Available online at IJEE (Indonesian Journal of English Education) Website:
http://journal.uinjkt.ac.id/index.php/ijee
IJEE (Indonesian Journal of English Education), 3 (2), 2016, 171-191

THE VOICES OF PRESERVICE EFL TEACHERS ON THE IMPLEMENTATION OF TEACHER EDUCATORS' FLIPPED CLASSROOM IN DESIGNING AND DEVELOPING PACI MODEL

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Received: 12th September 2016; Revised: 22th October 2016; Accepted: 28th Desember 2016

ABSTRACT

This research investigate pre-service EFL teachers' voices toward teacher educators' implementation of flipped classroom combined with Facebook throughout TPACK that can be observed by pre-service EFL teachers during their teacher training program. This study employed phenomenology of semi-structure interview and document e-portfolio projects of eight pre-service EFL teachers. This research revealed although not all participants were unfamiliar with flipped classroom, this approach to combine with Facebook as media to upload e-portfolios of previous pre-service EFL teachers and various website links to design and develop PACI model was effective and efficient in understanding the content of PACI model before they have face to face classes. The significance of this study is useful for pre-service EFL teachers to witness the use flipped classroom combine with Facebook to extend the use of technology for being self-discipline and self-directness to design and develop PACI model throughout the TPACK framework in supporting them to be 21st future teachers.

Key Words: TPACK, flipped classroom; facebook; PACI

ABSTRAK

Penelitian ini mengungkap pengalaman para calon guru terhadap penerapan kelas terbalik dengan menggunakan Facebook sebagai media oleh dosen dengan TPACK yang dapat diamati oleh para calon guru selama mengikuti perkuliahan agar nantinya dapat mereka terapkan. Dengan menggunakan phenomenology semi interview terstruktur terhadap delapan calon guru dan menganalisa hasil unjuk kerja berbasis portofolio elektronik. Penelitian ini menemukan walaupun tidak semua calon guru terbiasa dengan pendekatan kelas terbalik, penggabungan metode ini dengan Facebook sebagai media untuk memasukkan materi ajar dari Internet ditambah dengan hasil kerja mahasiswa sebelumnya berbasis elektronik portofolio untuk mendesain dan membuat materi ajar berbasis teknologi dengan menggunakan PowerPoint, Audacity, Camtasia, dan Internet (PACI) efektif dan efisien untuk difahami dan diterapkan oleh calon guru sebelum mengikuti perkuliahan dan meningkatkan penggunaan teknologi untuk belajar mandiri, mendesain, dan membuat PACI model berdasarkan TPACK untuk menjadi guru abad 21.

Kata Kunci: *TPACK; flipped classroom; facebook, PACI*

How to Cite: Limbong, E. (2016). The Voices of Preservice EFL Teachers on the Implementation of Teacher Educators' Flipped Classroom in Designing and Developing PACI Model. *IJEE (Indonesian Journal of English Education), 3*(2), 171-191 doi:10.15408/ijee.v3i2.5511.

***Permalink/*DOI**: http://dx.doi.org/10.15408/ijee.v3i2.5511

INTRODUCTION

Many teacher educators and researchers have recently turned to flipped classroom methods (Bergmann & Sams, 2012). They change the pedagogical model by flipping their classrooms learning situation, from face to face teaching to web-based method through videos or recordings of the teaching (Evseeva & Solozhenko, 2015a; Hao, 2016; Hao & Lee, 2016; Wilson, 2013).

According to Bergmann and Sams (2012), a flipped class refers to the process whereby "…that which is traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class (p. 13)". The teaching and learning processes in the flipped classroom often use multimedia lectures that have been recorded (O'Flaherty & Phillips, 2015), and uploaded to the web, so that students can view them out of class and at their homework (Bergmann & Sams, 2012) to give students knowledge and skills prior to attending the face to face sessions.

Providing students with access to online videos, audio recorded materials, multimedia and internet links about the specific lessons outside of the class encourage the students to gain prior understanding and knowledge about the lessons before they come to the face to face classroom (Strayer, 2012). The study by Evseeva and Solozhenko (2015a) reported that through the flipped classroom, the students' motivation and academic performance increased because this method promotes students' self-discipline and self-directness. O'Flaherty and Phillips (2015) revealed that the flipped classroom makes higher education students into lifelong learners by becoming familiar with 21st century skills. For the teacher, the flipped classroom offers pedagogical efficiency and effectiveness as teachers' roles dramatically change in the classroom because they are no longer the sole sources of knowledge and skills, and presenters of information. Instead, they become more tutors and facilitators (Evseeva & Solozhenko, 2015b; O'Flaherty & Phillips, 2015).

