

YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
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**THE EFFECT OF DIGITAL LITERACY ON E-LEARNING OF
YANGON UNIVERSITY STUDENTS**

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MPA – 73 (22nd BATCH)

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YANGON UNIVERSITY STUDENTS**

**A thesis submitted as a partial fulfilment of the requirements for the
Degree of Master of Public Administration**

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ABSTRACT

This study examines the effect of digital literacy on e-learning of Yangon University students. The objectives include identifying the level of digital literacy of Yangon University students and examining the effect of digital literacy on e-learning of Yangon University students. By using simple random sampling method, sample respondents (254) were surveyed in this study. Utilizing a quantitative research methodology, this study employs a regression model to analyze the effect of digital literacy on e-learning of Yangon University students. The results showed that the effect of digital literacy was positively correlated with e-learning among the Yangon University students. Moreover, the result highlighted the hardware and software basics, information and data literacy, digital content creation and career-related competencies had positive and significant effect on e-learning of Yangon University students. And, communication and collaboration; and problem solving in security had no effect on e-learning. This study suggests that the digital literacy is crucial for improving the e-learning practices among the university students.

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LIST OF ABBREVIATIONS

ACRL	ASSOCIATION OF Collage and Research libraries
ANOVA	Analysis of Variance
ANU	ASEAN Universities' Network
CDS	Content Delivery System
COE	Canter of Excellent
E-books	Electronic book
ICT	Information and Communication Technology
MOU	Memorandums of Understanding
MRES	Master of Research
ODEL	Open Distance and E-learning
PCS	Personal Computers
SPSS	Statical Package for the Social Sciences

CHAPTER 1

INTRODUCTION

In today's world, there is a fated collaboration between digital literacy and e-learning since technology is essential to education in every field. University education institutions have chosen to rapidly shift from traditional classroom instruction in person to online instruction because of the well-established relationship between e-learning and university student motivation. The social background's dependence on technology and information makes digital literacy a necessary ability today (Mohammad Ari et al., 2015). University education's educational environment may be influenced by connectivity to the internet.

In the education industry, students are able to find educational resources by applying the internet. It is cost-effective, easy, and possible to do in actual time. In university education, rising symbols of internet approachability influence the learning environment. Hybrid learning was established to connect online and in-person education. While minimizing locations as well as time limitations, online collaboration and knowledge promote the use of online and in-person learning (Yang et al 2014). After only a few minutes of computer usage and mouse clicks, Lau assesses that the people have assessed to be at their fingertips on the internet. This suggests that the world no longer lacks space or time because of the advance in technologies. The use of e-learning in the educational process has been explored as the subject of many studies (Bates, 2005). Education is one of the most important fundamental components that plays a part in the development of a nation.

In the 21st century, literacy skills are regarded as combinations of mainly reading, writing, speaking, and listening; they additionally encompass literacy abilities that have been linked in today's digital age. As a consequence of modern technological improvements, educational programs have experienced enormous transformation with the development of technology. The purpose of 21st century education is to ensure that students benefit from skills relevant today so that they are more flexible to changing and evolving situations (Malik, 2018). Indicated as the digital and technical grow older, the modern area generated many new terms for

almost every aspect of routine. Literacy used to be reduced to the skills of reading, writing, speaking, and listening. Digital literacy, visual literacy, data literacy, health literacy, media literacy, financial literacy, and numerical literacy are among the several forms of literacy that can now be argued due to the continuous advancements in technology.

One of the new literacies, digital literacy, is the skill to utilize information and communication technologies and the Internet to contact information, estimate it, and collect knowledge in various forms. Knowing the fundamentals of applying various resources and assets, it's needed to create technologies that allow their fundamental and effective efficiency. According to Puniatmaja et al (2024), students must collect a set of skills known as digital literacy to know well in a digital setting. According to AI Khateeb (2017), digital literacy is the context most frequently found in the educational system. The negative consequences of the digital age can be prevented with digital literacy.

All against aspects of the digital earth, such as violence, cyberbullying, cybercrime, and hoaxes, may be prevented by pupils. The next generation of people requires digital literacy. In the age of digital technology, students have the skills to solve social problems. Students have to be able to apply the ideas to real-life problems that have taken place in the community, according to Yang et al .,(2014). People in the community will successfully communicate through a variety of flexible networks because of the internet. A new digital world has emerged as a result of the wide range of content and services it offers users, compared to traditional media. Individuals' adaption and their degree of digital literacy influence how they adjust to new technology (Yildirimet et al ., 2023).

Pool (1997) was the one who first introduced the concept of digital literacy. The term "digital literacy" was explored and discussed by Pool in his book of the same name. The book examined the effects of digital technologies in the information age, emphasizing the importance of literacy skills that would allow people to function well in these new technological contexts. The capacity to comprehend, use, and assess digital technologies is known as digital literacy (Shariman et al 2012). Digital literacy includes skills such as the internet, comprehending digital content, analyzing data, and applying critical thinking. Nowadays, "digital literacy" can refer to the technical knowledge and abilities required to live a productive life, participate in ongoing learning activities for personal development, and contribute positively to society.

Improving digital literacy abilities can benefit students studying sports science in the e-learning process by giving them better access to information, create content, and share it with others.

A system of learner-centered learning strategies, e-learning has become more common as digital media-based education has grown more widespread. E-learning makes educational resources readily available online through readily available learning activities (Okonkwo, 2024). According to Alexander et al. (2020), online learning activities are created by online learning platforms. Information on lecture materials, individual projects, discussion boards, and learning outcome evaluations is all accessible through it. The current status of online platform-based e-learning in higher education presents a number of challenges and issues that students must address, one of which is their readiness to understand new technology applications composed of numerous websites. The capacity of university resources to facilitate e-learning through online platforms and students' willingness to learn a vast amount of material without being able to confirm its accuracy. Significant developments in the realm of education have resulted from the rapid spread of technological advancements.

Especially in recent years, e-learning, or electronic learning, has become more and more appeal as a substitute for conventional teaching methods (Pizzelle et al., 2024). Information and communication technologies are involved in e-learning, which enables learning to happen regardless of time or location (Stosic, 2020). It is thought that Desmond Keegan was the first to use the term "e-learning." He defined remote learning conducted in electronic environments, emphasizing the term "e-learning" in his 1986 book "The Foundations of Distance Education," highlighting the use of digital and computer-based technology in distance learning processes. Students' proficiency in digital literacy abilities is also associated with e-learning. Education involves a number of resources to communicate and share knowledge. According to Azari (2023), e-learning can optimize teaching and learning activities that are intended to improve learning outcomes.

1.1. Rationale of the Study

For a variety of reasons, the influence of digital literacy on the utilization of e-learning technologies by Yangon University students is worth researching. As digital tools become more and more integrated into educational facilities, it becomes

essential to find out how the ability and willingness of students e-learning platforms are influenced by their level of proficiency with these literacies. E-learning may provide an alternate route to education in situations where access to conventional learning resources may be restricted. Additionally, by comprehending these dynamics, educators and legislators can create digital literacy initiatives that are more successful and guarantee that every student is prepared to use and benefit from the digital learning environment. Studies indicate that students with high levels of both literacies are more likely to use e-learning technologies because they can get past technical obstacles and make effective use of online learning platforms.

For educational institutions, studying how digital literacy affect Yangon University students' purposes to use e-learning technologies become crucial. This study indicates possible challenges in successfully implementing e-learning in addition to indicating the students' current level of digital readiness. By comprehending these dynamics, educational establishments can contextualize their support services and digital literacy programs to close the competencies gaps in their students. It also provides a wealth of information on how to enhance instructional strategies to establish an inclusive classroom where all students can feel empowered to use technology wisely. This study is crucial for ensuring that educational institutions can adapt and prosper in a world that is becoming more and more digital as e-learning becomes a fundamental component of contemporary education.

The COVID-19 pandemic and other global disruptions are making it increasingly important for universities like Yangon University to comprehend and address the factors influencing students' adoption of e-learning. As e-learning becomes more and more common in educational systems in developing nations, it becomes imperative to comprehend the unique challenges and opportunities faced by Yangon University students, many of whom may have had little prior exposure to digital tools and resources. The importance of digital and information literacy in assessing students' readiness to use e-learning platforms can be examined in this context. The research can provide insights that are useful for the university's instructional strategies as well as pertinent to larger regional initiatives to improve digital inclusion and educational equity by analyzing how these literacies affect students' e-learning. There are a number of important reasons why this organization

was chosen to look into how digital literacy effect Yangon University students' e-learning technologies.

The findings of this study on how the effect of digital literacy on e-learning of Yangon University students are extremely helpful as well. The study will contribute to the expanding body of research on the impact of digital competencies on learning behaviors and will guide future instructional strategies and curriculum design. This study can help Yangon University develop a more successful and inclusive e-learning environment, guaranteeing that every student can take advantage of the technologies at their disposal.

1.2. Objectives of the Study

This study aimed.

- (1) To identify the level of digital literacy of Yangon University students.
- (2) To examine the effect of digital literacy on e-learning of Yangon University

1.3. Method of Study

This quantitative study examines how independent factors affect the dependent variable in education. Yangon University students' structured questionnaire with five-point Likert scale collects primary data. Organizational annual reports and trustworthy websites provide secondary data. Approximately 700 Yangon University undergraduates and postgraduates are included in this study. The sample size is 254 Yangon University students randomly selected using the Yamen algorithm with a 5% margin of error and 95% confidence interval. This study uses basic random sampling. This study uses descriptive, reliability, correlation, and multiple linear regression analysis.

1.4. Scope and Limitations of the Study

The purpose of this study is to investigate the ways in which digital literacy affect Yangon University students' on e-learning tools. The study focuses on undergraduates and master students at Yangon University to explore more about how they view their own digital literacy and how its influences on their e-learning resources. Data are collected through surveys and questionnaires, which allow students to self-assess their skills in using digital technologies and finding

information. This study only focuses on the perception of Yangon University towards digital literacy and its effect on e-learning excluding other university students. In addition, this study highlights the effect of digital literacy on e-learning excluding other influencing factors on e-learning.

1.5. Organization of the Study

This research has five chapters. First, Chapter I introduces the study's motivation, issue description, methodologies, scope and constraints, and organization. Second, Chapter II's literature review examines how digital literacy affects Yangon University students' e-learning. Third, Chapter III profiles Yangon University. Data analysis follows Chapter IV. Chapter V concludes with a summary, debate, and recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1 Literacy

Literacy is understanding, interpreting, producing, communicating, and computing with printed and written materials in any situation. Literacy helps people achieve their goals, learn more, and participate in their communities and society. Literary numeracy incorporates fundamental arithmetic. Literacy can be distinguished from measurements like functional literacy and literacy rate (Voong et al (2021).

Today's literacy encompasses technology, as acknowledged by the Iowa Core. After completing Iowa's public education system, students are expected to have the technological know-how and abilities necessary to learn efficiently and lead productive lives. According to this vision, which was created by the Iowa Core 21st Century Skills Committee, Iowans in the twenty-first century live in a globalized world where technology is widely used, enabling both residents and workers to work together and contribute individually like never before. Students in Iowa are surrounded by media, which includes a wealth of information and quickly evolving technology tools that support critical thinking and problem-solving.

According to the ICT Literacy Bauer (2002), literacy is the capacity "to access, manage, integrate, evaluate, and create information in order to function in a knowledge society." In the context of digital literacy, this statement is very noteworthy. The fundamental ideas of technological literacy in Iowa are general, universal procedures and abilities. Students require abilities beyond the fundamental cognitive capacity to absorb and process language in such a dynamic setting. The developing discourse on literacy, or as it is now called, digital literacy, to comprehend the features of the digital age and what this means for how individuals learn in this novel and shifting environment. The history of literacy contextualizes digital literacy, which also shows how literacy has evolved throughout time. The digital age covers an outline of digital literacy, key elements, and significance for learning.

2.2 Digital Literacy

According to Aavakare (2019), digital literacy is the capacity to use information and communication technologies (ICTs) efficiently for tasks including locating, comprehending, assessing, producing, and disseminating digital information. These tasks call for both technical and cognitive ability. As defined by Ng et al (2012), it includes a variety of literacies related to the use of digital instruments. These technologies can be applied in a variety of ways, including software and internet resources for educational or recreational purposes, as well as hardware such as computers, mobile devices, interactive whiteboards, and digital recording equipment.

Strong digital literacy skills are crucial given the importance of digital technologies in daily life. Digital literacy was a crucial skill for modern labour. Cooper (2006) referred to this idea by stressing that people of all ages, from novices to seasoned pros, require at least a basic understanding of digital tools. Eshet(2004) constructed a conceptual framework that outlines the different competences that are included in digital literacy in order to address this problem. Photo-visual literacy, reproductive literacy, information literacy, branching literacy, and socio-emotional literacy are the five different categories of literacy that are identified under this paradigm. Its goal is to counteract the inclination to exclusively consider digital literacy from a technical standpoint, or, conversely, to concentrate on its cognitive and socioemotional aspects.

The understanding and skills required by individuals to engage in lifelong learning and create important contributions to society are often referred to as digital literacy. With a focus on information, computer, media, communication, visual, and technological literacy, it has been recognized as an essential skill for modern education (Zulkarnain et.al,2020). Young people can effectively make use of information resources associated with digital technologies by developing digital literacy, which will allow them to navigate and solve the challenges posed by present advances in technology.

A key indicator of educational achievement is the ability to develop digital literacy skills. When related to using digital devices, digital literacy was the capacity to employ practical skills that enable users to search for and evaluate information, think strategically, create independently, interact with others, communicate successfully, and keep up digital security. For individuals to effectively incorporate e-

learning into hybrid learning models, they have to build digital literacy, an important technological competency. Also, it has been recognized as a fundamental understanding of technology, covering a number of vital skills necessary for implementing e-learning in the educational structure (Dewi, 2022).

