Journal of English Language Education
Vol. 3(1) 2020: 29-48
Edulangue

PRE-SERVICE TEACHER EXPERIENCE IN DESIGNING LESSON USING TPACK-21 CL IN TEACHING READING FOR HIGH SCHOOL STUDENTS

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Abstract

This study looked into the experiences of a pre-service teacher in designing a lesson using Technological Pedagogical Content Knowledge for 21st Century Learning framework. The pre-service teacher integrated the use of technology for the teaching learning process because it was to support the students to achieve the 21st skills, especially in reading. This study drew on the narrative inquiry methods to present the finding. The pre-service teacher designed the lesson followed by a reflection. This long scientific endeavor leads the pre-service teacher to consider to develop technological pedagogical content knowledge (TPACK) skills to enable herself to become a professional teacher. The finding showed that though the pre-service teacher was finally able to design the lesson and implement it in the classroom, she needs further discussion with the lecturers and the tutor teacher. The development skills from the experience is important for a teacher to be able to design meaningful learning for the students.

Keywords: *Pre-service Teacher Experience, TPACK-21 CL , Teaching Reading.*

INTRODUCTION

In this 21st century, students need to learn the competencies which suit the 21st century workplace. To facilitate the students to have such competencies, 21st century learning (21 CL) is needed to help students foster their sociocultural, cognitive, metacognitive,

productive, and technological competencies (Koh, Chai, Wong, and Hong, 2015a). English and reading are some of the core subjects in 21 CL to be learnt by the students (P21, 2015). Thus, students in Indonesia as the English as Foreign Language (EFL) learners need to develop such competencies so.

Since it is needed to prepare the students for 21st Century work, teachers need to teach the students with the skills needed. Therefore, the pre-service teachers also have to develop their selves with the competencies to be able to conduct the lesson. One of the methods to apply the 21 CL is creating ICT-Integrated learning (Koh, Chai, and Lim, 2016). One of the ideas to support the ICT-Integrated learning is proposed by Mishra & Koehler (2006) with their technological pedagogical content knowledge (TPACK) framework to conduct effective teaching.

The topic about TPACK has already been studied by many researchers. Koh, Dong, Chai, and Tsai (2015) studied the profiles and interplays of pre-service and in-service teachers' TPACK in China using exploratory study. In 2016, Maor studied the use of the TPACK model in two higher education e-learning classes in Australia using mixed-method study. Zinger, Tate, and Warchauer (2017) also conducted research to examine technology-enhanced pedagogy in the context of teacher learning and classroom practice. It was a theoretical study. Tseng, Cheng, & Yeh (2019) studied how pre-service English teachers enact TPACK in the context of web-conferencing teaching using an action research method.

In Indonesia, there have been several developments of TPACK-21 CL. Koh, Chai, and Natarajan (2018) conducted research about developing Indonesian teachers' TPACK and their learning outcomes throughout a two-day professional development workshop. Drajati, Tan, Haryati, Rochsantiningsih, and Zainnuri (2018) conducted a survey about the development of TPACK and multimodal literacy towards English Language Teacher in Indonesia. The finding shows that the teachers, pre- and in-service teachers knew about TPACK but still need to be supported by university, environment, stakeholders, and government. These show that Indonesian already recognize the TPACK-21 CL.

Those previous studies are pointing on the topic of TPACK in pre-service teachers. The method used is the significant differences of all. This study adopts the content-specific form of TPACK to teach English as proposed by Koh, Chai, Lim (2016) and focuses on the use of TPACK to teach English reading. The researcher aims to integrate the TPACK-21 CL framework in teaching reading for Senior High School and reports the experience through Narrative Inquiry since a similar study is still rare. Therefore, this study was conducted to know the pre-service teacher experience in designing the TPACK-21 CL lesson.

Literature Review

The Conception of TPACK-21 CL

The TPACK framework is initially from Shulman's (1986) study about the knowledge which the teachers need to know. Based on Shulman (1986) the teacher should develop the subject matter content knowledge, pedagogical content knowledge, and curricular knowledge. Content knowledge and pedagogical knowledge are the two important things must be mastered in teaching. Mishra and Koehler (2006) build a further concept about teacher knowledge which knowing as TPACK (Technological Pedagogical Content Knowledge). In order to hold effective technology integration in teaching, the teacher needs to integrate the technological knowledge (TK), pedagogical knowledge (PK), pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPACK).

