

The Online training to develop skills of using Zoom, MS–Teams, and Google Meet based on the Connectivism theory for the General public during the COVID–19 pandemic

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Abstract

COVID–19 changes all daily routines and forces people to adapt while online technology becomes The New Normal. This study developed an online training course of three popular online video conferences based on connectivism theory for the general public. The aims are; 1) to develop the online training course based on connectivism, 2) to study the skills of using Zoom, MS Teams, and Google Meet, and 3) to study the course's satisfaction. The researcher applied the ADDIE Model in three steps: 1) a analysis and design, 2) implementation, 3) summary and report. The design of the curriculum took approximately one month, from August to September 2022. There were 35 voluntary samples from 116 participants to answer online questionnaires that had an IOC > 0.5 from three experts. The results show that many elderly educators and workers had never used the online video conference platform until COVID–19 helped them find New Normal. This course can develop all skill levels in three applications, from poor to high. The satisfaction level of the course was high in all aspects.

The knowledge gained in this research is able to be beneficial in improving the use of information and communications technology for all academic educators and the human resources of corporations to be more efficient, especially in this New Normal period.

Keywords: Online Training; Constructivism Theory; Zoom MS Team Google Meet; ADDIE Model

Introduction

The COVID–19 pandemic changes the daily routine and is one of the periods that changes how humans interact. There was a super pool after the new normal, which shows that 81.5 % use more social media technology while 55.2% work from home. In addition, 79.1% need online technology to recover and develop different sections of their countries. Resilience and agile collaboration between organizations and industries will increase. States, governments, and business corporations can use this opportunity to organize free online education for workers or designate new regulations to reduce resource consumption (Posttoday, 2020)

Likewise, daily life behaviors will be changed and driven by online technology, which is called the New Normal or New Norm (Sanook, 2020). It is a new way of life that is different from the past (Thai PBS, 2020). COVID–19 has severely affected the global economy and caused the world to fall into a great recession. Only adaptable people will survive and grow continually with the New Norm's behaviors, including work, meeting, or learning from home, which will be driven by online technologies. These strategies just need communication devices to connect to the internet; therefore, it will be the main strategy of the New Normal with more capacities (UIH, n.d.).

Connectivism Learning theory focuses on lifelong learning in the digital era, where knowledge can happen anytime, and the learning process can happen in multi–channel networks that connect everywhere in the world. Knowledge does not matter where to learn from (Bunnapasut, 2015); however, educational technology through the internet can disseminate information widely. The 5C components of internet technology (Jirasatjanukul & Jeerungsuwan, 2018) are; 1) connecting knowledge; 2) connecting resources; 3) communication; 4) collaboration; and 5) creativities. This model corresponds to the Constructivism theory which uses many processes to encourage learners to create their knowledge by themselves rather than as the recipients (Simmatun, 2009). They will adapt four principles to guide the design of technology learning experiences for preservice and in–service teachers to increase the likelihood; including 1) connecting technology learning to professional knowledge 2) privileging subject matter and pedagogical context connections 3) using technology learning to challenge professional knowledge; and 4) teaching many technologies (Hughes, 2004). Based on the concept of Zone of Proximal Development (ZPD), which is the advanced intelligence process from social interactions through demonstrations, practices, guides, or feedback (Verenikina, 2003).

In this pandemic situation, the New Normal training course should prepare and develop participants to be adapt, live, and work in their careers continuously. Therefore, the academic service of online training courses to develop skills in Zoom, MS Teams, and Google Meet was designed and established for the general public who wish to survive together.

Objectives

- 1) To develop an online training course based on connectivism.
- 2) To study the users' skills in Zoom, MS Teams, and Google Meet.
- 3) To study course satisfaction.

