

SELF-EFFICACY, SERVICE QUALITY AND ONLINE LEARNING ACCEPTANCE IN DISTANCE UNIVERSITY EDUCATION

OYELEKE, JOHNSON TUNDE

Department of Psychology, Lead City University Ibadan, Nigeria

oyeleke.johnson@lcu.edu.ng

&

IBRAHIM, BASHIRAT ABIODUN

Department of Psychology, University of Ilorin, Nigeria

[ORCID: 0000-0002-7976-5975](https://orcid.org/0000-0002-7976-5975)

ibrahim.ab@unilorin.edu.ng

ABSTRACT

This study examined Perceived Self-efficacy and Service Quality as Predictors of Online Learning Acceptance among Online Distance Learning Students of the University of Ibadan. A cross-sectional survey design was employed to gather data from 473 respondents. Copies of structured questionnaires made up of Perceived Self-efficacy, Service Quality and Online Learning Acceptability were utilized. T-tests for independent samples, zero-order correlation and multiple regressions were used in analyzing data at <.05 level of significance. Results indicate that participants with a high level of self-efficacy scored significantly higher on online learning acceptance $t(471) = 14.896$. Service quality predicted online learning acceptance $t(471) = 29.311$. Self-efficacy and service quality jointly predicted online learning acceptance ($R^2 = .765$; $F_{2, 470} = 765.389$), and there was a significant relationship between service quality, self-efficacy and online learning acceptance ($p < .01$). The findings underscore the significance of factors such as self-efficacy and perceived service quality in shaping online learning acceptance. Addressing digital literacy and ensuring high-quality support services are recommended to enhance student readiness and satisfaction in online education. Other recommendations include acknowledging diverse student experiences; adopting an intersectional approach in research; conducting longitudinal studies for lasting impact; and continually evaluating programs for adaptation.

Keywords: Online distance learning, self-efficacy, service quality, online learning acceptability.

Introduction

In Nigeria, like many developing countries, e-learning has become an integral part of the national effort to improve the level of literacy. It is the hope of stakeholders in education that online learning or e-learning will provide a pathway to education for students who are unable to access higher education either through age or financial difficulties. Secondly, online education has been viewed as a necessary instrument to raise the level of literacy and enhance productivity for the country to become more competitive and viable among the comity of nations. Currently, higher education institutions in Nigeria are licensed by the Nigeria Universities Commission (NUC) to operate Online Distance Learning (ODL) mode of study, all of which are public institutions. Each of these institutions provides funding for infrastructure projects. For example, the University of Ibadan has established Internet services

for the institution and developed an e-learning portal to meet the needs of students both regular and those on ODL mode of study. Online education or e-learning is uniquely suited to adult education as participants can access their lessons, communicate with the class or teacher, and collaborate with others wholly online. Despite many improvements, online education still faces policy, standards and administrative structure challenges.

In practice, researchers have noted goal setting, limited training and support (for educators and students), inconsistent Internet quality, and pedagogy as noteworthy obstacles to developing an e-learning program (Pagram & Pagram, 2006; Siritongthaworn, Krairit, Dimmitt, & Paul, 2006). Diffusion research examines characteristics (i.e. relative advantage, compatibility, complexity, trialability, and observability) at some point in time as technologies are adopted (Rogers, 1983). New technologies and systems are often studied to learn how to make the new system or technology more usable, or compatible with current practices.

The current study therefore examines undergraduate students' Internet self-efficacy and perceived service quality as determinants of online learning acceptance in the University of Ibadan. As noted, e-learning innovation research includes the study of acceptance of online learning after an innovation has been adopted for classroom use. The current research examines the perceived service quality and internet self-efficacy of a group of undergraduate students on ODL mode of study at the University of Ibadan. A survey modelled on the unified theory of acceptance of technology (Venkatesh, Morris, Davis, & Davis, 2003), a framework of multiple theories that allow for sophisticated analysis of factors that may produce uncertainty about adopting the innovation was adopted for this study. The results offer some insights which may lead to more effective policies on ODL mode of study. If we can determine which factors contribute most significantly to online learning acceptance, then we can redesign or modify programs that will attract distance-teaching students of higher education to pursue the undergraduate education required to develop their knowledge.

