

The Readiness of Distance Learning Students for Digital Higher Education: A Case Study of the Open University in Thailand

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Abstract

Digital Higher Education is an essential part of Thailand's National Scheme of Education (2017-2036), which focuses on education transformation through digital technology. This study aimed to examine the readiness for digital higher education of distance learning students, and to explore essential skills they want to improve. A cross-sectional descriptive study of 271 distance learning students in Sukhothai Thammathirat Open University in Thailand was conducted in May 2023. A 25-item questionnaire containing three parts was administered. The content validation of the questionnaire by 3 experts was considered as 0.92 and the Cronbach's alpha reliability coefficient was found to be 0.87. Descriptive statistical methods were used in analysing the survey data. The result shows that Health readiness had the highest mean score (4.21, SD=0.16); followed by Digital learning devices (M=4.18, SD=0.32); Digital skills (M=4.05, SD=0.24); Study time allocation (M=4.00, SD=0.12); and Financial readiness (M=3.83, SD=0.18). The findings also indicated that the essential skills respondents want to improve include: Career skills (64.2%), Critical thinking skills and problem-solving skills (55.7%), Cooperation skills, teamwork and leadership (39.1%), Digital skills (29.2%), and Creativity and innovation skills (27%), respectively. The results of this study provide convincing evidence of the high level of readiness among distance learning students as well as top 5 skills students need for higher education in the digital age.

Keywords: Readiness, Digital Higher Education, Distance Learning, Student, Thailand

1. Introduction

The challenges of the 21st century are driven by external forces such as the digital revolution, the needs of the workforce for 21st century skills, and problems with the education system caused by globalization. Thailand thus urgently needs to reform national education to meet future challenges as education is the main mechanism for national development that responds to the 20-year national strategic framework and the 12th National Economic and Social Development Plan (2017-2021) under the Constitution of the Kingdom of Thailand (2017-2036), that leading the country to higher prosperity, greater wealth, and sustainability over the next 20 years (OEC, 2017).

In recent years, the field of education has witnessed a significant transformation with the advent of digital technologies. Distance learning, in particular, has emerged as a popular alternative to traditional classroom-based education, providing learners with flexibility, accessibility, and convenience. The invention of the internet and the World Wide Web has forced educational institutions to adapt their teaching and learning techniques to meet the learner's demands in providing an ideal learning environment. (Xu and Ebojoh, 2007). Digital transformation has become a priority for higher education institutions, and this is a natural and necessary process for organizations that claim to be leaders of change and be highly competitive in their domain. Higher education institutions have been permeated by the technological advancement that the Industrial Revolution 4.0 brings with it, and forces institutions to deal with a digital transformation in all dimensions (Benavides et al, 2020).

Distance learning students have become an integral part of digital higher education. Digital higher education provides students with flexible learning opportunities, and distance learning students benefit from the ability to access educational resources and participate in courses from any location. However, distance learning students face several challenges in digital higher education, including digital literacy, access to technology, and support services. As the demand for online education continues to grow, it becomes crucial to examine the readiness of distance learning students for digital higher education, which is an essential part of Thailand's National Scheme of Education (2017-2036).

Sukhothai Thammathirat Open University (STOU) is one of two open universities in Thailand. Since its establishment, STOU was the first university in Southeast Asia to use the distance learning system that enables people throughout Thailand and beyond to receive education without having to be physically present in a classroom. STOU strives to be a world-leading open university utilizing technology and educational innovation to provide lifelong education for all (STOU, 2023). As the demand for online education continues to grow, it becomes crucial to examine the readiness of distance learning students for digital higher education, which is an essential part of Thailand's National Scheme of Education (2017-2036). By understanding the factors that contribute to their readiness, educators, policymakers, and institutions can better design effective online learning to meet the diverse needs of students.

2. Literature Review

2.1. Current State of Digital Higher Education:

Higher education is a source of production and development of high-level manpower. It is also a source of knowledge, technology, and innovation, which is a crucial factor in driving various sectors to lead the country forward in a modern way. Digital higher education has become an essential part of the educational system. The demand for digital higher education has increased due to the flexibility it provides to students. According to the National Center for Education Statistics (NCES), the number of students enrolled in distance learning courses has increased from 1.6 million in 2002 to 6.7 million in 2016 (National Center for Education Statistics, 2018). Digital higher education has become a popular choice for students due to its flexibility, accessibility, and cost-effectiveness.