Based on the P21 (2015) students have to learn the core skills for today's world; critical thinking, problem solving, communication and collaboration. Therefore, teachers have not just focus on how to use technology but also the way to integrate technology in the teaching-learning process to support ICT (Mishra and Koehler, 2009). Koh et. al. (2016) have proposed a content-specific conception of TPACK which known as TPACK-21 CL. It is a conception of teacher teaching of TPACK in using 21st-century learning as the pedagogical set for ICT integration. The teaching-learning process focusing on

student-centered ICT-integrated learning could give some insights about how 21st CL may look like. Koh (2013) also provided a rubric to assess the lesson designed by the teacher dealing with TPACK-21 CL (see Apendix).

Reading as Literacy in 21stCL

Tan (2014) stated that the definition of literacy was traditionally restrained by the capacity to read and write; then reading and writing skills was the importance of literacy in printed texts. Today, the definition of literacy is including the Information and Communication Technology (ICT) literacy in connection to prepare students for 21st-century learning (Tan, 2016). In reading for high school students, successful comprehension of text can be predicted by their vocabulary, background knowledge, inference ability, word reading, and comprehension strategy use (Cromley & Azevedo, 2007).

Educational testing service (ETS) (2007) reports that ICT literacy is the use of digital technology, communication tools, and/or networks to access, manage, integrate, and evaluate, and create information for knowledge society. According to Huang 7 Hong (2015) assume that ICT may play crucial role in facilitating individual's learning in language especially for English learning. The use of ICT has already affected many parts of life; people use computers to work some tasks with quick and easy way, students are able to access information on the internet, many of them use some ICT tools that provide free resources for task and professional business such as YouTube, Google Docs/Drive, Google search, Dropbox, Facebook, and Gmail. Reading for high School students in this study includes Correlative Conjunction and Biography Text material and uses ICT tools such as Schoology and Canva.

Many studies have been conducted to develop TPACK. In 2015, Dong, Chai, Koh, and Tsai conducted an exploratory study entitled "The Profiles and Interplays of Pre-service and In-service Teachers' TPACK in China". This research surveys about the teachers' constructivist-oriented teaching (CB) and design disposition (DD). The findings reveal that DD consistently predicts both pre-service and in-service teachers' TPACK and this provides support about the importance of design disposition for TPACK advancement. The findings imply that while the in-service teachers believe strongly in

constructivist-oriented teaching, they need further professional development in designing instruction to actualize their desired form of education.

A study about TPACK also conducted by Maor (2016) entitled "Using TPACK to Develop Digital Pedagogues: A Higher Education Experience". The study took place in two higher education e-learning classes in Australia which concern on the use of the TPACK model. It increased students' competency to use technology in their studying and later in their work place. A mixed-method study qualitative and a TPACK survey are used. Based on the finding, the students' confidence and understanding in the use of the different domains of TPACK is increased.

Zinger, Tate, and Warchauer (2017) also conducted research entitled "Learning and Teaching with Technology: Technological Pedagogy and Teacher Practice" to examine technology-enhanced pedagogy in the context of teacher learning and classroom practice. It was a theoretical study. The study defined and discussed technology-rich environments, which encompass a complex combination of tools, curricula, contexts, and teachers. Then pointed out the technocentric approaches persisting in the classroom and note their counterproductive nature. The study also conceptualized technological pedagogical within the framework of TPACK. Finally, the study broadened the view of examination technological contexts across a number of settings and the impact of sociocultural factors on the use of technology and the enactment of technological pedagogy.

Drajati, N. A., Tan, L., Haryati, S., Rochsantiningsih, D., and Zainnuri, H (2018) examine the perception and implementation of pre-service teachers and in-service teachers about the literacy of the technology, pedagogy, and content knowledge aspects. The research entitled "Investigating English Language Teachers Developing TPACK and Multimodal Literacy" involved 100 teachers; the researchers described the demographic teacher with technology, pedagogy, and content knowledge literacy (TPACK). The points of TPACK literacy are PCK for Multimodal Literacy, TPK (21st Century Learning), and knowledge of digital media tools.

Tseng, Cheng, & Yeh (2019) conducted research entitled "How Pre-service English Teachers Enact TPACK in the Context of Web-conferencing Teaching: A Design Thinking Approach". The study

used quantitative content analysis of coded post-teaching discussions and qualitative analysis of interviews. It studied the design conversations where six distance teachers discussed how to design online teaching materials and activities and solve any contextual problems happened. When the teachers' discussions displayed with an orientation towards Pedagogical Content Knowledge, the opposite of technology-based knowledge, the discussions were particularly not connected with Technological Pedagogical Knowledge. Besides there are other two contextual factors that influence their web-conferencing teaching. Those are technical problems related to sound quality and short attention spans.