Background knowledge

Connectivism theory

Connectivism is the new scientific concept for cognition and behavior, which is the linkage network process (Bunnapasut, 2015). It pretends a network is know-where (knowledge sources) that fosters someone toward Know-How and Know-What; 1) Know-where is the online learning or knowledge sources anywhere on the internet; such as Google, YouTube, Blogger, etc, that enable learners to learn and share information with others, 2) Know-how is the research; including searching, training, learning, reading, social interaction, connecting on networks, 3) Know-What is the media presentation in multiple-forms such as video, text, pictures, and symbols. Connectivism is the learning theory that came from the advanced internet and is a continually flowable theory that emphasizes lifelong learning (Hundhikorn, 2012).

Siemen (2005) defined the main principles and features of connectivism, which are 1) learning and knowledge are the result a variety of opinions; varieties, 2) learning is the specific connection process at the unit of the information source. 3) learning could occur in non-humans. 4) Capacity is very important compared to the existing knowledge. 5) Connection maintenance is needed for facile and continual learning. 6) the main skill is the ability to see the connection between fields, ideas, and concepts. 7) Up-date to date (accurate and updated) is the intent of all Connectivism's learning activities. 8) The decision-making from the received information becomes visible through the reality lens, while today's correct answer may be incorrect tomorrow because the information for decision-making will be

changed. In addition, Boitshwarelo (2011) added more principles that; 1) Connectivism's center is learning in the linkage form between the learning communities and benefits from data research. The learning community is a group of people who attend something together to talk and exchange knowledge; 2) it is important for any community to be a part of a wild network that enlarges the network with variety and creativity in learning development; 3) Knowledge is not limited to anyone, whereas it can spread through networks. The learning processes depend on diverse perspectives, opinions, and accessible information; 4) Information needs to change and be evaluated continually for actual knowledge and information, and 5) The connection between the research and knowledge-creating processes is very important, especially the internet-environment system and of information through the system. Connectivism has three main components (Phumpuang, 2015) 1) Online communication of Practice; 2) Design-based research, and 3) Activity Theory, As shown in Figure 1. These parts need to work together continually.

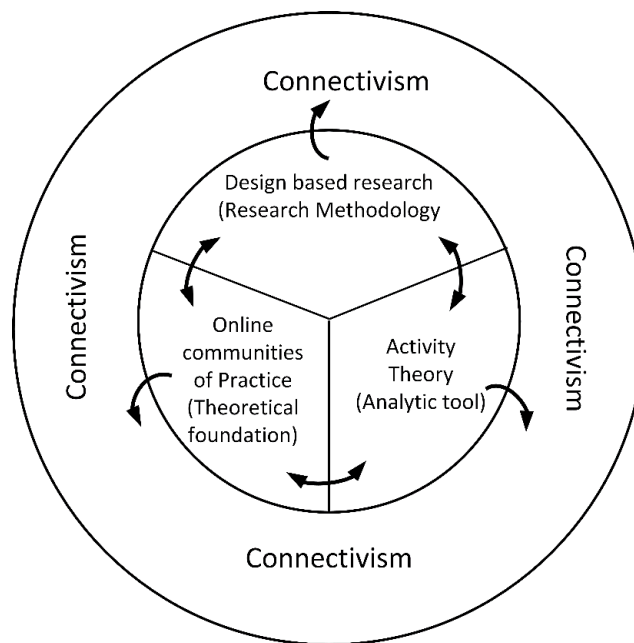


Figure 1 The Component of Connectivism.

(Source: Ganesan, Edmonds and Spector, 2002)

The use of communication and internet technology in the learning community is the key to the success of online learning. The online community is enriched with social processes, interactions, and collaborations for knowledge creation and meaning research (Phumpuang, 2015). Therefore, it is

important for the learning environment designer to should consider this key to maintaining and responding to the needs of users. In addition, the collaboration of network members includes an information role, and knowledge management is the other key to online learning design (Ganesan, Edmonds & Spector, 2002). Especially, the complicated situation design and The socially situated activities; which need more collaboration and cooperation for the variety of activities. Hence, Computer-based learning is a suitable form learning of Connectivism, which combines all the limitations of behaviorism, cognitivism, and constructivism (Siemens, 2005).