Digital technology tends to support lifelong learning in higher education, people of all ages receive more opportunities in education through digital technology. The main indicators include modern network technologies which satisfies the needs of the learners effectively, and a high-quality internet access at every educational institution (OEC, 2017). Institutions of higher education that want to remain relevant in the 21st century turn to technology to improve their teaching, learning, student management, and faculty performance (Zitter, 2020). Before COVID-19 crisis, online education programs with fully digital technology embedded in the curriculum were rather rare. Only a few educational institutions, such as open universities had established fully digital models of teaching and learning (Laufer et al., 2021). However, the unexpected coronavirus pandemic situation sparked an ongoing debate about the importance of digital transformation of higher education institutions worldwide and the risks or opportunities of normalizing online teaching (Zaimakis & Papadaki, 2022).

On the positive side, digitalisation delivers a beneficial impact on the quality of life and social progress, with the internet opening up participation in the knowledge society by decentralizing and democratizing information. However, there are some barriers for the successful implementation of digital higher education thus encompass a variety of factors, from digital divides among staff caused by lack of training, reluctant attitudes, or systemic exclusion, to inequalities among students which are heightened during the COVID-19 pandemic (Castañeda & Selwyn, 2018; Laufer et al., 2021). Furthermore, various past studies on the effectiveness of distance learning have been mixed, concluding that investing solely in digital technology cannot actually make learning more effective. Due to the ever-changing business environment in the 21st century, employers have raised their concerns about the need for a future workforce with a different set of skills that includes: thinking skills, communication skills, digital skills, teamwork and flexibility, ethics and responsibility, ability to study independently, and knowledge management. Moreover, desired employees should have the ability to deal with difficult situations as well as well-rounded skills from different areas (Bates, 2015; Raziana et al., 2022).

2.2. Readiness of Distance Learning Students

Readiness is defined as the state of being prepared for something about to be done or experienced. Individuals learn best when they are physically, mentally, and emotionally ready to learn. Basic factors that can improve the learning abilities of the students include skill, competency and tendency to utilize technology (Jones, 2012). Learner readiness is a prerequisite for further education. Learning goals can be achieved when students are well supported by their readiness to face the situation. In this new era of education, digital technologies play an important role for improving education quality in various ways. Digital readiness encompasses cognitive skills and digital proficiency. For being able to digitally ready, students are required to use technology for academic work to meet educational objectives. The students who use digital technology in the learning process and can do a critical evaluation of digital culture around learning are more likely to have better academic outcomes (Winarso, 2016; Hong & Kim, 2018; Huang Y, 2022).

Distance learning students have become an integral part of Digital higher education. However, distance learning students face several challenges in digital higher education, including digital literacy, access to technology, and support services. Distance learning students need to have sufficient digital literacy skills, access to technology, and support services to succeed in digital higher education. The study concludes that educational institutions need to provide distance learning students with the necessary resources and support services to succeed in digital higher education (Kulal & Nayak 2020). Thus, in terms of education policy, special attention needs to be paid to the key factors that influence students' learning experiences and readiness for online learning, particularly in terms of available technological devices, adequate digital technology skills and appropriate home-learning environment. The administrators and academic staffs should understand the impact of related factors on students' learning experience in order to better redesign integral pedagogies and more inclusive teaching and learning practices in digital higher education (Aristovnik et al. 2020; Zaimakis & Papadaki, 2022).

2.3. 21st century skills for learners

The term “21st-century skills” is commonly used to refer to a broad set of knowledge, skills, work habits, and character traits that are believed to be critically important to success in the current world, particularly in contemporary careers and workplaces. 21st century skills can be applied in all academic subject areas, and in all educational, career, and civic settings throughout a student's life (The Glossary of Education Reform, 2023). The international research project Assessment and Teaching of 21st Century Skills (ATC21S) grouped 10 skills into four categories: 1) ways of thinking (creativity and innovation; critical thinking, problem-solving, and decision-making; learning to learn and metacognition), 2) ways of working (communication; collaboration), 3) tools for working (information literacy; ICT literacy), and 4) living in the world (citizenship; life and career skills; personal and social responsibility) (Binkley et al., 2012; Van Laar et al., 2020). The Organisation for Economic Co-operation and Development (OECD) has categorized 21st-century skills in terms of three dimensions: information, communication, and ethics and social impact (Ananiadou & Claro, 2009). Panich, W. (2013) states that education in the 21st century that everyone must learn from kindergarten to university and throughout life consists of: 1) Reading 2)