All those previous studies are studying about TPACK in pre-service and in-service teacher but none of them that used narrative inquiry method. So, the significant difference from those previous studies and this research is the method. That is why the researcher proposing a study about the implementation of TPACK-21 CL in teaching reading for high school student using narrative inquiry method.

Method

This study employed a narrative inquiry design conducted by a pre-service teacher. The study took place in Surakarta when the pre-service teacher doing the internship program for 2 months. The school used the 2013 Curriculum and the English subject had 3 hours per weeks. According to Barkhuizen, Benson, & Chik (2014), narrative inquiry is narrative research in which stories used as data. In the narrative study of Language Teaching and Learning (LTL), the data is concerned with the teachers' stories about their experiences in professional development and practice and the learners' stories about their experiences in learning and using language. Narrative inquiry helps the researcher to understand how the teachers and learners of language arrange their experience and identities into story and represent it to themselves and others.

Narratives in LTL have been regarded as the text or the method of analysis or both. The data of narrative inquiry research is qualitative. It focuses on the experiences of the participant. This study is an aautobiographical case studies written for academic readers and describe teachers' experiences when teaching English reading using

TPACK-21 CL in High School. The data was collected from the pre-service teacher's diaries. Teacher diary was written as the reflections of how the pre-service teacher learning in the university and how the pre-service teacher planning the lesson. To analyze the data, the researcher will use thematic analysis. The model of thematic analysis is proposed by Barkhuizen et. al. (2014), it contains three activities: 1) repeatedly reading of the data, 2) coding and categorizing the data extracts, and 3) recognizing the thematic headings.

Findings

The data was taken from the Pre-service Teacher's Diary (PTD) before, during, and after doing the designing the lesson. The findings are based on the research questions; how are the pre-service teacher's experiences in designing the TPACK-21 CL lesson.

The majority of the pre-service teacher's experiences in designing the lesson derived from the knowledge in joining the classes before the internship. The classes taught me about the teacher competencies (professional, personal, pedagogical, and social), syllabus, learning indicator, and lesson plan which later were useful for the internship program. At that moment, I developed the first understanding that learning goals and indicator were important in making lesson plan.

Next, by joining the classes before the internship, I developed my knowledge from only understanding the element in designing the lesson to be how to practice the knowledge to prepare a lesson. Thus, the classes I joined also developed my skills about how to make lesson activities, how to make the material based on the syllabus, and how to create an online classroom using Schoology. In addition, I learned that technology could be integrated in teaching learning process.

I also joined a class where I learned how to act as a teacher in front of the class, how to lead discussion, and how to give feedback to the students. The class was called microteaching class.

> *In the next semester, I join a "Microteaching" course where I learned about how to practice a lesson plan in the classroom. In the beginning, my lecturer showed to the students what to do in opening the classroom, then how to lead a discussion, and how to close the class. In microteaching, I taught my friend about recount text. My lesson activities were including 5 aspects in learning*

> *and I practiced it in front of the class. My class ran smoothly, my students understood the material and did the task well. I also learned about TPACK-21 CL based on the articles that I found related to it in this semester and knowing about other teacher competencies. In this class, my lecturer said that the real class would not be pleasant because the students had their own character and needed the right treatment.*
>
> *(PTD, June 2019)*

Thus from many classes I joined before my internship in a senior high school which located in Surakarta which had great facilities in preparing for digitalization era, I developed my skills in designing the lesson and prepared myself to become a professional teacher. The skills I developed according to the TPACK-21 CL framework from Koh et. al. (2016) were the content knowledge (CK) when I learned English as the material and selected the material for teaching learning process; the pedagogical knowledge (PK) when I learned how to design, practice, and evaluate the lesson, technological knowledge (TK) when I learned the technology used in teaching learning process using Schoology; pedagogical content knowledge (PCK) when I learned how to teach students using the material I had in microteaching class; technological content knowledge (TCK) and technological pedagogical knowledge (TPK), when I learned how my lecturer use the technology to share the material for the students using Schoology.

