows that Mobile learning is becoming a crucial components of my education

Mobile learning is becoming a crucial component of my education.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	83	38.4	38.4	38.4
	Agree	86	39.8	39.8	78.2
	Neutral	10	4.6	4.6	82.9
	Disagree	18	8.3	8.3	91.2
	strongly disagree	19	8.8	8.8	100.0

	Total	216	100.0	100.0	

According to table 4.22 above, out of the 216 respondents in the total population, 83 (38.4%) strongly agreed, 86 (30.8%) agreed, 10 (4.6%) were not allowed to respond, 18 (8.3%) disagreed, and the remaining 19 (8.8%) strongly disagreed. The majority of respondents' responses were agreed. The majority of respondents believed that mobile learning is becoming an essential part of my education, as seen in table 4.22 above.

4.1.7 ICT skill impact on mobile learning

Table 4.23 shows My comprehension of software applications is enhanced by mobile learning.

My comprehension of software applications is enhanced by mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	83	38.4	38.4	38.4
	Agree	78	36.1	36.1	74.5
	Neutral	16	7.4	7.4	81.9
	Disagree	21	9.7	9.7	91.7
	strongly disagree	18	8.3	8.3	100.0
	Total	216	100.0	100.0	

From the total population of 216, as shown in table 4.23 above, 83 (38.4%) of the respondents strongly agreed, 78 (36.1%) agreed, 16 (7.4%) were not allowed to respond, 21 (9.7%) disagreed, and the remaining 18 (8.3%) strongly disagreed, with the majority of respondents agreeing. Table 4.23 above shows that the majority of respondents strongly agreed with Mobile learning improves my ability to understand software programs.

Table 4. 24 shows I can finish ICT-related tasks more quickly.

I can finish ICT-related tasks more quickly					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	69	31.9	31.9	31.9
	Agree	72	33.3	33.3	65.3

	Neutral	30	13.9	13.9	79.2
	Disagree	21	9.7	9.7	88.9
	strongly disagree	24	11.1	11.1	100.0
	Total	216	100.0	100.0	

Table 4.24 above shows that, out of the 216 respondents, 69 (31.9%) strongly agreed, 72 (33.3%) agreed, 30 (13.9%) were not allowed to respond, 21 (9.7%) disagreed, and the remaining 24 (11.1%) strongly disagreed across the entire population. The majority of respondents agreed that I can complete ICT-related duties more rapidly, as shown in table 4.24 above.

Table 4.25 shows Mobile learning has given me more confidence in my ICT abilities.

Mobile learning has given me more confidence in my ICT abilities.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	75	34.7	34.7	34.7
	Agree	73	33.8	33.8	68.5
	Neutral	26	11.9	11.9	80.6
	Disagree	25	11.8	11.8	92.1
	strongly disagree	17	7.8	7.8	100.0
	Total	216	100.0	100.0	

As can be seen in table 4.25 above, out of the 216 respondents in the total population, 75 (34.7%) strongly agreed, 73 (33.8%) agreed, 26 (11.9%) were not allowed to respond, 25 (11.8%) disagreed, and the remaining 17 (7.8%) strongly disagreed. According to table 4.25 above, the majority of respondents strongly agreed that mobile learning had increased their confidence in their ICT skills.

Table 4.26 indicates Because to mobile learning, I feel more equipped to handle ICT tasks in the future

Because to mobile learning, I feel more equipped to handle ICT tasks in the future					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	60	27.8	27.8	27.8
	Agree	61	28.2	28.2	56.0
	Neutral	20	9.3	9.3	65.3
	Disagree	56	25.9	25.9	91.2
	strongly disagree	19	8.8	8.8	100.0
	Total	216	100.0	100.0	

Table 4.26 above shows that, out of the 216 respondents, 60 (27.5%) strongly agreed, 61 (28.0%) agreed, 20 (9.3%) were not allowed to respond, 56 (24.9%) disagreed, and the remaining 19 (8.8%) strongly disagreed. Table 4.26 above shows that the majority of respondents agreed with I feel more prepared to manage ICT activities in the future because of mobile learning.

4.1.8 Barriers to use mobile

Table 4.27 shows My utilization of mobile learning is impacted by my limited internet access.

My utilization of mobile learning is impacted by my limited internet access					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	76	35.2	35.2	35.2
	Agree	95	44.0	44.0	79.2
	Neutral	17	7.9	7.9	87.0
	Disagree	10	4.6	4.6	91.7
	strongly disagree	18	8.3	8.3	100.0
	Total	216	100.0	100.0	

Table 4.27 above shows that, out of the 216 respondents, 76 (35.2%) strongly agreed, 95 (44.0%) agreed, 17 (7.9%) were not allowed to respond, 10 (4.6%) disagreed, and the remaining 18 (8.3%) strongly disagreed as a percentage of the total population. Table 4.27 above shows that

the majority of respondents agreed with My limited internet access affects how I use mobile learning.

Table 4.28 shows I don't always have access to mobile devices when I need them.

I don't always have access to mobile devices when I need them					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	88	40.7	40.7	40.7
	Agree	66	30.6	30.6	71.3
	Neutral	23	10.6	10.6	81.9
	Disagree	20	9.3	9.3	91.2
	strongly disagree	19	8.8	8.8	100.0
	Total	216	100.0	100.0	

Table 4.28 above shows that, out of the total population of 216, 88 (40.7%) of the respondents strongly agreed, 66 (30.6%) agreed, 23 (10.6%) were not allowed to respond, 20 (9.3%) disagreed, and the remaining 19 (8.8%) replied strongly disagreed. The majority of respondents strongly agreed with the statement, "I don't always have access to mobile devices when I need them," as seen in table 4.28 above. This table also shows that students can gain ICT digital skills using their own mobile device.

