



A Journal of Culture, English Language, Teaching & Literature

ISSN 1412-3320 (Print), ISSN 2502-4914(Online)

Vol. 16 No. 2; December 2016

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**DESIGNING AND DEVELOPING SUPPLEMENTAL  
TECHNOLOGY OF PACI MODEL MATERIALS  
THROUGH BLENDED LEARNING METHODS**

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Received: 09-08-2016

Accepted: 12-05-2016

Published: 28-02-2017

# DESIGNING AND DEVELOPING SUPPLEMENTAL TECHNOLOGY OF PACI MODEL MATERIALS THROUGH BLENDED LEARNING METHODS

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**Abstract:** The 21st century English teachers and lecturers are required to have competencies in translating Content Knowledge (CK), integrating various Pedagogical Knowledge (PK) and implementing Technological Knowledge (TK) in order to produce effective and efficient teaching. This research reveals and describes researcher's efforts and pre-service EFL teachers' (Pre-service EFL teachers) roles in designing and developing the supplemental teaching and learning materials with PowerPoint, Audacity, Camtasia and Internet (PACI) model. To transform researcher roles and model to introduce and implement Technological, Pedagogical, and Content Knowledge (TPACK) framework, this research implemented blended learning: traditional face to face and Facebook closed-group discussion based on Project-Based Learning. This research employed the qualitative autobiography narrative of self-study from the researcher's experiences to implement blended learning. Semi-structured interviews were conducted with four Pre-service EFL teachers of group A and five Pre-service EFL teachers of group B to seek the Pre-service EFL teachers' experiences in designing and developing PACI model. The results suggested that blended learning could effectively and efficiently integrate and implement the design and development of a PACI model. Most importantly both researcher and two groups realized that in integration of TPACK during a Computer Literacy course, the subject matter may be shaped by the application of technology; teaching as well as learning might be changed by the use of technology and the way to represent and communicate specific lessons to students.

**Key words:** TPACK framework, blended learning, project based learning, facebook, PACI model

**Abstrak:** Pada abad ke-21 seluruh guru dan dosen bahasa Inggris wajib memiliki kompetensi dalam menerjemahkan Materi ajar, mengintegrasikan berbagai Pengetahuan Pengajaran dan menerapkan kemampuan dan keterampilan teknologi untuk menghasilkan pengajaran yang efektif dan efisien. Penelitian ini mengungkapkan dan menjelaskan upaya peneliti dan pengalaman para calon guru bahasa Inggris disaat merancang dan mengembangkan bahan pembelajaran dan pengajaran dengan menggunakan aplikasi model PowerPoint, Audacity, Camtasia dan Internet (PACI). Untuk mengubah peran dan model peneliti untuk memperkenalkan dan menerapkan kerangka Teknologi, Pedagogical, dan Content Knowledge (TPACK), penelitian ini dilaksanakan dengan menerapkan metode penggabungan proses perkuliahan tatap muka dan Facebook kelompok diskusi berdasarkan pembelajaran berbasis-proyek. Penelitian ini menggunakan narasi autobiografi kualitatif dari pengalaman peneliti untuk menerapkan pembelajaran berbasis-proyek. Wawancara setengah terstruktur dilakukan terhadap empat orang Kelompok A dan lima orang dari kelompok B calon guru Bahasa Inggris untuk memperoleh gambaran pengalaman yang telah mereka lakukan dalam merancang dan mengembangkan model PACI. Hasil penelitian menunjukkan bahwa pembelajaran berbasis-proyek terbukti efektif dan efisien dapat mengintegrasikan dan menerapkan desain dan pengembangan model PACI. Yang terpenting adalah bahwa peneliti dan dua kelompok calon guru bahasa Inggris menyadari bahwa dalam integrasi TPACK pada mata kuliah Computer Literacy, materi pelajaran bahasa Inggris dapat diperjelas dengan teknologi yang mencakup proses pengajaran, pembelajaran, dan penyampaian materi ajar bahasa Inggris akan berubah dengan menggunakan dan menerapkan teknologi terhadap peserta didik.