The crucial component of the learning process, web-based education, or e-learning is the use of internet technologies in the classroom. E-learning and social interactive education were two separate approaches to learning. Students and teachers engaged closely in direct contact in social interactive education, often referred to as traditional learning. E-learning and open learning, on the other hand, differ from this common framework by providing a physical gap between the instructor and the student who is learning. With the potential to receive education from the convenience of their homes, e-learning provides many advantages, especially for individuals who live in rural areas or have work responsibilities. It provides students an opportunity to keep up their education and develop their educational achievements at any stage in their lives as well, without regard to where they reside or generation (Anshar et al, 2016).

The excessive access to technology in today's world is the reason for the absence of creativity. In the modern world, technology and education are inextricably linked. Understanding how technology could increase student involvement, attendance, and creativity is imperative to comprehend how it affects education. Children can assist one another and take advantage of educational opportunities offered by colleges through technology (Shafieiosgouei et al ,2018).

The European Union has recognized digital skills as part of the eight key continuous learning characteristics. Based on its capacity for change, it promotes the growth of other fundamental skills (such as innovation, learning how to learn, and mathematics) and promotes active engagement in the economy and society. This ability involves applying Information Society Technology (IST) for relationships, employment, and entertainment with confidence and thoughtfulness (Shopova, 2013).

In 1997, Paul Glistler introduced the term "digital literacy" in the publication of Digital Literacy. Through it, he described it as the ability to understand, significance, and use understanding across various kinds of computer-delivered media. Based on Glistler (1997), digital literacy is in addition to "a book about how to get around the Internet." Moreover, it is essential for having the ability to evaluate and comprehend the facts. What important is that digital literacy supports one develop the

basic cognitive skills and core competencies that are needed for focusing and solving tasks in an interactive setting.

According to some specialists, digital literacy is the set of skills required to use digital devices and the internet successfully. Martin (2005) said that digital literacy includes technological knowledge, media, visual proficiency, and IT literacy; all of these have increased in prominence as digital environments expand. A more complete view has emerged, emphasizing the incorporation of skills to solve real-world situations, whereas early definitions concentrated on specific talents. Developing a number of abilities helps students to take charge of their education, evaluate the reliability of information, and understand information channels.

According to recent research, digital literacy was beyond simply learning how to employ digital tools and information; it included developing the ability to use them carefully and successfully. Currently, a lot of researchers see the use of technology as a developmental continuum, with fundamental abilities serving as only the beginning. Higher-level cognitive abilities are required for tasks, learning, creating, and communicating ideas in the advanced levels, which also involve attitudes and sociocultural elements (AlaMukta, 2011).

According to Ferrari (2012), digital competence extends beyond internet, ICT, information, and media literacy skills. This paradigm defines 21st-century digital literacy for living, working, and engaging in society. Digital literacy includes the knowledge, attitudes, and abilities needed to find, access, retrieve, store, and organize information. It stressed critical, creative, adaptable, and ethical problem-solving and knowledge creation using technology and media.

2.3 Learning

The complicated process of studying, experiencing, or training to acquire information, skills, attitudes, or behaviors is learning. It typically alters behavior or understanding permanently. Learning theory explains how pupils process and recall knowledge. Cognitive, emotional, environmental, and prior experiences shape understanding and talents. Learning is acquiring new skills, knowledge, values, and habits through education, training, or experience. It often generates a permanent change in behavior or understanding.

Learning is seen in education as a comprehensive and all-encompassing process. Acquiring academic knowledge is only one aspect of it; other components

include the development of social skills, emotional intelligence, and moral principles. Together with topic knowledge, a well-rounded education seeks to equip students with a range of abilities that will enable them to overcome obstacles in the real world. These abilities include critical thinking, effective communication, and teamwork.

The curriculum, instructional strategies, and assessment are the three key elements that must be properly combined for learning to occur. For an educational system to promote student achievement, all components must be in harmony. Assessments measure the depth of learning, teaching strategies dictate how the material is presented, and the curriculum specifies the material to be learned. When these components come together, they form a solid framework that encourages significant comprehension and success.

Students have diverse origins, skills, and learning styles, which are acknowledged by a holistic approach to education. By relating new concepts to what students already know, it encourages active engagement. Deepening understanding and fostering advanced thinking abilities are achieved through strategies like project-based learning, individualized instruction, and group cooperation. With the use of this technique, students can progress from rote memorization to the thoughtful and innovative application of knowledge.

By implementing inclusive and comprehensive learning strategies, educational systems seek to develop well-rounded individuals who can make informed decisions, positively impact society, and continue to grow throughout their lives. Educational learning essentially aims to equip individuals to thrive in a complex and ever-changing world, emphasizing the importance of adaptability, lifelong learning, and developing skills that extend beyond academic success.

2.4 E-learning

By implementing inclusive and comprehensive learning strategies, educational systems seek to develop well-rounded individuals who can make informed decisions, positively impact society, and continue to grow throughout their lives. Educational learning essentially aims to equip individuals to thrive in a complex and ever-changing world, emphasizing the importance of adaptability, lifelong learning, and developing skills that extend beyond academic success.

The development of digital technology and the growing need for flexible, accessible education have led to a rapid expansion of this learning method. Live

virtual classrooms, recorded lessons, interactive modules, and multimedia resources are all possible with e-learning, which makes it a dynamic and captivating method of learning. It is extensively utilized in a variety of contexts, such as educational institutions, corporate training, professional development, and skill-building initiatives.

The development of digital technology and the growing need for flexible, accessible education have led to a rapid expansion of this learning method. Live virtual classrooms, recorded lessons, interactive modules, and multimedia resources are all possible with e-learning, which makes it a dynamic and captivating method of learning. It is extensively utilized in a variety of contexts, such as educational institutions, corporate training. Additionally, e-learning is essential for workforce development since it helps workers stay current with technology and adjust to new developments. While educational institutions incorporate e-learning to supplement or replace conventional teaching techniques, businesses use it to train employees effectively and economically. The global spread of e-learning was further driven by the COVID-19 pandemic, underscoring its significance in maintaining educational continuity in the face of disruptions.

E-learning is a versatile, technologically advanced educational approach that makes use of digital gadgets and the internet to deliver interactive, easily accessible learning opportunities. With advancements like virtual reality and artificial intelligence, it keeps changing and is changing the way that knowledge is obtained and imparted in the contemporary world.

2.5 Concept of Digital literacy and E-learning

Digital literacy encompasses a variety of skills, including the capacity to locate, assess, produce, and share knowledge using digital technologies. Beyond just technological proficiency, it includes ethical awareness and critical thinking in digital contexts. According to Mitra and Dangwal (2017), information and communications technology (ICT) literacy, information literacy, and critical literacy are the three main facets of digital literacy. ICT literacy includes using digital technologies, information literacy is about managing and accessing information, and critical literacy is about using critical thinking and problem-solving skills to comprehend and use digital content in a responsible manner.

As digital technology has become a necessary part of everyday life, education, and employment, the significance of digital literacy has increased dramatically. It enables people to make sense of the massive volume of information on the internet, identify reliable sources, and participate actively in digital places. A person who is technically and cognitively capable of processing a variety of digital formats and working cooperatively in online settings is considered digitally literate, according to the American Library Association. This collection of abilities promotes responsible information creation and sharing in addition to content consumption, allowing individuals to participate in society with knowledge.

Understanding the cultural and societal ramifications of technology use is another aspect of digital literacy. When engaging in online interactions, it is necessary to be mindful of privacy, security, and ethical issues. For instance, online safety education is frequently included in digital literacy curricula to teach students how to safeguard their personal information and identify online dangers. Additionally, it promotes adaptation because technology is changing quickly and requires ongoing education to remain competent and secure in digital situations.

Digital literacy encompasses many different and related competencies. Basic technological abilities, teamwork and communication, information management, privacy and security, and ethical behavior in digital settings are among the twelve digital competency categories listed by the Open Universiteit Nederland. By combining technological expertise with critical thinking and creativity, mastery of these qualities empowers people to operate successfully and responsibly in a digital world.

Digital literacy is crucial in classrooms to equip pupils to succeed in a technologically advanced society. By giving students the abilities to research, produce, and communicate utilizing digital technologies while comprehending the consequences of their digital acts, it promotes lifelong learning. Digital literacy is a fundamental ability for both personal and professional success in the twenty-first century, as technology continues to change how people study, work, and connect.

In the current technological era, students demand a higher degree of classroom participation with the use of multimedia, which provides new obstacles and expectations. E-learning had an opportunity for doing this. E-learning was an innovative technology that was made available by new technology innovation and progress. The process of learning had been given a new shape through information

technology. E-learning included any educational activities done by individuals or groups utilizing standalone or connected computers and other technology, either synchronously or asynchronously, and online or offline (Patel, 2016).

E-learning, additionally referred to as web-based training or electronic learning, was the method of providing instructional materials through intranets or the internet so that students can access these resources from anywhere in the world Moreno et al (2017). E-learning provides a structured educational experience that is not restricted by geographic location, in contrast to traditional learning approaches. E-learning evolved over time from being a one-way delivery method to a dynamic platform that supports collaborative learning between teachers and students. This change supports peer interaction and gives students an opportunity to pick how they connect with educational resources.

In recent years, the incorporation of information and communication technologies (ICT) into educational settings has led to a major change in e-learning practices. The widespread adoption of network technologies has influenced this evolution, which has changed the landscape of educational delivery Kahiigi et.al,(2008). However, the definition of e-learning remains ambiguous due to the multiplicity of perspectives and potential contradictions surrounding its Sangra et.al (2012). Terms such as computer-based learning, technology-based training, and online learning have been used interchangeably with e-learning, adding to the complexity of (Friesen, 2009).

To address these complexities, it is crucial to develop an inclusive definition of e-learning that encompasses its diverse forms and applications. This definition should recognize e-learning as a dynamic field that leverages digital tools to enhance learning experiences, ensuring inclusivity and accessibility for all learners. An inclusive definition would emphasize interactivity, accessibility, and the evolution from traditional distance education. It should also account for the various perspectives and terminologies associated with e-learning, clarifying its distinctiveness and scope. By adopting such an approach, e-learning can effectively cater to the needs of diverse learners, ensuring that educational opportunities are equitable and accessible in the digital age. This comprehensive understanding will help in aligning e-learning practices with the evolving needs of learners worldwide.

E-learning was a name given to cover the use of the internet for studying, including websites and email. The internet frequently interacted with ways to deliver

online courses. E-learning integrated facts-to-instruction Net Work (web-based resources) learning with online learning. It was an original form of learning or a system of learning via the internet. Before the internet, a concept of e-learning was very old; it was employed for the same reason as computer-based training and computer-aided instruction.

E-learning was more reasonably valued, flexible, mobile, self-paced, quick and easy, and available anywhere, at any time. It allowed youngsters to become better acquainted with technology and improved their memory. E-learning was more reasonably valued, flexible, mobile, self-paced, quick and easy, and available anywhere, at any time. It allowed youngsters to become better acquainted with technology and improved their memory. Also, e-learning had limitations (Managal, 2009). This form of learning excluded human interaction, motivation, and face-to-face interaction. Teachers and students needed to possess the right related to computer training, knowledge, skills, and attitude.

But the reality was that our educational system already includes e-learning. Education had grown more electronic, from learning management systems to email. E-learning provided a variety of advantages and creative ideas that are just waiting to be uncovered. Still, there were also substantial risks that had to be carefully avoided. Information may be reached fast and at any stage due to the technology provided. Activities, all teaching and learning were simple for students to complete at any time and at any location. It's less difficult to resolve the surrounds of time, space, and distance. The internet offers a variety of data sources, which is how learning happens online. Additionally, you are able to figure out where the information you've been searching for is situated (Audsarsana, 2019 November).

2.6 Dimensions of Digital Literacy

Students needed to be digitally literate to participate in e-learning environments productively. The most important aspect of digital literacy is being familiar with the basic gear and software required for effective educational online activities. The majority of computing devices employed by learners to access course materials, participate in online forums, and complete assignments are smartphones, PCs, and tablets Nabhanet.al,(2025) . Enhancing engagement and increasing the general quality of the educational process requires an accurate internet connection and additional devices, including webcams and microphones. When students possess the

necessary tools, their capacity to fully take part in e-learning platforms suffers, which could worsen digital education inequities Bukreiev et.al., (2022). There are six dimensions of digital literacy to access the level of technology application in learning society.

2.6.1 Hardware and Software Basics

Software proficiency, which involves not only the ability to use various operating systems and educational platforms but also proficiency with crucial productivity tools including word processors, spreadsheets, and specialized academic applications, is an essential element of digital literacy. Students who are competent with these digital resources have a greater ability to interact with course materials, work with peers, and finish assignments quickly in an online setting. Students with strong digital literacy skills can use technology more effectively, which frequently results in higher scores (Wanf et al, 2008).

2.6.2 Information and data literacy

A capacity to locate, assess, and employ information in an assortment of situations is an essential part of information literacy in higher education. In the digital age, information literacy has grown to encompass digital literacy, which not only accesses and assesses information but additionally creates, communicates, and shares knowledge using digital platforms Lynch (1998). As both producers and consumers of information, students must engage with, assess, and distribute content in a variety of formats and modalities, as this broadened concept highlights. Information literacy now necessitates flexibility and critical thinking, according to the Association of College and Research Libraries (ACRL), as students interact with ever-changing digital environments and take part in the social construction of knowledge.