Table 4.29 shows that My experience with mobile learning is hampered by technical difficulties

My experience with mobile learning is hampered by technical difficulties					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	82	38.0	38.0	22.7
	Agree	49	22.7	22.7	43.1
	Neutral	4	1.9	1.9	44.9
	Disagree	44	20.4	20.4	82.9
	strongly disagree	37	17.1	17.1	100.0
	Total	216	100	100.0	

As can be seen in table 4.29 above, out of the total population of 216, 82 (38.0%) of the respondents strongly agreed, 49 (22.7%) agreed, 4 (1.9%) were not allowed to respond, 44

(20.4%) disagreed, and the remaining 37 (17.1%) strongly disagreed. Table 4.29 above shows that the majority of respondents were unable to provide their response for Technical issues are impeding my experience with mobile learning.

Table 4.30 shows that Adoption of mobile learning is difficult due to a lack of training.

Adoption of mobile learning is difficult due to a lack of training.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	69	31.9	31.9	5.1
	Agree	70	32.4	32.4	28.2
	Neutral	50	23.1	23.1	60.6
	Disagree	11	5.1	5.1	92.6
	strongly disagree	16	7.4	7.4	100.0
	Total	216	100.0	100.0	

From the total population of 216, as shown in table 4.30 above, 69 (31.9%) of the respondents strongly agreed, 70 (32.4%) agreed, 50 (23.1%) were not allowed to respond, 11 (5.1%) disagreed, and the remaining 16 (7.4%) respondents strongly disagreed. Table 4.30 above shows that the majority of respondents were unable to provide their response for Due to a lack of training, mobile learning adoption is challenging.at a high school in the country.

4.1.9 Opportunities to use mobile learning

Table 4.31 indicates My study habits are in line with mobile learning.

My study habits are in line with mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	101	46.8	46.8	46.8
	Agree	78	36.1	36.1	82.9
	Neutral	13	6.0	6.0	88.9
	Disagree	15	6.9	6.9	95.8
	Strongly disagree	9	4.2	4.2	100.0

	Total	216	100.0	100.0	

From the total population of 216, as shown in table 4.31 above, 101 (40.8%) of the respondents strongly agreed, 78 (36.1%) agreed, 13 (6.0%) disagreed, 15 (6.9%) disagreed, and the remaining 9 (4.2%) also strongly disagreed. According to table 4.31 above, the majority of respondents strongly agreed that their study habits aligned with mobile learning.to improve their ICT proficiency in a secondary rural school.

Table 4.32 students' It provides a flexible way to obtain educational materials

It provides a flexible way to obtain educational materials					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	18	8.7	8.7	39.4
	Agree	19	8.9	8.9	80.6
	Neutral	5	2.4	2.4	82.9
	Disagree	85	39.2	39.2	91.2
	Strongly disagree	89	41.0	41.0	100.0
	Total	216	100.0	100.0	

Out of the 216 respondents in the total population, 18 (8.7%) strongly agreed, 19 (8.9%) agreed, 5 (2.4%) were neutral, 85 (30.2%) disagreed, and the remaining 89 (41.0%) strongly disagreed, according to table 4.32 above. According to table 4.32 above, the majority of respondents agreed that it offers a flexible option for secondary schools in remote areas to receive educational materials.

Table 4.33 one useful method of improving ICT abilities is through mobile learning

One useful method of improving ICT abilities is through mobile learning.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	82	38.0	38.0	38.0
	Agree	70	32.4	32.4	70.4
	Neutral	30	13.9	13.9	84.3

	Disagree	22	10.2	10.2	94.4
	Strongly disagree	12	5.6	5.6	100.0
	Total	216	100.0	100.0	

As shown in table 4.33 above, out of the total population of 216, 82 (38.0%) of the respondents strongly agreed, 70 (32.4%) agreed, 30 (13.9%) disagreed, 22 (10.2%) disagreed, and the remaining 12 (5.6%) strongly disagreed. Table 4.34 above shows that the majority of respondents strongly agreed with the Mobile learning is a helpful strategy for enhancing ICT proficiency in rural secondary schools..

Table 4.34 indicates that by using it, my school can close the digital skills gap

By using it, my school can close the digital skills gap					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	22	10.1	10.1	34.3
	Agree	29	13.5	13.5	71.8
	Neutral	10	4.6	4.6	76.4
	Disagree	81	37.5	37.5	89.8
	Strongly disagree	74	34.3	34.3	100.0
	Total	216	100.0	100.0	

Table 4.34 above shows that, out of the total population of 216, 22 (10.1%) of the respondents strongly agreed, 29 (13.5%) agreed, 10 (4.6%) were neutral, 81 (37.5%) disagreed, and the remaining 74 (34.3%) strongly disagreed. Table 4.34 above shows that the majority of respondents strongly disagreed with the My school can use computers to improve students' academic achievement and bridge the digital skills gap.

4..2 Observation results of Integrating mobile learning in teaching and learning in selected secondary schools

In order to determine whether teachers are motivated to teach ICT and other subjects using mobile phones, whether students are motivated to learn these subjects using mobile phones, whether students have their own smart phones to improve their digital skills, whether they can

access educational materials using a handheld mobile device, and whether students possess ICT digital skills, the researcher conducted observations. In this case, the researcher would mark it with [√] if the teacher and students met the aforementioned observation requirements, and with [χ] if they did not, as indicated in the following table. Finding the contextual factors influencing M-learning in the teaching-learning process in a chosen rural secondary school in the eastern Bale zone Gololcha woreda of Oromia regional state was one of the study's goals. The following table provides a summary of the observation's findings.

School name	. students' motivation to learn ICT and other subject with their mobile phone	Teachers Motivation to teach ICT and other subject with mobile phone	does the students can access educational material with hand held mobile	Does the Students enhance ICT digital skill by using their mobile phone
Tamamo secondary school	√	√	√	√
Dinsa secondary school	√	√	√	√
Gololcha secondary school	√	√	√	√

Table 4.32 observation

According to the above table, the researcher can see that both teachers and students from all of the secondary schools that were chosen can be motivated to teach ICT and other subjects using their personal mobile phones. As a result, Temamo Secondary School students are also capable of using their mobile devices to access educational resources. Therefore, the aforementioned findings suggest that improving the integration of mobile learning into the teaching and learning process is beneficial for improving the digital literacy of students in rural schools and reducing the digital divide between students in urban and rural areas.