**Kata kunci:** Kerangka TPACK, Penggabungan Pembelajaran-Pengajaran, Pembelajaran Berbasis-Proyek, Facebook, model PACI.

## INTRODUCTION

Aligning with the 21<sup>st</sup> century demands, the Indonesian Minister of National Education has issued several laws and regulations regarding teacher and lecturer competence to improve the quality of education in Indonesia. One is the Regulation of National Education Minister No.16 Year 2007 on Teachers Standard Academic Qualifications and Competency which was

obligated that each Indonesian teacher should meet specific standards of academic qualifications and competencies. The standard consists of pedagogic, personal, social and professional competencies. Pedagogic and professional competencies concern the utilization of information and communications technologies (ICTs) in the development of educational; specifically, teachers and lecturers need to be able to design teaching and learning with technology and utilize and integrate technology into the teaching and learning process (MoNE, 2007).

In response to this regulation, faculties of teacher training and education, particularly English Study Program of the Teacher Training and Education of Mulawarman University, which is located in Samarinda, Indonesia has the responsibility to educate their Pre-service EFL teachers graduates to be able to master these four competencies.

In line with Minister of National Education demands and following the suggestions of many researchers, the English Study Program of Teacher Training of Mulawarman University offers three educational technology courses; namely 1) Computer Literacy, 2) Computer Application, and 3) Computer Assisted Language Learning as component of its syllabus (Bullock, 2004; English-Department-Study-Program, 2009; Leh, 1998; Oakley, 2008; Sumarni, 2013).

The Pre-service EFL teachers start to enroll the Computer Literacy in semester two. This topic covers the knowledge and skill (technical skills) needed to operate software such as PowerPoint, Audacity, Camtasia, and Internet literacy. During this topic, the Pre-service EFL teachers also learn the Windows operational system embedded with the knowledge and skills to search and download any educational sources and materials from the Internet. They also need to understand social media (i.e., YouTube, Facebook, Twitter and so on) to support their learning. During their study of this topic, Pre-service EFL teachers are able to design and create their presentation during their program in addition to make multimedia to support their future teaching (English-Department-Study-Program, 2009). There are two projects that the Pre-service EFL teachers need to design and develop as the goals of this topic. In the first project, the Pre-service EFL teachers have to design and develop supplemental multimedia to provide explanations of the specific grammar point they selected to focus on. The books as the main sources were the English books in the Junior High School (Year 7 to 9). The second project was to follow up the first project by

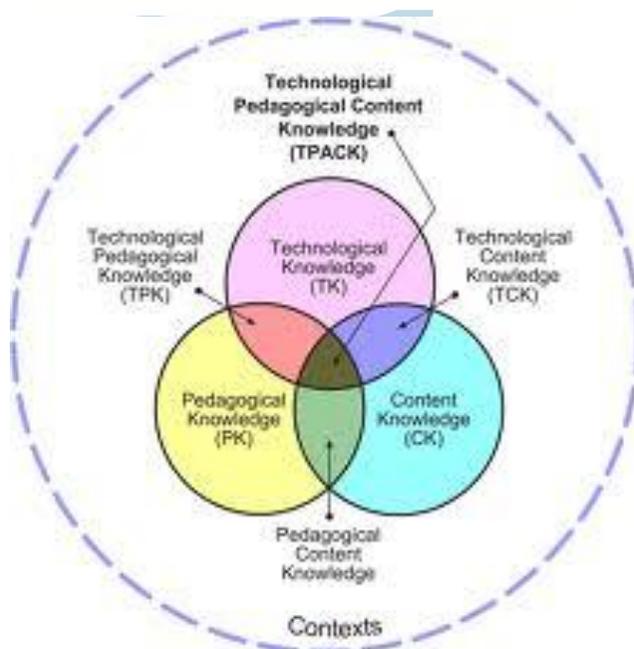
creating and exercises or quizzes to evaluate the learners' understanding about the specific grammar selected.