Digital literacy is viewed as essential to equipping students to understand and participate in Myanmar's changing information ecosystem at the University of Yangon. Lecturers can now improve their own digital literacy and teach students how to use it thanks to recent initiatives like the creation of a digital center with contemporary tools and software. This advancement facilitates the transformation of education by giving graduates the skills necessary for information management, digital preservation, and productive engagement in academic and professional contexts Podgornik et al (2017). Because digital literacy and information literacy are

becoming more and more entwined, Yangon University students are more equipped to interact with technological innovations, promote community development, and help the country flourish in the digital age.

This foundation not only enhances their employability but also empowers them to be proactive contributors to society. By fostering a culture of continuous learning and adaptation, these initiatives prepare students to navigate the complexities of an ever-evolving digital landscape. As students embrace these skills, they become better equipped to tackle global challenges and drive meaningful change within their communities. Ultimately, this holistic approach to education cultivates a generation of leaders ready to harness technology for social good (Nicholson et al.,2011).

2.6.3 Communication and Collaboration

Communication is essential to digital literacy and university students' e-learning experiences. Digital literacy includes skills in using digital technologies and communicating in virtual contexts. Through platforms such as discussion forums, emails, and collaborative documents, students are able to articulate their ideas, seek clarification from instructors, and participate in academic discussions with peers Ng (2012). Proficiency in digital communication also requires an understanding of how to adapt messages for different audiences and contexts, ensuring clarity and appropriateness in all online interactions Eshet-Alkalai,(2004).These skills are essential for fostering meaningful engagement and enhancing the overall quality of learning in digital settings.

Collaboration, closely related to communication, is another key component of digital literacy that significantly enhances e-learning outcomes. Digital tools such as video conferencing software, shared documents, and online learning management systems enable students to work together on group projects and assignments regardless of their physical locations Blau et al (2017). Through these collaborative platforms, students can share resources, co-create content, and collectively solve problems, which not only improves academic performance but also develops essential teamwork skills. The ability to collaborate effectively in digital environments prepares students for the demands of the modern workforce, where virtual teamwork and cross-cultural communication are increasingly important.

2.6.4 Digital Content Creation

Digital content creation is an essential dimension of digital literacy, significantly influencing the e-learning experiences of university students. The ability to create digital content involves the development and utilization of diverse materials, such as videos, podcasts, interactive simulations, and e-books, which facilitates the design of engaging and adaptable learning environments Jones et al (2010). Effective digital content creation incorporates multimedia elements and interactive features that enhance learner motivation, engagement, and knowledge retention Mayer et al (2009) . Moreover, the capacity to customize content enables educators to address varying levels of student proficiency, thereby supporting personalized learning pathways that may not be feasible in traditional classroom settings (Hattie, 2012) .

Digital material makes higher education more accessible and scalable. pupils may access e-learning resources at any time and from anywhere, which is very useful for geographically scattered or busy pupils. Collaborative digital content creation, which includes both faculty and students, promotes authentic learning experiences and develops practical skills relevant to future employment (Siemens,2005). The incorporation of feedback mechanisms and analytics within digital content allows for continuous assessment and adaptation, ensuring that learning objectives are met and that students receive timely support throughout their educational journey (Dede, 2008).

2.6.5 Problem Solving in Security

Security constitutes a vital component of digital literacy, particularly within the context of e-learning for university students. As educational activities increasingly rely on digital platforms and online resources, the associated cybersecurity risks-such as identity theft, unauthorized data breaches, phishing attacks, and exposure to malicious content-have become more pronounced (Nguyen et al., 2020). Digital literacy, therefore, extends beyond basic technical skills to encompass the ability to identify, prevent, and respond to these security threats effectively. Research indicates that students possessing advanced digital security competencies exhibit heightened awareness and preparedness to mitigate potential risks, highlighting the necessity of integrating cybersecurity education within digital literacy frameworks to ensure a secure and trustworthy e-learning environment (Alqahtani & Rajkhan, 2020).

Furthermore, cultivating digital security skills is essential for safeguarding personal information and maintaining the integrity of online learning experiences. Comprehensive digital literacy education should incorporate instruction on secure password management, safe internet practices, and the recognition of suspicious online behaviours Bada et al (2019). Many higher education institutions have begun embedding security awareness programs into their curricula and support services to equip students with the knowledge required to protect their digital identities and data. These initiatives not only enhance individual student safety but also contribute to the overall resilience and security of educational platforms. As e-learning continues to expand, reinforcing digital security literacy remains a critical priority for universities committed to preparing students for the challenges of an increasingly digital academic and professional landscape.

Problem-solving in security by using technology is a crucial skill in e-learning, as it enables students to analyze challenges, apply critical thinking, and develop solutions within digital learning environments. Research suggests that online education enhances students' ability to think independently and engage in interactive learning experiences. The inclusion of digital tools, such as forums and collaborative platforms, facilitates structured problem-solving activities that strengthen analytical reasoning and decision-making skills. The students' ability to effectively approach complex academic tasks Alqahtani et al(2020). When universities incorporate problem-solving strategies into digital education, students become more adaptable and resilient in navigating their academic and professional journeys.

The effectiveness of problem-solving in e-learning is closely linked to instructional approaches that promote innovation and reasoning. Studies indicate that integrating problem-solving exercises into online learning environments enhances students' ability to generate creative solutions and apply knowledge in real-world situations Nguyen, (2020) . By fostering an active inquiry-based learning process, educators can cultivate engagement and deeper comprehension among students. Furthermore, digital tools supporting interactive problem-solving techniques, such as case studies and simulations, enhance cognitive development and practical application skills. As e-learning continues to evolve, educational institutions must refine pedagogical strategies to ensure students acquire strong problem-solving capabilities essential for academic and career success.

2.6.7 Career-related competencies

Digital literacy is increasingly recognized as a critical determinant of career readiness and employability among university students in the contemporary, digitally driven labor market. As economic and social structures undergo digital transformation, higher education institutions bear the responsibility of equipping students with the digital competencies necessary for effective engagement as knowledge workers within their respective fields van Deursen et al (2014). These competencies extend beyond basic technical proficiency to encompass the ability to utilize digital tools for information retrieval, analysis, synthesis, effective communication, and knowledge creation in specific professional contexts. Empirical evidence suggests that experiential learning opportunities, such as undergraduate research and internships, positively correlate with students' perceptions of preparedness for the demands of the job market and the technological requirements of their chosen career paths.

Furthermore, digital literacy functions as a form of career capital, significantly enhancing the transition from academia to professional environments. In the context of the Fourth Industrial Revolution, characterized by the convergence of physical, digital, and biological domains, employers across diverse sectors seek candidates capable of adapting to digital tools and collaborating effectively within technology-enabled teams. Digital competencies, including technical skills, independent research capabilities, and critical information literacy, have become essential requirements in most professional settings. Research indicates that digitally literate students exhibit enhanced critical thinking, improved communication skills, and greater employment prospects, as they are better prepared for self-directed learning and interdisciplinary collaboration Jenkins et al(2009).As digital technologies continue to evolve, universities must prioritize the integration of digital literacy across curricula and student experiences to ensure graduates possess the career-related competencies necessary for success in an increasingly interconnected and technology-dependent professional landscape.

2.7 E-learning theories

The foundation of successful teaching is an understanding of learning. However, there isn't a single e-learning best-practice standard. This could prove to be possible considering the variety of teaching and learning methods, the ways in which technology can be used, and the ways in which educational technology is evolving.

When creating and interacting with e-learning programs, many pedagogical techniques or learning theories may be given account.

Studies show that e-learning works better than traditional learning. This teaching method removes time and distance obstacles and promotes education. Flexibility is another e-learning perk. Online courses allow students to become lifelong learners anytime, anyplace. Many thinkers believe online student-teacher and student-student interaction improves learning (Mayer 2003). E-learning involves talks about a topic, which makes information apparent and applies to VLE learning.

Cognitive science ideas underpin e-learning theory, which shows how educational technology may improve learning (David, 2015). These cognitive loads, design concepts, and technology make up e-learning theory. E-learning theory, part of connectivism, emphasizes how technology may be utilized and adapted to generate new learning possibilities and improve learning.

E-learning theory developed educational technology to reduce cognitive load and control managerial and intrinsic loads at the optimal level for pupils. The e-learning theory model can help instructors categorize cognitive burden and integrate design concepts to provide successful technology-based learning (Fu et al 2021).

E-learning involves a technology-driven framework that combines organizational and management methods to offer students a chance to learn online and improve their educational experience. To convey information and accomplish learning objectives, it makes use of the telecommunications technology Sarikhani et al (2016). E-learning was the process of learning through electronic technologies. The broad category of e-learning encompasses a variety of digital teaching resources, including computers, the internet, multimedia CDs, online journals, and virtual broadcasts. These resources were all intended to save expenses and time while facilitating a more effective and convenient learning (Zare et al 2015).

A method of education termed "electronic learning," or "e-learning," substituted electronic tools and resources for traditional printed educational materials. Both teaching and learning could make use of it. Both online and offline educational activities carried out by individuals or groups have been included in the e-learning (Naidu ,2006). E-learning is a method that enables students to get knowledge through a variety of digital media. E-learning, in a narrower sense, was defined by Wang et al (2007) as any online educational activity. The concept of "e-learning" is related to a learning process that employs a range of electronic devices (including smartphones,

laptops, desktop computers, and tablets) on a variety of tools (including social media, online databases, academic resources, and educational tools like Google, Facebook, and YouTube).

Information and communication technologies are employed in e-learning for enhancing performance and learning outcomes. It made it easy for people, teams, and organizations to use technology for educational purposes Pollard et al (2001). E-learning is an electronic learning approach that may be used with or without internet access. As more individuals utilize the internet daily, e-learning has increased in importance as a learning tool (Goyal, 2012).

The revolution in information technology and the growing popularity of the worldwide internet caused enormous advances in social life. The primary objective of society changed from economic growth to information as a result. All areas, including education, now rely greatly on information technology. All aspects of education had altered because of it, especially the way that conventional methods of instruction are shaped and the arrival of e-learning.

The wide utilization of educational training is made easier by e-learning. E-learning is more effective than traditional learning methods and provides a variety of advantages. The simplest method for obtaining an apprenticeship in university involves online courses. Many students complete their university degrees through flexible, independent education. Addressing technology in education, the researchers agreed that technology has become unaffected when it concerns education. The hammer can be applied to crush an individual's brain under torture or to build a house; it doesn't care how you do (Salamat et al 2018).

A dynamic educational strategy, e-learning enables learners to record their conversations and listen to them later when they have time. The building and schedule are not divided. Contacting any instructor or institution from any location around the world has been rendered possible by e-learning. Additionally, they can listen to audio lectures or watch relevant videos by different instructors all through the world. because they have a greater chance to discover more.

2.8 Previous Studies

Puniaatmaja et al (2024) examined the impact of both e-learning and students' digital literacy levels on their academic performance. In the quasi-experimental study, a 2x2 factorial design with a post-test-only control group was employed. Ninety-six

eleventh-grade vocational students from SMK Telkom Malang in Indonesia were selected through a random sampling method to participate in the study. Data collection involved the use of questionnaires and tests, and the resulting data were analysed using SPSS version 25, with ANOVA employed to examine the differences between groups. The results indicated that both e-learning methods and varying levels of digital literacy significantly influenced students' academic outcomes. Interactions between these factors suggested that students with higher digital literacy benefitted more from e-learning compared to their peers with lower proficiency. The researchers suggest that educators should intentionally incorporate technology into their teaching practices to improve students' digital skills, ultimately enhancing their learning outcomes and enabling them to thrive in digital learning settings.

Maphosa et al (2019) found that digital literacy was the ability to use and analyze the use of technology for education, which is a necessity for students in open and online educational environments. The main approaches utilized in this paper were conceptual analysis and a literature review. Based on the research findings, for ODEL students to effectively access educational materials and participate in online learning, they should be skilled in digital literacy. The paper's main findings included the fundamental spatial and temporal separation in online education; digital literacy was important for ODEL students in utilizing information and communication technologies (ICTs) for learning. It also illustrates crucial problems such as learners' different levels of digital competence and limited access to technology, which are especially prevalent in poor nations. The study highlighted the importance for educational institutions that provide concentrated support and training to bridge these digital literacy gaps.

Sumin et al (2021) conducted the effects of external factors, using digital literacy as a moderating variable, such as system design, ease of use, device availability, internet access, and electricity, on the actual usage of e-learning. The research project employed a quantitative method and involved 385 respondents who were selected at random from a total of 760,619 students registered in 59 Indonesian state Islamic universities. Questionnaires measuring digital literacy, external factors, and e-learning usage were implemented for collecting data. Digital literacy and external factors' direct effects on e-learning use were evaluated through statistical analyses, as was the moderating influence of digital literacy on the relationship between e-learning adoption and external factors. Findings suggested that e-learning

consumption had been significantly and positively influenced by external factors and that knowledge of technology also had a beneficial effect. In addition, digital literacy showed its vital function in supporting successful e-learning despite technological and organizational challenges during the COVID-19 epidemic in Indonesian Islamic universities by limiting the effects of outside influences.

Yildirim et al (2023) explored the e-learning readiness of both students and academic staff within a faculty of education. Based on the study, most university students used laptops and accessed the internet from home, indicating that they generally possess the physical infrastructure needed to conduct e-learning. Data from 428 undergraduate students in 59 departments at 33 Turkish universities was gathered using a survey methodology. The findings of the study were that students' readiness levels were usually above average, with significant differences identified due to variables such as device ownership, home internet availability, field of study, daily internet use, gender, and prior online learning experience. Owning a personal computer and having access to the internet were added as key factors influencing better e-learning preparedness.