In the flipped classroom, educators have to provide multiple activities outside of the class that can be facilitated through a range of technological resources to support face to face instructions in class to enhance students' achievement. With the help of technological resources, students benefit from the outside classroom exercises and activities because they can allocate their time and pace their online learning to meet their learning styles and needs (Bergmann & Sams, 2012; O'Flaherty & Phillips, 2015). "Finding or creating effective content for a flipped classroom is the first step in

thinking outside the box' in the flipped classroom (Muldrow, 2013, p. 29)" and it is not an easy job. O'Flaherty and Phillips (2015) underlined that although many educators and students have access to numerous online teaching tools and learning trustworthy links, "teaching and learning is not all about the technology (p. 85)". By requiring students to understand the lessons before the face-to-face interaction, their familiarity with the content allows higher-order thinking and interactive problem solving in the face to face sessions (See & Conry, 2014).

The flipped classroom is a focus on student-centered rather than teacher-centered. It is a form of learning with students' active participation in small group problem solving and self and peer evaluations (Kim, Kim, Khera, & Getman, 2014; O'Flaherty & Phillips, 2015). However, there is the danger that educators in reviewing their curriculum may not fully understand the pedagogy of how to effectively translate the flipped class into practice (O'Flaherty & Phillips, 2015), as it requires "… both teachers and students to "flip" the way they fundamentally view education (Webb & Doman, 2014, p. 54)". Therefore, it is crucial that the appropriate principles of the flipped classroom design are understood before implementation.

Few studies have selected and used Facebook as medium to upload the teacher educators' materials. Loving and Ochoa (2011) showed that the Facebook can be a vehicle for enhancing learning. In addition, Facebook can be used to engage in classroom-related collaborative activities: arranging study groups, learning about course processes, asking each other questions (Lampe et al., 2011).

Research is needed to explore the use of flipped classroom by using Facebook ad a medium to upload the lecturers' videos, audios, and electronic-portfolios and other materials about the content of the lessons in to support and discuss the problem solving during face to face classes throughout Technological Pedagogical Content Knowledge (TPACK) framework (Angeli & Valanides, 2008; Koehler & Mishra, 2006; Niess, 2008). Also, few studies have explored how pre-service teachers connect the TPACK framework in designing and developing supplemental technology-integrated teaching, learning and materials with the PowerPoint, Audacity, Camtasia, and Internet (hereafter, PACI model) (Limbong, 2017) in the flipped classroom. The use of the flipped classroom to support face to face classrooms is particularly scarce in Indonesian universities.

This study therefore aims to address the gaps by addressing the following specific research questions: (1) What were the pre-service teachers' voices when the teacher educator used the flipped classroom method on Computer Application course. (2) How did pre-service teachers connect all materials in the flipped classroom in designing and developing PACI model for teaching English lesson?

METHOD

The context of the Study

This study was conducted in English study program, Faculty of Teacher Training and Education at Mulawarman University in Samarinda, Indonesia. The English Department Study Program has technology courses in three semester. They are Computer Literacy in the second semester, Computer Application (CA) in the third semester, and Computer Assisted Language Learning (CALL) in the fourth semester (EnglishDepartment-StudyProgram, 2009). This study was conducted during the Computer Application course.

The pre-service EFL teachers enrolled in Computer Application course have been equipped with certain knowledge and skills in operating software such as PowerPoint, Audacity, Camtasia, Filmora editing video, Windows Movie Maker, Windows operational system, social media (i.e., YouTube, Facebook, Twitter), and the knowledge and skills to search and download any educational sources and materials from the Internet to support their learning. In addition, The Computer Application also covers additional softwares such as Photo story, Scratch, Sparkol Video scribe, and Powtoon.

The pre-service teachers needed to complete two projects. In the first project, the pre-service teachers had to design and develop supplemental multimedia to provide explanations of the specific grammar point they selected to focus on. The second project was to follow up the first project by creating exercises or quizzes to evaluate the learners' understanding.