The Computer Application topic is offered by the English Study Program in semester three. This topic covers the knowledge and skills to operate the Photo story, Scratch, Sparkol Video scribe, and Powtoon software. At the end of this topic, the Pre-service EFL teachers are able to operate and apply the four softwares to support their learning and teaching in EFL lessons during their courses and also in their future teaching (English-Department-Study-Program, 2009). They have two projects to complete in this topic. In the first project, the Pre-service EFL teachers have to design and develop the supplemental multimedia to explain a specific English lesson by using the Photo story, Scratch, Sparkol Videoscribe, and Powtoon software. The books as the main sources were the English books in the Junior and High School (Year 7 to 12). The second project, as a follow up from the first project, was to create an exercise or quiz for evaluating the learners' understanding about the specific English lesson. The Computer Assisted Language Learning is taken by Pre-service EFL teachers in semester four. This topic covers the knowledge and skills for making and editing videos using mobile phone, flip video and other videos of educational materials to support their teaching and learning by using Windows Movie Maker. The Pre-service EFL teachers also may combine the previous software that they had mastered in Computer Literacy and Computer Application topics to teach EFL. During those three courses, the Pre-service EFL teachers also learn how to integrate all offline and online software into their lesson plan within other courses during their program (English-Department-Study-Program, 2009).

In addition, during the CALL course, the Pre-service EFL teachers should experience an innovative technology learning environment that provides them numerous opportunities to use technologies and to adopt effective and efficient strategies to integrate the technology knowledge from their technology courses with other teaching courses by putting the TPACK framework into practice, the roles, modelling and assistance of the lecturers who support and encourage Pre-service EFL teachers are essential (Brown, 2007; Larsen-Freeman & Anderson, 2011; Limbong, 2015; Nunan, 1999; Stephenson, 2001). In other words, Pre-service EFL teachers not only learn about technology but also learn with or through technology (Cahyani & Cahyono, 2012; Dede, 2010; Eickelmann, 2011; Koehler & Mishra, 2006; Lemke, 2010).

In educational contexts, the teacher education institutions should apply the TPACK framework in their undergraduate program (Kay, 2006; Niess, 2005; Sweeney & Drummond, 2013) because technology can help make complex subject matter ideas more accessible to students, because the integration of technology changes the teaching as well learning experience, and because with technology specific concepts and topics of a subject matters become easier to master by students (Chien, Chang, Yeh, & Chang, 2012; Rilling, Dahlman, Dodson, Boyles, & Pazvant, 2005). The strategy to combine the subject matter with pedagogical and technological knowledge is essential to the success of the teaching and learning process (Koehler et al., 2007). One the strategy is to adopt the TPACK framework to make teaching and learning more effective and efficient (Koehler & Mishra, 2005, 2006, 2008a, 2008b, 2009; Koehler et al., 2007; Mishra, Koehler, & Henriksen, 2011).

Figure 1  
TPACK



Many teachers, instructors, and researchers have already explored and used the TPACK framework in varieties of knowledge, and its advantages have been well documented (Chai, Koh, Tsai, & Tan, 2011; Harris, Mishra, & Koehler, 2009; Koehler & Mishra, 2005, 2006, 2008b). However, more research is required on the use of TPACK framework as guidance for lecturers

in delivering and modeling it in their specific lessons. TPACK should be combined with the project-based learning approach (Sumarni, 2013; Yusofa, Hassan, Jamaludin, & Harun, 2012) and with blended learning of face to face and Facebook closed-group discussion methods (Yusofa et al., 2012) in teaching specific lessons so that learners may observe its implementation in the real classroom. In particular, research is scarce in teaching EFL context on the impact the implementation in the EFL classroom of the of TPACK framework combined with the project-based learning through blended learning between face to face and Facebook closed-group discussion methods.