Khan et al (2022) highlighted the crucial role of digital literacy as an eclectic collection of skills necessary for preparing students to meet the changing requirements of the labor market in the 21st century. Employing a quantitative survey of 300 youth, they determined that critical thinking abilities, operational skills, creative and collaborative learning methods, and effective learning systems were significant elements of increased digital literacy. These results supported other research that showed an ongoing discrepancy between the digital skills students develop while attending college and what companies need in a rapidly changing technological landscape. The study indicated that, for the purpose of bettering students' educational achievement and employability through increased digital literacy, higher education institutions should establish extensive frameworks and apply focused teaching tactics.

2.9 Conceptual framework

The study examined the link between digital literacy, information literacy, and university students' desire to utilize technology for learning.

Dimensions of Digital literacy

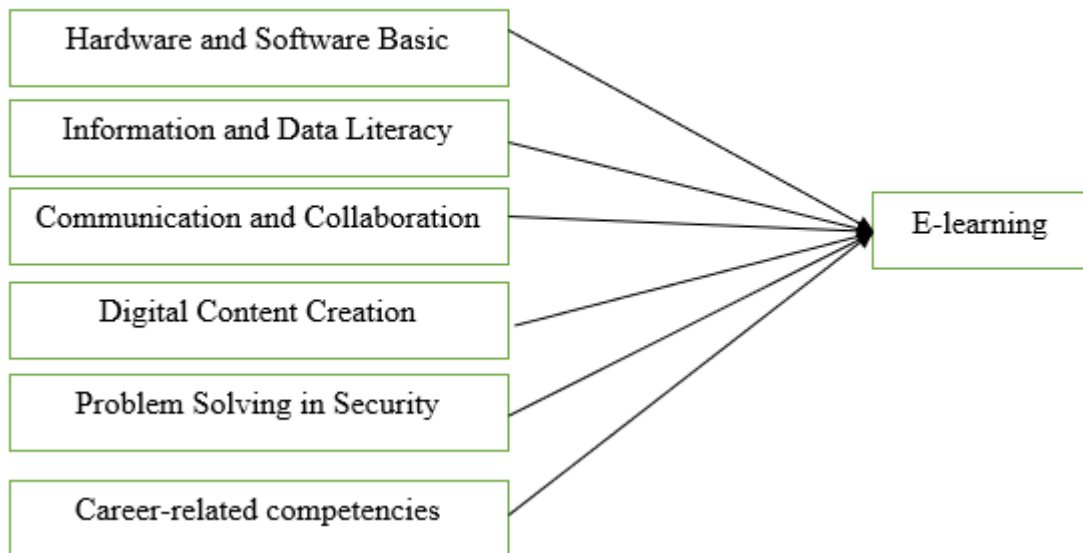


Figure (2.1) Conceptual framework of the study

CHAPTER 3

OVERVIEW ON DIGITAL LITERACY OF YANGON UNIVERSITY STUDENT

3.1 Background of Yangon University

The University of Yangon is one of the oldest and greatest universities in Myanmar, which was founded in 1920. Along with the University of Mandalay, which at first, in 1958, was a division of the University of Yangon, it had contributed a substantial contribution to the nation's educational landscape. With an abundant record history and a high literacy rate of educational success, Myanmar has made the University of Yangon a focal point of this culture.

The institution is situated in Yangon's Kamayut Township on a large urban campus nearby Inya Lake. Initially established as a result of the Yangon University Act merging University College and Judson College, it was based on esteemed universities such as Oxford and Cambridge. The University of Yangon was regarded as one of Southeast Asia's top universities during its peak in the middle of the 20th century. But it declined as a result of educational reforms and political unrest. Undergraduate programs were halted at the main campus after student demonstrations in 1996, although they were resumed in 2014. During 2008's Cyclone Nargis, the campus itself sustained severe damage and lost a large portion of its green space.

In recent years, there has been a surge in efforts to bring the university back to its previous splendour. Academic reforms, global partnerships, and investments are among the initiatives aimed at making it a center of excellence. Notwithstanding obstacles, the University of Yangon continues to be a vital component of Myanmar's higher education system, making substantial contributions to the country's intellectual and cultural advancement while working to reclaim its ranking in the region.

The university's establishment contributed to Myanmar's strong educational tradition, which is evident in the high literacy rate in the nation. Encompassing public universities, colleges, technical institutes, and vocational schools are all part of Myanmar's varied education system, all of which provide a variety of higher

education pathways. The education system was severely disrupted by the coups of 1962 and 1988, such as the closure of universities for extended periods of time in order to prevent student uprisings. It is an enormous pile of students waiting to get placed as a result of the closures of colleges and universities in Myanmar, which significantly postponed secondary school graduates' bids for admission to university.

However, the National University of Yangon continued to operate as an important force in Myanmar's higher education system and to inspire Myanmar's intellectual, academic, and cultural growth. The main campus failed to provide full-time bachelor's degrees from 1997 to 2011 due to a variety of factors. Only a handful of postgraduate courses were still offered at Yangon University. The Center of Excellence (COE) project, however, reoffered undergraduate courses in 2013.

Its goal has always been to give pupils a good education and advanced abilities in numerous academic subjects. The institution has produced world-renowned scientists and educators respected by numerous worldwide organizations. Since academic personnel come from different geographical and religious origins, the institution has a large cultural and ethnic variety. The 21 primary YU departments provide undergraduate, graduate, and doctorate degrees. Many overseas NGOs collaborate with university departments on field trips and research. The University of Yangon is also a member of the ASEAN Universities' Network and has signed several Memorandums of Understanding (MOU) with foreign universities and higher education institutions to strengthen their international relations.

3.2 Organizational Structure of Yangon University

The Education managers Yangon University, which has a clear academic and administrative foundation. The university operates from multiple campuses, namely the main campus in Kamaya, Yangon, and the Hlaing Campus on Pyay Road. The Ministry of Education of Myanmar maintains the University of Yangon, one of the major universities in the nation of Myanmar. The academic, administrative, and research duties assigned to the organization have been well supported by the organizational structure. The academic coordination, operational management, and strategic decision-making have been rendered possible through its multilevel governance organization.

As the top of the university's administration, the rector who is at the highest level of the administrative ladder. In charge of the university's general administration

and academic direction is the rector. Each Pro-rector supervises an individual portfolio, encompassing student affairs, administration and finance, academic affairs, and foreign cooperation, and supports the rector. Each pro-rector at the University of Yangon oversees specific divisions and operational units, playing a crucial role in ensuring that institutional policies are effectively enacted and strategic objectives are achieved. The pro-rector responsible for academic affairs supervises areas such as curriculum planning, academic staff coordination, teaching quality assurance, and the assessment of student learning outcomes. In contrast, the pro-rector for administration and finance manages the university's budgeting processes, human resource activities, and the upkeep of physical facilities across the campus.

Functioning under this executive leadership are various academic and administrative departments. The university comprises 21 academic departments that span the disciplines of arts, sciences, and social sciences. Each department is led by a department head who is responsible for subject-specific teaching, research activities, and curriculum implementation. These departments report administratively through their corresponding pro-rector based on the nature of their academic or operational focus. On the administrative side, several core offices facilitate the day-to-day operations of the university. These include the Office of Administration, the Academic Affairs Office, the Examinations Department, and the Finance Department. These units are essential in maintaining institutional efficiency, managing academic records, coordinating university-wide examinations, and handling fiscal responsibilities.

Supporting the academic mission of the university is the Central Library, which serves as a vital knowledge hub by providing access to extensive collections of books, scholarly journals, and electronic databases. The Campus Development and Maintenance Department is another key component of the university's organizational infrastructure. This unit is tasked with ensuring that the campus environment remains conducive to learning and research by maintaining classrooms, laboratories, dormitories, and administrative buildings.

In addition to these structural components, the University Senate and various academic boards are instrumental in academic governance. These bodies are responsible for evaluating and approving new degree programs, formulating academic policies, and maintaining educational standards. Faculty participation in these committees promotes transparency, accountability, and collaborative decision-making

within the university system. Overall, the University of Yangon's organizational structure enables it to efficiently administer a large and diverse student population while maintaining high academic standards. Moreover, this structural framework facilitates the integration of digital technologies in education, including the adoption of e-learning platforms. This is particularly significant in enhancing digital literacy among students and aligning the university with contemporary ends in higher education.

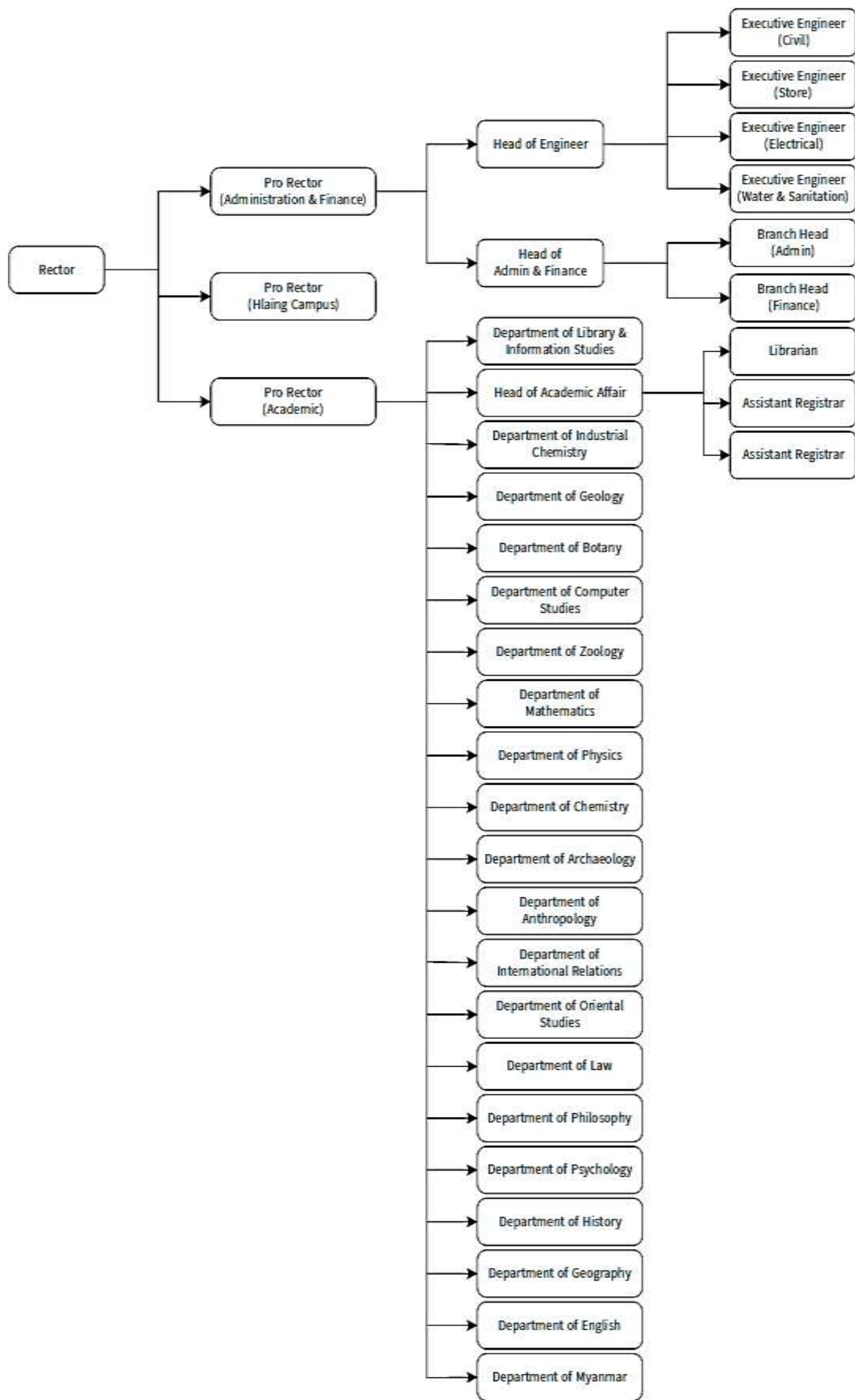


Figure (3.1) Organization Chart of Yangon University

3.3 Programs in Yangon University

Yangon University provides undergraduate and graduate degrees. Postgraduate diplomas, master's degrees, Master of Research (MRes), and PhDs in arts and science are offered. Twenty-one teaching departments exist now.

The university awarded its first PhD degree in 1997 after reorganizing it to become a standalone center for postgraduate study. Today, it awards about 20 PhD degrees yearly. The University of Yangon Faculty of Social Science provides many programs to study human society, culture, and behavior. This faculty specializes in anthropology, archaeology, English, environmental studies, geography, history, international relations, law, library and information studies, Myanmar, Myanmar studies, Oriental studies, philosophy, political science, and psychology.

Biological, chemical, physical, and mathematical sciences are studied in the University of Yangon Faculty of Natural Science. This faculty specializes in biochemistry, botany, chemistry, computer science, engineering physics, environmental science, fisheries and aquaculture, food science, geology, industrial chemistry, mathematics, microbiology, physics, and zoology.

From 1997 to 2011, full-time bachelor's degrees were not offered at the main campus due to various circumstances. Only some postgraduate courses continued to be taught at Yangon University. However, in 2013, undergraduate courses were reoffered with a project called the Centre of Excellence (COE). The university is going through a handle of revitalization that will create a flagship university for the future development of the country. It offers comprehensive undergraduate programs through its two major faculties: social science and natural science. Both faculties emphasize a blend of practical skills and theoretical knowledge. To obtain practical experiences, research projects, internships, and fieldwork are provided for students. The University of Yangon aims to produce graduates who are well-equipped to contribute to their respective fields and address the socio-economic challenges of Myanmar.