4.3 Discussion of Interview obtains from ICT teachers and principals' respondents.

As responders, ICT teachers and school administrators stated that there is some incorporation of mobile learning into the teaching and learning process to enhance student performance and facilitate the educational process. Therefore, incorporating mobile learning into rural secondary schools is crucial to improving the ICT digital skills of students in these areas where there is a shortage of ICT infrastructure. Without a computer lab, it is difficult to teach ICT digital skills in rural secondary schools. According to their reaction, mobile learning is a critical area and an important problem since it helps students in remote areas improve their ICT digital skills by utilizing their own mobile phones without worrying about time or location. The response suggests that incorporating mobile learning into the teaching and learning process is crucial for improving student performance and motivation. It is challenging to encourage kids in a classroom to just copy what is printed on the whiteboard into their notebooks, according to the interviewer with the ICT instructor. On the other hand, pupils gain new insights in the classroom when they use digital devices like smartphones. The ability to offer educational resources and materials for interactive sessions between students or between teachers is the primary advantage of mobile learning in the classroom. Students will be more motivated in the classroom when teachers foster an environment where learning is enjoyable.

When there is a paucity of ICT infrastructure, the secondary school principals who responded discussed the potential benefits of sharing data and resources using mobile devices rather than computers. The interviewee, the school principal, believes that integrating mobile learning into rural secondary schools is beneficial for improving students' performance in the teaching and learning process by enabling them to access and share educational resources both online and offline.

ICT teacher interviewees stated that rural secondary schools lack ICT infrastructure, including electricity, desktop computers, computer labs, printers, and networking/internet. They also highlighted that mobile learning is only partially integrated into the teaching and learning process. Teachers and students can access and share educational materials at any time and from any location thanks to the integration of mobile learning, which is essential for teaching ICT digital skills with mobile phones. Additionally, mobile learning can help close the digital divide between students in rural and urban areas.

According to the respondents interviewed, integrating mobile learning into the teaching and learning process is generally more beneficial than teaching using the manual method. This is because mobile learning plays a significant role in the field by helping students improve their ICT digital skill performance and by giving them greater advantages when it comes to sharing and accessing educational materials on any other subject at any time or place. Additionally, mobile learning integration in the teaching and learning process helps close the ICT skill gap between secondary school students in rural and urban areas.

4.4 Research model

review of the study model's relevant literature. This study's goal is to create a model for using M-learning to improve the educational process and students' digital skills. The model can be expanded to incorporate intermediate variables as this study progresses.

