The Total Learning Experience Model on the Cloud: TLX Model on the Cloud to Enhance Digital Teaching Skills for Teacher Professional Students

Anusart Tasen[1] & Pinanta Chatwattana[1]

[1] King Mongkut's University of Technology North Bangkok, Bangkok, Thailand

Correspondence: Anusart Tasen, King Mongkut's University of Technology North Bangkok, Bangkok, Thailand. Tel: 66-922-789-813. E-mail: Ta.anusartnote@gmail.com

Abstract

The total learning experience model on the cloud, or TLX model, is based on the application of concepts concerning the instruction management of teacher professional students, who are required to use technologies and innovations to produce instruction media that enable learners to learn and interact with instructors anywhere and anytime. The instruction management of this style is said to provide challenges and real experiences, leading to new bodies of knowledge and technology skills that help teacher professional students create the more efficient instruction media. The objectives of this research are (1) to design the total learning experience model on the cloud, (2) to develop the total learning experience model on the cloud, and (3) to study the results of the development of the total learning experience model on the cloud. The research tools include (1) the total learning experience process on the cloud, and (2) the assessment form on the suitability of the total learning experience model on the cloud. The results of this research show that (1) the overall suitability of the total learning experience model on the cloud (overall elements) is at the highest level (mean = 4.83, SD = 0.14), and (2) the overall suitability of the total learning experience model on the cloud is at the highest level (mean = 4.77, SD = 0.17). According to the results, it can be summarised that the total learning experience model on the cloud can be employed as a tool to promote learning through cloud technology in order to enhance digital teaching skills for teacher professional students through experiential learning process.

Keywords: total learning experience, TLX model, cloud technology, digital teaching skills, teacher professional students

1. Introduction

The development of information technology media is proceeding in a rapid manner in both public and private educational institutions. At present, teachers and those working in the education field always utilise information technology to develop and implement instruction management systems in order to comply with the education policies designated to raise the quality of education and develop digital skills and computer language for learners of all ages. It is expected that these skills can help learners catch up with the transition to a digital society in the modern world. In addition, the instruction management of this kind is regarded as the transformation of the Thai education system, which can be achieved by using innovations and modern technologies in education management at all levels. Therefore, every educational institution is expected to be able to apply innovations and modern technologies in education management through digital systems (Ministry of Education, 2023).

Experiential learning is a kind of learning format that encourages learners to conduct self-learning by taking actions. This enables them to meet with challenges and gain first-hand experiences, which is thought to lead to new bodies of knowledge and correspond to educational development. The highlight of learning by doing is the encounter with challenges or real experiences, which will result in the crystallisation of the new bodies of knowledge gained from this kind of learning. Whereby, the said new bodies of knowledge can be used as an extension of existing knowledge or applied in other contexts (Chatwattana et al., 2022; Kolb, 1984). The experiential learning process, according to Kolb, consists of four steps, i.e., concrete experience, reflective observation, abstract conceptualization, and active experimentation.

Total experience (TX) is a business strategy that focuses on the overall users' experiences, which reflect their

impressions of the organization. It is about a deep analysis on the combination of various experiences in different fields in order to achieve transformative results. The objective of TX is to inspire customers and employees to have more confidence, more satisfaction, more loyalty, and more support (Gartner, 2022). These experiences consist of the customer experience (CX), employee experience (EX), user experience (UX), and multi-experience (MX). In short, the goal of TX is to stimulate customers and employees to have more confidence, more satisfaction, more loyalty, and more support.

Cloud technology is the number one information and communication technology that is highly popular in the world today (Jlelaty & Monzer, 2012). This technology is considered a new paradigm for providing information technology services, in which users can share their resources and computer capabilities with others. At present, cloud technology has been widely applied in teaching and learning (Chatwattana, 2018) due to the convenience provided by internet network services that can facilitate data transmission and e-mail communication between teachers and students. In addition, cloud technology can be used as a tool to support learning and enhance teaching techniques through applications that are safe, convenient to use, and easy to access (Maneewan, 2018).

Digital teaching skills are the ability to use digital technology in the instruction management (UNESCO, 2018). Digital teaching skills also refer to the integration of different technologies with several teaching skills so as to effectively create instruction activities, which are usually in the form of digital instruction media.

In reference to the aforementioned principles and reasons, the researchers have had an idea to design the TLX model for use as a guideline to promote digital teaching skills for teacher professional students. With the aid of digital technology and media, teacher professional students are expected to possess technology skills and can create effective digital instruction media. The students themselves can study the contents produced based on the experiences of experts and then enhance their knowledge and understanding, which are necessary to fulfil the needs of today's learners.