Meanwhile, constructivism emphasized the processes of knowledge creation by learners themselves and believed that learners created and gained knowledge by linking new experiences or information with their existing knowledge (Dixon–Krauss, 1996). This involves cognitive structure or Schema, in which knowledge is composed of memorizing new information and expanding the existing knowledge structure into its meaning. Hence, the learning environment is very important to create the actual meaning (Duffy & Cunningham, 1996). Although constructivism was divided into cognitive constructivism by Piaget and social constructivism by Vygotsky, the designer should create the learning context and environment to foster interesting activities that stimulate and facilitate all learners, which is the same goal regardless of any theory.

There are four suggestions for constructivism's learning activity setting (Somabud, 2013); a) learning constructed, in which learners will create self-meaning from the combination of new information and existing experience, b) active learning, in which learners will be motivated to create their own meaning self-meaning, c) collaborative learning, in the variety of concepts in a group will be reconstructed to be their own concepts; and d) situated in learning, which reality's experience activities should be created to link the knowledge to use in reality daily.

In summary, the connectivism learning process is the instruction of learning activities by connecting personal networks with various knowledge sources to exchange, expand, and create new knowledge together. The appropriate tool for connectivism learning activities is the social network through the instruction, which is designed with activities and tools to foster learner selection and filtering of learning resources to find the meaning for themselves. When learners can connect all information, opinions, and feelings, and use them for their learning benefits, then the learning processes will happen (Laohajatsang, n.d.). Moreover, connectivism provides a model of learning which accepts society's changes. Learning process have not in internal or personal activities anymore, the functions and

disciplines were changed by the innovation tools, that can provide insight information about any learning skill and any task for learners to grow in this digital era.

Conceptual Framework

In this study, the author had four principles based on Connectivism to create the framework that consisted of a) ZPD Scaffolding by the distance communication devices to create social meaning (Hughes, 2004), b) Collaborative Learning, in which social learning activities were designed with problematic situations but end with clear explanation which learner able to solve, learn, and satisfy with the result (Dewey, (1916), c) Active learning, which instructor will motivate all learners to participate the activities, and d) Situated Learning, which the online video–conferences become New Normal in the real–life world and social interaction able to motive the intellectual structure (Glassman, 2001). Finally, the conceptual framework is shown in Figure 2

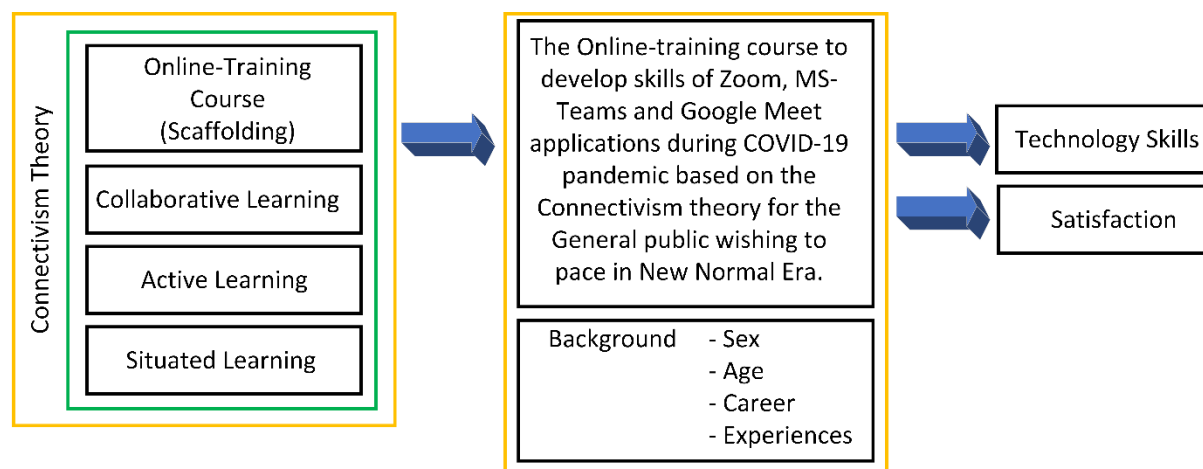


Figure 2 Conceptual Framework

Proposed method

A. The Experimental Design This experimental research uses a one–shot case study design (Leekijwattana, 2015), as Table 1