The next experience was I got during the internship program. I planned to teach English as specialization subject for the 10th grade Science students. The materials were correlative conjunction and biography text. At first, my tutor teacher gave me a guidance to make lesson plan and let me observed her in teaching the class. During my observation, I learned that the teachers' explanation and instruction had to be clear to the students. So all the students would be able to understand the lesson and did the task well. It can be seen from the situation when although some of the students had been busy with their phone by playing online game secretly, the students still had been able to answer the teacher's question. It indicated that the students in this class were able to understand the material quickly. The students' behaviors might be a challenge for the teacher to decide creating classroom activity which involves the use of the technology

or just asking the students to submit their phone and learn the material based on the textbook removed one of the distraction of students' focus.

Figure 1. I observed how my tutor teacher taught the students.

After observed my tutor teacher, I made my own lesson plan. During my process in designing the lesson plan, I felt a critical incident for my self-development process. I made a lesson plan about correlative conjunction and learnt again how to make lesson plan by searching in the internet. I planned to integrate technology during the teaching-learning process using an online classroom, Schoology. I chose it because I have experienced creating an online classroom in my study. But then I found a confusing situation.

> *I thought that my understanding about lesson plan during my study before this semester was well enough. But I had to revise the activities for my lesson plan that day because some of my activities were too complicated and less effective. I was confused, because I thought that I have already implemented my knowledge about designing a lesson plan well. I wrote the learning objectives in some points and for the activities, I used discovery learning and list the 5 aspects such as observing and questioning, associating, experimenting, communicating, and creating. Then my tutor teacher advised me to revise the lesson objectives to be a paragraph and for the activities, the in-service teacher asked me just to write down the activity without classifying it to the 5 aspects.*
>
> *(PTD, 27th September, 2019)*

Thus, that day I learnt more again about lesson plan and collaborated with the other pre-service teacher (my friend) to create a new lesson plan. We determined the clearer learning goals first then planned the activities to reach the learning goals. The lesson activities were doing online exercise then discussing it online, writing a dialogue script in pair using correlative conjunction, submitting in online, asking the students to give feedback to others' work and reflecting their work based on the feedback given by others.

For the next lesson plan about biography text, I did research again in the internet. I found a lesson plan that has been applied 21-CL. The activities designed to accommodate students' critical thinking and problem solving, communication, collaboration, and creativity. I used it to inspire me to make my lesson plan. In writing the lesson plan, I considered the syllabus, lesson objectives, and time allocation. I would use multimodal text (video), Schoology, and Canva as the technology for the teaching learning process. The learning activities designed to accommodate the learning objectives I had decided. I chose multimodal text in the first meeting to gain the students interesting in learning biography text since reading was usually boring. I asked the students to make digital resume to depth their knowledge about biography text and build their creativity. The next activity was a fun project for the students to learn biography text based on the figure they interested in. Then, in order to build their understanding on biography text and speaking skill, I asked the students to make a dialogue script in pair and perform it. The last activity was making a poster of the students' own biography and do exercise related to biography text.

I took a reflection after designing the lesson plan. I reflected on whether I found difficulties or not. The result, for the CK, PK, and TK I did not find a real difficulty. I mastered the content for the lesson, I decided to teach the students using some pedagogical methods, I would use Schoology for the technology tool. Yet I found difficulty in combining the skills among those PCK, TPK, and TCK. I should make sure that the activities in the teaching learning process would be memorable for the students. Then, the way I delivered the content should be understandable for them. I also should create a classroom situation where the students not feeling bored and on the contrary, they feel enthusiastic with the lesson.