Online Learning Acceptance

Distance learning has become more technology-based. Distance learning often incorporates several forms of instructional media—print, audio, video, computers, collaborative systems, and the Web. The computer and the network have linked the teacher and the student through word processing, e-mail, collaboration, chat rooms and virtual environments. E-learning is said to be the fourth generation of distance education in the United State (US). (Taylor, 2001) (See Table 1.1)

Distance learning has evolved through four generations, and the development of the four generation models has been paralleled with trends in pedagogy and the development of learning paradigms. The first generation was the introduction of correspondence education in the 1800s, especially its use by land grant universities beginning in the latter part of the century to deliver agricultural education to farmers in rural areas. The second generation came with the introduction of television to deliver educational opportunities to all people in their homes. This stage expanded with the introduction of public broadcasting of telecourses in the 1970s and 1980s, reaching its apex with the quality courses of the Annenberg/Corporation for Public Broadcasting (CPB) Project in the 1980s and early 1990s. The third generation emerged in the late 1980s when colleges and universities sporadically

began to offer online courses while the Internet was still largely funded by the U.S. government and was a “club” of university faculty and military personnel. This was an era of experimentation and searching for ways to use the reach of the Internet while still taking advantage of all that had been learned from the two preceding stages. At present, distance education in the U. S. is in its fourth generation with the introduction of a complete “virtual program” of study (Dirr, 1999).

Technological advances since the 1990s have led to increasing integration of web-enhanced and web-based resources into instructional practices. It is difficult to find a higher education course that does not employ or take advantage of technology in some way. The number of online courses offered by different colleges and universities is growing at an astonishing rate. In recent years, the growth of online educational programmes has been fueled by the advancement of the Internet and modern information technology that changed the face of education (Sher, 2008). The World Wide Web (www) has become a valuable educational means and offers new educational experiences for students, which were not earlier possible. Due to the advancement of the latest technology, online education has emerged as an alternative or at least a considerable supplement to traditional modes of teaching and learning (Waits & Lewis, 2004). Especially in higher education, online education is increasingly becoming common and emerging as an opportunity for delivering entire education online (Johnson, 2004).

In the academia, through online classes, universities now can provide distance learning opportunities for students--- full-time or part-time, traditional or non-traditional and international or local, who perhaps have had limited access to advanced educational opportunities (Bartley et al., 2004). During the 2000-2001 academic year, 56 per cent of all 2-year and 4-year degree-granting institutions offered online courses, while an additional 12 per cent were planning on offering online courses within the following 3 years; this included 127,400 online courses attracting an enrollment of over 3 million (National Center for Educational Statistics, 2003). Some educators are exploring the use of more emerging technologies such as mobile technologies and Second Life into their teaching practices, whereas many others are incorporating technologies such as Moodle, WebCT, or Blackboard to create hybrid course experiences.

The rising demand and growing consumer experience with flexible education programs to support career development and lifelong learning has increased people’s expectations for quality instruction, effective educational outcomes, and finally learning satisfaction (Debourgh, 1999). This study was conducted to address students’ satisfaction in relevant to their distance learning experiences at the University of Ibadan.

Predictors of Online Learning Acceptance

Previous studies have determined factors that influence online learning acceptance in the ODL mode of study (Reinhart & Schneider, 2001; Sahin, 2007). The framework of this study used Internet self-efficacy, service quality and online learning acceptance.

Expanded from the self-efficacy theory in Psychology (Bandura, 1993), researchers in education have indicated that efficacy beliefs positively influence achievement and

persistence related to specific instructional tasks. The Internet self-efficacy scale refers to the belief in one's capability to organize and execute Internet-related actions required to accomplish assigned tasks (Eastin & LaRose, 2000).

There are two reasons to include Internet self-efficacy as a predictor of online learning acceptance. First, online learning relies on Internet delivery through which various types of activities take place such as group discussions, collaborative projects, communication with instructor or classmates, and so on (Rodriguez, 2006). It seems important for online learners to possess high Internet self-efficacy to complete required tasks for an online course delivered through the Internet. Secondly, Internet self-efficacy, as one of the three self-efficacy constructs in web-based instruction, is less addressed than academic self-efficacy or computer self-efficacy. Studies on the impact of Internet self-efficacy on student online learning acceptance are scarce and inconclusive. For example, Eastin and LaRose (2000) indicated that Internet self-efficacy is positively correlated with expected outcomes including entertainment, social, and informational outcomes.