The Intervention of the Study

In order to efficiently provide the pre-service teachers special competencies development, new modern teaching methods and education technologies, the teacher educator and also as the researcher in this study used the Facebook to uploaded varieties websites links, flip videos, videos, audios recording, electronic portfolios (electronic projects from previous classess), and supporting materials such as handouts, books, and summary of journals for pre-

service teachers in learning activities in the flipped classroom in the three technology courses. The teacher educator adopted and modified the nine design principles of the flipped classroom (Kim et al., 2014) to follow the pre-service teachers' educational route (Bezukladnikov & Kruze, 2015) and the TPACK framework (Koehler & Mishra, 2006) to support face to face classes on Computer Application course.

The Methodology and Theoretical Framework

The TPACK framework was employed as the strategy to combine the three basic knowledge of content knowledge (CK) with pedagogical knowledge (PK) and technological knowledge (TK), to create another three knowledge of pedagogical content knowledge (PCK) (Shulman, 1986, 1987), technological pedagogical knowledge (TPK), technological content knowledge (TCK) and at the end create the technological pedagogical and content knowledge (TPACK) as the basic function to make teaching and learning more effective and efficient (Koehler & Mishra, 2006).

The TPACK framework is the extended of the PCK framework (Shulman, 1986, 1987). According to Shulman (1986) PCK deals with ''the ways of representing and formulating the subject that make it comprehensible to others'(p. 9)". While Koehler and Mishra (2006) define PCK is concerned with the representation and formulation of concepts, pedagogical techniques, knowledge of what makes concepts difficult or easy to learn, knowledge of students' prior knowledge, and theories of epistemology (p. 1027).

TCK is knowledge about the manner in which technology and content are reciprocally related (p. 1028). TPK is knowledge of the existence, components, and capabilities of various technologies as they are used in teaching and learning settings, and conversely, knowing how teaching might change as the result of using particular technologies (p. 1028).

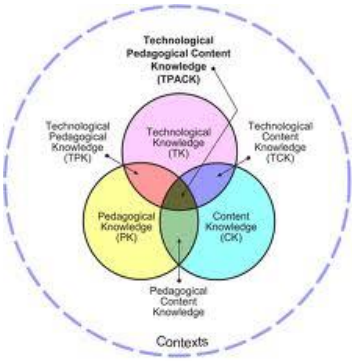

Figure 1. TPACK framework (Koehler & Mishra, 2006).

TPACK is an emergent form of knowledge that goes beyond all three components (content, pedagogy, and technology) (p. 1028).

The PowerPoint, Audacity, Camtasia, and Internet (PACI) model

The knowledge and skills comprises of four knowledge and skills of PACI model. These four knowledge and skills cannot be taken separately. The content or lessons that are designed, selected, and created by using each of these software are combined to produce a video multimedia for teaching English lessons. In this research, the specific lesson was Grammar. Its purpose is to make supplemental multimedia of the PACI model to make the presentation more attractive and efficient by producing a video with varieties of texts, colors, sounds, instrument, animation, graphics and so on. The users, particularly educators and learners may create their own multimedia by using the PACI model to help them to understand the specific lessons better (Limbong, 2017).

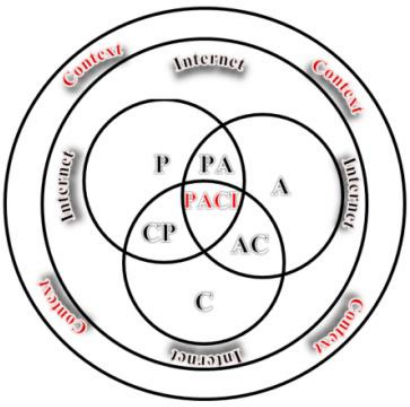

Figure 2. The model of PACI (Limbong, 2017)

The Participants Selection and Interview Techniques

The Computer Application course was attended by 120 students. Eight pre-service teachers were willing to participate and were able to be interviewed. The participants were 2 females and 6 males. Their names in this study were all pseudonyms.

This study used the semi-structure interview (Bryman, 2012; Donley, 2012; Punch, 2005; Seale, 2002) to assist researchers in gathering comprehensive information from the participants' experiences to interpret and describe their own experiences toward the teacher educators' implementation of flipped classrom. The interviews were digitally voice recorded one by one with approximately 30-40 minutes. In order to acquire a deeper understanding of the meaning of the interviewees' experiences (Creswell, 2012), the interview was conducted in different time and days. Thematic analysis was employed after transcribing in order to identify, analyze, and report patterns (themes) within data (Bryman, 2012; Cox, 2008; Saldana, 2009).