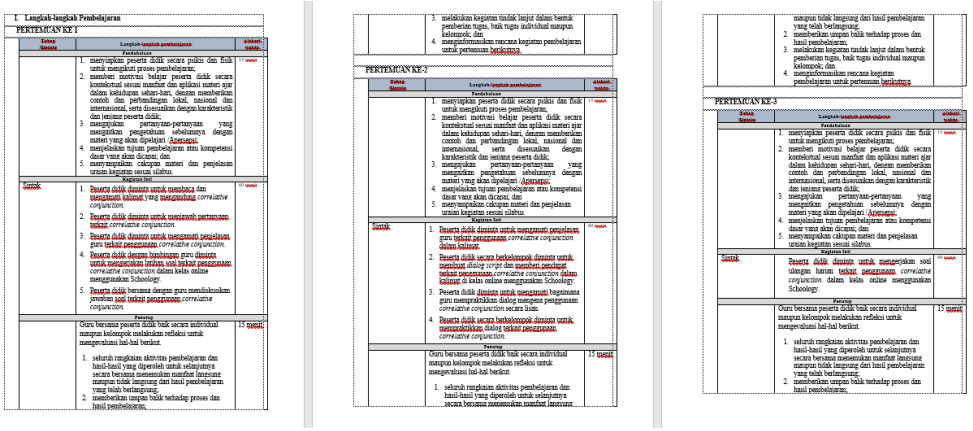

Figure 2. Learning activities in correlative conjunction lesson plan

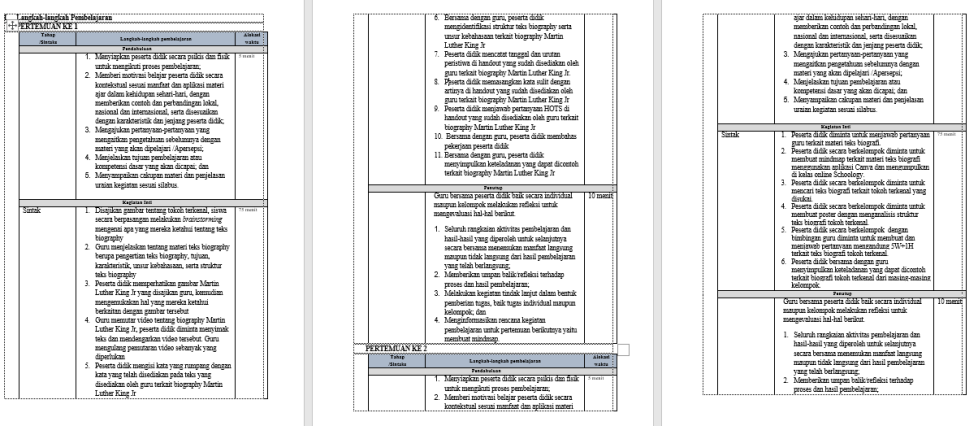

Figure 3. Learning activities in biography text lesson plan

Discussion

Based on the findings, there was a long process that leads the pre-service teacher to be able to integrate the TPACK-21 CL framework for designing lesson. The process began with gaining the knowledge for designing the lesson and then practicing the knowledge by designing lesson plan.

The pre-service teacher had to join many classes to gain the knowledge for designing the lesson. Having the right knowledge, doing research, and deepening the understanding about lesson plan before designing the lesson would ease the teacher to design a good lesson plan. In this research, I already learnt about what is lesson plan, how to design lesson plan, how to create online classroom, how to evaluate the students' learning, and practice to lead a class in microteaching class. The knowledge I had helped me in designing the lesson for the internship program. This finding related to the Li and Xia (2016) that by having sufficient education for pre-service teachers in university or some workshops for in-service teacher through persistent lifelong learning and practice the knowledge into classroom, teachers update their concept and technological equipment to improve their ability in selecting, controlling, and assessing information technology in their EFL teaching.

Next, the pre-service teacher was practicing the knowledge by designing lesson plan during the internship program. At this point, the knowledge for designing the lesson was having a significance role. It is related to the teacher's competency in designing TPACK-21 CL. Here is the explanation of the implementation of the TPACK framework by Mishra & Koehler (2006) and the TPACK-21 CL by Koh et. al. (2016) based on his scaffolding questions to design the lesson on this research.

a. Content (C), what the subject matter to be taught. The lesson is about the use of correlative conjunction and the knowledge about biography text.
b. Technology (T), it is about the technologies used for representing information. In teaching learning process, the students used their smartphone to access Google search, Google translate, Schoology, and Canva. The teacher used the Schoology as the online classroom where the teacher could share the material, monitor and evaluate the students' learning.
c. Pedagogy (P), the methods used in teaching and learning, such as the purpose(s), values, techniques or methods used to teach, and the way for evaluating student learning. During the lesson, the students developed these following 21st CL skills: creativity and innovation, critical thinking and problem solving, communication,

collaboration; and English skills: reading, speaking, listening, and writing. After studying the lesson about correlative conjunction, the students are expected to be able to classify the kind of correlative conjunction, use the correlative conjunction in the sentences, and communicate using correlative conjunction. Next, after studying biography text, the students are expected to be able to determine the topic of the paragraph, the intentions of the text, the text structure, the language feature of the text, the detailed information of the text both implicit and explicit, and the reference and the meaning of certain words.