Another aspect that has largely been neglected is for Pre-service EFL teachers not only to learn about technology but also to learn with or through technology (Koehler & Mishra, 2005, 2006, 2008a, 2008b, 2009) in designing and developing multimedia for problem-solving (Macklin, 2008) in specific lessons, how lecturers teach and how Pre-service EFL teachers learn to teach with technology and how to make multimedia has been scarcely explored.

The aims of this research was to (1) to describe the researcher's experiences in designing and developing multimedia technology-integrated materials of the PACI model with project-based learning through blended learning between traditional face to face and Facebook closed-group discussion methods throughout the TPACK framework, (2) to explore the Pre-service EFL teachers' experiences with project-based learning through blended learning between traditional face to face and Facebook closed-group discussion methods during the Computer Literacy course throughout the TPACK framework

The major research question describe in this research was what are the experiences of lecturers and pre-service EFL teachers to implement TPACK framework in action in designing and developing multimedia technology-integrated materials of PACI model with project based-learning through blended learning between traditional face to face and Facebook closed-group discussion methods. The major research question was broken down into several sub-questions:

- 1) What are the researcher's experiences in designing and developing multimedia technology-integrated materials of PACI model with project based-learning through blended learning between traditional face to face and Facebook closed-group discussion methods throughout TPACK framework?

- 2) What are the Pre-service EFL teachers' experiences with project based-learning through blended learning between traditional face to face and Facebook closed-group discussion methods during the Computer Literacy course?

The significance of this study, therefore, lies in describing and discovering the researcher experiences with the method of blended learning in designing and developing multimedia technology-integrated materials of the PACI model throughout TPACK framework implementation during the Computer Literacy course.

This study can contribute to the improvement of teacher training programs in Indonesia by lecturers, teachers and pre-service EFL teachers because it demonstrates the model and activities of the TPACK framework in action by employing the blended learning between traditional face to face and Facebook closed-group discussion with project-based learning methods in designing and developing multimedia project, particularly in the education of teachers of English.

Finally, as this is a new area of implementation of the TPACK framework in the Indonesian context, the findings of this narrative explanation may contribute to future research in this area. Further study of how the integration of multimedia of PACI model into teaching and learning in EFL context in combination with TPACK framework can be achieved and enhanced the quality of teaching for educators, especially for university lecturers, teachers and pre-service teachers, which would in turn lead to an improvement in learners' learning and achievement in any lessons.

## **THE METHODS OF THE RESEARCH**

The major aims of this study were to describe how the researcher in designing and developing multimedia technology-integrated materials of PACI model with project-based learning through blended learning between traditional face to face and Facebook closed-group discussion methods throughout TPACK framework during the Computer Literacy course in the Faculty of Teacher Training. The goal was to better prepare lecturers and the pre-service EFL teachers to design and develop supplemental multimedia for teaching specific English lessons in their teaching of EFL in the Indonesian context.

Interpretivism as the epistemology was chosen as the most appropriate for describing the participants' experiences. Denzin (2001) asserted that interpretive research focuses on life experiences "that radically alter and shape the meanings persons give to themselves and their live projects" (p. 34). Cohen, Manion, and Morrison (2011) highlighted that an interpretive paradigm is to understand the subjective world of human experience focusing on actions. Actions are only meaningful to us in so far as we are able to ascertain the intentions of actors to share their experiences (Cohen et al., 2011, p. 18). Thus, this approach aims to grasp the diversity of subjects' experiences (Kvale, 1996). The aim of the scientific method for the interpretive researcher is to understand how this glossing of reality goes on at one time and in one place and compare it with what goes on in different times and places (Cohen et al., 2011).

#### **A. An Autobiography Narrative Self-Study**

In this context, this research used qualitative research. According to Norman K. Denzin (2003) "qualitative research primarily involves a variety of activities and empirical material collections including case study, personal experience, introspection, life story, interview, artifacts, cultural texts, and historical texts that describe routine and problematic moments and meanings in individuals' lives" (p. 5). The narrative autobiography self-study design as the methodology was chosen to describe his experiences in designing and developing multimedia technology-integrated materials of PACI model with project-based learning through blended learning between traditional face to face and Facebook closed-group discussion methods throughout the TPACK framework. According to Creswell (2012), "in an autobiography approach, the individual who is the subject of the study writes the account" (p. 504). In this research, the researcher or lecturer used his own story as the data. Both autobiography and narrative are similar in that, it depends on who writes or records the story (Clandini & Connelly, 2002).