Phenomenology Qualitative Study

This study is a phenomenology study which underlines "a study of lived, human phenomena within the

everyday social contexts in which the phenomena occur from the perspective of those experienced them (Titchen & Hobson, 2005, p. 121)". Phenomena comprise the pre-service teachers' experiences (Titchen & Hobson, 2005) on the use of Facebook to deliver the video or lecturer' voices and electronic-portfolios and other materials about the content of PACI and TPACK in flipped classroom to support and discuss the problem solving during face to face classes in Computer Application course.

FINDINGS AND DISCUSSION

Some categories and sub-categories were compared and contrasted in order to answer the research questions posed.

Understanding PACI model and TPACK framework through Flipped Classroom

All PSTs agreed that they were still not familiar with the flipped classroom when the teacher introduced it on the learning contract in the first meeting as they just experienced it on technology course. They have never experienced flipped classroom methods on previous classes. However, they all agreed that the flipped classroom was useful to enhance their understanding to design and develop the PACI model to develop the PACI model according to the theory of TPACK framework to teach English-based lessons. Irawati explained:

> 'The flipped classroom was like a new vehicle for me to reach my destination faster than before. I could download the materials from the websites and electronic portfolios of previous students' project and saved them into my laptop and watched them anytime and anywhere and practiced them with my own learning style'.

Similarly, Raiendi expressed his experiences:

> 'I learnt the theories of TPACK framework and to learn PACI model at home first by following and practicing the links provided by the lecturer and other friends on Facebook. I had a lot time to practice this knowledge and skills before I came to the class.'

The findings depicted that the flipped classroom was effective method to use in uploading content of technology course (Muldrow, 2013), view the materials at home before the face to face activities (Bergmann & Sams, 2012) and benefit to all pre-service teachers for having ample of time to discuss the problems related to their project during the face to face activities, and the teaching and learning processes were being active (Strayer, 2012) and faster.

Facilitating Pre-service Teachers with Flipped Classroom to Learn PACI Model and TPACK in Computer Application

All pre-service teachers agreed that their knowledge about technology can be learnt not only from teacher educator in Computer Application course, but also through technology. Two pre-service teachers commented:

> 'I learnt the content of Computer Application course, not only the face to face class, but also on my mobile phone. I was able to re-watch the materials from our Facebook. So, it was interested to have the flipped classroom. I did not waste my time to do click and click to learn to operate the softwares in the face to face.' (Ningsih).

Irawati echoed similar views:

> 'I could see other classmates' links in helping me to know more about PACI model. I directly contacted my group for having discussion about our project through Facebook instant message'.

The findings described that technology has flipped the situation, time and environment in teaching and learning. Implementing the flipped classroom pushed the pedagogy environment and the flipped classroom leads to collaborative and cooperative activities (Bergmann and Sams, 2012).

Supporting and Modeling TPACK Framework through Flipped Classroom and Face to Face Teaching and Learning

All pre-service teachers asked for more time to understand and practice the TPACK framework for making teaching and learning effective and efficient in the face to face. Below are some statements from pre-service teachers. Komari's statement:

> 'TPACK framework is not easy to understand. Many videos, websites, and other sources have been provided by teacher educator and other friends in flipped classroom, but I still need the teacher educator's assistance in helping me to understand its theories into my teaching rather than theoretically'.

One participant expected the model from other teacher educators:

> 'I hope all lecturers may model the TPACK framework in all courses in this teacher training program so that I could see and practice the best way to make my teaching better with TPACK framework. We need more models from all lecturers, not only from Computer Application course' (Raiendi).

This study revealed that all materials that had been uploaded into Facebook in the flipped classroom can

support the face to face instructions as a tool that facilitates renewal in teacher education programs (Lee, 2008) and the flipped classroom may be implemented to increase pre-service teachers' understanding as long as the teacher educator modeled it appropriately (Koh & Sing, 2011a, 2011b; Limbong, 2015a, 2016; Teo, 2009).