2. Research Objectives and Hypotheses

1) To design the TLX process on the cloud to enhance digital teaching skills for teacher professional students

2) To develop the TLX model on the cloud to enhance digital teaching skills for teacher professional students

3) To study the results of the TLX model on the cloud to enhance digital teaching skills for teacher professional students

According to the results of the evaluation on the suitability of the development TLX model on the cloud to enhance digital teaching skills for teacher professional students is at a high level.

3. Research Methodology

This research is related to the design and development of the TLX model on the cloud to enhance digital teaching skills for teacher professional students, and the research methodology is as follows:

3.1 Participants

The research participants are six experts from different institutions in higher education and secondary schools, all of whom are specialised in design and development of instruction models consist of two males and four females.

3.2 Research Instruments

The tools employed in this research consist of (1) the TLX model, and (2) the evaluation form of the TLX model on the cloud to enhance digital teaching skills for teacher professional students.

3.3 Research Methodology

The design of the TLX model is based on the system approach (Khemmani, 2010; Utranan, 1982), which can be divided into 3 stages as shown in Figure 1.

Figure 1. Research methodology

Stage 1: Study, analysis, and synthesis of the documents and the researches relevant to the design of the TLX model. In order to establish the conceptual framework of this research, the researchers had studied and analysed the documents and the researches, which are concerning instruction system, teacher professional curriculum, experiential learning, total experience, cloud technology, and digital teaching skills.

Stage 2: Development of the TLX model. In this stage, the researchers based the design and development of this architecture on the principles of the system approach, which consists of four elements, i.e., input factor, learning process, output, and feedback.

Stage 3: Study the results of the TLX model. The researchers employed the research tools to find out the results after having the participants use the said architecture. There are six experts in this research who were derived by means of purposive sampling. All of them are experts from different institutions in higher education and secondary schools. The criteria for evaluation and the interpretation of results (Kanasutra, 1995) are shown in Table 1.

Table 1. Mean score range and interpretation of results.

Range of average score	Interpretation of suitability
4.50 – 5.00	Highest
3.50 – 4.49	High
2.50 – 3.49	Moderate
1.50 – 2.49	Low
0.00 – 1.49	Lowest

4. Results

The development of the TLX model on the cloud to enhance digital teaching skills for teacher professional students can be summarised as follows:

4.1 The Conceptual Framework of the TLX Model on the Cloud to Enhance Digital Teaching Skills for Teacher Professional Students

After the study, analysis, and synthesis of the documents and the researches relevant to the design of the TLX model, the researchers obtained the conceptual framework of this research as shown in Figure 2.
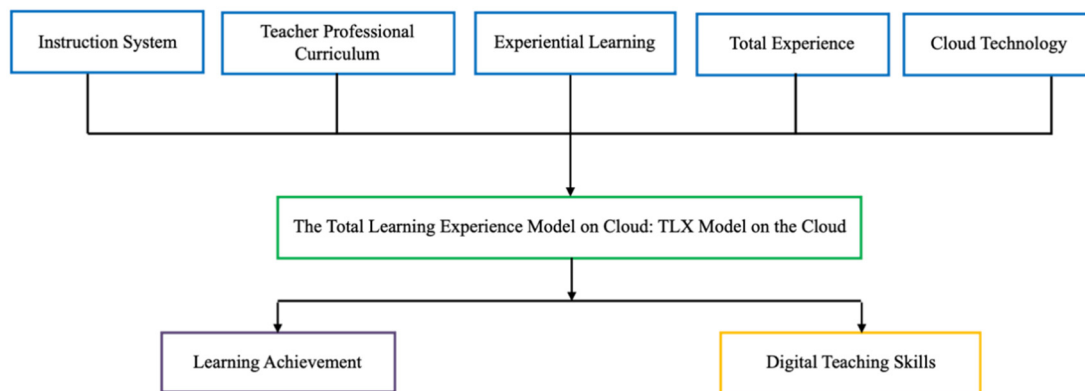

Figure 2. Conceptual framework of the TLX model on the cloud

4.2 Results of the Development of the TLX Model on the Cloud to Enhance Digital Teaching Skills for Teacher Professional Students

The TLX model is intended to be used as a guideline to further design and develop other total learning experience systems on the cloud designated to enhance digital teaching skills among teacher professional students. It is also a tool to promote learning through digital technology integrated with instruction activities, which are designed from the experiences of experts in an attempt to enhance knowledge and understanding, which are necessary to fulfil the needs of today's learners.