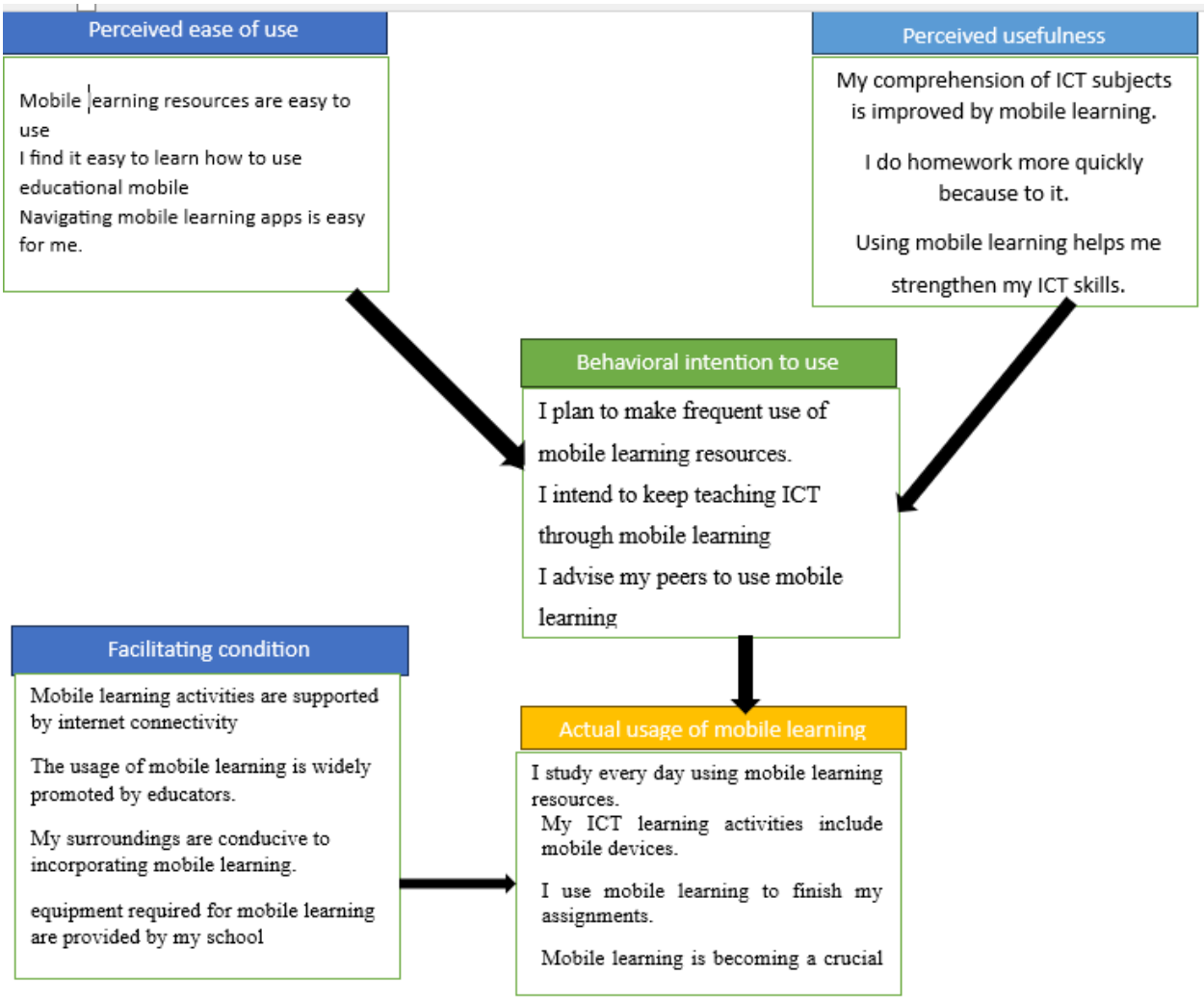

Figure 4 Research model on integration of mobile learning

The model of integrating mobile learning to increase student ICT digital skill in the teaching and learning process includes three dependent variables: perceived utility, perceived ease of use, and facilitating condition enhanced ICT digital skill. Perceived usefulness and perceived ease of use are the two independent variables that make up behavioral intention, which is an intermediate variable in this instance and facilitating condition is directly affect the actual usage of mobile learning. The three independent variables are affected by external variable such as barriers to use mobile learning, ICT skill performance and opportunity to use mobile phone in teaching and learning process. Decisions regarding improved ICT digital skills are made after the influence of actual mobile learning usage, and behavioral intention also has a direct impact on the actual use of mobile learning. This implies that mobile learning integration is utilized to enhance students' ICT digital skills in the classroom in remote locations.

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1. **Perceived ease of mobile learning**

A person's opinion of a technology's usability is based on how simple they believe it to be. When people believe a technology is easy to use, their intentions to use it also improve.

Mobile learning resources are easy to use

Popular and easy-to-use tools like Edmodo, Kahoot, and Google Classroom are great places to start. One of the main benefits of mobile learning is its capacity to increase student involvement.

I find it easy to learn how to use educational mobile

Well-known and user-friendly resources like Google Classroom, Edmodo, and Kahoot! are excellent for beginning. The potential of mobile learning to boost student engagement is among its biggest advantages.

Navigating mobile learning apps is easy for me

Of course! You can become much more productive while using mobile learning for ICT-related work. .

2. **Perceived usefulness**

The degree to which an individual thinks that utilizing a specific system will improve his or her performance at work is known as perceived usefulness.

My comprehension of ICT subjects is improved by mobile learning

The accessible and user-friendly design of mobile learning applications may make it easier for people to learn while on the go.

I do homework more quickly because to it.

Applications for mobile learning can be very practical for accessing everywhere and for doing homework at home.

3. **Facilitating condition for mobile learning**

Certain requirements must be fulfilled in order for mobile learning, or m-learning, to be deployed successfully and to engage users. I have the resources required to use mobile learning for ICT education, I have a dependable mobile device for mobile learning, and I have dependable internet access for using mobile learning tools, according to these models.

Behavioral intention to use mobile learning

People's goals or desires to embrace and use mobile technology for learning are referred to as "behavioral intention to use mobile learning" (m-learning). The following are included in the framework of these models: I will set up mobile learning as my main method of gaining ICT skills; I want to use it whenever I need to learn more about ICT and to improve my ICT capabilities. All of the independent variables—social influence, enabling conditions, effort expectancy, and performance expectancy—have a direct impact on the dependent variable, behavioral intention to use mobile learning.

Improved ICT Digital Skills

By integrating mobile learning into the classroom, ICT digital skills can be significantly enhanced. The following are included in the framework of these models: enhanced typing, enhanced file editing, enhanced internet usage, and enhanced information access and sharing. Better Typing Ability: Mobile learning is the process of using mobile technology to improve typing efficiency through touch typing.

Enhanced proficiency in file editing: File editing is the process of altering or rearranging content within a file. It could involve moving, copying, inserting, or deleting text. Programs for file modification include Adobe Photoshop for picture editing and Audacity for sound editing. Enhanced Internet Usage: The educational process can be significantly enhanced by combining mobile learning with online literacy.

Information accessibility and sharing: - Mobile learning makes learning more flexible and inclusive by enabling students to access and share educational materials at any time and from any location.

4.4.1 Evaluation of the Research Model

The study model's last outcome variable, ICT Digital Skills, broadens it to incorporate crucial components from the TAM framework. In order to enhance students' digital ICT skills, the study model, which is founded on the TAM framework, aims to better understand how mobile learning can be successfully integrated into secondary schools in rural areas.

According to the model's hypothesis, students' intentions to utilize mobile learning tools are shaped by their opinions about the technologies' functionality, usability, social influences, and support availability. In a chosen Gololcha Woreda rural secondary school, this goal is then realized through the actual use of mobile learning, which ultimately results in the development of ICT digital skills.

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4.4.2 Strengths of the Model:

• **Extensive**: The model includes a wide variety of variables that account for the different factors influencing technology adoption and use.

• **Predictive Power**: By linking behavioral intention to actual mobile learning use and, ultimately, to ICT digital skills, the method provides a clear route for understanding how technology adoption may lead to skill development.

• **Usefulness**: The idea can be applied in educational contexts, particularly when determining how to motivate students to use mobile learning materials to advance their digital literacy**.**

4.4.3 Expected Results for the integration of mobile learning in selected Gololcha woreda Secondary School.

The researcher was informed by the respondents that integrating mobile learning into the teaching and learning process is expected to produce the following outcomes: Through this model, the teaching process is facilitated. It raises the standard for learning, encourages students' independence and creativity, and makes materials more available, making it more interesting for both teachers and students. This strategy will make it easier for students and teachers to

communicate via mobile phones. Using a mobile device, teachers will also link their lesson plans, study aids, and lecture notes. This strategy will greatly benefit a few rural secondary schools in Gololcha Woreda by improving ICT digital competency and closing the digital divide between rural and urban secondary school pupils.

4.11 Summary of the Research model

To demonstrate the model's assumption, the model shown in picture 4.1 above offers a thorough explanation of the research variables together with an explanation of their likert scale. The study model summary that follows shows the independent and dependent variables as well as the route from the independent to the dependent variables. This idea states that perceived utility and simplicity of use have a direct impact on behavioral intention to use mobile learning. Therefore, behavioral intention and enabling environment have an impact on the actual application of integrated mobile learning. Actual integrated mobile learning use leads to improved ICT digital skills, including typing, file editing, internet usage, and information-sharing abilities.