Table 1 One–shot case study design

GROUP	PRE–OBSERVE	TREATMENT	POST–OBSERVE
E	–	X	T

B. Population and Sample

The population is the general public who is interested and pre-registered to participate 116 people.

Samples are the purposive sampling group of 35 participants who voluntarily answer the questionnaire after the end of training on 6 and 8 June 2020.

C. Data Collection Tools

Two online questionnaires were used to collect data that both were qualified the index of Congruence: IOC (0.83–1.00) of validity by 3 experts then were evaluated the reliability (> 0.8) by 30 try-out participants who learned the previous online course.

- The main questionnaire that collected the data of participant's basic information and the level of application skills before and after online training.

- The satisfaction questionnaire that collected the data of participant's satisfaction after the online training course.

D. Scope of content

All skills in Zoom, MS Teams, and Google Meet were instructed for 4 hours through Online Training.

C. Data Analysis

Descriptive statistics: mean, standard deviation, and percentage were used to analyze the data.

D. Activities Flowchart:

There were three steps of activities as Figure 3.

Step 1: Analyst and Design process. The author observed the general public's need for Online training courses during the COVID-19 situation and proposed courses with pros and cons to private universities for approval of authority while designing instruction courses based on the framework and creating learning activities and materials.

Step 2: Implementation process. The first session course was implemented on August 6, 2022 for 4 hours. through a Zoom webinar, and the second session course was implemented on June 8, 2020, for 4 hours through a Google Meet webinar.

Step 3: Summary and Report process. The author evaluated all the data and concluded the final report.