Writing 3) Arithmetic 4) Critical thinking & problem solving 5) Creativity & innovation 6) Cross-cultural understanding 7) Collaboration, teamwork & leadership) 8) Communications, information & media literacy 9) Computing & ICT literacy, and 10) Career & learning skills. Van Laar et al. (2017) conducted a systematic literature review to synthesize academic literature related to 21st century skills and digital skills. Their results concluded that the digital component can be integrated into 21st-century skills.

In summary, previous studies have shown the various components of 21st century skills to enable students to successfully participate in the global economy. Therefore, the focus of this study was to examine the readiness for digital higher education of distance learning students, and to explore essential skills they want to improve.

3. Research Method

3.1. Subjects, Materials, and Procedures

This cross-sectional study was conducted in May 2023 at Sukhothai Thammathirat Open University, Thailand. A total of 271 students from the target population of 321 students who registered in the professional experience practicum participated in the survey. Qualifications of those who can attend the professional experience practicum must have the last 1-3 set of subjects left to graduate. This target group was therefore close to graduation and had the opportunity to pursued further education.

The research instrument used was a self-administered questionnaire based on the objectives of the research which consisted of three sections:

- Section A: Socio-demographic characteristics (gender, age, major field of study, and most used learning device).
- Section B: Items related to learner readiness for digital higher education in five dimensions: digital learning devices, digital skills, study time allocation, finance, and health.
- Section C: Items related to the essential skills that students want to improve.

The content validation of the questionnaire by experts was considered as 0.92 and the Cronbach's alpha reliability coefficient was found to be 0.87. This study was conducted in accordance with the principles of the Declaration of Helsinki, and informed consent were obtained from each participant in the study.

3.2. Data Analysis

The collected data were statistically analysed to determine the percentage, mean, and standard deviation. As the questionnaire used five-point Likert scale statements asking for participants to indicate their level online learning readiness, the ranges of mean scores used to interpret the data are presented in table 1 (Best & Kahn, 2006):

Table 1. Interpretation of the readiness level

Mean Score	Interpretation of Readiness Level
4.51-5.00	Very high
3.51-4.50	High
2.51-3.50	Moderate
1.51-2.50	Low
1.00-1.50	Very low

4. Findings and Discussion

4.1. Demographic characteristics of the respondents

The demographic details of the respondents for this study are illustrated in Table 2. Most of the respondents were female (77.8%) aged between 21-40 years old. About one-third of respondents majored in occupational health and safety (36.1%), followed by early childhood development (35.1%), management science (22.9%), and information science (5.9%).

Table 2. Demographic characteristics of the respondents

Demographic characteristics		N (%)
Gender	Male	59 (21.8)
	Female	211 (77.8)
	Prefer not to answer	1 (0.4)
Age (years)	21 - 30	119 (43.9)
	31 - 40	101 (37.3)
	41 - 50	46 (17.0)
	51 and above	5 (1.8)
Major field of study	Occupational Health and Safety	98 (36.1)
	Early Childhood Development	95 (35.1)
	Management Science	62 (22.9)
	Information Science	16 (5.9)
Most used learning device	Desktop computer	24 (8.9)
	Notebook/Laptop	132 (48.7)
	Tablet	14 (5.2)
	Smartphone	76 (28.0)
	Traditional writing instruments (e.g. pen, pencil, etc.)	25 (9.2)

Table 2 shows that there is a higher number of female respondents compared to male respondents with 77.8% and 21.8% respectively. Other than that, 43.9% and 37.3% were respondents between 21-30 years and between 31-40 years old respectively, followed by 41-50 years old with 17.0%. Approximately 36.1% and 35.1% of the respondents are undergoing the Bachelor Degree in Occupational Health and Safety and Early Childhood Development respectively. In terms of learning tools, the large majority of respondents (90.8%) reported that their most used learning devices are mobile devices: notebooks (48.7%), smartphones (28.0%), and tablets (5.2%), respectively. While only 9.2% still use traditional stationery such as pens, pencils, etc. The findings are connected to prior studies that indicated the benefits of mobile devices include notebooks/laptops, smart phones, tablets, and e-readers. These devices can be used either as a communication tool or an instructional tool in teaching. Mobile devices provide vital learning-related notices and enhance learner-learner and learner-instructor interaction. A notable advantage of such devices is its ability to permit learner-content alliance in real time and remotely (Deng, Benckendorff & Gannaway, 2020; Idoga et al, 2022).