CHAPTER 5

An overview of the main conclusions, recommendations, and future research

This chapter covers the key results summary, the conclusions derived from the findings, and the researcher's suggested and presumed operational recommendations. The integrating mobile learning to boost student ICT digital skill in remote Gololcha woreda secondary schools in emphasis.

5.1 summary of key findings

This section contrasts the study's findings with those of other researchers, as was indicated under the literature review. The degree to which the study's goals have been achieved is assessed by comparing them with the results that were analyzed. In order to improve rural students' ICT digital skills in the teaching and learning process, this study looked into integrating mobile learning in a few chosen rural secondary schools in the Gololcha woreda, including Tamamo Secondary School, Gololcha Secondary School, and Dinsa Secondary School. Both qualitative and quantitative methods were employed in this study, along with a descriptive survey.

As a result, 216 randomly selected pupils provided the data, while three ICT teachers and three principals were specifically picked. Questionnaires, interviews, and observation were conducted in order to achieve the goal of this study and provide answers to the research questions.

According to the data gathered, the secondary schools that were chosen for the study have relatively minimal integration of mobile learning. This is caused by a lack of enabling conditions, a gap in ICT proficiency, difficulties with commitment on the part of ICT teachers and school principals, and social impact. Students are therefore less likely to use their phones for educational purposes while studying.

According to the study, 94 (43.5%) of the respondents strongly agreed with the statement that mobile learning can be used to improve ICT skills, while 7 (3.2%) of the respondents were not allowed to respond, 15 (6.9%) disagreed, and the remaining 6 (2.8%) strongly disagreed. According to the findings, the majority of peers support the use of mobile learning to enhance ICT proficiency. Adopting mobile learning approaches can be strongly encouraged by this

positive peer effect. But the small percentage of neutral and unfavorable answers suggests that not all peers share the same level of enthusiasm or conviction toward mobile learning.

Regarding the statement, "I intend to use mobile learning to enhance my ICT skills," the majority of respondents—76 (34.9%) strongly disagree, 95 (43.9%) agree, and 17 (7.9%) are neutral. 18 (8.3%) strongly agree, whereas 10 (4.7%) disagree. According to these statistics, students have a significant desire to improve their ICT abilities through mobile learning. For mobile learning solutions to be successfully adopted and integrated, this optimistic attitude is essential. But the fact that some replies were neutral or negative suggests that there might be different levels of interest or commitment that need to be addressed.

Given that the majority of students who responded strongly agreed with the statement, "I intend to use mobile learning to enhance my ICT skills," this finding suggests that students used their phones in a straightforward way to improve their ICT skills. This indicates that people can use their phones for educational purposes without being constrained by time or place. According to ICT teachers' and principals' interview responses, the school lacks ICT infrastructure, such as desktop computers, printers, Internet, and electricity. Instead, there is a small amount of mobile learning integration, where students use their phones to access and share educational materials. Additionally, respondents indicated that the majority of teachers and principals use their phones for both personal communication and educational material access. It showed that a small percentage of secondary schools in the Gololcha woreda have adopted mobile learning and ICT digital skills.

5.2 Conclusions

This study demonstrates that rural secondary school students have ICT digital skills. Its goal was to enhance the teaching and learning process by incorporating mobile learning and improving the students' ICT digital skills. Notwithstanding all of these efforts to improve teaching and learning in Ethiopia through ICT infrastructure, tools, and professional development.It is clear that information and communication technology's promise to support students' learning has not been fully realized. The goal of this thesis is to build a model for integrating M-learning to improve the educational process and students' digital skills in a few rural secondary schools in Gololcha woreda. The main issues were as follows: To better understand the theory and practice of integrating M-learning into the teaching-learning process, a review of related literature is

necessary. Additionally, factors that hinder the use of M-learning in the teaching-learning process in rural high schools should be investigated, contextual factors influencing M-learning in the teaching-learning process should be identified, a model for integrating M-learning in the rural Ethiopian context should be developed, and the models should be evaluated.

The researcher employed a descriptive strategy based on surveys to fulfill the aforementioned aims. Questionnaires, interviews, and observation were used to gather data from Tamamo Secondary School, Gololcha Secondary School, and Dinsa Secondary School. Tools from the statistical software (SPSS)27 package are used to analyze the data. To make sure the data gathered was impartial, a survey was conducted. The chosen students who responded were given thirty-two (32) questionnaires. After all, 216 respondents' questionnaires were gathered and examined, 100% of them were returned.

Information and communication technology, or ICT, is becoming a more significant component of our daily lives and educational system because it has the ability to support education across the curriculum and provide opportunities for effective communication between teachers and students in ways that have historically been difficult or impossible. ICT is essential to economic development, social change on a worldwide scale, and effective educational delivery. The problem with the study shows how obvious the value of ICT is when considering education. Mobile phones have had a greater impact on ICT in rural high schools than any other technology, even if ICT infrastructure like PCs has been used over the years to develop digital skills connected to ICT.

Out of 216 respondents, 18 (8.7%) strongly agreed, 19 (8.9%) agreed, 5 (2.3%) were neutral, 85 (30.2%) disagreed, and the remaining 89 (41.0%) strongly disagreed, according to the study. According to this response, the majority of pupils in rural secondary schools My utilization of mobile learning is impacted by my limited internet access on their mobile devices in order to advance their ICT skills. This shows that the majority of respondents strongly disagreed with the statement that students in rural secondary schools have low ICT digital skills.

According to the study, out of the 216 respondents in the total population, 22 (11.0%) strongly agreed, 29 (13.5%) agreed, 10 (4.6%) were neutral, 81 (37.5%) disagreed, and the remaining 74 (34.3%) strongly disagreed. According to this response, the majority of pupils in rural

secondary schools Mobile learning is becoming a crucial component of my education. This suggests that the majority of respondents disagreed with the statement that students in rural secondary schools have low ICT digital skills due to a lack of sufficient ICT resources in the classroom.

Although it has not been successfully implemented, integrating mobile learning into rural secondary schools is intended to benefit students' learning and teaching processes as well as provide a more appealing teaching and learning environment. The simplicity of utilizing a cell phone is one statistically significant predictor of ICT digital competency in rural secondary schools without PCs and other ICT facilities.