Rodriguez Robles (2006) found Internet self-efficacy is not a significant predictor of student satisfaction in a study involving undergraduates and graduates who attended a web-based distance education course from a university in the United States. However, Chang & Tung (2008) perceived system quality and computer self-efficacy to be among critical factors for students' acceptance and behavioural intentions to use online learning course websites.

Likewise, Abu-Al-Aish & Love (2013), found the quality of service among factors that influence behavioural intention to use mobile learning, while, perceived self-efficacy serves as an antecedent to online learning acceptance, (Lee & Mendlinger, 2011).

Methods

Research Design, Setting and Participants

The study is a cross-sectional survey. Participants for this study were all undergraduate students at the University of Ibadan who enrolled in classes offered in the ODL mode of study. The accessible sample surveyed in this study was a convenience sample of 473 undergraduate students in ODL mode of study enrollments for 2014/2015 sessions. The participants had spent at least two sessions on this method of learning

Data Collection Instruments

The inventory is made up of four subsections signified as separate sections by the letters A through D. Section A is designated for the participants' "Personal Information". Participants were asked to give their sex, age, marital status, job status, occupation, level of study and department.

In section B, students were asked to evaluate how "perceived self-efficacy" was to their own personal beliefs on the topic. The general self-efficacy scale developed by Schwarzer, and Jerusalem (1995) was used to elicit responses from the respondents. Responses were measured on a 4-point likert scale ranging from "Not at all true" (1) to "Exactly true" (4).

Section C was the second part to evaluate the participants, and to what extent the service quality of ODL management of the University of Ibadan correlates with their satisfaction. A 6-point Likert scale was adapted using the SERVQUAL model (Parasuraman et al., 1990). Participants response includes “Very infrequently” (1) on the scale and “Very frequently” being (6).

Lastly, section D inventory was online learning acceptance developed by Smith, Murphy and Mahoney (2003), to measure how effectively the students communicate with their classmates and lecturers electronically. This section evaluated the participants using a 4-point Likert scale “Strongly agree” (1) and “Strongly disagree” (4). The conceptualization of the study aims to enhance strategy measures for student satisfaction at the University of Ibadan.

Results

Hypothesis One

Female participants will score significantly higher on the measures of online learning acceptance than their male counterparts among distance learning students of the University of Ibadan. The hypothesis was tested with a t-test for the independent samples and the result is presented in Table 1.

Table 1: Summary of t-test for the independent samples showing the influence sex on online learning acceptance

	Sex	N	Mean	S.D	df	t	P
Online learning acceptance	Female	47	30.34	25.30	471	.817	>.01
	Male	426	33.63	26.31			

The results in Table 1 indicate that female participants did not score significantly higher on online learning acceptance than their males among distance learning students of the University of Ibadan. However, female participants recorded a mean of (30.34) and male participants recorded a mean score of (33.63). This result implies that there is no significant difference in the sex of participants on the measures of online learning acceptance among the study sample. Therefore, the result did not confirm the stated hypothesis and it is rejected in this study.

Hypothesis Two

Participants with high levels of self-efficacy will score significantly higher on the measures of online learning acceptance than participants with low levels of self-efficacy among distance learning students of the University of Ibadan. The hypothesis was tested with a t-test for the independent samples and the result is presented in Table 2.

Table 4.2: Summary of t-test for the independent samples showing the influence level of self-efficacy on online learning acceptance

Self-efficacy			N	Mean	S.D	df	T	P
Online learning acceptance	Low		41	18.76	13.63	471	-14.896	<.01
	High		32	48.40	27.59			

The results in Table 2 indicated that participants with a high level of self-efficacy scored significantly higher on online learning acceptance than participants with a low level of self-efficacy $t(471) = -14.896$; $p < .01$). However, participants with a high level of self-efficacy recorded a mean of (48.40) and participants with a low level of self-efficacy recorded a mean score of (18.76). This result implies that there is a significant difference in the level of self-efficacy. Hence, the result confirmed the stated hypothesis and it is accepted in this study.

Hypothesis Three

Participants with a high level of perceived service quality will score significantly higher on the measures of online learning acceptance than participants with a low level of perceived service quality. The hypothesis was tested with a t-test for the independent samples and the result is presented in Table 3.