Inconsistent Internet Access Issues in the Flipped Classroom

The lack of availability of the internet access in campus area was the main challenge for all pre-service teachers in the flipped classroom when they selected varieties of animation to be inserted into their PACI model. Although the majority of students had internet data on their mobile phone, they were unable to download the materials due to insufficient Internet quota on their mobile phone. To overcome the problem, often they asked the materials from other pre-service teachers who had downloaded and saved the materials into their own external harddrive. Consequently, not all pre-service teachers may instantly get the materials before the face to face classes. In addition, pre-service teachers experienced were also sometimes unable to access the links provided by teacher educator and other pre-service teachers in campus area due to low Internet connection. As a result, few of them were unable to instantly get involved in the discussion activities in the face to face classes. Two pre-service teachers' voices were quoted below.

> 'I should learned the materials before came in to face to face class, but I could not learn these materials directly due to slower Internet at campus. As a result, it was ashame and I lost my self-confidence when I could not give the ideas to my classmates when we had problems into our group's project of PACI model, Agung.'

Similarly, Efflin added, 'other friends have uploaded the links into Facebook, but I could not experience the links to learn Camtasia as it took time to download it because the Internet at campus was so slowly'

The internet access was vital for pre-service teachers to understand the materials of PACI model and TPACK framework in the flipped classroom before they attended the face to face classess. This finding is in line with previous study that the teacher educator needs to consider about the technology infrastructure (Eickelmann, 2011), and evaluate the social presence of providing familiar and accessible technologies so that the clear connection between in-class and out-of-class activities can be achieved (Kim et al., 2014).

To answer the second research question, the researcher played and watched the participants' projects together with the students and asked some questions about their experiences in connecting all materials in the flipped classroom in designing and developing PACI model for teaching English lessons with PACI model throughout TPACK framework.

Supporting Pre-service Teachers' Understanding the Content Knowledge through the Flipped Classroom Approach

Few participants still had lack of experiences to unpack the the content of EFL courses, such as listening, speaking, reading, writing and features of EFL language of grammar and vocabulary knowledge into PACI model. However, the flipped classroom facilitated participants to reduce these issues.

> 'It was hard for me to select varieties animation pictures into my PowerPoint slides and make them matching to my English lessons because I learnt few English courses and contents during last two semesters. But I was able to improve my weaknesses through the website links that upload by lecturer and other classmates on Facebook, Suryanto.'

Similar voices also delivered by Ningsih by saying 'my EFL knowledge and skills have been starting from semester 1 to 2. It was difficult to put them all into my PACI model. Our Facebook helped me a lot'.

From the data above, several pre-service teachers faced difficulty to translate the content knowledge when they designed and developed the PACI model. It can be understood as they enrolled the Computer Application in semester three which means that they have not learnt courses related to English teaching methods yet. As a result, they still had lack of knowledge and skills to translate and connect the listening, speaking, reading and writing into PACI model that led to mismatch varieties pictures, animations, sound selection into their PACI model projects to explain the English lessons.

Scholars have underlined that insufficient English knowledge of grammar, phonology, morphology, syntax, lexicon of the language as well as speech functions in the spoken language, and rhetoric in written language (e.g. Brown, 2007; Larsen-Freeman & Anderson, 2011; Nunan, 1999) can inhibit the language users and listeners to understand the language itself. However, these issues can be reduced through the flipped classroom by uploading and providing multimedia

on Facebook (Akcaoglu & Bowman, 2016) as it may directly model the learning target used through video (Lonergan, 1984; Mayer, 2009).

Facilitating Pre-service Teachers' Self-Confidence the Technological Knowledge through Flipped Classroom Approach

All pre-service teachers were confident to learn the PACI model and other softwares as they had watched the electronic portfolios, videos, and audios not only from the links uploaded by the teacher educator in the flipped classroom but also from classmates. Three pre-service teachers voiced their technological knowledge improvement below.

'I am now able to learn the software in details. I just realized that those software could be used as supplemental teaching and learning, not only during the Computer Application course but also later on into my teaching', Komari.

'Overall, I had self-confidence on how to operate varieties of software that can be used to teach English lessons. By knowing the software deeper, we may modify it to fit to our teaching instruction', Raiendi.

From this data, it could be underlined that the self-confidence (Adamy & Boulmetis, 2006) to master the software of PACI model and other softwares have been accomplished on Computer Application course. All the pre-service teachers experienced out side class activities in the flipped classroom through learning by doing (Grabe & Grabe, 2001) to implement and experience self-learning to support collaborative learning in the face to face activities (Webb & Doman, 2014). This study is linear with previous studies which underlined the increase of students' academic achievement by using Facebook as medium to communicate and interact between teacher educators, pre-service teachers, and other pre-service teachers to solve the learning problems (Espinosa, 2015; Kurtz, 2014; Loving & Ochoa, 2011; Miron & Ravid, 2015).