5.2 Recommendation

The study's conclusions are as follows: In rural secondary schools with limited access to computers and other ICT infrastructure, integrating mobile learning is crucial for improving teaching and learning processes and developing ICT digital skills. The administration, instructors, and students of secondary schools must embrace and employ new technologies at every level of their operations in order to improve ICT digital skills in the teaching and learning process. The thesis suggests the following actions to accomplish this: -

1. To further enhance the advantages of mobile learning, schools should incorporate more ICT-specific training modules into their platforms. These could include hands-on practice with critical ICT skills like word processing, spreadsheets, coding, and other essential digital tools, as well as interactive lectures and realistic tasks.
2. Create a framework for ongoing assessment and monitoring to measure how mobile learning affects rural students' ICT proficiency and make data-driven program modifications as necessary.
3. Integrate mobile learning materials into the current ICT curriculum and provide structured training on how to use them to improve comprehension.
4. To improve rural students' ICT digital skills, governments should continue to integrate mobile learning into all rural secondary schools.
5. For the long-term sustainability of mobile learning initiatives in rural schools, form partnerships with academic institutions, development organizations, and educational technology companies to get funding and technical support.

6. The Ministry of Education should decide how to supply schools with mobile devices and the apps they need.
7. In order for all schools to benefit from mobile learning, the Ethiopian government should give top priority to creating the conditions necessary for rural secondary schools to integrate mobile learning.
8. Offer professional development programs to teachers so they can improve their ability to integrate mobile devices into their lesson plans.
9. Add mobile learning components to the curriculum to make it more engaging and helpful for learning ICT skills.
10. To increase support and awareness for mobile learning initiatives, include parents, local authorities, and other interested parties in the adoption process.
11. Encourage local and national policies that support mobile learning as part of a broader rural ICT and education strategy.
12. Establish a system of continuous monitoring and evaluation to ascertain the effectiveness of mobile learning programs and to make modifications in response to real-time data.

5.4 Future work

This study paper's primary goal is to examine how mobile learning can be integrated into rural high schools to improve students' ICT digital skills. Specifically, it will look at three Gololcha secondary schools: Tamamo Secondary School, Gololcha Secondary School, and Dinsa Secondary School. The integration of mobile learning and the variables influencing mobile learning in rural secondary schools are the primary topics of this study. Thus, the remaining difficulties that this study has not addressed are left for future research in order to indicate to other researchers where they might concentrate if they wish to look into the same subject. This primary focus area includes technical, academic, and economic variables that impact mobile learning, as well as political issues and the impact on rural students' academic achievement.

Reference

[1] A. Shuja, D. M. Schaeffer, M. Effect, and D. M. Schaeffer, “Effect of m-learning on students ’ academic performance mediated by facilitation discourse and flexibility Recommended citation : Effect of m- learning on students ’ academic performance mediated by facilitation discourse and flexibility Aleema Shuja * M,” vol. 11, no. 2, pp. 158–200, 2019.

[2] M. Jwaifell, “Mobile learning Instructional Types,” no. December, 2016.

[3] A. Tugrul and A. Alkan, “Differences between m-learning (mobile learning) and e-learning , basic terminology and usage of m-learning in education,” *Procedia - Soc. Behav. Sci.*, vol. 15, pp. 1925–1930, 2011, doi: 10.1016/j.sbspro.2011.04.029.

[4] H. Street, “THEORETICAL IMPLEMENTATIONS OF VARIOUS MOBILE APPLICATIONS,” vol. 14, no. 1, pp. 35–46.

[5] E. Vázquez-cano, “Mobile Distance Learning with Smartphones and Apps in Higher Education,” vol. 14, no. 4, pp. 1505–1520, 2014, doi: 10.12738/estp.2014.4.2012.

[6] Y. Park and V. Tech, “A Pedagogical Framework for Mobile Learning : Categorizing Educational Applications of Mobile Technologies into Four Types,” 2011.

[7] N. Hayaati, M. Alwi, and Z. Mohd, “Successful Factors for Teaching and Learning Using Mobile Applications,” vol. 7, no. 4, pp. 230–238, 2019.

[8] M. A. Almaiah, “Investigating Students ’ Perceptions on Mobile Learning Services,” no. May 2016, 2014, doi: 10.3991/ijim.v8i4.3965.

[9] T. Assefa, B. Abera, and B. Gebru, “ICT Integration in Ethiopian High Schools ICT Integration in Ethiopian High Schools MENACIS 2021 Agadir ICT Integration in Ethiopian High Schools Association for Information

Systems AIS Electronic Library (AISeL) ICT Integration in Ethiopian High School," no. February, 2022.

[10] D. A. Antony and G. Singh, "Mobile Application for m-Learning Mobile Application for m-Learning," no. April, 2017.

[11] T. H. Brown, "Towards a model for m-learning in Africa," no. May, 2014.

[12] P. K. Ganesan and V. Raja, "Mobile Learning," no. April, 2019.

[13] H. Baihaqi, "Mobile LEARNING Pendidikan : Manfaat dan Tantangan".

[14] B. Bhandari, C. Jain, and A. K. Sahu, "Are Secondary Schools Imparting Digital Skills ? An Empirical Assessment," vol. 1, pp. 73–100, 2021, doi: 10.1177/0973801020976607.

[15] R. Eyiuche, "Use of Mobile Phone Technology in Education for Easy Accessibility of Information : Challenges and Prospects Use of Mobile Phone Technology in Education for Easy Accessibility of Information : Challenges and Prospects," no. May, 2019, doi: 10.4314/ijah.v4i2.12.

[16] U. I. Repository, "MOBILE EDUCATIONAL TECHNOLOGIES CURRENTLY USED AS A MEANS TO ENHANCE TEACHING," no. February, 2015.

[17] T. Assefa, B. Abera, and B. Gebru, "ICT Integration in Ethiopian High Schools ICT Integration in Ethiopian High Association for Information Systems AIS Electronic Library (AISeL) ICT Integration in Ethiopian High Schools," no. February, 2022.