Table 3: Summary of t-test for the independent samples showing the influence level of perceived service quality on online learning acceptance

Perceived service quality		N	Mean	S.D	df	t	P
Online-learning acceptance	Low	61	21.58	13.91	471	-29.311	<.01
	High	12	71.08	20.17			

The results in Table 3 indicated that participants with a high level of perceived service quality scored significantly higher on online learning acceptance than participants with a low level of perceived service quality $t(471) = -29.311$; $p < .01$). However, participants with a high level of perceived service quality recorded a mean of (71.08) and participants with a low level of perceived service quality recorded a mean score of (21.58). This result implies that there is a significant difference in the level of perceived service quality. Hence, the result confirmed the stated hypothesis and it is accepted in this study.

Hypothesis Four

Self-efficacy and perceived service quality will predict significant joint and independent influence on online learning acceptance among distance learning students of the University of Ibadan. This hypothesis was analyzed using multiple regressions and the result is presented in Table 4.

Table 4: Summary of Multiple Regressions showing the independent and joint prediction of self-efficacy and perceived service quality on online learning acceptance

Variable	Beta	t-value	Sig	R	R ²	F	P
Self-efficacy	.036	1.142					<.05
			<.01	.875	.765		
Perceived service quality	.849	26.725					<.01

Dependent variable: online learning acceptance

The results in Table 4, showed that self-efficacy and perceived service quality predicted 77 per cent significant joint influence on online learning acceptance {R = .875; R² = .765; F (2, 470) = 765.389; p<.01} However, the remaining 23 per cent can be attributed to other variables not considered in this study. Similarly, the analysis of the independent prediction showed that perceived service quality only had a significant independent prediction on online learning acceptance ($\beta = .849$; $t = 26.725$; $p < .01$) among distance learning students of the University of Ibadan. This result implies that self-efficacy and perceived service quality predicted significant joint and independent influence in online learning acceptance. Therefore, the result is supported by the stated hypothesis and it is accepted in this study.

Hypothesis Five

Service quality and self-efficacy will have a significant relationship with online learning acceptance among distance learning students of the University of Ibadan. The hypothesis was analyzed with zero order correlation statistics and the result is presented in Table 5.

Table 5: Zero-order correlation showing the relationship between service quality, self-efficacy and online learning acceptance

VARIABLES	1	2	3	X	SD
1. Service quality	-	.710**	.874**	33.24	8.61
2. Self-efficacy		-	.639**	15.90	6.25
3. Online learning acceptance			-	33.30	4.64

**. Correlation is significant at the 0.01 level (1-tailed).

The results in Table 5 showed that there is a significant relationship between service quality, self-efficacy and online learning acceptance at ($P < .01$); service quality significantly correlated with online learning acceptance ($r = .874$; $p < .01$) and the relationship is strong and in a positive direction; self-efficacy significantly correlated with online learning acceptance ($r = .639$; $p < .01$) and the relationship is very strong and in positive direction. In addition, service quality significantly correlated with self-efficacy ($r = .710$; $p < .01$) and the relationship is very strong and in a positive direction. This result implies that there is a strong and positive relationship between service quality, self-efficacy and online learning acceptance. Therefore the result supported the stated hypothesis and it is accepted in this study.

Discussions

This research examined the relationship between three independent variables and student satisfaction and determined the degree to which student satisfaction was predicted. The

results show that there is a significant relationship between service quality, self-efficacy and online learning acceptance; service quality significantly correlated with online learning acceptance; self-efficacy significantly correlated with online learning acceptance. In addition, service quality significantly correlated with self-efficacy. This result implies that there is a strong and positive relationship between service quality, self-efficacy and online learning acceptance.

According to existing literature, there is an array of variables associated with student satisfaction with online learning acceptance (Barnard et al., 2008). Considering the number of participants needed for analysis, this study limited the number of predictors to three variables as discussed in the literature review.

Online learning acceptance results indicated that female participants did not score significantly higher on online learning acceptance than males. This result indicated that there is no significant difference in the sex of participants on the measures of online learning acceptance among the study sample. This implies that both sexes are equal in their level of acceptance of the ODL mode of study. However, it is important to recognize potential underlying factors influencing this outcome. One crucial factor to consider is the participation rates of male and female students in distance learning programs, which may vary due to disparities in access and participation. Despite efforts to promote gender equity in education, these disparities persist, particularly in specific regions and cultural contexts (UNESCO, 2022). Future research could investigate the reasons behind gender disparities in participation rates and their implications for online learning acceptance.

