Investigating Challenges of Student Centered Learning in Thai Higher Education during the COVID-19 Pandemic

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Abstract—The Covid-19 pandemic has posed major challenges for the education sector worldwide. Face-to-face university courses have to be taught online. University instructors have faced significant difficulties in creating a student-centered learning (SCL) environment online. The aim of this study was to investigate the major challenges of creating student centered learning in Thailand and focused on a population of college instructors attending Thai EASTEM webinar on "Student-Centered Learning in Internet-Based (online) Teaching", offered in year 2020 during the Covid-19 pandemic. The aims of this webinar series aimed to provide information on student-centered online learning, how to effectively conduct SCL-based online classes and strategies for better assessments in online learning. There were more than 1000 participants attending all three webinars. The online questionnaire was designed to gather information required by the study. Both quantitative and qualitative were analyzed according to emerging aspects of the online learning activity including learning goals, tools & resources, roles and assessment. As results, most instructors had concerned about fairness and honesty in online assessment, how to create SCL online teaching and students' skills in using computer for online learning and students' readiness in terms of equipment. The study findings are of great use in areas of education development in higher institutes of learning. The findings are also of considerable value in creating SCL online learning environment for college teaching in a digital era and adaptation of instructors towards new way of teaching and learning.

Keywords—student-centered learning, online learning, higher education, Covid-19 education

I. INTRODUCTION

Euro-Asian collaboration for enhancing STEM education (EASTEM) project has been co-funded by the Erasmus+ Programme of the European Union 2019-2022. The project main aim is to improve employability of STEM graduates by ensuring students obtains skills needed in the 21st century workplace. The project provides a platform of exchange information and knowledge between European and Southeast Asian universities on student-centered STEM education [1]. In Thailand, there are three universities partners including Chiang Mai University, Prince of Songkla University and Mahidol University. The EASTEM project consists of four work packages in which the work package 2 focused on the development of Train the Trainers (ToT) courses for university lecturers to adapt student-centered learning approaches in their teaching.

When COVID-19 pandemic had spread to Thailand in March 2020, many higher institutions were instructed to offer online teaching, however, with limited resources. This sudden change into online teaching during this pandemic is referred to as "emergency remote teaching" by Hodges et al. (2020) because it's quality and effective are compromised by various factors [2]. Thai university instructors have troubles in offering online teaching alone and it is quite challenged in creating a student-centered learning (SCL) for online teaching. Therefore, Thai EASTEM universities partner offered a series of webinar on "Student-Centered Learning in Internet-Bases (online) Teaching" to support higher education instructors teaching online classes and implementing SCL approaches. This study was aimed to survey major challenges and obstacles of implementing SCL

in online teaching among Thai higher education instructors who attended the webinar series.

II. LITERATURE REVIEW

A. Student-Centered Learning

The challenges of globalization, exponential advances in Information and Communication Technologies (ICT), and the need to resolve several global issues for better life and well-being, have become reform agents of change in higher education institutions. The curriculum has been designed toward more interdisciplinary, integrated and student centered approach to teaching.

The term student-centered learning (SCL) is often used in educational research studies but it does not have a clear definition. Initially, SCL has been defined as a learning approach in which students choose not only what to study but also how to study and why they are interested in that particular topic [3]. However from literature review, SCL was interpreted in a number of ways. O'Neill and McMahon (2005) summarize three important components of SCL as, (1) students have choices or controls in their education; (2) students are actively engaged in their learning; and (3) the shift in the power relationship between the student and the teacher [3]. These have influenced of how to run a real classroom using SCL approaches and how to design an effective instruction. In summary, SCL refers to instructional approaches that move the focus of learning away from the teacher and toward the pupil. The main principles of SCL as Brandes and Ginnis (1986) proposed in their book "A Guide to Student-Centred Learning" as follows [3]:

- Students have full responsibility for their learning.

- Actively involvement and engagement are essential for learning.

- The relationship among learner is toward promoting growth and enhancing competency.

- Teachers become facilitators and resource person.

- Student experiences both affective and cognitive domains together.

- Students have a new perspective on themselves as a result of the learning experience.

Thus SCL requires students to be active and in charge of their own learning, so many research studies implemented SCL and active learning approach together [4-5].