3.4 Digital literacy of Yangon University students

A foundational understanding of hardware and software is essential for university students to effectively engage with contemporary digital learning environments. Knowledge of hardware components, such as input and output devices, storage systems, and processing units, enables students to operate and maintain their

digital tools with greater proficiency, reducing technical disruptions that may impede learning. Similarly, familiarity with software-including operating systems, productivity applications, and specialized educational platforms-facilitates efficient management of academic tasks such as research, data analysis, and presentation development. Mastery of these digital competencies not only enhances students' academic performance by improving their ability to access, process, and communicate information but also cultivates critical problem-solving skills necessary for navigating complex e-learning systems. Consequently, integrating hardware and software literacy into university curricula is imperative to equip students with the technological fluency required for success in increasingly digitalized educational and professional contexts.

Information literacy is an essential competency for university students, as it enables them to recognize when information is needed, locate relevant sources, critically evaluate the credibility and accuracy of information, and use it effectively and ethically in academic work. Mastery of information literacy skills empowers students to become more self-directed and independent learners, supporting their ability to master course content, extend their research beyond classroom boundaries, and engage in lifelong learning. Furthermore, information literacy enhances students' critical thinking, problem-solving, and decision-making abilities, which are vital for academic success and effective participation in the modern information-rich society. By fostering these skills, universities equip students not only to excel in their studies but also to adapt to the demands of the workplace and to contribute thoughtfully as informed citizens.

Effective communication and collaboration are indispensable for university students, as they not only facilitate the exchange of ideas and information but also foster deeper engagement and academic success within e-learning environments. Through digital communication tools such as video conferencing, group chats, and collaborative platforms, students can actively participate in discussions, share resources, enhance their understanding of course material and promote critical thinking. Collaborative learning experiences help students develop essential skills such as teamwork, problem-solving, and time management, while also broadening their perspectives by exposing them to diverse viewpoints and approaches. Moreover, these skills are highly valued in the modern workforce, preparing students for professional environments where effective communication and collaboration are

crucial. Digital technologies for communication and collaboration, universities create inclusive, flexible, and interactive learning spaces that support academic achievement and equip students with competencies necessary for lifelong learning and career success.

Digital content creation is highly beneficial for university students, as it enables them to communicate ideas in innovative and visually compelling ways, deepening their engagement with academic material and enhancing their critical thinking skills. By producing digital assignments such as videos, infographics, blogs, and interactive presentations, students not only demonstrate higher-order cognitive abilities but also develop creativity and digital fluency that are increasingly demanded in both academic and professional settings. Furthermore, proficiency in digital content creation allows students to build media-rich portfolios and personal brands, making them more competitive in the job market and equipping them with the practical skills necessary for success in a rapidly evolving digital landscape.

Security is a critical aspect of digital literacy for university students, particularly in e-learning environments where large amounts of sensitive personal and academic data are stored and transmitted online. Robust cybersecurity measures—such as strong access controls, data encryption, multi-factor authentication, and regular software updates—not only protect students’ personal information and academic records from cyber threats but also foster a sense of trust and confidence in the e-learning system, thereby encouraging greater student engagement and participation. When students perceive that their data and learning activities are secure, they are more likely to utilize digital platforms actively, which can lead to improved academic achievement and satisfaction. Moreover, security awareness equips students with essential skills to recognize and prevent cyber risks such as phishing, identity theft, and data breaches, preparing them for responsible participation in both academic and professional digital environments. Prioritizing security in e-learning not only safeguards educational integrity and privacy but also supports the long-term sustainability and reputation of educational institutions.

Problem-solving in security is a component of digital literacy competency for university students. Mastery of problem-solving skills enables students to adapt to rapidly changing digital environments, troubleshoot issues encountered during e-learning, and select the most effective resources or methods for completing assignments, thereby enhancing their autonomy and resilience in academic pursuits.

However, strong digital problem-solving abilities foster critical and analytical thinking, which are essential not only for academic achievement but also for preparing students to meet the complex demands of the modern workforce and to remain competitive in an increasingly digitalized society.

Career-related digital competencies are increasingly indispensable for university students, as they not only enhance academic performance but also significantly improve employability and adaptability in the modern workforce. Proficiency in digital literacy equips students with technical skills, such as using productivity software, managing digital information, and navigating online platforms that are highly valued by employers across all sectors. These competencies enable students to communicate and collaborate effectively in technology-driven environments, engage in independent research, and adapt to rapidly evolving digital tools, all of which are crucial for career readiness and lifelong learning. Moreover, digital literacy fosters critical thinking, problem-solving, and the ethical use of technology, empowering students to make informed decisions and contribute responsibly in professional contexts. As digital technologies continue to transform workplaces, possessing strong career-related digital skills ensures that university graduates remain competitive, resilient, and prepared to meet the demands of the Fourth Industrial Revolution.

CHAPTER 4

SURVEY ANALYSIS

4.1 Survey Profile

This study involved 254 students who were randomly selected from a total population of 700 students at Yangon University. The respondents included undergraduates and master student at Yangon University. Data collection was conducted through an online survey using Google Forms. The demographic characteristics of the participants varied in terms of gender, age, educational level, using computers(years), using mobile phone(years), person taught how to use the computer in the first place and types of mobile devices. Most respondents were male, and female with the most students at Yangon University. These demographic details offer important background for interpreting the study's findings.

4.2 Survey Design

The study employed a structured questionnaire to assess the digital literacy skills of students at Yangon University and to explore the effect of digital literacy on e-learning of Yangon University students. The survey was organized into two primary sections. The first section collected demographic details, including gender, age, education level, computer usage years, phone usage years, teaching how to use the computer in the first place, and types of mobile devices. The second section addressed various aspects of digital literacy, such as knowledge of hardware and software, information literacy, communication and collaboration abilities, digital content creation , problem-solving in security awareness and capabilities, and career-related digital skills. Different types of questions were used to gather comprehensive data: Likert scale questions to gauge students' attitudes and confidence, frequency scales to determine how often they used digital tools, and yes/no questions to identify specific behaviours. The questionnaire was carefully designed for clarity and relevance and was pilot tested to enhance its reliability. Ethical standards were strictly observed, ensuring confidentiality and voluntary participation. The gathered data were analysed quantitatively to uncover patterns and relationships, offering insights into the impact of digital literacy on students' e-learning experience.

4.3 Survey Results

According to the survey, the participants in this study are students from Yangon University, the educational backgrounds of the respondents are detailed in the following table.

Table 4.1 Demographic characteristics of Respondents

Gender	No. of Respondents	Percentage
Female	159	62.6
Male	95	37.4
Total	254	100.0
Age	No. of Respondents	Percentage
18 - 21	152	59.8
22 - 25	57	22.5
Over 25	45	17.7
Total	254	100.0
Education	No. of Respondents	Percentage
First year	11	4.3
Second year	10	3.9
Third year	4	1.6
Third year(H1)	23	9.1
Fourth year(H2)	146	57.5
Master	60	23.6
Total	254	100.0

Source: Survey Data (March , 2025)

According to Table 4.1, female students at Yangon University made up most respondents, accounting for 62.6%, while male students represented 37.4% of the total. This suggests that female students were either more willing to participate in the survey or are more actively involved in academic and research activities at the university. The gender distribution may also reflect current enrolment patterns, particularly in disciplines where female student populations are higher. These results point to the increasing involvement of women in higher education, which may contribute to shaping future gender balance in academic and professional fields.

The largest proportion of respondents, 59.8%, belongs to the 18-21 age group, followed by 22.5% in the 22-25 age range, and 17.7% who are over 25 years old. These results suggest that most students participating in the survey are relatively young, which aligns with the typical age of university undergraduates. This age distribution may also reflect the active participation of younger students in academic studies and surveys, indicating a strong involvement of early-career students at Yangon University.

Most respondents are undergraduate students, with the largest proportion (57.5%) being in their fourth year (H2). The second-largest group consists of master's degree students, representing 23.6% of the total sample. Smaller percentages of respondents are from the first year (4.3%), second year (3.9%), and third-year (1.6%) groups. These findings suggest that the survey primarily reflects the views of senior undergraduate and master students, likely due to their increased engagement in academic activities and research. The substantial representation of fourth-year students may be indicative of their greater familiarity with university processes and their higher level of academic involvement, making them more likely to participate in surveys. Additionally, the inclusion of master's students highlights the active participation of graduate-level individuals, offering insights from those with more advanced academic experience.

4.4 Using computers (years) of Respondents.

The research further investigated the length of time that student participants from Yangon University have been utilizing computers. Table 4.4 illustrates the distribution of respondents based on their years of computer usage.

Table 4.2 Number of Respondents by Using computers (years)

Sr. No.	Using Computer (Years)	Frequency	Percentage
1	1 to 5 years	160	63.0
2	6 to 10	74	29.2
3	11 to 15	10	3.9
4	16 to 20	10	3.9
	Total	254	100

Source: Survey Data (March 2025)

According to the data in Table 4.2, a significant majority of respondents (63.0%) have between 1 and 5 years of experience using computers, indicating that most participants are relatively new to computer technology. The next largest group (29.2%) has 6 to 10 years of experience, suggesting a moderate level of familiarity with digital tools. Smaller percentages of respondents (3.9%) report having 11 to 15 years or 16 to 20 years of experience, pointing to a small group with more extensive computer skills. These results suggest that, while the respondents generally possess basic to intermediate computer knowledge, the overall sample is still developing more advanced digital competencies. This may also reflect the growing importance of technology, with newer generations gaining digital skills at an increasingly younger age, while those with longer experience represent an older generation with different exposure to technology.

4.5 Using Mobile phone (years) of Respondents.

As shown in table 4.3, the distribution of respondents by years of mobile phone usage is presented. The study investigated the duration of mobile phone use among students at Yangon University.

Table 4.3 Number of Respondents by Years of Mobile Phone use

Sr. No.	Using Mobile Phone (Years)	Frequency	Percentage
1	1 to 5 years	56	22.0
2	6 to 10	154	60.6
3	11 to 15	38	15.0
4	16 to 20	6	2.4
	Total	254	100

Source: Survey Data (March, 2025)

As shown in Table 4.3, most respondents (60.6%) have been using mobile phones for 6 to 10 years, suggesting that mobile technology has been an integral part of their daily routines for a significant period. The second-largest group (22.0%) consists of respondents who have used mobile phones for 1 to 5 years, indicating they started using mobile devices more recently, likely during the rise of smartphones. Meanwhile, 15.0% of respondents report using mobile phones for 11 to 15 years, showing a moderate level of long-term experience. Only a small percentage (2.4%) have been using mobile phones for 16 to 20 years, which reflects the early adopters of the technology.

These results highlight the widespread use of mobile phones among the respondents, with the majority having considerable experience with the devices. The larger proportion of users in the 6 to 10-year range emphasizes the rapid adoption of mobile phones in the last decade, especially with the growth of smartphones and mobile internet. This trend indicates that mobile phones have become essential tools for communication and various other functions in the lives of most respondents. The small group with over 16 years of experience also emphasizes the fast-paced development and adoption of mobile phone technology over a relatively short period.

4.6 Person taught how to use the computer in the first place.

The study explored who initially taught computer skills to the students of Yangon University. The findings from 254 surveyed individuals are detailed in Table 4.4.

Table 4.4 Number of Respondents by the person who taught computer

Sr. No.	Person	Frequency	Percentage
1	Self-study	9	3.5
2	Family members	11	4.3
3	Friends	25	9.8
4	Teacher/Trainer	209	82.4
	Total	254	100

Source: Survey Data (March 2025)

As shown in Table 4.4, most respondents (82.4%) learned to use a computer from a teacher or trainer, indicating that formal education plays a crucial role in developing computer skills. This suggests that structured learning environments, such

as classrooms or computer training courses, are the primary sources of digital literacy for most individuals. A smaller portion of respondents learned from more informal sources: 9.8% from friends, 4.3% from family members, and 3.5% through self-study.

These results highlight the prevalence of formal education as the primary method of learning computer skills among respondents, with teaching professionals being the dominant source of instruction. The substantial percentage of respondents who received training from teachers or trainers underscores the importance of educational institutions in providing essential technology skills.

4.7 Types of Mobile Devices

Table 4.5 Number of Respondents by Types of Mobile Devices

Sr. No.	Types of Devices	Frequency	Percentage
1	Computer (Desktop, Laptop, MacBook, etc.)	7	2.8
2	Mobile Phone	57	22.4
3	Mobile Phone, Computer (Desktop, Laptop, MacBook,	178	70.1
4	Mobile Phone, Computer, and Tablet	12	4.7
	Total	254	100.0

Source: Survey Data (March , 2025)

According to the showing data 4.5, the largest group of respondents (70.1%) use both mobile phones and computers (desktop, laptop, MacBook, etc.), indicating that these individuals commonly rely on multiple devices for various activities. This combination of mobile phones and computers is the most popular choice, highlighting the versatility of using both types of technology for communication, work, or study. The second-largest group (22.4%) uses only a mobile phone, suggesting that a significant number of respondents depend on their mobile phones as their primary device for digital tasks. A smaller proportion (4.7%) use mobile phones, computers, and tablets together, indicating a higher degree of technological engagement and multi-device usage. Only 2.8% of respondents rely exclusively on a computer, such as a desktop or laptop, which reflects a lower reliance on traditional computing devices compared to mobile phones. These findings emphasize the increasing trend of using multiple devices, particularly mobile phones and computers, in everyday life. Mobile

phones, due to their portability and multifunctionality, serve as the main device for many, while computers remain crucial for tasks that require more screen space, processing power, or specialized applications. The limited number of respondents using only desktop or laptop computers suggests a shift toward more flexible, mobile technology. Furthermore, the inclusion of tablets among some respondents' devices signals their growing role in communication, entertainment, and productivity alongside other digital tools.