Improving Pre-service Teachers' Pedagogical Knowledge through Flipped Classroom Approach

Majority pre-service teachers had insufficient knowledge in connecting the pedagogical knowledge into their PACI model. General concerns were provided. For example, 'I learned less teaching approaches, methods, and techniques in two last semesters that inhibited me in designing and developing my PACI model', Efflin.

'Knowing our students' learning styles, characteristics, and their prior

knowledge were important variable when we designed and developed our PACI model. We know them, then we know our appropriate pedagogy selected, and it is better to improve it through the materials not only the text, but also the multimedia', Agung.

These findings described the crucial pedagogical knowledge for teaching and learning English lessons with technology. To make our teaching better, we have to know the way how to select appropriate teaching strategies to match with our content knowledge and role model and examples (Koehler & Mishra, 2008; Shulman, 1986, 1987). These model and examples can be provided through teachers' model and ICT roles (Jaipal-Jamani & Figg, 2015) in the flipped classroom.

Combining the Flipped Classroom and Face to Face Classes in Developing Pre-service Teachers' Pedagogical Content Knowledge

All pre-service teachers agreed that how to make the lesson fitted with the learners' characteristics such as young and adult learners and learners learning styles into PACI model were the most difficult exercises. They also faced difficulties to represent the English lessons and how to teach them appropriately on their PACI model. They still need real practice in the face to face class rather than watching the visual links on Facebook. As two pre-service teachers indicated:

'So far, I have learnt few pedagogical approaches, methods and techniques from my previous courses. It was the most challenge for me to design and develop my PACI model, and all materials helped me on the Facebook, but I want to see the practices in the face to face classes', Irawati.

These findings clearly explained that unfamiliarity with teaching EFL approaches, methods and activities inhibited pre-service teachers to design and develop their PACI model. Previous studies have concerned with these issues (Harris & Hofer, 2009; Koehler & Mishra, 2008). Particularly in the EFL context, van-Olphen (2003, 2007) argued the importance of pre-service teachers and in-service EFL teachers about teaching the target language, while (Brown, 2007; Larsen-Freeman, 2011) stressed the crucial roles of teaching approaches and methods to be mastered by EFL educators, not only theories but also practices based. Therefore, the roles of technology (TCK and TPK) to model the abstract concept is important (Angeli & Valanides, 2008; Jaipal-Jamani & Figg, 2015).

Combining the Flipped Classroom and Face to Face Classes in Developing Pre-service Teachers' Technological Pedagogical Knowledge

All pre-service teachers agreed that due to lack of content and pedagogical knowledge, they struggled to understand pedagogical content knowledge. However, when they designed and developed their PACI model on technological pedagogical knowledge in the face to face activities, with the assistances of teacher educator and other classmates that they achieved less modeling in the flipped classroom, their technological pedagogical knowledge improved.

'It was difficult to connect my content, technological, and pedagogical knowledge into my pedagogical content knowledge. But when I had involved in discussion during the face to face classes in designing and developing my PACI model, my technological pedagogical knowledge was better. We discussed some strategies to connect our ideas on Facebook, but not all of us involved, Ningsih.

The findings revealed that during the discussion in the face to face classes, all participants were involved to discuss the content, technological, and pedagogical content knowledge. While in the flipped classroom through Facebook, few participants were active to participate. Discussion is the foundation for creating the technological pedagogical knowledge and could be learnt together when designing and developing the PACI. The teacher educator's model in the face to face classes was the key solution to model the TPACK (Koehler & Mishra, 2006). In other words, if teachers see and understand how technology can affect the content to be represented, they are more likely to integrate it into their teaching (Lee, 2008).

Combining the Flipped Classroom and Face to Face Classes in Developing Pre-service Teachers' Technological Pedagogical Knowledge (TPK)

All pre-service teachers were capable to implement their technological knowledge into practice. They were able to expand their technological knowledge into matching varieties animations, motions, colors, music instruments and clear narrations recorded into English lessons. They were also capable to repurpose the other functions of software to match with English lessons. However, the issues on how to change their pedagogical practice with technology when they designed and developed the PACI model arose. Similar voices were quoted below.