In addition, the results of this study found that notebooks/laptops were the most used learning device among the participants. This may be because nearly half (43.9%) of the study participants were between the ages of 21 and 30, who differ in their use of technology compared to older adults, who may prefer tablet technology due to the portability and usability they provide (e.g., adjustable font or icon size), especially to those who have a wide range of motor and visual abilities (Chan et al., 2016).

4.2. The readiness for digital higher education of the respondents

The results are presented in Table 3 which shows that health readiness had the highest mean score (M=4.21, SD=0.16); followed by readiness for digital learning devices (M=4.18, SD=0.32); digital skills (M=4.05, SD=0.24); and study time allocation (M=4.00, SD=0.12). Financial readiness had the lowest mean score among all the readiness dimensions (M=3.83, SD=0.18).

Table 3. Students’ readiness for digital higher education

Readiness dimensions	Mean (SD)	Level
Digital learning devices	4.18 (0.32)	High
Digital skills	4.05 (0.24)	High
Study time allocation	4.00 (0.12)	High
Finance	3.83 (0.18)	High
Health	4.21 (0.16)	High

The findings of this study evidenced that the respondents rated the dimension of "Health readiness" the highest. This may be explained by the majority of the respondents being in their early adulthood, between the ages of 21 and 40, when they were at their fullest physical strength with relatively complete intellectual, emotional, and social development. In addition, the majority of respondents studied in health-related fields, including Occupational Health and Safety and Early Childhood Development. Thus, they may have the knowledge to take care of their own health and have relatively high health readiness. Besides that, the results revealed that the respondents had the high level of readiness in "Digital learning devices" and "Digital skills" dimensions. These findings are in line with previous studies (Kim et al. 2019; Händel et al., 2020; Osman et al., 2022), which concluded that digital readiness is an important factor that can enhance learning capabilities of students in the distance education system. Additionally, digital readiness is a positive signal and is a motivator for increasing the work productivity of students. Digital readiness enhances students’ technology-related knowledge, skills, and competencies, which can play a constructive role in meeting their academic expectations.

Although the results indicated that respondents had high levels of readiness in study time allocation and finances, these two dimensions had the lowest mean scores of all readiness dimensions. This may be due to the fact that the respondents were students in Sukhothai Thammathirat Open University, which managed teaching and learning by using the distance education system. Students are people of all age groups, able to study without leaving their work (Sungsri, 2015). Most of the students are employed. As a result, they tend to have difficulty allocating time to study. In addition, the Covid-19 disease began to spread worldwide by the end of 2019. The pandemic has an impact not only on health but also the other fields including the financial readiness of students towards digital higher education. This finding is supported by Gewalt et. al (2022), which suggested that one of the factors influencing students' E-readiness can be the individual's financial status (socio-economic status), which should be considered in future research.

However, the results of this study indicated a high level of learners’ readiness for digital higher education in all dimensions. These findings thus support the importance of digital transformation in higher education to meet the needs of 21th century learners.

4.3. The essential skills that respondents want to improve

The obtained results are presented in Figure 1 which shows that the top 5 skills respondents want to improve include: Career skills (n = 174, 64.2%), Critical thinking skills and problem-solving skills (n = 151, 55.7%), Cooperation skills, Teamwork and leadership (n = 106, 39.1%), Digital skills (n = 79, 29.2%), and Creativity and innovation skills (n =73, 27%), whereas Arithmetic skills (n =42, 15.5%) and Intercultural/Inter-paradigm understanding skills (n =39, 14.4%) were the least required.