B. Active Learning Approach

Recent research in education suggests that traditional instruction hardly improve students' understanding and appreciation in the subject even if the instruction includes demonstrations, simulations or computer-aided instruction. Higher education institutions increasingly promote and provide support for teaching with active learning approach and other pedagogies of engagement as a means to increase learning and improve student attitudes [4-6].

In teaching science and engineering subjects, students actively construct their learning while observing demonstrations, conducting experiments, doing practical works, making mathematical descriptions along with constructing theories, developing scientific reasoning through discussions, and solving problem. There is a wide spectrum of actively engaging students in learning subjects.

The instructors have to choose appropriate active learning strategies for their classes. Instructor readiness was found to be the key success in implementing active learning [7, 8]. The Covid-19 pandemic has placed more challenges to instructors in delivering active-learning online [9-11].

C. Challenges in online learning during Covid-19

Universities have undergone a large-scale shift to online learning as a direct result of social distancing efforts during the pandemic and the need to sustain service during times of emergency. Academics all around the world have had to turn documents and techniques into an online-friendly format in a limited amount of time. This change was hurried and forced by circumstances, so this "emergency online education" are lack of cautious design and development process [9]. These have raised many challenges for both instructors and students [9-11]. Here are summary of the difficulties in delivering emergency online learning [9-11].

- **Technology**—online learning requires technological devices and internet, so this places huge burdens on universities, instructors and students [9, 10].

- **Socio-economic factor**—students with low socio-economic background have found it difficult to get technological devices and internet for online learning [9, 11]. Universities face additional challenges, such as budget restraints and limitations of current IT facilities [11].

- **Digital competence** is defined as skills, knowledge and attitudes required when using ICT and digital technologies [9]. Students with low digital competence are often lack behind in online learning. Instructors with low digital competency are lack of adaptation of teaching style for the online environment [10].

- **Assessment and supervision**—online assessments are limited to online proctor of students, so it is difficult to prevent and regulate cheating [9].

- **Heavy workload**—the sudden change to online learning has placed massive workload on ICT staffs at universities, instructors as well as students [9].

- **Self-regulation**—many studies reported high correlation between students' self-regulation and success in online learning. Moreover, students with low self-regulation found online learning to be stressful and frustrated [11].

- **Compatibility**—engineering, science, health science and sport science where hands-on practical experiences are essential are found online learning to be lack of compatibility, especially teaching laboratories [9].

- **Interactivity**—the online learning lack of support from instructors in the learning process and lack of interaction with peers as well [10].

- **Teaching style**—for online learning to be effective, instructors have to adjust their teaching style to the online environment [11].

III. METHODOLOGY

A. Objectives and Research Questions

Before the Covid-19 pandemic, instructors in Thai higher education mostly used online platform in uploading course materials, assigning online homework or making announcements. The pandemic has abruptly forced teachers and college instructors to move from face-to-face learning in the classroom to online learning in self-quarantine. The instructors did not prepare nor had time to design lesson plans for online learning, so this teaching are "emergency remote teaching" [3]. The crisis-response migration methods of higher education instructors were surveyed to identify their status quo, challenges and concerns facing by college instructors in delivering online teaching with SCL approach. This is a descriptive research study with the following research questions:

1. What are status quos of higher education instructor in technological readiness?

2. What are the instructor opinions regarding online teaching with SCL?

B. Research Approach

This study is a descriptive research and used a quantitative approach. The quantitative data were taken from Likert-based instruments to measure the respondents' perceptions of their status quos in technological readiness and their online teaching with SCL.

C. Participants

The participants in this study were higher education instructors attending Thai EASTEM webinar on "Student-Centered Learning in Internet-Based (online) Teaching", offered in year 2020 during the Covid-19 pandemic. The aims of this webinar series aimed to provide information on student-centered online learning, how to effectively conduct SCL-based online classes and strategies for better assessments in online learning. The webinars divided into 3 parts including

Webinar 1: "Overcoming Challenges in University-Level Online Teaching during the Covid-19 Crisis," offering on June 22, 2020 at 10 am – noon. There were 1051 participants.

Webinar 2: "How to Effectively Conduct SCL-Based Online Classes," offering on June 29, 2020 at 10 am – noon. There were 1135 participants.

Webinar 3: "Strategies for Better Assessments in Online Learning," offering on July 6, 2020 at 10 am – noon. There were 1159 participants.

There were 1045 participants attending and answering all three questionnaires at the end of webinars. Their demographic characteristics are reported in Table 1.