4.8 Reliability Analysis

Reliability analysis is an essential procedure for evaluating the internal consistency of measurement instruments, commonly assessed through Cronbach's Alpha coefficient. This coefficient quantifies the degree to which a set of items reliably measures a construct. In the literature, a Cronbach's Alpha value between 0.7 and 0.8 is regarded as acceptable, values from 0.8 to 0.9 indicate good reliability, while values above 0.9 denote excellent reliability. The Cronbach's Alpha values for all dependent, mediating, and independent variables obtained from the survey are presented in Table 4.6, thereby confirming the reliability of the measurement scales employed in this study.

Table 4.6 Reliability Analysis of Variables

Sr. No.	Variables	Frequency	Cronbach's Alpha
1	Hardware and software Basic	4	0.949
2	Information and Data Literacy	5	0.960
3	Communication and Collaboration	3	0.952
4	Digital content creation	3	0.928
5	Problem Solving in Security	5	0.928
6	Career Related Competencies	3	0.901
7	E-learning	18	0.976

Source: Survey Data (March, 2025)

The analysis of internal consistency for the survey instruments administered in March 2025 indicates that all variables achieved superior reliability, with Cronbach's alpha values surpassing the 0.9 benchmark. Variables of digital literacy such as Hardware and Software Basic (0.949), Information and Data Literacy (0.960), Communication and Collaboration (0.952), Digital Content Creation (0.928), Problem Solving in security (0.928), Career-Related Competencies (0.901), and E-Learning (0.976) demonstrate excellent reliability. These results suggest that the items within each scale are highly coherent and effectively capture the underlying constructs. Therefore, the measurement scales employed in this study are deemed highly reliable, providing a solid foundation for subsequent data analysis and interpretation.

4.8.1 Basic Hardware and software by respondent

The first point in digital literacy is hardware and software basics. To see the student attitude on hardware and software basics, students are requested to rate five items, which are measured on a five-point Likert Scale. The following table shows the students' perception of basic hardware and software at the University of Yangon.

Table (4.7) Analysis of Hardware and software Basic

Sr. No.	Items	Mean	Std. Deviation
1	I can properly turn on and turn off a computer or mobile device.	3.97	0.790
2	I understand the functions and simple operating features of the application, such as shifting pages (scroll), clicking navigation buttons (home, next), and adjusting the volume or screen brightness.	3.91	0.841
3	I can install and uninstall simple applications or software.	4.00	0.783
4	I understand the function of antivirus applications as a device security tool.	3.85	0.844
	Overall Mean	3.93	

Source: Survey Data (March,2025)

The analysis of the digital skills items demonstrates that respondents largely agree with the presented statements, as indicated by mean scores between 3.85 and

4.00 and standard deviations ranging from 0.783 to 0.841, reflecting consistent response patterns. Participants reported confidence in performing fundamental tasks such as powering devices turn on and off (mean = 3.97, SD = 0.790) and installing or removing software applications (mean = 4.00, SD = 0.783). Additionally, there was a positive level of understanding regarding basic application functions, including page navigation and volume control (mean = 3.91, SD = 0.841), while awareness of antivirus programs as security tools was slightly lower but still favourable (mean = 3.85, SD = 0.844). These findings suggest that respondents possess an adequate level of basic digital proficiency, with reliable and internally consistent responses supporting the appropriateness of these measures for assessing digital literacy in this study.

4.8.2 Perception on Information and Data Literacy by respondent

The second variable is information and data literacy. Respondents are requested to rate five items, which are measured on a five-point Likert Scale in this variables.

Table (4.8) Analysis of Information and Data Literacy

Sr. No.	Items	Mean	Std. Deviation
1	I can choose to search keywords and access simple information with the help of teachers from reliable sources such as official websites or digital reference books.	3.87	0.775
2	I can explore simple information and optimize the information features provided in digital sources, such as QR codes, direct links, embedded sources, etc.	3.87	0.799
3	I can use the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.	3.89	0.732
4	I can choose to search keywords and access simple information with the help of teachers from reliable sources such as official websites or digital reference books.	3.92	0.731
5	I understand the use of the information obtained to support the completion of assignments given on digital	3.89	0.725

Source: Survey Data(March,2025)

The evaluation of the information literacy items in the table (4.8) indicates that respondents generally agree with the statements, as reflected by mean scores ranging from 3.87 to 3.92 and standard deviations between 0.725 and 0.799, showing consistent responses across participants. Participants expressed confidence in their ability to select relevant search keywords and access trustworthy sources such as official websites and digital reference books, often with teacher support (mean = 3.87 to 3.92, SD = 0.731 to 0.775). They also demonstrated competence in navigating and utilizing digital information features like QR codes, direct links, and embedded resources (mean = 3.87, SD = 0.799). Moreover, respondents reported understanding how to effectively use the information gathered to complete assignments on digital platforms, including quizzes, games, and practice exercises, with mean scores of 3.89 and relatively low variation. Collectively, these results indicate that the participants have an adequate level of information literacy skills, supported by reliable and consistent responses, confirming the appropriateness of these items for measuring digital information proficiency in this research.

4.8.3 Perception on Communication and Collaboration by respondent

The third point is communication and collaboration. In this variable, students are requested to rate three items, which are measured on a five-point Likert Scale.

Table (4.9) Analysis of Communication and Collaboration

Sr. No.	Items	Mean	Std. Deviation
1	I can participate in class discussions using technology (e.g., sending answers via learning applications).	3.91	0.812
2	I understand how to convey messages clearly and effectively through learning applications.	3.90	0.724
3	I can explore the activity and participation in assignments through learning applications.	3.88	0.756
	Overall Mean	3.90	

Source: Survey Data(March,2025)

As shown in Table 4.9, most of the students strongly agree in using technology to improve communication and collaboration within their learning systems. The results pertaining to digital participation and communication skills

reveal that respondents generally concur with the statements, as shown by mean scores ranging from 3.88 to 3.91 and standard deviations between 0.724 and 0.812, indicating a consistent pattern of responses. Participants expressed confidence in their ability to actively engage in class discussions using technology, such as submitting answers through learning applications (mean = 3.91, SD = 0.812). They also demonstrated an understanding of how to communicate messages clearly and effectively via these digital platforms (mean = 3.90, SD = 0.724). Additionally, respondents reported competence in exploring and completing assignments through learning applications, with a mean score of 3.88 and moderate variability. Overall, these findings suggest that the participants possess adequate digital communication and participation skills, with dependable and internally consistent responses validating the use of these items in assessing digital engagement within educational contexts.

4.8.4 Perception on Digital content creation by respondent

The fourth variable is digital content creation. In this variable, employees are requested to rate five items, which are measured on a five-point Likert Scale.

Table (4.10) Analysis of Digital content creation

Sr. No.	Items	Mean	Std. Deviation
1	I understand the digital work, such as making simple drawings or photo collages.	3.86	0.772
2	I understand the digital content creation and how to select or use images, videos, or other copyrighted content (reference source).	3.86	0.827
3	I can create and share simple digital content.	3.86	0.782
Overall Mean		3.86	

Source: Survey Data (March,2025)

The analysis of the digital content creation items as shown in table (4.10) indicates a consensus among respondents, with mean scores consistently at 3.86 and standard deviations ranging from 0.772 to 0.827, reflecting moderate agreement and response stability. Participants reported familiarity with basic digital tasks such as producing simple drawings or photo collages (mean = 3.86, SD = 0.772) and demonstrated awareness of proper use and referencing of images, videos, and other

copyrighted materials (mean = 3.86, SD = 0.827). Additionally, respondents expressed confidence in their ability to generate and share straightforward digital content (mean = 3.86, SD = 0.782). These findings suggest that the participants have a satisfactory level of foundational skills in digital content creation, supported by consistent and reliable responses, validating the effectiveness of these items in assessing digital creativity for this study.

4.8.5 Perception on Problem Solving in Security by respondent.

The fifth variable is problem solving in security. In this variable, employees are requested to rate five items, which are measured on a five-point Likert Scale.

Table (4.11) Analysis of Problem Solving in Security

Sr. No.	Items	Mean	Std. Deviation
1	I understand how to sort information when inputting personal data on digital application requests (including application permissions).	3.84	0.790
2	I can explore the security risks of cyberbullying and the steps they take to protect themselves.).	3.83	0.804
3	I understand the compliance with school security policies or the digital learning environment (e.g., accessing digital information according to specified study hours, not accessing prohibited websites, etc.).	3.85	0.778
4	I explore the technology problems they face. (Error, hang, not responding, application permissions).	3.75	0.879
5	I use digital problems to find solutions. (Error, hang, not responding, application permissions).	3.76	0.875
Overall Mean		3.81	

Source: Survey Data (March,2025)

The results as shown in table (4.11) regarding digital literacy indicate that respondents generally agree with the statements, with mean scores between 3.75 and 3.85 and standard deviations ranging from 0.778 to 0.879, reflecting a consistent

pattern of responses. Participants demonstrated an understanding of how to organize personal data when using digital applications, including managing application permissions (mean = 3.84, SD = 0.790). They also showed awareness of the risks associated with cyberbullying and the measures needed to protect themselves (mean = 3.83, SD = 0.804), as well as compliance with school security policies related to digital learning, such as observing designated study hours and avoiding prohibited websites (mean = 3.85, SD = 0.778). Moreover, respondents acknowledged their ability to identify common technical issues like errors and application freezes (mean = 3.75, SD = 0.879) and to apply problem-solving skills to resolve these challenges (mean = 3.76, SD = 0.875). Overall, these findings suggest that participants possess an adequate level of digital literacy, with reliable and consistent responses supporting the use of these items to assess digital competence in this study.

4.8.6 Perception on Career Related Competencies by respondent

The sixth variable is career related competencies. In this variable, employees are requested to rate five items, which are measured on a five-point Likert Scale.

Table (4.12) Analysis of Career Related Competencies

Sr. No.	Items	Mean	Std. Deviation
1	I can use digital devices such as computers, tablets, smartphones, or interactive whiteboards.	3.89	0.831
2	I can create projects or presentations about the jobs they envision in the future.	3.88	0.773
3	I can use applications or software relevant to a particular job, such as word processing or spreadsheet applications	3.80	0.781
	Overall Mean		3.86

Source: Survey Data (March,2025)

The results demonstrate in above table in (4.12) that participants generally agree with the digital skills in career related competencies statements, as shown by mean scores of 3.89, 3.88 and 3.80, standard deviations of 0.831 and 0.773, and 0.781

respectively, indicating consistent responses. Respondents showed competence in using a range of digital devices such as computers, tablets, smartphones, and interactive whiteboards ($M = 3.89$, $SD = 0.831$). They reported confidence in creating projects or presentations related to their future career goals ($M = 3.88$, $SD = 0.773$). They also demonstrated ability in using the applications or software relevant to a particular job, such as word processing or spreadsheet applications ($M=3.80$, $SD=0.781$). These findings suggest that the participants have an acceptable level of digital literacy, covering both device operation and digital content creation, supported by reliable and internally consistent data that validate the effectiveness of these items for assessing digital skills in this study.

4.9 Perception on E-learning by respondent

The seventh variable is career related competencies. In this variable, employees are requested to rate five items, which are measured on a five-point Likert Scale.

Table (4.13) Analysis of E-learning

Sr. No.	Items	Mean	Std. Deviation
1	My interaction with the e-library is clear and understandable.	3.91	0.746
2	E-learning would be easy for me to become skilled at using the e-library.	3.92	0.678
3	I would find the E-library easy to use.	3.92	0.709
4	I enjoy using a mobile application to learn.	3.93	0.775
5	I can improve my learning skills by using internet. (i.e., improved educational skills from using e- learning).	3.98	0.785
6	I have the ability to learn by using ICT devices.(i.e. improved learning from using e-learning).	3.87	0.760
7	I can ask questions and inquiries through internet.	3.90	0.718
8	I can use the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.	3.88	0.729

9	I see that e-learning achieves quality standards in university education.	3.94	0.723
10	I feel that e-learning does not take into account individual differences among students.	3.85	0.784
11	I see that e-learning is just a way to complete the curriculum.	3.80	0.855
12	I have difficulties understanding the lecture through Classroom.	3.74	0.896
13	I find it difficult to express my opinions and ideas in writing.	3.72	0.910
14	I see that e-learning focuses only on the knowledge aspect.	3.83	0.809
15	I can learn online from accessing the course easily.	3.88	0.793
16	I feel like e-learning is raising my level of achievement.	3.93	0.662
17	My studies through classroom evolve my intellectual skills.	3.89	0.734
18	I see that e-learning achieves quality standards in university education.	3.92	0.723
	Overall Mean	3.88	

Source: Survey Data (March 2025)

The findings as shown in (4.13) indicate that participants generally hold favorable perceptions of e-learning and digital library usage, as evidenced by mean scores ranging from 3.72 to 3.98 and standard deviations between 0.662 and 0.910, reflecting a consistent level of agreement. Respondents reported that their interactions with the e-library are clear and comprehensible ($M = 3.91$, $SD = 0.746$) and expressed confidence in acquiring skills necessary for effective use of the e-library through e-learning ($M = 3.92$, $SD = 0.678$). The ease of navigating the e-library was similarly affirmed ($M = 3.92$, $SD = 0.709$), alongside a positive disposition toward utilizing mobile applications for learning purposes ($M = 3.93$, $SD = 0.775$).