'Selecting and repurposing the animations, pictures and sounds that related to my English lessons by clicking all the functions of software to fit them all into the way how I explained my content into my PACI model challenged me a lot. To model them all, I need role model not only from multimedia on Facebook, but also face to face classes,' Raiendi.

This study revealed that all pre-service teachers were able to select, modify, and implement the appropriate animations, sounds, colors and animation GIFs to represent their English lessons in PACI model. However, all of pre-service teachers were incapable to represent those animated or motion of objects into their pedagogical to integrate with PACI model. Lin, Chen, and Dwyer (2006) have suggested appropriateness multimedia and motions selection can be represented related to the specific English lesson and instructions that may increase the learners' processing the information about the topics and stay longer in the short term memory. In other words, the technological content knowledge of pre-service teachers was sufficient during the Computer Application course to increase their competencies to translate the English lessons with technology, for example the use of Facebook modified the way teacher educators presented content to the students that lead to shape and change the teacher educator and pre-service teachers' teaching and learning practices as a result of the use of ICT (Lee, 2008). In addition, the pre-service teachers had experienced an increase their competencies to refine the purpose of the basic functions of varieties offline software to make their English lessons easier to understand. These findings explained that 'knowledge of content-appropriate technologies and competence with content-appropriate technologies' were implemented appropriately (Jaipal-Jamani & Figg, 2015; Jamani & Figg, 2013).

Modeling Technological Pedagogical Content Knowledge through Flipped classroom and Face to Face Classes

All pre-service teachers still have insufficient knowledge to implement TPACK in designing and developing PACI model. They were still incapable of arranging the dynamic relationship between content, pedagogical, technological knowledge to create pedagogical content knowledge, technological content knowledge, and technological pedagogical and content knowledge into their PACI model. Some comments were provided below.

'I would say technological knowledge could not stand alone. I

need to master my content knowledge and pedagogical knowledge first then my technological knowledge would be useful to design my PACI model. Hence, I have to learn the TPACK framework model through multimedia and specifically from face to face activities. I need to see the TPACK implementation into practice', Khanif.

'I hope I could see the model from all my teacher educators, not only from this Computer Application course. We only had 14 weeks to learn all the theories and to practice them into our PACI model. So far, I taught the model from the multimedia on Facebook. I still need to see and experience the TPACK framework within our teacher training program's curriculum', Raiendi.

The data clearly showed that all pre-service teachers realized that understanding TPACK can be from technology in the flipped classroom. However, most importantly by putting sources of technology into practice in the face to face classes and activities (Harris, Mishra & Koehler, 2009) practices and models (Jaipal-Jamani & Figg, 2015; Jamani & Figg, 2013) should from all lecturers and courses. All pre-service teachers expected teacher educators both model and teach the use of technology-based methods during their teaching training program. All teacher educators need to facilitate, guide and model the integration of TPACK framework into practice. The findings of study related to previous studies which stressed the importance of role model from teacher educator to unpack TPACK framework during teacher training programs. Bowman, 2000 in Hughes and Scharber (2008) underlined "modelling was gravely important, as pre-service teachers need guidance and support to make important connections between course material and technology applications (p. 94)". Therefore, teacher educator is an important agent to explicitly track the development of pre-service teachers' technological content knowledge, pedagogical content knowledge, and TPACK for suitable selection and decision for technology integration (Bowman, 2000, cited in Hughes & Scharber, 2008).

Multiple studies have stressed the important role model from the teacher educators during their teacher training programs. All teacher educators have to facilitate and provide real examples of TPACK framework in practice (Angeli & Valanides, 2008; Chai et al., 2011; Jaipal-Jamani & Figg, 2015; Koehler & Mishra, 2006, 2009; Limbong, 2015; 2017; Lu & Lei, 2012; Niess, 2008; Teo, 2009).

CONCLUSION AND SUGGESTION

During the Computer Application course, the use of Facebook as a medium to upload all electronic portfolios and website links in the flipped classroom to support face to face classes is valuable approach to facilitate and support the face to face classroom to enhance pre-service teachers understanding the TPACK framework from theory into practice by designing and developing PACI model.

The TPACK framework is ill-structured and difficult to understand. Therefore, the teacher educators and teachers may use the flipped classroom in combining with Facebook to facilitae and support pre-service teachers to experience, discuss, analyze, and determine how they interpret, apply, and analyze the various aspects of the theory the TPACK into teaching and learning practices.

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