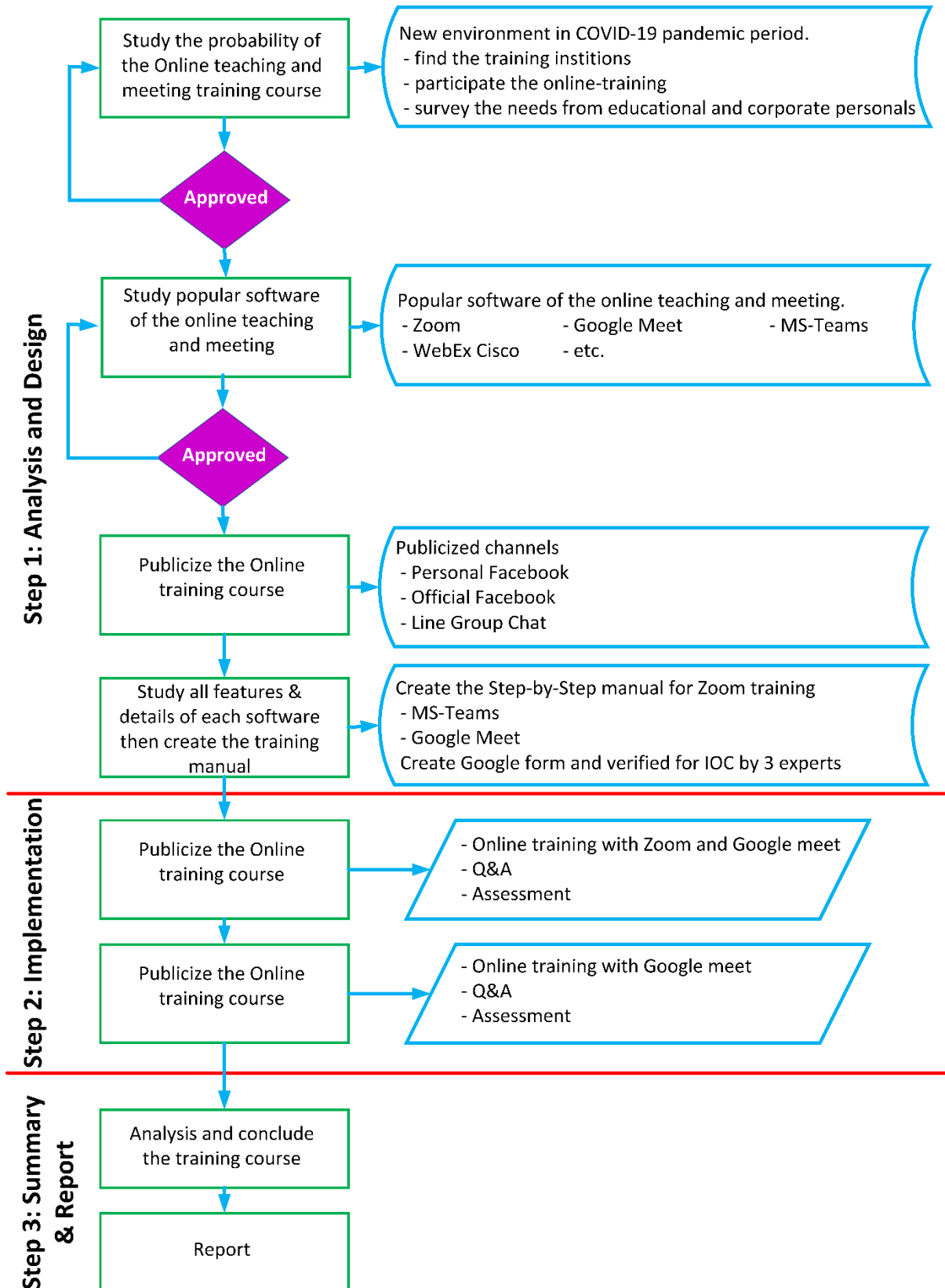


Figure 3 Activities Flowchart

Results

1) The online training course based on connectivism was designed, conducted and developed during May to June 2020. The course planning was met quality of the index of Congruence: IOC (0.85–1.00) by 3 experts. Then the researcher published this Online course by personal social channel and the TNI's official channels. The result found there were 85 participants (73.28%) who registered from the personal channel and by 31 participants (26.72%) who registered from the TNI's official channels. All participants mostly never used Zoom, MS Teams, or Google Meet, up to 54.29% (19 people), whereas ever using them at least once is 45.71% (16 people). All 116 participants came from various workplaces but mostly in Bangkok (59.48%) and nearby provinces (13.79%).

2) The results show the participants almost had a Poor skill level in Zoom, MS Teams, and Google Meet ($\bar{X}$ =2.29, 1.86, 2.03 respectively) before they were trained. But after they were trained in this online course, they mostly have a high skill level in Zoom, and Google Meet ($\bar{X}$ =3.63 and 3.49), whereas they have a middle level of MS Teams ($\bar{X}$ =3.34) as shown in Table 2.

Table 2 The skill level before and after training

Online Technology	Skill before training			Skill after training		
	$\bar{X}$	SD	LEVEL	$\bar{X}$	SD	LEVEL
ZOOM	2.29	0.96	Poor	3.63	0.73	High
MS-TEAMS	1.86	0.91	Poor	3.34	0.84	Middle
GOOGLE MEET	2.03	1.07	Poor	3.49	0.92	High

3) The satisfaction questionnaire has 8 items about the Online course's aspects with 5 points Likert scale for participants responding to their satisfaction level after training and the results are shown in Table 3–5. All 8 aspects of all 3 software (Zoom, MS Teams, and Google Meet) met the High level of satisfaction ($\bar{X}$ = 3.59, 3.44, and 3.43 respectively) including 1) satisfaction of contents, 2) language to provide contents, 3) difficulty of contents, 4) sequence of contents, 5) attractive presentations, 6) motivation and joy of activities, 7) new skill easy to understand, and 8) benefits to adopting in real-life work.