In the case of self-efficacy, it is revealed in the results that participants with high levels of self-efficacy scored significantly higher on online learning acceptance than participants with low levels of self-efficacy. These findings are in tandem with the conclusion of Raaij, & Schepers (2008) that programme managers in education should not only concern themselves with basic system design but also explicitly address individual differences between virtual learning environment users. The difference in online learning acceptance based on self-efficacy levels emphasizes the importance of digital literacy and technological skills in distance education (Ally, 2004). Higher self-efficacy enables individuals to navigate online platforms confidently, engage with digital resources effectively, and address technical issues. Therefore, institutions should prioritize the development of digital literacy to better prepare students for online learning environments.

The findings regarding perceived service quality underscore the pivotal role of institutional support and infrastructure in fostering student engagement and satisfaction in online learning (Martens et. al., 2020). Participants who perceive online distance education as providing high-quality services are more likely to engage actively with course materials, interact with instructors and peers, and persist in their studies. Therefore, institutions must invest in robust support systems, responsive communication channels, and user-friendly interfaces to enhance perceived service quality and promote positive learning experiences in online environments. Moreover, it's crucial for institutions to regularly solicit feedback from students and incorporate their input into ongoing improvements to ensure that online learning environments remain responsive to evolving needs and expectations (Allen & Seaman, 2013).

This iterative approach to quality assurance can help cultivate a culture of continuous improvement and accountability in distance education programs, ultimately benefiting students and enhancing their overall learning outcomes.

The strong positive relationships identified between service quality, self-efficacy, and online learning acceptance underscore the importance of holistic approaches to course design and pedagogy (Garrison & Kanuka, 2004). Educators and instructional designers should prioritize the integration of supportive services, interactive learning activities, and opportunities for student reflection and collaboration in online courses. By enhancing service quality and fostering self-efficacy through learner-centred approaches, institutions can create engaging and effective online learning environments conducive to student success.

Conclusion and Recommendations

In conclusion, the findings of this study contribute to our understanding of the multifaceted nature of online learning acceptance among distance learning students. By examining the interplay between gender, self-efficacy, perceived service quality, and online learning acceptance, this research provides valuable insights for educational policymakers, administrators, and practitioners seeking to enhance the quality and accessibility of online education.

It's important to recognize that student experiences and perceptions of online learning acceptance are shaped by intersecting factors beyond gender, such as socioeconomic status, cultural background, and prior educational experiences (Collins & Bilge, 2020). While this study focused on gender and self-efficacy, future research should adopt an intersectional approach to examine how various social identities intersect and influence online learning acceptance differently. By considering the complex interplay of multiple identities, institutions can better tailor their online learning initiatives to meet the diverse needs of all students, thereby fostering inclusivity and equity in distance education.

While this study provides valuable insights into factors influencing online learning acceptance, longitudinal studies are needed to assess the long-term impact of these variables on student engagement, retention, and academic achievement (Means et al., 2009). Additionally, continuous evaluation of online learning programs is essential to identify areas for improvement and ensure the ongoing relevance and effectiveness of distance education initiatives. By adopting a proactive and iterative approach to program evaluation, institutions can adapt to evolving student needs and technological advancements in the digital learning landscape.

References

- Abu-Al-Aish, A. & Love, S. (2013). Factors influencing students' acceptance of m-learning: An investigation in higher education. *International Review of Research in Open and Distributed Learning*, 14(5), 16-31.
- Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Sloan Consortium. PO Box 1238, Newburyport, MA 01950.
- Ally, M. (2004). Foundations of educational theory for online learning. *Theory and practice of online learning*, 2(1), 15-44.

- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28 (2), 117-148.
- Barnard, L., Paton, V. O., & Lan, W. Y. (2008). Online self-regulatory learning behaviors as a mediator in the relationship between online course perceptions with achievement. *International Review of Research in Open and Distance Learning*, 9(2), 1–11.
- Bartley, S. J. & Golek, J. H. (2004). Evaluating the cost effectiveness of online and face-to-face instruction. *Educational Technology & Society*, 7(4), 167-175.
- Chang, S. & Tung, F. (2008). An empirical investigation of students' behavioural intentions to use the online learning course websites. *British Journal of Educational Technology*, 39(1), 71–83.
- Collins, P. H., & Bilge, S. (2020). *Intersectionality*. John Wiley & Sons.
- Debourgh, G. A. (1999). Technology is the tool, teaching is the task: Student satisfaction in distance learning. Proceedings of Society for Information Technology and Teacher Education International Conference (pp.131-137).
- Dirr, P. (1999). Distance and Virtual Learning in the United States. In G. Farrell (Ed.), *The development of virtual education: A global perspective*. Vancouver: Commonwealth of Learning.
- Eastin, M. S., & LaRose, R. (2000). Internet self-efficacy and the psychology of the digital divide. Retrieved from <http://jcmc.indiana.edu/vol6/issue1/eastin.html>
- Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The internet and higher education*, 7(2), 95-105.
- Johnson, L. R. (2004). Research-based Online Course Development for Special Education Teacher Preparation. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, 27(3), 207-223.
- Lee, J. & Mendlinger, S. (2011). Perceived Self-Efficacy and Its Effect on Online Learning Acceptance and Student Satisfaction. *Journal of Service Science and Management*, 4(3), 243-252.
- Martens, M., Hajibayova, L., Campana, K., Rinnert, G. C., Caniglia, J., Bakori, I. G., ... & Oh, O. J. (2020). "Being on the wrong side of the digital divide": Seeking technological interventions for education in Northeast Nigeria. *Aslib Journal of Information Management*, 72(6), 963-978.
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies.
- National Center for Educational Statistics. (2003). *Distance education at degree-granting postsecondary institutions: 2000–2001*. Retrieved July 30, 2004, from <http://nces.ed.gov/surveys/peqis/publications>.
- Pagram, P. & Pagram, J. (2006). Issues in E-Learning: A Thai Case Study. *The Electronic Journal of Information Systems in Developing Countries*, 26(1), 1–8.
- Parasuraman, A., Berry, L. L. & Zeithaml, V. A. (1990). Guidelines for Conducting Service Quality Research. *Marketing Research*, 2(4), 34-44.
- Pituch, K. A. & Lee, Y. (2006). The influence of system characteristics on e-learning use. *Computers & Education*, 47(2), 222-244.
- Raaij, E. M. V. & Schepers J. J. L. (2008). The acceptance and use of a virtual learning environment in China. *Computers & Education*, 50(3), 838-852.

- Reinhart, J., & Schneider, P. (2001). Student satisfaction, self-efficacy, and the perception of the two-way audio/video distance learning environment: A preliminary examination. *Quarterly Review of Distance Education*, 2(4), 357-365.
- Rodriguez Robles, F. M. (2006). Learner characteristic, interaction and support service variables as predictors of satisfaction in web-based distance education. *Dissertation Abstracts International*, 67(7). (UMI No. 3224964).
- Rogers, E. M. (1983). *Diffusion of innovations* (1st ed., 1962). New York: Free Press.
- Sahin, I. (2007). *Predicting student satisfaction in distance education and learning environments*. (ERIC Document Reproduction Service No. ED496541).
- Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, Measures in health psychology: A user's portfolio. Causal and control beliefs (pp. 35-37). Windsor, UK: NFER-NELSON.
- Sher, A. (2008). Assessing and comparing interaction dynamics, student learning, and satisfaction within Web-based online learning programs. *MERLOT*.
- Siritongthaworn, S., Krairit, D., Dimmitt N. J. & Pau H. (2006). The study of e-learning technology implementation: A preliminary investigation of universities in Thailand. *Education and Information Technologies*, 11(2), 137-160.
- Smith, Murphy and Mahoney (2003) Towards Identifying Factors Underlying Readiness for Online Learning: An Exploratory Study. *Distance Education*, Vol. 24, No. 1; 2003
- Taylor, J. C. (2001) Fifth Generation Distance Education. *Instructional Science and Technology*, 4(1), 1-14.
- UNESCO. (2022). Gender and education. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000381329>
- Venkatesh, V., Morris, M. G., Davis G. B. & Davis F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *Management Information Systems Quarterly*, 27(3), 425-478.
- Waits, T. & Lewis, L. (2004). *Distance education at degree granting postsecondary institutions: 2000-2001*. Retrieved 19 November 2004 from http://nces.ed.gov/programs/quarterly/vol_5/5_3/4_4.asp.