TABLE I.   DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

Variables	Category	Count	Percentage
Gender	Female	750	71.8%
	Male	295	28.2%
Higher	Traditional University	569	54.4%

Variables	Category	Count	Percentage
Education	Rajabhat and Technical University	186	17.8%
	Private University	72	6.9%
	Educational Institution	13	1.2%
	College	47	4.5%
	Community college	158	15.1%
Field of expertise	Technological science and Engineering	290	27.8%
	Health science	289	27.7%
	Humanity and social science	166	15.9%
	Education	119	11.4%
	Business Administration	98	9.4%
	Arts and others	83	7.6%
Teaching experiences	0-3 years	148	14.1%
	3-5 years	111	10.6%
	5-10 years	254	24.2%
	more than 10 years	532	50.9%

D. Research Instrument

This research relied on the instrument to measure the readiness of instructors. The questionnaire consisted of items according to research questions. The first research question, having items with 3-point Likert scale (3 = often, 2 = seldom, 1 = never) consisted of

- frequency of using learning management system (LMS) including Moodle or Google classroom

- frequency of using online communication with the classes to counseling, asking question, and/or making announcements including e-mail, Facebook, Line, MS Teams, Slack.

- frequency of using technologies to create active learning activities in class including Google form, Kahoot, Plicker, Mentimeter, Nearpod, Padlet, and Zoom poll.

- frequency of using technologies to monitor, to run activities or to receive students' work including MS Office, Google drive, Google document, Google spreadsheet.

- frequency of using technologies to prepare for online teaching including Zoom, MS Teams, FB Live, YouTube, and Loom.

The second research question, also having items with 3-point Likert scale (3 = agree, 2 = somewhat, 1 = disagree) consisted of opinion about SCL online teaching and obstacles in online teaching with SCL. The 12 statements consisted of seven dimensions including technology, socio-economic factor, digital competency, assessment, self-regulation, compatibility, interactivity and teaching style.

E. Data Collection and Analysis

Data was collected online from three questionnaires distributed through Google Forms at the end of each webinar. The participants received information at the beginning of the questionnaire about the objectives. The data were analyzed using a spreadsheet program and descriptive statistics were calculated.

IV. RESULTS AND DISCUSSION

Results are reported and discussed according to instructors' status quo of technological readiness (RQ 1) and instructors' opinion regarding challenges in online teaching with SCL (RQ 2).

A. Technological readiness

From literature, the main concern of emergency remote teaching was that the instructors did not have the necessary technical skills and necessary technologies. Therefore our first research questions, "What are status quos of higher education instructor in technological readiness?" aimed to survey instructors' technological readiness in these topics as follow:

- *Learning management system (LMS)* is essential in operating e-learning, 35.2% of respondents often used Google classroom and only 15.2% often used Moodle. Surprisingly, 17.0% never used both LMS platform. Their organization might have used different LMS or lack of any.

- *Online communication* can be done through various channels in order for students to counsel, ask question and receive news from the instructors. Most instructors about 72.5% often used Line, 59.1% still used e-mail and 45.3% used FB for classroom communication, as shown in Fig 1.
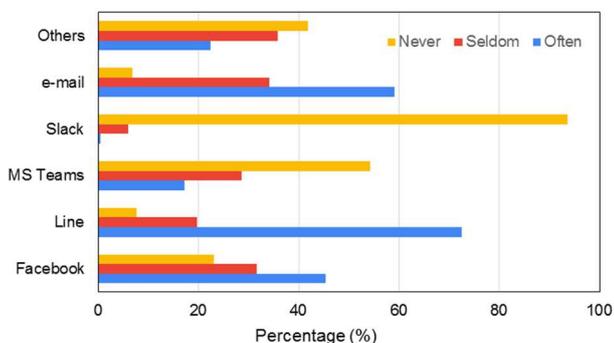