Figure 3. The TLX model on the cloud to enhance digital teaching skills for teacher professional students

Figure 3 illustrates the TLX model, which consists of the following four main elements:

1. The input factor: This element refers to the sub-elements involved in the instruction management, i.e., student, instructor, expert, course, and learning technology.

2. Total learning experience process on the cloud: To develop the learning process herein, the researchers integrated the experiences and concepts of Kolb (1984), which includes four steps of concrete experience, reflective observation, abstract conceptualization, and active experimentation, with the concepts of total experience, i.e., user experience (UX) and multi-experience (MX). As a result, the learning process for use in the TLX model to enhance digital teaching skills for teacher professional students was acquired. Compatible with many operating systems, the TLX model can support learning through network systems and facilitate operation through the moodle platform.

3. Output: This element is the results arising from the learning process, i.e., (1) learning achievement, which is the measurement of the knowledge of the students before and after learning, and (2) digital teaching skills, which are the ability to use digital technology in the instruction management by integrating different technologies with several teaching skills so as to create effective and appropriate instruction activities.

4. Feedback: This element refers to the data derived from the output, which will be used to further improve the learning process and the input factor. The feedback herein includes (1) the results of the measurement on learning achievement, and (2) the results of the measurement on digital teaching skills.

4.3 Results of the Study on the Suitability of the TLX Model on the Cloud to Enhance Digital Teaching Skills for Teacher Professional Students.

The study results of the design of the TLX model with six experts in this research who were derived by means of purposive sampling. All of them are the experts from different institutions in higher education and secondary schools. The results of the study are shown in Table 2 and Table 3.

Table 2. Results of evaluation on the suitability of the development of the TLX model (overall elements)

Items for evaluation	Assessment results		Interpretation of results
	Mean	SD	
1. What is the level of suitability of the principles and concepts used to develop the TLX model?	4.57	0.53	Highest
2. What is the level of suitability of the elements of the TLX model? ** Considering the comprehensiveness of the main components of the instruction system.			
2.1 Input factor	5.00	0.00	Highest
2.2 Total learning experience process on the cloud	4.71	0.49	Highest
2.3 Output	4.86	0.38	Highest
2.4 Feedback	5.00	0.00	Highest
Overall average	4.83	0.14	Highest

According to Table 2, it is found that the overall suitability of the development of the TLX model (overall elements) is at the highest level (mean = 4.83, SD = 0.14). Thus, it can be summarised that the TLX model contains all required elements and can be employed as a guideline to further develop other total learning experience systems on the cloud designated to enhance digital teaching skills among teacher professional students. It is also considered a tool to promote the learning through digital technology on the cloud integrated with instruction activities, which are designed based on the experiences of experts.

Table 3. Results of the evaluation on the suitability of the components of the TLX model.

Items for evaluation	Assessment Results		Interpretation of results
	Mean	SD	
1. Input factor			
1.1 Student	4.71	0.49	Highest
1.2 Instructor	4.86	0.38	Highest
1.3 Expert	4.29	0.49	High
1.4 Course	4.71	0.49	Highest
1.5 Learning technology	4.86	0.38	Highest
2. Total learning experience process on the cloud			
2.1 Total learning experience step			
2.1.1 Concrete experience	4.71	0.49	Highest
2.1.2 Reflective observation	4.57	0.53	Highest
2.1.3 Abstract conceptualization	4.57	0.53	Highest
2.1.4 Active experimentation	5.00	0.00	Highest
2.2 Components of total experience			
2.2.1 User experience (UX)	4.71	0.49	Highest
2.2.2 Multi experience (MX)	4.71	0.49	Highest
2.3 Cloud technology			
2.3.1 Compatible with many operating systems	4.86	0.38	Highest
2.3.2 Support the learning through network systems	4.86	0.38	Highest
2.3.3 Facilitate the moodle platform	4.86	0.38	Highest
3. Output			
3.1 Learning achievement	4.86	0.38	Highest
3.2 Digital teaching skills	5.00	0.00	Highest
4. Feedback			
4.1 Results of evaluation on learning achievement	4.86	0.38	Highest
4.2 Results of evaluation on digital teaching skills	4.86	0.38	Highest
Overall	4.77	0.17	Highest

Referring to Table 3, it is evident that the overall suitability of the development of the TLX model is at the highest level (mean = 4.77, SD = 0.17). It can be concluded that the TLX model has appropriate elements and can be used as a guideline for the management of experiential learning as to the concepts of Kolb (1984). It is also believed that the TLX model will encourage students to develop digital teaching skills, which are necessary for teacher professional students. It is said that these skills enable the students to think systematically and take action practically through cloud technology, which will eventually help them create digital instruction media in a more efficient manner.