To seek the experiences of Pre-service EFL teachers, qualitative narrative study was employed in which the researcher sought to understand the phenomenon by focusing on a total picture of the Pre-service EFL teachers' experiences with project-based learning through blended learning between traditional face to face and Facebook closed-group discussion methods throughout TPACK framework (Ary, Jacobs, & Sorensen, 2010).

#### **B. Participants Selection Procedure**

The Computer Literacy course was the focus of this research with four classes (A,B,C,D) with approximately 28-32 of Pre-service EFL teachers in each class. The EFL class with less than 40 students a classroom are still included in the standard category). This study employed purposeful sampling to select the participants. Gay, Mills, and Airasian (2011) stated that in qualitative study the most common form of sampling is purposive or purposeful sampling “based on the assumption that the researcher wants to discover, understand and gain insight and therefore must select a sample from which the most can be learned” (Merriam, 1998) and the participants must be “information-rich” (Patton, 1990). In addition, Creswell (2012) points out that the participants are to know more about the central phenomenon. Due to overload of assignments and preparation for final exams, only nine Pre-service EFL teachers (2 from A class; 3 from B class; 2 from C class and 2 from D class) were willing to participate and were able to be interviewed. The researcher divided them into two groups (Group A and Group B). The four of Pre-service EFL teachers on Group A were named with Wati, Ita, Joni, and Anton, while the five Pre-service EFL teachers in Group B were named with Efflin, Raiendi, Erna, Siska and Robiah. These are all pseudonyms.

### C. Interview Collection Technique

The most common and widely adopted data collection technique in qualitative research is the interview (Bryman, 2012; Donley, 2012; Gay et al., 2011). The interview is a basic mode of inquiry that assists researchers in gathering comprehensive information from the research constituents (Miller & Glassner, 1997; Seidman, 1991) and “is one of the most powerful ways we have of understanding others” (Punch, 2005, p. 168). Through interview, the participants may express their experiences without any hesitant to speak (Creswell, 2012) and they can articulate and share ideas comfortably without any forces from others to describe and interpret their experiences (Oishi, 2003; Creswell, 2012).

In this research, face to face group semi-structured interview data collection was employed (Bryman, 2012) and the interviews were digitally voice recorded. The researcher interviewed Group A and Group separately on different days in order to acquire a deeper understanding of the meaning of the interviewees’ experiences as a phenomenon in society (Creswell, 2009; Fontana & Frey, 2003; Seidman, 1991). The semi-structured interview allowed the researcher to expand the standard questions with additional questions to elicit richer, and sometimes unexpected answers from the

participants (Mitchell & Jolley, 2012) and to let the participants develop issues they regarded as important (Longhurst, 2010).

To enrich the data sources of this study, the links about the discussion of Computer Literacy's content on Facebook close-group discussion are provided in appendix 3. These Facebook closed-group discussion names of Computer Literacy for A, B, C, and D classes are still using by all the pre-service EFL teachers who enrolled in the Computer Application and CALL courses. We have agreed to always use this group for sharing any kinds of new information related to technology courses.

#### **D. Data Analysis Procedures**

Content analysis data was employed after transcribing the data to find the codes. By coding the data the researcher was able to detect frequencies (which codes occur most commonly) and patterns (which codes occur together) (Strauss & Corbin, 1998). Starting with open coding in which the researcher attaches a code to a piece of text to describe and categorize themes and also properties/sub categories (the characteristic of a category/theme or phenomenon of that piece of text). The researcher then did axial coding, grouping the open codes that are similar in meaning, causal conditions that lead to the phenomena, their intervening conditions and the actions and interactions of, and consequences for the actor in situation (Cohen et al., 2011; Strauss & Corbin, 1998). Last was selective coding, in which the researcher identified the core categories or central categories or phenomena of the text data, integrating them to form a theory (Cohen et al., 2011; Strauss & Corbin, 1998).