Fig. 1.   Percentage of using online communication

- *Technologies to create active learning activities* during online teaching can be done with numerous applications. From Fig 2, most instructors often used Google form (53.9%) and Kahoot (25.7%) to run active learning activities. Only 7.9% used poll function in Zoom to engage students despite majority of instructors preferred Zoom as platform to teach online as shown in Fig 4. This might indicate that the instructors need to receive training on using Zoom to teach active learning activities.
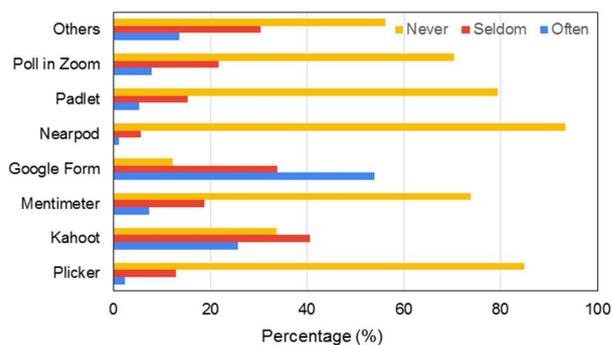

Fig. 2.   Percentage of of using technologies for active learning

- *Technologies to manage classroom* such as to monitor, to run activities or to receive students' work. These technologies include MS Office, Google drive, Google document and Google spreadsheet as shown in Fig 3.

- *Technologies for online teaching* both synchronous and asynchronous. Majority of instructors often used Zoom to teach live online as they mentioned in the follow up questions. They also concerned about video and audio quality in teaching online.
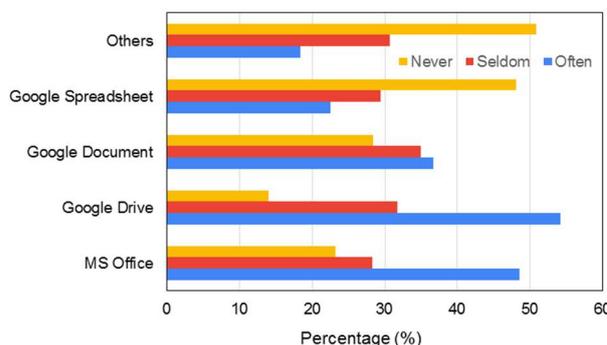

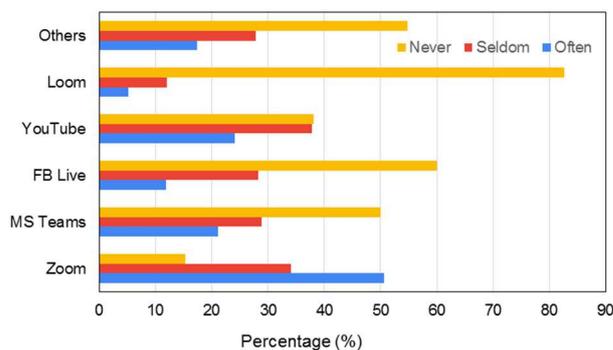Fig. 3.   Percentage of of using technologies for classroom management

Fig. 4.   Percentage of of using technologies for online teaching

B. Opinion Regarding Online Teaching with SCL

The second analysis of questionnaire focused on the instructors' general opinions and specific opinions about

obstacles affecting online teaching with SCL. The analyses are shown in Table II.

Variables	Category	Agree
Technology	Stability and access to stable internet connection.	83%
	Instructors' knowledge and skills in using different technologies for online teaching.	73%
Socio-economic factor	Students' readiness in terms of technological devices for online learning.	81%
Digital competency	Students' skills in using computer or technologies for online learning.	66%
Assessment	In SCL, using formative assessments and providing timely feedback are important.	77%
	Honesty in online test and assessment.	78%
Self-regulation	Creating non-threaten atmosphere in which students feel safe, relaxed, is the most important factor of student-centered learning	80%
	Students' self-discipline and self-regulation during online learning.	84%
Compatibity	Certain topics should not be taught online.	70%
Interactivity	Engaging and motivating students to participate in online learning.	80%
Teaching style	Student-centered learning must ensure to cover all contents in the curriculum.	72%
	Online teaching can be student-centered learning.	64%

More than 80% of instructors mostly concerned about students, especially their self-regulation and self-discipline during online learning, socio-economic factor affecting students' technological readiness, and interactivity during online teaching with SCL. When the online learning was not well designed to engage students, students with low self-regulation could be easily distracted and far behind on their learning [11]. Students with low socio-economic background would have problems in getting devices or internet for online learning. Fishbane and Tomer (2020) found that students who could not afford hi-speed internet are most vulnerable to fall behind and encountered problems to have online discussion or group meeting [12]. This made it harder to implement SCL in online teaching. However, many instructors seemed to have somewhat confidence in students' digital competency.