Table 3 The satisfaction criteria and interpretation

Criteria level	Score	Interpretation
5	4.21–5.00	Highest level
4	3.41–4.20	High level
3	2.61–3.40	Middle level
2	1.81–2.60	Poor level
1	1.00–1.80	Most poor level

Table 4 The satisfaction score per item by software

Item	Zoom		MS–Teams		Google	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1.Contents	3.71	0.67	3.63	0.84	3.54	0.78
2.Language	3.86	0.85	3.71	0.96	3.60	0.77
3.Difficulty	3.63	0.77	3.63	0.88	3.63	0.77
4.Sequence	3.69	0.87	3.63	0.91	3.57	0.74
5.Presentation	3.71	0.79	3.66	0.97	3.69	0.76
6.Motivate & Joy	3.74	0.89	3.60	1.01	3.63	0.91
7.Understand	3.74	0.92	3.60	0.85	3.57	0.81
8.Benefit	3.86	0.77	3.74	0.85	3.60	0.81
Total	3.59	0.09	3.44	0.06	3.43	0.10

Table 5 The satisfaction levels.

Software	$\bar{X}$	SD	Interpretation
Zoom	3.59	0.09	High level
MS–Teams	3.44	0.06	High level
Google Meet	3.43	0.10	High level
Total	3.49		High level

Discussions

1) The online training course based on Connectivism was conducted for developing the skills of Zoom, MS Teams, and Google Meet in the COVID–19 situation for the general public who are interested

in and need to use these applications as the New Normal tools for their work. The ADDIE Model was applied in three planning steps including 1) Analysis and Design, 2) Implementation, and 3) Summary and Report. 116 participants of 2 days online course almost came from Bangkok and nearby areas (63%). Mostly worked for private companies (56.90%) and the rest (27.59%) worked as a lecturer at educational institutes. Even though teachers were familiar with educational technologies or worked in Bangkok, but they never used video conference applications (54.29%). Moreover, elderly people (> 40 years old) attended this class more than the youth people. These empirical results show that the COVID-19 pandemic changed and flipped their ordinary and working lives into the New Normal way, and the elderly people who grew up before this digital age have to adapt and find the New Normal skills to survive in this situation. However, the online setting courses require a more sophisticated comprehension of effective pedagogy to deal with new technology as a feature of this change (Abdelhak et al., 2017). Meanwhile, online activities based on connectivism are able to foster learners in active learning and develop new skills as Blerta & Huseyin (2019), who studied the online setting by doing dynamic, group-based activities that show the results of students' engagement in active learning, critical thinking, and developing new studying skills. Moreover, many researchers confirmed that online discussion and simplification activities are able to enhance students' problem-solving skills during the learning process (Chaiwat & Pallop, 2015; Satien & Pallop, 2018).

2) All participants mostly did not have the skills of Zoom, MS Teams, and Google Meet software but their skills were developed by this online training course from poor to high level (Zoom and Google Meet) and to middle level (MS Team) after training. The instructor provided an online learning environment to foster all participants' connective interaction with the instructor and others, such as questions and sessions, sharing opinions, and discussing some topics. Collaborative learning fosters the exchange of knowledge anytime, anywhere (Sriwisathiyakun, 2015). Web instruction allows learners to learn and connect with knowledge on the internet network and link their existing experience with new knowledge through the learning process [30]. In addition, it can reduce cost and time compared to in-class learning (Bunnapasut, 2015).