### **FINDINGS AND DISCUSSIONS**

The researcher's experiences that have been implemented during Computer Literacy course are narrated below.

#### **A. Redesigning the Content of Educational Technology**

The researcher is the lecturer for the Computer Literacy, Computer Application and CALL courses. The first step that researcher took was to redesign the goals of the Computer Literacy, Computer Application, and CALL courses after completing his Doctor of Education (Ed.D) from

Flinders University in 2015. Learning from his dissertation with the title 'Experiences of Indonesian Pre-Service English as Foreign Language Teachers in Implementing Technology in Teaching Practicum: An Investigation through the TPACK Framework (Limbong, 2015) revealed that the participants expected some changes or improvement from their training courses at university in order to better prepare them to integrate technology into English as Foreign Language Teaching. The changes are, for example, modifying the computer courses content, modeling the integration computer courses into EFL teaching, selecting competent lecturers to teach computer courses and integrating and modeling TPACK framework in English department (Limbong, 2015). Hence, the researcher aimed to fill the gaps from his findings in order to overcome the issues faced by the Pre-service EFL teachers and also to prepare Pre-service EFL teachers ready for being 21<sup>st</sup> century teachers through this current study.

Some books and journals such as Morrison and Lowther (2010), Grabe and Grabe (2001), Roblyer and Doering (2013), Newby, Stepich, Lehman, and Russell (2000), Smaldino, Lowther, and Russell (2008) and Newby, Stepich, Lehman, Russell, and Ottenbreit-Leftwich (2011), Mayer (2009), Alessi and Trollip (2001), (Koehler and Mishra (2006); Pamuk (2012), ISTE (2007) particularly ISTE NESTS-T and ISTE NESTS-S, were the resources that inspired him in his redesign of the three courses' goals, to adopt and implement the TPACK framework into these three technological courses.

The focus outputs of NETS-S are creativity and innovation, communication and collaboration, research, and information fluency, critical thinking, problem solving and decision making, digital citizenship and technology operations and concepts (ISTE, 2007). The details of NETS-S are to prepare Pre-service EFL teachers to demonstrate creative thinking and develop innovative products and use digital media to communicate and work collaboratively and apply digital tools to gather, evaluate and use information with technology. The aim was to prepare the Prepare Pre-service EFL teachers to use critical-thinking skills to plan, manage projects, and solve problems using appropriate digital tools and resources and to demonstrate capability in selecting and using applications effectively and productively (ISTE, 2007; Morrison & Lowther, 2010). The expectation was that during their English teacher training program, especially the three technological courses, the Pre-service EFL teachers would be able to learn, see, and implement the model of the TPACK framework implementation from the lecturers in the classroom (Harris et al., 2009; Koehler & Mishra, 2005, 2006, 2008; Koehler et al.,

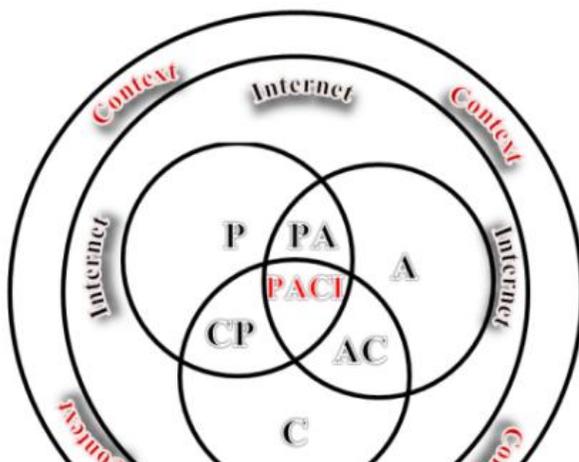
2007; Mishra et al., 2011; Schmidt, Thompson, Mishra, Koehler, & Shin, 2009; Shulman, 1986, 1987; Zhao, Tan, & Mishra, 2001). The additional goal was that after completing their teacher program, the Pre-service EFL teachers would be able to interpret the ISTE National Educational Technology Standards for Students (NETS-S) and for Teachers (NETS-T) (ISTE, 2007) and the TPACK framework in their future teaching.