The instructors also concerned about using SCL approach in online teaching in terms of online assessment, compatibility, and teaching style. They were most worried about how to teach laboratories or practical classes online [9-11], so that many agreed that certain topics cannot be taught online. Instructors' negative view of compatibility for online learning might come from inadequate digital literacy in designing online laboratory. The laboratory can be done virtually and there is a need for professional development program for faculty members on running virtual laboratory and related software [13].

V. CONCLUSION

In this study, Thai higher education instructors attending the webinars fairly prepared in using suitable technology to deliver remote education. However, majority are in needed for professional development in using technology for active learning online and for online laboratories or online practices.

Most instructors viewed that student self-regulation and self-discipline, socio-economic factor, and limited interactivity are obstacles to students' online learning. The self-regulation issue is an important factor in determining students' success in online learning environment [14]. Socioeconomic factor also jeopardizes access to learning materials as well as quality of online learning [11, 12]. Moreover, students who lack of necessary technologies or do not have adequate internet at home cannot engage or participate in online learning activities [12]. Instructors have to resolve these issues creatively and be more flexible and innovate in delivering their teaching.

Many instructors also were concerned about how to assess student online and how to avoid cheating and plagiarism. Regarding various challenges of online assessment, we had discussed this issue with the webinar participants and suggested increasing formative assessment to provide meaningful feedback, designing questions that require higher order thinking and using varied question types.

Moreover, the college instructors were questioned about compatibility, especially conducting laboratories, or performing practice in their field. These concerns are mostly in the field of science, engineering, health science, and physical education [11]. However, many studies have reported use of appropriate technology where virtual or online learning can be used to substitute hands on experiences [13].

With different situations and/or limitations in terms of institutional support or online teaching experiences, there are the socio-technical aspects that the college instructors should focus on their effort and time to improve. In our opinion, providing meaningful feedback or using formative assessment is critical to keeping students motivated and interested in the online learning materials [15]. The instructors should design the online lesson to provide effective feedback. This allows students to get the most out of their online learning experience and may have a major influence on their overall performance. Moreover, the instructors should create non-threaten atmosphere in which students feel safe, relaxed and connected with the instructor. This can be done with adding instructor presence in video lectures [16].

All in all, higher education instructors have to receive necessary professional development and sufficient time to level-up their digital literacy for online teaching with SCL approach and to become a competent and self-confident online instructor [17]. Results from this study were used to design online workshop offered by Thai partner universities to their faculties and those who are interested.

1. Teacher technology readiness

For the following questions, please rate the frequency of using these technologies in your teaching based on 3—often, 2—seldom, 1—never.

1.1 How often you use these Learning Management System (LMS)?

- Moodle
- Google Classroom
- Others

1.2 How often do you use these online communications to contact with your classes—including counseling, asking questions and announcements?

- Facebook
- Line
- MS Teams
- Slack
- E-mail
- Others

1.3 How often do you use the following technologies to create active learning activities in class?

- Plicker
- Kahoot
- Mentimeter
- Nearpod
- Padlet
- Poll in Zoom
- Others

1.4 How often do you use the following technologies to monitor, to run activities or to receive students' work?

- MS Office
- Google Drive
- Google Document
- Google Spreadsheet
- Others

1.5 How often do you use the following technologies to prepare for online teaching?

- Zoom
- MS Teams
- FB Live
- YouTube
- Loom
- Others

2. Opinion about online teaching

2.1 Your opinion about online teaching with student-centered learning. Please rate your opinion on the following statements based on 3—agree, 2—somewhat, 1—disagree

- Online teaching can be student-centered learning.
- Creating non-threaten atmosphere in which students feel safe, relaxed, is the most important factor of student-centered learning.

- Student-centered learning must ensure to cover all contents in the curriculum.
- In SCL, using formative assessments and providing timely feedback are important.

2.2 In your opinion, what obstacles or problems affect online teaching using student-centered learning? Please rate your opinion on the following statements based on 3—agree, 2—somewhat, 1—disagree

- Students' readiness in terms of technological devices for online learning.
- Instructors' knowledge and skills in using different technologies for online teaching.
- Students' skills in using computer or technologies for online learning.
- Certain topics should not be taught online.
- Stability and access to stable internet connection.
- Engaging and motivating students to participate in online learning.
- Honesty in online test and assessment.
- Students' self-discipline and self-regulation during online learning.

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