5. Discussion & Conclusion

The design of the TLX model is based on the application of principles, concepts, and theories related to digital technology with the intention of equipping the teacher professional students with digital teaching skills. With the TLX model, the students are able to learn anywhere and anytime with the total experience learning process designed from the experts' experiences. In this way, the students are encouraged to develop thinking processes and technology skills, which will encourage them to create digital instruction media more effectively.

The TLX model is composed of four main elements, i.e., 1. input factor, which includes student, instructor, expert, course, and learning technology; 2. the total learning experience process on cloud, which consists of the total

learning experience process four steps, i.e., concrete experience, reflective observation, abstract conceptualization, and active experimentation, that combine with the components of total experience, which includes of user experience, and multi experience; 3. output, which consists of learning achievement, and digital teaching skills; and 4. feedback, which includes results of evaluation on learning achievement, and results of evaluation on digital teaching skills.

Regarding the assessment on the suitability of the development of the TLX model, it is found that (1) the overall elements suitability of the development of the TLX model is at the highest level, and (2) the overall suitability of the development of the TLX model is at the highest level. The assessment results above are in line with the research of Ugsornwong (2018), who said that the learner-centered learning management, in which instructors assist learners by giving advice and using questions to stimulate their thinking, encourages learners to seek and discover new bodies of knowledge, which will further lead to active learning. The results are also consistent with the research of Chatwattana et al. (2022), who mentioned that the application of total learning experience theories combined with self-directed learning process in the design and development of a learning process, which can promote limitless self-learning through learning by doing, can encourage learners to meet challenges and receive real experiences. This enables them to generate new bodies of knowledge extended from the existing knowledge, which can be also applied in other contexts.

Funding

None.

Informed Consent

Obtained.

Provenance and Peer Review

Not commissioned; externally double-blind peer reviewed.

Data Availability Statement

The data that support the findings of this study are available on request.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

References

Chatwattana, P., Piriyasurawong, P., Nilsook, P., & Wannapiroon, P. (2022). Total learning experience (TLE) on the cloud with an intellectual repository to enhance digital empathy and literacy skills. *Global Journal of Engineering Education, 24*(3)**,** 193-201.

Chatwattana, P. (2018). Concepts of an interactive adaptive learning system architecture design in an active learning environment through a cloud learning ecosystem. *Global Journal of Engineering Education, 20*(3)**,** 181-189.

Gartner. (2022). *Gartner Identifies the Top Strategic Technology Trends for 2022*. Retrieved from https://www.gartner.com/en/newsroom/press-releases/2021-10-18-gartner-identifies-the-top-strategic-technology-trends-for-2022

Jlelaty, M., & Monzer, Y. (2012). *Factors in Cloud Computing Adoption*. Master Thesis, Department of Information Systems, School of Economics and Management, Lund University.

Kanasutra, P. (1995). *Statistics for Research in the Behavioral Sciences*. Bangkok: Chulalongkorn University Press.

Khemmani, T. (2010). *Science of Teaching: Knowledge of Efficient Learning Process Management*. Bangkok: Chulalongkorn University Press.

Kolb, D. A. (1984)**.** *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ: Prentice Hall.

Maneewan, S. (2018). Project-based Learning Model Using Synectics Technique via Cloud Technology to Enhance Creativity and Innovation. *Journal of Vocational and Technical Education, 8*(15)**,** 63-76. Retrieved from http://ojs.kmutnb.ac.th/index.php/JVTE/article/view/2097/1656

Ministry of Education. (2023). *Announcement of the Ministry of Education on policies and focuses of the Ministry of Education Fiscal year 2023*. https://www.moe.go.th.

Ugsornwong, R. (2018). Development of Active Learning Management Abilities of Field Experience Student Teachers using Coaching and Mentoring Supervision. *UMT Poly Journal, 15*(2), 486-498.

UNESCO. (2018). *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2*. Retrieved from http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf

Utranan, S. (1982). *Systematic Instructional Management*. Bangkok: Chulalongkorn University.