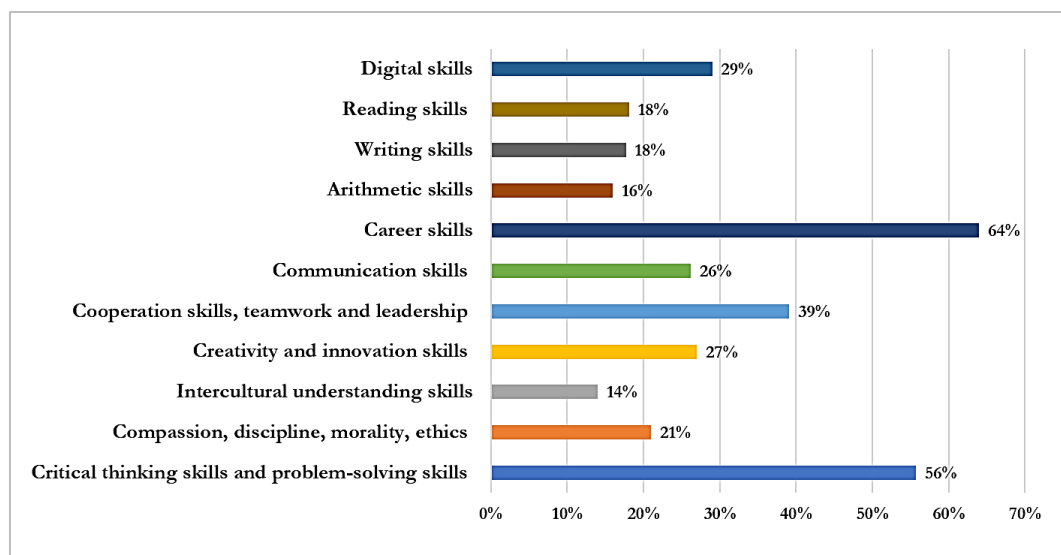


Figure 1. Essential skills that respondents want to improve

The results in the present study revealed that the most important skills that the respondents want to improve was “Career skills”, which are the sum of professional knowledge, skills, and experiences that enable the individual to perform a job effectively, influencing success at work, income, and career progression (Indeed, 2023). Besides, this finding may lend support to the relevant studies (Fuchs, 2010; Van Laar et al., 2020) in that workforces need to be capable of continuously adapting to shifting job requirements related to new skill-intensive technologies. For increasing productivity, new technology is developed, and as a consequence, technology is increasingly replacing manual labour and being integrated into most aspects of work. As workplaces have become more complex and supported by information and communication technology, more jobs require technical skills.

The results also evidenced that the respondents rated the three factors of Critical thinking skills and problem-solving skills; Cooperation skills, Teamwork and leadership; and Digital skills at a high level, respectively. The finding is in line with Rutkowski (2015) which indicated that employers seek not only technical, job-specific skills but also cognitive skills (such as literacy, numeracy and problem solving) and adequate socio-behavioural skills (such as communication, teamwork and leadership). In particular, the digital skills demand among the respondents is in line with a Washington, D.C. report (2023) that found strong demand for digital skills across every industry and in almost every occupation, including entry-level and frontline positions (NSC, 2023). Likewise, language skills such as reading and writing skills which are essential for communication in global or culturally diverse workplaces. Through writing the students can express their ideas and thoughts into written form (Anggraeni & Jolanda, 2018).

On the other hand, although the skills of compassion, discipline, morality, ethics and intercultural understanding were rated relatively low by the respondents, they are all important skills of the desired workforce in today's world. Higher education institutions play a vital role in producing graduates with good academic qualifications, balanced with good moral and ethical values (Raziana et al., 2022). As the future workforce, they need to have all the essential skills and values to face future challenges in 21st century.

5. Conclusion

This study focuses on the readiness for digital higher education of distance learning students, and the essential skills they want to improve. A cross-sectional descriptive study was conducted on 271 distance learning students of Sukhothai Thammathirat Open University in Thailand by using a validated self-administered questionnaire. The results showed that health readiness had the highest mean score, followed by readiness for digital learning devices, digital skills, study time allocation, and financial readiness, respectively. The top 5 skills respondents want to improve included: (1) Career skills, (2)

Critical thinking skills and Problem-solving skills, (3) Cooperation skills, teamwork and leadership, (4) Digital skills, and (5) Creativity and innovation skills. The study offers a holistic view of students' readiness for digital higher education, as well as essential skills that should be developed in line with the needs of distance learning students. These findings can be used to promote successful learning outcomes in higher education.

The limitation of this study was that 271 participants were selected from four different majors and some majors had relatively few students. Therefore, future research may be conducted on samples in other fields of study to generalize the results to a larger group.

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