[18] L. Todoranova and B. Penchev, "A Conceptual Framework for Mobile Learning Development in Higher Education," *ACM Int. Conf. Proceeding Ser.*, no. September, pp. 251–257, 2020, doi: 10.1145/3407982.3407996.

[19] M. Sharples, J. Taylor, and G. Vavoula, "Towards a theory of mobile learning," *Proc. mLearn 2005*, no. January, 2005.

[20] "123."

[21] D. Uygun, “Journal of Educational Technology &,” no. March 2019, 2018, doi: 10.31681/jetol.378241.

[22] N. O. Keskin and D. Metcalf, “The current perspectives, theories and practices of mobile learning,” *Turkish Online J. Educ. Technol.*, vol. 10, no. 2, pp. 202–208, 2011.

[23] V. Cho and E. Ngai, “A T HEORETICAL F RAMEWORK OF T HE I NFLUENCE OF M OBILITY IN C ONTINUED U SAGE I NTENTION OF,” pp. 19–26, 2014.

[24] J. Valk, A. T. Rashid, and L. Elder, “Using Mobile Phones to Improve Educational Outcomes : An Analysis of Evidence from Asia,” vol. 11, no. 1, pp. 13–14, 2010.

[25] N. Y. Asabere, “Benefits and Challenges of Mobile Learning Implementation : Story of Developing Nations,” vol. 73, no. 1, pp. 23–27, 2013.

[26] F. Ozdamli and N. Cavus, “Basic elements and characteristics of mobile learning,” *Procedia - Soc. Behav. Sci.*, vol. 28, no. December 2011, pp. 937–942, 2011, doi: 10.1016/j.sbspro.2011.11.173.

[27] J. Valk, A. T. Rashid, and L. Elder, “International Review of Research in Open and Distributed Learning Using Mobile Phones to Improve Educational Outcomes : An Analysis of Evidence from Asia Using Mobile Phones to Improve Educational,” *Int. Rev. Res. Open Distrib. Learn.*, vol. 11, no. 1, pp. 117–140, 2024.

[28] S. Zaineldeen, L. Hongbo, A. L. Koffi, B. Mohammed, and A. Hassan, “Technology Acceptance Model ’ Concepts , Contribution , Limitation , and Adoption in Education,” vol. 8, no. 11, pp. 5061–5071, 2020, doi: 10.13189/ujer.2020.081106.

[29] M. Masrom and U. Teknologi, “Technology Acceptance Model and E-

learning,” no. May, pp. 1–10, 2007.

[30] M. Almulla, “TECHNOLOGY ACCEPTANCE MODEL (TAM) AND E-LEARNING SYSTEM USE FOR EDUCATION SUSTAINABILITY,” vol. 20, no. 4, pp. 1–13, 2021.

[31] C. Technology, “The Utility of the UTAUT : An Application to Mobile Learning Adoption in the Caribbean Troy Thomas , Lenandlar Singh & Dwayne Renville,” vol. 16, no. 2, pp. 122–143, 2020.

[32] A. B. Nassuora, “Students Acceptance of Mobile Learning for Higher Education in Saudi Arabia,” vol. 9, no. 1, pp. 1–9, 2013.

[33] M. I. Ahmad, “Unified Theory of Acceptance and Use of Technology (UTAUT) A Decade of Validation and Development,” no. August, 2015.

[34] F. Aburub and I. Alnawas, “A new integrated model to explore factors that influence adoption of mobile learning in higher education : An empirical investigation,” pp. 2145–2158, 2019.

[35] A. S. Hanbidge, N. Sanderson, and T. Tin, “Using Mobile Technology to Enhance Undergraduate Student Digital Information Literacy Skills : A Canadian Case Study”.

[36] S. Chatterjee, D. Majumdar, and S. Misra, “Adoption of mobile applications for teaching-learning process in rural girls ’ schools in India : an empirical study,” pp. 4057–4076, 2020.

[37] J. Muzurura, F. Chigora, and J. Ndlovu, “DETERMINANTS OF MOBILE LEARNING SYSTEMS ’ ADOPTION IN ZIMBABWE Keyword s,” vol. 9, no. 1, pp. 201–219, 2021, doi: 10.18488/journal.61.2021.91.201.219.

[38] T. Talan, “The Effect of Mobile Learning on Learning Performance : A Meta-Analysis Study,” vol. 20, no. January, pp. 79–103, 2020, doi: 10.12738/jestp.2020.1.006.

[39] I. K. Yusri and R. Goodwin, “Mobile Learning for ICT Training : Enhancing

ICT Skill of Teachers in Indonesia," vol. 3, no. 4, pp. 293–296, 2013, doi: 10.7763/IJEEEE.2013.V3.243.

[40] S. Alharbi and S. Drew, "Mobile Learning-system usage : Scale development and empirical tests," no. November 2014, pp. 30–47, 2015, doi: 10.14569/IJARAI.2014.031105.

[41] O. S. Olanrewaju and E. P. Ikuereye, "M-Learning in developing countries: challenges, remedies and benefits in instructional activities," *KIU J. Humanit.*, vol. 4, no. 1, pp. 105–114, 2019, [Online]. Available: https://www.ijhumas.com/ojs/index.php/kiuhums/article/view/466[page accessed 20th December, 2021]

[42] B. M. Alemu, "Transforming educational practices of Ethiopia into development and the knowledge society through," vol. 5, no. January, pp. 1–14, 2017.

[43] S. Issue, "MOBILE-LEARNING IN A RURAL COMMUNITY . PROBLEMS OF THE PSYCHOLOGY OF LEARNING IN CONTEXT AT PRIMARY AND SECONDARY SCHOOL STUDENTS," vol. 9, no. 2, 2016.

[44] S. Irum and M. Dilshad, "INTERACTION OF TEACHER EDUCATORS WITH INNOVATIVE DEVICES (MOBILE- LEARNING): EXPLORING IMPLICATIONS," vol. 45, no. 1, pp. 183–196, 2016.