While respondents generally perceived e-learning as meeting quality standards within university education ($M = 3.94$ and 3.92 , $SD = 0.723$), some noted limitations, including insufficient accommodation of individual learner differences ($M = 3.85$, SD

= 0.784) and the perception of e-learning as primarily a means to fulfil curricular requirements (M = 3.80, SD = 0.855). Challenges were also reported in traditional classroom contexts, such as difficulties in comprehending lectures (M = 3.74, SD = 0.896) and articulating ideas in writing (M = 3.72, SD = 0.910). Furthermore, some participants perceived e-learning as predominantly focused on knowledge acquisition rather than holistic skill development (M = 3.83, SD = 0.809).

Furthermore, learners found online courses accessible (M = 3.88, SD = 0.793) and believed that e-learning positively influences their academic achievement (M = 3.93, SD = 0.662). Additionally, traditional classroom instruction was recognized for its role in fostering intellectual growth (M = 3.89, SD = 0.734).

These results suggest that students value the benefits of e-learning and digital library resources in supporting their educational progress, while also identifying areas for enhancement, particularly in addressing diverse learner needs and improving expressive competencies.

Table (4.14) Average Mean Score and Average Standard Deviation

Sr. No.	Variables	Mean	Std. Deviation
1	Hardware and software Basic	3.93	0.759
2	Information and Data Literacy	3.89	0.699
3	Communication and Collaboration	3.90	0.730
4	Digital content creation	3.86	0.742
5	Problem Solving in Security	3.81	0.727
6	Career Related Competencies	3.86	0.765
7	E-learning	3.88	0.649

Source: Survey Data (March,2025)

The findings as shown in (4.14) reveal that participant consistently express agreement across all assessed digital competency areas, with mean scores ranging from 3.81 to 3.93 and standard deviations between 0.649 and 0.765, indicating stable and reliable responses. The highest agreement was noted in hardware and software basics (M = 3.93, SD = 0.759), reflecting strong confidence in fundamental technical skills. Communication and collaboration (M = 3.90, SD = 0.730) and information and data literacy (M = 3.89, SD = 0.699) were also rated positively, demonstrating participants' proficiency in managing and sharing digital information effectively.

Digital content creation (M = 3.86, SD = 0.742) and career-related competencies (M = 3.86, SD = 0.765) received favorable evaluations, indicating preparedness to apply digital skills in practical and professional settings. Although slightly lower, problem-solving skills in security (M = 3.81, SD = 0.727) still reflect general agreement, suggesting awareness of digital safety and troubleshooting. E-learning competencies (M = 3.88, SD = 0.649) were also positively acknowledged, highlighting adaptability to digital learning platforms.

These results show that respondents possess a comprehensive digital skill set, with consistent and dependable responses supporting the relevance of these competencies as essential measures of digital literacy in this study.

4.10 Correlation Analysis between Digital Literacy and E-learning

Through analysis of the independent variables, hardware and software basics, information literacy, communication and collaboration, digital content creation, security problem-solving, career-related skills, and e-learning were related to the dependent variable. The association between e-learning and digital literacy was examined using two-tailed Pearson correlation analysis. A positive correlation coefficient indicates a direct association between variables, whereas a negative correlation indicates an inverse relationship. Correlation ranges from -1.0 to +1.0. According to the Pearson correlation analysis P-value, the linkages seem likely. The correlations for these components are presented in Table 4.15.

Table 4.15 Correlation Analysis of Digital Literacy and E-learning

Sr. No.	Dimension	Pearson Correlation with E-learning	Significance (2-tailed)
1	Hardware and software basic	0.669***	p < 0.001
2	Information and Data Literacy	0.776***	p < 0.001
3	Communication and Collaboration	0.758***	p < 0.001
4	Digital content creation	0.737***	p < 0.001
5	Problem Solving in Security	0.697***	p < 0.001
6	Career-Related Competencies	0.781***	p < 0.001

Source: Survey Data (March 2025)

*** is significant at the 1% level.

Table 4.15 shows the association between digital literacy and e-learning. Digital literacy, hardware and software basics, information and data literacy, communication and collaboration, digital content creation, security problem-solving, career-related competencies, and e-learning have a positive Pearson correlation at Yangon University. Information and data literacy and e-learning at Yangon University are strongly correlated (0.776). If the p-value is less than 0.001, correlations are statistically significant at 1%. All digital literacy measures exhibit a moderate positive connection with e-learning.

4.11 Multiple Linear Regression Analysis of the Effect of Digital Literacy On E-learning

E-learning was examined using multiple linear regression analysis to determine how digital literacy—hardware and software foundations, information literacy, communication and cooperation, digital content production, security problem-solving, career-related skills—affects it.

E-learning is the dependent variable, and digital literacy is the independent variable. Digital literacy includes hardware and software basics, information literacy, communication and collaboration, digital content creation, security problem-solving, and career-related skills. The projected findings are in Table 4.18.

Table 4.16 The Effect of Digital Literacy on E-learning

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.005	0.135		7.433	0.000
Hardware and software Basic	0.245***	0.070	0.287	3.483	0.001
Information and Data Literacy	0.381***	0.108	0.411	3.540	0.000
Communication and Collaboration	0.127	0.096	0.143	1.322	0.187
Digital content creation	0.211***	0.075	0.241	2.802	0.005
Problem Solving in Security	-0.125	0.077	-0.141	-1.625	0.105
Career Related Competencies	0.393***	0.067	0.463	5.861	0.000
F Value	86.04***				
R ²	0.676				
Adjusted R ²	0.669				

Dependent Variable: E-learning

Source: Survey Data (2019)

Note: ***Significance at 1% level, **Significance at 5% level, *Significance at 10% level

As shown in table (4.16), the multiple regression analysis exploring the impact of several digital literacy components on e-learning was highly significant overall with an F-value of 86.04 ($p < 0.01$). The digital literacy features account for almost 67.6 percent of the variability in e-learning, relative to the adjusted R squared value of 0.669, showing a well-fitting model. Additionally, the corrected R squared value is larger than 0.5, showing that the model corresponds data very effectively. Therefore, it can be determined that the effect of digital literacy on the e-learning of Yangon University students exists.

The unstandardized coefficient (B) for hardware and software basics is 0.245 ($t = 3.483$, $p = 0.001$), reflecting a positive and statistically meaningful impact on e-learning. The results show that the factor has significant value in the hardware and software basics of students at the University of Yangon and has a positive effect. Students' satisfaction in fundamental tasks, involving turning on and off computers or mobile devices, installing and uninstalling basic applications, and understanding how antivirus software works, was found to be significantly positively correlated with their overall learning outcomes. These results indicate that while using electronic devices to satisfy the goals and objectives of the organization, students who are more confident and comfortable with these fundamental abilities are likely to do better. It can be beneficial to strengthen students' fundamental hardware and software competencies to improve academic achievement and increase alignment with organizational goals.

Information and data literacy also exhibits a significant positive relationship with a coefficient of 0.381 ($t=3.540$, $p<0.001$). According to the University of Yangon's information and digital literacy results, faculty, and student skills, along with the infrastructure that promotes these skills, have improved. Research indicates that students can utilize digital tools such as QR codes and embedded links to better their learning experience, apply search terms effectively, and find reliable data from official websites and digital reference books. Strong information literacy abilities are demonstrated by the way that they apply these skills to complete assignments on digital platforms such as educational games and quizzes. This suggests that upgrading students' learning effectiveness needs an equilibrium of excellent information literacy skills and basic digital skills. For students to have the ability to competently utilize electronic devices successfully, it is essential to nurture both information literacy and fundamental digital hardware and software abilities. Supporting raised learning

outcomes acts as the University of Yangon's instructional aims and overarching organizational objectives. This suggests that higher levels of information and data literacy significantly improve e-learning performance.

Digital content creation has a coefficient of 0.211 ($t = 2.802$, $p = 0.005$), indicating a statistically significant positive effect. Students who can produce fundamental digital content, including collages of photos and drawings, typically perform better in their learning courses. The results indicated a significant positive relationship between students' success in e-learning and their ability to create digital material. Effectively creating and sharing digital content.

CHAPTER 5

CONCLUSION

This chapter is divided into two sections: the first section outlines the main findings of the thesis and results of data analysis, and the second section presents the study's recommendations.

5.1 Findings

The survey investigated the effect of digital literacy on e-learning of 254 students from Yangon University at different academic levels participated. According to the findings from demographic characteristics, First-year (4.3%), second-year (3.9%), third-year (1.6%), third-year (H1), and fourth-year (H2) students were among the participants, as were master's students (23.6%). This large sample size provides an in-depth perspective on the effects of digital literacy on university levels of e-learning. The age range of the respondents is 18 -21 age group, and the number of females are more than the number of males. A great deal of students has been using computers and mobile phones for several years, often picking up basic information from friends or family. A moderate level of competency in hardware and software basics was made possible by this first exposure, allowing students to effectively utilize and access e-learning systems. Variations in technical proficiency, however, indicate that not all students are similarly comfortable or competent about utilizing digital technologies, underlining the significance of institutional support to fill these gaps.

A balanced investigation into the variances in digital literacy across different educational backgrounds and levels have been rendered possible by this varied sample. A significant number of students had regular access to digital devices involving computers, tablets, and mobile devices. Many people have been using these tools for years, usually picking up the basics of digital skills informally from academics or family. This moderate level of ability was improved by this early exposure, especially with basic tasks like using educational platforms and using

software. The digital literacy study needs an efficiency score for each element. Regression analysis is used to examine how digital literacy affects university students' e-learning. The poll found high mean scores for all digital literacy. Thus, pupils are satisfied with those learning aspects. Hardware and software essentials average the highest score. Students are happy with hardware and software essentials. The poll found strong mean scores for information and data literacy.

This research examined Yangon University students' digital literacy and how it affects e-learning. The survey examined information and data literacy, security problem-solving, teamwork and communication, digital content production, and hardware and software basics. The data paint a misleading picture of the pros and cons that impact e-learning platform usage by learners.

In addition, each component of digital literacy and the effectiveness of e-learning demonstrated a statistically significant and strong positive connection, all at the $p < 0.001$ level, based to the correlation analysis. These findings suggest that increasing students' digital literacy in several approaches might greatly increase their participation, engagement, and achievement in Yangon University. With the goal to create a more complete and successful digital learning experience, institutions may find it advantageous to use targeted changes and training programs to improve these competencies, especially in areas with more limited relationships.

The regression analysis demonstrates that there is a positive effect between digital literacy and e-learning of Yangon University students. These results collectively highlight the importance of digital literacy as a core ability for both teachers and students, which has a direct bearing on academic success, curricular efficacy, and preparedness for the digital age. Putting money into digital literacy infrastructure and training is essential to creating inclusive, dynamic, and future-ready educational systems. Students need more systematic assistance to build their skills in creating academic work and multimedia projects, even when they are familiar with the fundamental tools for content creation. Students would be able to contribute more actively and artistically to their e-learning experiences if they had better skills in creating digital content. For the e-learning ecosystem to be secure and reliable, students' knowledge of digital security must be strengthened.

5.2 Suggestions

Yangon University's effective e-learning implementation is dependent upon staff and students improving strong digital literacy and access to technology. To guarantee that all participants can fully engage in online education, it is essential to upgrade computer hardware and software in addition to holding hands-on training sessions. Furthermore, by incorporating data and information literacy into academic programs and providing teachers and librarians with specialized training, the university's academic environment will be strengthened as students become more adept at using digital tools and information.

Students must be prepared for the current workforce by developing digital content creation abilities through creative projects and multimedia tool teaching, in addition to technical proficiency. It should also be a priority to use soft skills training and internship programs to develop important job abilities like communication, teamwork, and industry participation. Building international partnerships, producing mobile-friendly content, funding continuous faculty development, and promoting student involvement are some of the tactics Yangon University must employ to attain sustainable e-learning growth. In addition to increasing e-learning's efficacy, these approaches will help it remain successful and flexible in a digital environment that is evolving quickly. By fostering a culture of innovation and adaptability, Yangon University can ensure that its e-learning initiatives not only meet current educational demands but also anticipate future challenges. Emphasizing collaboration between faculty and industry leaders will further enhance the relevance and applicability of the skills being taught.

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APPENDIX-A

QUESTIONNAIRE

Currently, I am conducting an research related to digital literacy and e-learning in the education sector. Therefore, I make a survey to learn more about these issues and contribute the results to the effective teaching environment with communicative approach in Myanmar. You have been randomly together with others chosen for this study. I much appreciate your participation and contribution to this voluntary survey. It should take only just for few minutes to complete the questions. Your response will be kept confidential and you will not be identified in any published reports.

Thank you.

Section 1: Demographic Information

1. What is your age?
 - Under18
 - () 18-21
 - () 22-25
 - Over25

2. What is your gender?
 - Male
 - Female
 - Other

3. What is your current academic level?
 - First Year
 - Second Year
 - Third Year (H1)
 - Fourth Year (H2)
 - Master

4. How long have you been using computers?

year(s)

5. How long have you been using mobile phone?

year(s)

6. Who taught you how to use the computer in the first place?

-Teacher/trainer

-Friend

-Book

-Video

-Other

7. What type of mobile device do you own? (Check all that apply)

- Mobile Phone

- Computer (Desktop, Laptop, MacBook, etc.)