d. Pedagogical Content Knowledge (PCK), the description and formulation of the content, pedagogical methods, knowledge of what matter the content difficult or easy to learn by the students, knowledge about students background knowledge and essence of knowledge. The contents are about correlative conjunction where the students learn the use of some paired conjunctions and biography text where the students learn a genre-based text and answer some questions based on the text. In the teaching learning process, I used presentation, discussion, collaboration, role-playing, mind-mapping, and games as the activities to help the students learning.
e. Technological Content Knowledge (TCK), comprehension of how is the relationship between the technology and content. Teachers need to know what the subject matter they teach and how the subject matter represented by the application of technology. Between the technology and the content, I used the technology to share the content and the students could practice their learning by doing exercise in the online classroom (Schoology). I asked the students to use the technology (Canva) to do mind-mapping and create a timeline of their own biography.
f. Technological Pedagogical Knowledge (TPK), knowing the technology tools used in teaching learning and the pedagogical strategies used together with the technology. The technology tools used during the teaching learning are Schoology as the online classroom where I could share the material, monitor and evaluate the students learning and the students could share their works, interact and collaborate each other in this platform; Canva as the application for the students to collaborate and represent their

creative ideas; Google Search where the students could learn more about the lesson; and Google Translate used by the students to translate words from English to Bahasa Indonesia or vice versa.

g. Technological Pedagogical Content Knowledge (TPACK), the teacher's strategies to use all the competencies to conduct good teaching learning with technology. In conducting the teaching learning, I understand the material and formulate the clear goals for the lesson, then decide indicator to measure the learning. Next, I plan the right activity to accommodate the students to reach the goals by considering the teaching methods and the media and the technology for the teaching learning. The technology used not just to share the knowledge but also to help the students experience the good learning. I evaluate the students learning and reflect on my teaching in the end of the lesson.

Based on the result of the study, the pre-service teacher feels confidence with the CK, PK, and TK skills rather than the PCK, TPK, TCK, and TPACK skills. This finding, related to the previous study conducted by Valtonen, Leppänen, Hyypiä, Sointu, Smits, Tondeur (2020) that PK, TK, PCK and TPK were the TPACK areas as areas of confidence or areas that were challenging based on the participants' response. PCK as the most challenging areas because of the lack knowledge of the pre-service teacher to consider the topics when designing lessons.

Conclusion

Based on the result of the study, the writer can conclude that the teaching experience of a pre-service teacher to become a professional teacher derived from his/her experience in designing and practicing the TPACK-21 CL lesson. The teaching experience was influenced by the pre-service teacher's learning before the internship program; including all the courses he/she had joined to gain the knowledge and develop the skills. By joining the courses, the pre-service teacher would understand about the elements in designing a lesson. After having knowledge, the pre-service teacher would be able to design lesson plan and develop his/her TPACK-21 CL skills by selecting the content for the students, formulating the learning goals, deciding the pedagogical methods and the activity for the students learning,

deciding the technology tools for the teaching learning process, and formulating the evaluation of the students learning. Thus, these experiences would be beneficial for the pre-service teacher future in becoming a teacher.

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Authentic	Real-world phenomenon or problems are not being presented with media or ICT.	Real-world phenomenon Or problems are presented with media or ICT tools by the teacher.	Students investigate and understand real-world phenomenon or problems with ICT tools.	Real-world problems or phenomenon are used as scenarios or cases, and students use ICT tools to support the creation of solutions to resolve these scenarios or cases.	Students work on realworld problems or phenomenon as outlined in Level 3 and also present their personal experiences or reflections of the real-world phenomenon or problem.
Intentional	ICT tools are not used to support students to diagnose their learning gaps.	Teachers and peers use ICT tools to provide feedback to students.	Students use ICT tools or resources as a way to self-evaluate their performance.	Students use ICT tools or resources to perform self-evaluation and also to obtain feedback from teachers and peers through ICT platforms. Students then consolidate the	Students continually use ICT tools or resources for self-evaluation and as a source of teacher or peer feedback in order to

APPENDIX

Table 1 TPACK-21CL Rubric (Adapted From Koh, 2013).

Dimension	0	1	2	3	4
Active	Teachers use media or ICT to transmit content all the time.	Students use ICT Tools occasionally.	Students use ICT tools 50% of the time.	Students use ICT tools more than 50% of the time but not all the time.	Students use ICT all the time.
Constructive	Teachers use ICT tools to transmit content.	Students use ICT tools to engage in content reproduction.	Students use ICT to go beyond content reproduction but largely still articulating convergent knowledge.	Students use ICT tools to synthesize information and to construct verbal, written, visual, conceptual, orproductoriented expressions of the learning content.	Students use ICT tools as described in Level 3. They also articulate personal reflections or applications of the learning content.