3) The total satisfaction levels of all applications are almost high or at a high level. All participants are satisfied with the benefits that they can adapt to their work, and the presentation is very attractive and interesting. These results mean the online training course based on the Connectivism theory provides effective and satisfying online instruction for learners. Although Alzahrani & Seth (2021) stated that the

online setting during the pandemic did not impact students' satisfaction the prior experience and social influence did impact their personal outcome expectations and satisfaction. But they studied in only the online setting for formal lessons in school that they found the barriers in the lack of internet connection for some students. The participants of this study were workers who did not have this barrier. So, they expected the information quality and self-efficacy from this course and their learning outcomes to impact on their satisfaction too. Especially, in the New Normal way of life, this online training course's model is the best appropriate solution to help learners pace into lifelong learning in the digital era.

Knowledge from this research

Knowledge from the Online training to develop skills in using Zoom, MS Teams, and Google Meet based on the Connectivism theory for the General public during the COVID-19 pandemic consists of the Online Course Scaffoldings and Learning Activities as show in Figure 4.

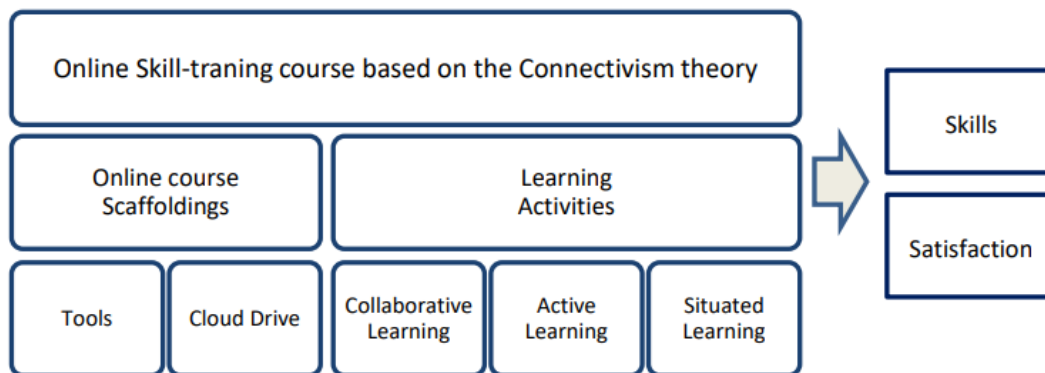


Figure 4 New Knowledge

1. Online Course Scaffoldings

1.1 Tools. There're are lot of various tools in online video conference programs (Zoom, MS Teams, and Google Meet) including screen-sharing, small-room functions, etc.

1.2 Cloud Drive. This scaffolding is quite necessary for sharing any resources in Online courses, such as Google Drive, OneDrive, etc.

2. Learning Activities

2.1 Collaborative Learning Activities. These activities need Online-learners working together through the video conference program instructor led including Small-group sessions, Group-discussion, etc.

2.2 Active Learning activities. The instructor needs to observe and assess all online behaviors of learners to stimulate their attention during the course's period with active learning activities such as Q&A, Game interruptions, Breaks, etc.

2.3 Situated Learning Activities. In the Online environment, there are many learning experiences that can occur while learners try to practice their skills by themselves. They often ask the instructor about their situations such as why their screen is different, or why their screen show errors. The instructor should take advantage of these chances to engage in the situated learning activities by discussing, sharing, or explaining the solutions. Other learners will be able to learn and fix those mistakes through these situated activities.

Finally, the researcher hopes even formal academic educators or private corporations that use information and communication technology for training, can improve their use of this knowledge to be more efficient, especially in this New Normal era.

Suggestions

Based on this study, the author suggests as below:

1. The instruction designer should be aware of the definition and backgrounds of the specific topics. Sometimes, participants should be categorized and qualified into the appropriate groups by their abilities and backgrounds to prevent inequality and constraint problems during the online class.
2. The instructor should separate the sessions or clusters for each application. Some complex applications are very complicated and have diverse tools, materials, and restrictions, such as MS-Teams.
3. The online participants should make all necessary preparations, including their devices, environment, materials, guidance, and directions, before joining the online session to prevent personal technical interruptions during the online class.

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