- Tablet (iPad)

- other

8. How would you rate your typing skills? Please tick (✓) one that best applies.

Very Poor

Poor

Acceptable

Good

Very Good

9. How would you rate your web search skills? Please tick (✓) one that best applies.

Very Poor

Poor

Acceptable

Good

Very Good

10. How would you rate your computer literacy (the ability to use the computer)? Please tick (✓) one that best applies.

Very Poor

Poor

Acceptable

Good

Very Good

11. How would you rate your Internet literacy (the ability to use the Internet)? Please tick (✓) one that best applies.

Very Poor

Poor

Acceptable

Good

Very Good

12. How would you rate your digital literacy (the ability to use digital technologies)? Please tick (✓) one that best applies.

Very Poor

Poor

Acceptable

Good

Very Good

Concerning Parts II, III, please indicate the level of agreement with each statement regarding the digital literacy, e-learning by ticking (/) in the box below.

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Hardware and software Basic

No.	Statement	1	2	3	4	5
1	I can properly turn on and turn off a computer or mobile device.					
2	I understand the functions and operating simple features of the application, such as shifting pages (scroll), clicking navigation buttons (home, next), and adjusting the volume or screen brightness.					
3	I can install and uninstall simple applications or software.					
4	I understand the function of antivirus applications as a device security tool.					

Information and data literacy

No.	Statement	1	2	3	4	5
1	I can choose search keywords and access simple information with the help of teachers from reliable sources such as official websites or digital reference books.					
2	I can explore simple information and optimize the information features provided in digital sources, such as QR codes, direct links, embedded sources, etc					
3	I can use the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.					

Communication and collaboration

No.	Statement	1	2	3	4	5
1	I can participate in class discussions using technology (e.g., sending answers via learning applications).					
2	I understand how to convey messages clearly and effectively through learning applications.					
3	I can explore the activity and participation in assignments through learning applications.					

Digital content creation

No.	Statement	1	2	3	4	5
1	I understand the digital work, such as making simple drawings or photo collages.					
2	I understand the digital content creation and how to select or use images, videos, or other copyrighted content (reference source).					
3	I can create and share simple digital content.					

Problem Solving in Security

No.	Statement	1	2	3	4	5
1	I understand to sort information when inputting personal data on digital application requests (including application permissions).					
2	I can explore the security risks of cyberbullying and the steps they take to protect themselves.					
3	I understand the compliance with school security policies or the digital learning environment (e.g. accessing digital information according to specified study hours, not accessing prohibited websites, etc.).					
4	I explore the technology problems they face. (Error, hang, not responding, application permissions).					
5	I use the digital problems to find solutions. (Error, hang, not responding, application permissions).					

Career-related competencies

No.	Statement	1	2	3	4	5
1	I can use the digital devices such as computers, tablets, smartphones, or interactive whiteboards.					
2	I can use the applications or software relevant to a particular job, such as word processing or spreadsheet applications.					
3	I can create projects or presentations about the jobs they envision in the future.					

PART II

Please describe **your perception** on the following statements of your productivity by using 5 point Likert scale where:

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4 = Agree, 5 = Strongly Agree

E-learning

No.	Statement	1	2	3	4	5
1	My interaction with the e-library is clear and understandable.					
2	E-learning would be easy for me to become skilled at using the e-library.					
3	I would find the E-library easy to use.					
4	I enjoy using a mobile application to learn.					
5	I can improve my learning skills by using internet. (i.e. improved educational skills from using e- learning).					
6	I have the ability to learn by using ICT devices. (i.e. improved learning from using e-learning).					
6	I have the opportunity to ask questions and inquiries through internet.					
7	I can use the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.					
8	I see that e-learning achieves quality standards in university education.					
9	I feel that e-learning does not take into account individual differences among students.					
10	I see that e-learning is just a way to complete the curriculum.					
11	I have difficulties understanding the lecture through Class Room.					
12	I find it difficult to express my opinions and ideas in writing.					
13	I see that e-learning focuses only on the knowledge aspect.					
14	I can learn online from accessing the course easily.					
15	I feel like e-learning is raising my level of achievement.					
16	My studies through classroom evolve my intellectual skills.					
17	I see that e-learning achieves quality standards in university education.					

Thank you for your time.

Appendix B

1. What is your age?(years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 21	152	59.8	59.8	59.8
	22 - 25	55	21.7	21.7	81.5
	22-25	2	.8	.8	82.3
	Over 25	45	17.7	17.7	100.0
	Total	254	100.0	100.0	

2. What is your gender?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	159	62.6	62.6	62.6
	Male	95	37.4	37.4	100.0
	Total	254	100.0	100.0	

3. What is your current academic level?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fifth year	1	.4	.4	.4
	First year	11	4.3	4.3	4.7
	Fourth year(H2)	146	57.5	57.5	62.2
	Master	59	23.2	23.2	85.4
	Second year	10	3.9	3.9	89.4
	Third year	4	1.6	1.6	90.9
	Third year(H1)	23	9.1	9.1	100.0
	Total	254	100.0	100.0	

4. How many years have you been using computers? (years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	6.7	6.7	6.7
	2	11	4.3	4.3	11.0
	3	23	9.1	9.1	20.1
	4	13	5.1	5.1	25.2
	5	96	37.8	37.8	63.0
	6	44	17.3	17.3	80.3
	7	10	3.9	3.9	84.3
	8	6	2.4	2.4	86.6
	9	1	.4	.4	87.0
	10	13	5.1	5.1	92.1
	11	2	.8	.8	92.9
	12	1	.4	.4	93.3
	13	1	.4	.4	93.7
	14	2	.8	.8	94.5
	15	4	1.6	1.6	96.1
	16	2	.8	.8	96.9
	17	2	.8	.8	97.6
	18	1	.4	.4	98.0
	19	1	.4	.4	98.4
	20	4	1.6	1.6	100.0
	Total		254	100.0	100.0

5. How many years have you been using mobile phone? (years)						
		Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	1	5	2.0	2.0	2.0	
	2	5	2.0	2.0	3.9	
	3	9	3.5	3.5	7.5	
	4	6	2.4	2.4	9.8	
	5	31	12.2	12.2	22.0	
	6	107	42.1	42.1	64.2	
	7	10	3.9	3.9	68.1	
	8	10	3.9	3.9	72.0	
	9	5	2.0	2.0	74.0	
	10	22	8.7	8.7	82.7	
	11	3	1.2	1.2	83.9	
	12	2	.8	.8	84.6	
	13	7	2.8	2.8	87.4	
	14	7	2.8	2.8	90.2	
	15	19	7.5	7.5	97.6	
	18	2	.8	.8	98.4	
	20	4	1.6	1.6	100.0	
	Total		254	100.0	100.0	

6. Who taught you how to use the computer in the first place?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Brother	1	.4	.4	.4
	Family	2	.8	.8	1.2
	Father	3	1.2	1.2	2.4
	Friend	25	9.8	9.8	12.2
	My aunt	1	.4	.4	12.6
	My aunts	1	.4	.4	13.0
	My father	1	.4	.4	13.4
	My parents	1	.4	.4	13.8
	Myself	2	.8	.8	14.6
	Parents	1	.4	.4	15.0
	Selfstudy	5	2.0	2.0	16.9
	Teacher/Trainer	209	82.3	82.3	99.2
	Video	2	.8	.8	100.0
	Total	254	100.0	100.0	

7. What type of mobile device do you own? (Check all that apply)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Computer (Desktop, Laptop, Macbook, etc.)	7	2.8	2.8	2.8
	Mobile Phone	57	22.4	22.4	25.2
	Mobile Phone, Computer (Desktop, Laptop, Macbook, etc.)	178	70.1	70.1	95.3
	Mobile Phone, Computer (Desktop, Laptop, Macbook, etc.), Tablet	12	4.7	4.7	100.0
	Total	254	100.0	100.0	

8. How would you rate your typing skills? Please tick one that best applies.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	39	15.4	15.4	15.4
	Good	195	76.8	76.8	92.1
	Poor	10	3.9	3.9	96.1
	Very Good	9	3.5	3.5	99.6
	Very Poor	1	.4	.4	100.0
	Total	254	100.0	100.0	

9. How would you rate your web search skills? Please tick one that best applies.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	34	13.4	13.4	13.4
	Good	204	80.3	80.3	93.7
	Poor	4	1.6	1.6	95.3
	Very Good	12	4.7	4.7	100.0
	Total	254	100.0	100.0	

10. How would you rate your computer literacy (the ability to use the computer)? Please tick one that best applies.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	36	14.2	14.2	14.2
	Good	199	78.3	78.3	92.5
	Poor	10	3.9	3.9	96.5
	Very Good	9	3.5	3.5	100.0
	Total	254	100.0	100.0	

11. How would you rate your Internet literacy (the ability to use the Internet)? Please tick one that best applies?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	28	11.0	11.0	11.0
	Good	208	81.9	81.9	92.9
	Poor	4	1.6	1.6	94.5
	Very Good	14	5.5	5.5	100.0
	Total	254	100.0	100.0	

12. How would you rate your digital literacy (the ability to use digital technologies)? Please tick one that best applies?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	35	13.8	13.8	13.8
	Good	202	79.5	79.5	93.3
	Poor	8	3.1	3.1	96.5
	Very Good	7	2.8	2.8	99.2
	Very Poor	2	.8	.8	100.0
	Total	254	100.0	100.0	

Reliability Analysis Results

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.949	.950	4

Item Statistics			
	Mean	Std. Deviation	N
HS1. I can properly turn on and turn off a computer or mobile device.	3.97	.790	254
HS2. I understand the functions and operating simple features of the application, such as shifting pages (scroll), clicking navigation buttons (home, next), and adjusting the volume or screen brightness.	3.91	.841	254
HS3. I can install and uninstall simple applications or software.	4.00	.783	254
HS4. I understand the function of antivirus applications as a device security tool.	3.85	.844	254

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.960	.960	5

Item Statistics			
	Mean	Std. Deviation	N
ID5. I can choose search keywords and access simple information with the help of teachers from reliable sources such as official websites or digital reference books.	3.87	.775	254
ID6. I can explore simple information and optimize the information features provided in digital sources, such as QR codes, direct links, embedded sources, etc.	3.87	.799	254
ID7. I can use the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.	3.89	.732	254

ID8. I can choose search keywords and access simple information with the help of teachers from reliable sources such as official websites or digital reference books.	3.92	.731	254
ID10. I understand the use of the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.	3.89	.725	254

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.952	.952	3

Item Statistics			
	Mean	Std. Deviation	N
CC11. I can participate in class discussions using technology (e.g., sending answers via learning applications).	3.91	.812	254
CC12. I understand how to convey messages clearly and effectively through learning applications.	3.90	.724	254
CC13. I can explore the activity and participation in assignments through learning applications.	3.88	.756	254

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.928	.929	3

Item Statistics			
	Mean	Std. Deviation	N
DCC15. I understand the digital work, such as making simple drawings or photo collages.	3.86	.772	254
DCC16. I understand the digital content creation and how to select or use images, videos, or other copyrighted content (reference source).	3.86	.827	254
DCC17. I can create and share simple digital content.	3.86	.782	254

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.928	.928	5

Item Statistics			
	Mean	Std. Deviation	N
PSS18. I understand to sort information when inputting personal data on digital application requests (including application permissions).	3.84	.790	254
PSS19. I can explore the security risks of cyberbullying and the steps they take to protect themselves.).	3.83	.804	254
PSS20. I understand the compliance with school security policies or the digital learning environment (e.g. accessing digital information according to specified study hours, not accessing prohibited websites, etc.).	3.85	.778	254
PS21. I explore the technology problems they face. (Error, hang, not responding, application permissions).	3.75	.879	254
PS22. I use the digital problems to find solutions. (Error, hang, not responding, application permissions).	3.76	.875	254

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.901	.902	2

Item Statistics			
	Mean	Std. Deviation	N
CR23. I can use the digital devices such as computers, tablets, smartphones, or interactive whiteboards.	3.89	.831	254
CR24. I can create projects or presentations about the jobs they envision in the future.	3.88	.773	254
CR25. I can use the applications or software relevant to a particular job, such as word processing or spreadsheet applications.	3.80	0.781	254

Case Processing Summary			
		N	%
Cases	Valid	254	100.0
	Excluded ^a	0	.0
	Total	254	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.976	.977	18

Item Statistics			
	Mean	Std. Deviation	N
1. My interaction with the e-library is clear and understandable.	3.91	.746	254
2. E-learning would be easy for me to become skilled at using the e-library.	3.92	.678	254
3. I would find the E-library easy to use.	3.92	.709	254
4. I enjoy using a mobile application to learn.	3.93	.775	254
5. I can improve my learning skills by using internet. (i.e. improved educational skills from using e-learning).	3.98	.785	254
6. I have the ability to learn by using ICT devices. (i.e. improved learning from using e-learning).	3.87	.760	254
7. I have the opportunity to ask questions and inquiries through internet.	3.90	.718	254
8. I can use the information obtained to support the completion of assignments given on digital applications, such as quizzes, games, practice questions, etc.	3.88	.729	254
9. I see that e-learning achieves quality standards in university education.	3.94	.723	254

10. I feel that e-learning does not take into account individual differences among students.	3.85	.784	254
11. I see that e-learning is just a way to complete the curriculum.	3.80	.855	254
12. I have difficulties understanding the lecture through Class Room.	3.74	.896	254
13. I find it difficult to express my opinions and ideas in writing.	3.72	.910	254
14. I see that e-learning focuses only on the knowledge aspect.	3.83	.809	254
15. I can learn online from accessing the course easily.	3.88	.793	254
16. I feel like e-learning is raising my level of achievement.	3.93	.662	254
17. My studies through classroom evolve my intellectual skills.	3.89	.734	254
18. I see that e-learning achieves quality standards in university education.	3.92	.723	254