[45] D. G. Mugo, K. Njagi, and B. Chemwei, "The Technology Acceptance Model (TAM) and its Application to the Utilization of SCIENCEDOMAIN international The Technology Acceptance Model (TAM) and its Application to the Utilization of Mobile Learning Technologies," no. January, 2017, doi: 10.9734/BJMCS/2017/29015.

[46] I. K. Yusri and R. Goodwin, "Mobile Learning for ICT Training : Enhancing ICT Skill of Teachers in Indonesia," no. January, 2017, doi:

10.7763/IJEEEE.2013.V3.243.

[47] S. I. Wains, “Integrating M-Learning with E-Learning,” pp. 31–37, 2008.

[48] F. Alshareef, “The Importance of Using Mobile Learning in Supporting Teaching and Learning of English Language in the Secondary Stage,” vol. 9, no. 15, pp. 71–88, 2018.

[49] N. Trends and R. Fojtik, “ScienceDirect,” no. March 2017, 2019, doi: 10.18844/gjhss.v3i3.1521.

[50] M. A. Camilleri, L. Cricelli, R. Mauriello, and S. Strazzullo, “Consumer Perceptions of Sustainable Products: A Systematic Literature Review,” *Sustain.*, vol. 15, no. 11, 2023, doi: 10.3390/su15118923.

Appendix A: Questionnaires.

HAWASA UNIVERSITY Institute of Technology

Department of Informatics

Master of Information Technology (MSc) program

Questioner to be filled by student's respondents

Dear respondents,

This questionnaire's primary goal is to gather information about how **mobile learning is being used in Ethiopian rural high schools to improve students' ICT digital proficiency (in the case of Gololcha woreda secondary schools).** Your response is the only thing the researcher needs to successfully complete this study. Read all of the questions before filling them out, and don't be afraid to voice your thoughts—no response is deemed incorrect. Be assured that your answers will be kept private and used only for academic purposes.

I appreciate your cooperation.

Instruction:

1. You don't write your name on the paper.
2. Read all the instructions and questions before you answer the questions.
3. Answer the questionnaires based on your current school.
4. Please, tick mark "√" or "X" in the box in front of the questions. And, write your opinion briefly for the short answer questions on the space provided.

NB

No need of writing your name.

PART I: - General Information Please insert tick mark (√) details or circle the appropriate category for you.

Name of your school _____

1. Sex:

Male ☐ Female ☐

2. Age: below 15 ☐ 15-18 ☐ 19- 23 ☐

24 - 30 ☐

Part Two: Questionnaire

Here is a set of Likert scale questionnaires based on the Technology acceptance model (TAM). These questionnaires are designed to assess the integration of mobile learning to enhance student ICT digital skills in rural high schools in Ethiopia.

Instructions: Please indicate your level of agreement with each statement by selecting one of the five likert scale response options.

Hint: SA= Strongly agree, A= agree, N= Neutral, D= Disagree, D= strongly disagree

Roll Number	**Lists of Items**	SA	A	N	D	SD
	Perceived ease of use					
1.	Mobile learning resources are easy to use.					
2.	I find it easy to learn how to use educational mobile apps					
3.	Navigating mobile learning apps is easy for me.					
4.	It's simple to incorporate mobile learning into my study regimen.					
	Perceived usefulness					
5.	My comprehension of ICT subjects is improved by mobile learning.					
6.	I do homework more quickly because to it.					
7.	My total learning productivity is increased by mobile learning.					
8.	Using mobile learning helps me strengthen my ICT skills.					

	Facilitating condition					
9.	The equipment required for mobile learning are provided by my school.					
10.	Mobile learning activities are supported by internet connectivity					
11.	The usage of mobile learning is widely promoted by educators.					
12.	My surroundings are conducive to incorporating mobile learning					
	Behavioural intention to use					
13.	I plan to make frequent use of mobile learning resources.					
14.	I intend to keep teaching ICT through mobile learning.					
15.	I'm inspired to look into further mobile learning resources					
16.	I advise my peers to use mobile learning					
	Actual usage of mobile learning					
17.	I study every day using mobile learning resources.					
18.	My ICT learning activities include mobile devices.					
19.	I use mobile learning to finish my assignments.					

20.	Mobile learning is becoming a crucial component of my education.					
	ICT skill impact on mobile learning					
21.	My comprehension of software applications is enhanced by mobile learning.					
22.	I can finish ICT-related tasks more quickly thanks to it					
23.	Mobile learning has given me more confidence in my ICT abilities.					
24.	Because to mobile learning, I feel more equipped to handle ICT tasks in the future					
	Barriers to use mobile					
25.	My utilization of mobile learning is impacted by my limited internet access.					
26.	I don't always have access to mobile devices when I need them					
27.	My experience with mobile learning is hampered by technical difficulties					
28.	Adoption of mobile learning is difficult due to a lack of training.					
	Opportunities to use mobile learning					
29.	My study habits are in line with mobile learning.					
30.	It provides a flexible way to obtain educational materials.					
31.	One useful method of improving ICT					

	abilities is through mobile learning.					
32.	By using it, my school can close the digital skills gap.					

Appendix B: Interview Questions

Hawassa University Institute of Technology Faculty of Informatics, Department of Information Technology

Dear Respondent: I am Master of Science (MSc.) student in Information Technology (IT) at Hawassa University Institute of Technology, Faculty of Informatics, and Department of Information Technology. Currently I conduct thesis research under the title**: Integrating Mobile learning in rural high schools in Ethiopia:(case of Gololcha Woreda high schools).** I would like to hear your views on this. I hope that you will respond to all of the questions. This study requires that you complete an interview and I kindly request you to answer the interview with at most care and honesty. Your name and any of the information you provide will be kept strictly confidential and will not be attributed to the individual or organization. All responses will be stored in a secure environment. The results of this research would be used for academic purposes only. Your help would be greatly appreciated.

Interview questions.

1. **Part Three: Questionnaire**
    1. Do you use mobile phone in teaching learning processes to develop students ICT digital skill?
    2. Does your student use their mobile phone for accessing and sharing educational resource?
    3. By using mobile phone in teaching learning processes is there a difference on the student's

    performance?
    4. What challenges do you face when using mobile learning for ICT skill development?