Preparing the Pre-service EFL teachers for being 21<sup>st</sup> century teachers is the core target of the Minister of Education, as well as the vision of the Faculty of Teacher Training and Education which is to educate its professional graduates to implement the TPACK framework in their future teaching. Hence designing and creating supplemental multimedia technology-integrated teaching and learning materials using the PowerPoint, Audacity, Camtasia and Internet (PACI) model are the learning targets of the Computer Literacy course, as explained below.

**B. Designing and Developing Supplemental Multimedia of PACI Model for Teaching Grammar**

Adapting Alessi & Trollip (2001), Model of Instruction and Mayer (2009), Multimedia Learning, the researcher created the PACI model. It stands for PowerPoint (P), Audacity (A), Camtasia (C) and Internet (I). The intersection amongst these four software create four knowledges and skills, namely PowerPoint-Audacity (PA), Audacity-Camtasia (AC), and Camtasia-PowerPoint (CP) for designing and developing the multimedia of the PACI model for supplemental technology-integrated materials. As can be seen from the figure below, the Internet is the main additional sources for designing and developing the multimedia of PACI model, while the context circle is the frame that limits the scope of the multimedia purposes (e.g. the scope of lessons, the students' level and varieties of lessons).

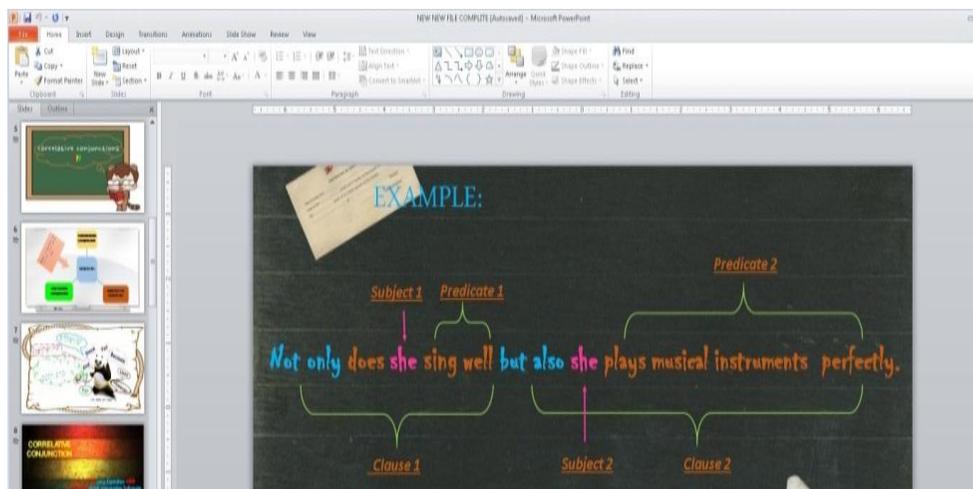
**Figure 2**  
**The model of PowerPoint, Audacity, Camtasia and Internet (PACI) Model**



## 1. PowerPoint

PowerPoint (P) is software that is embedded with Microsoft Office and was introduced many years ago. It provides a user-friendly interface that lets users create colorful and informative displays in any subject area. It covers backgrounds, animations, sounds, and functions that can be formatted to create a limitless variety of slides for presentation and to set to automatically show according to a present schedule. It can also be hyperlinked to other technology sources (Morrison & Lowther, 2010). In short, with PowerPoint we may input the materials you are going to present, create slides, decorate the PowerPoint, add background and gifs, add more objects and pictures, change the font color you want, change the font styles, and put in some effects and transition. To make its features more beneficial for teaching and learning, the researcher combines it with other software, as mentioned previously.

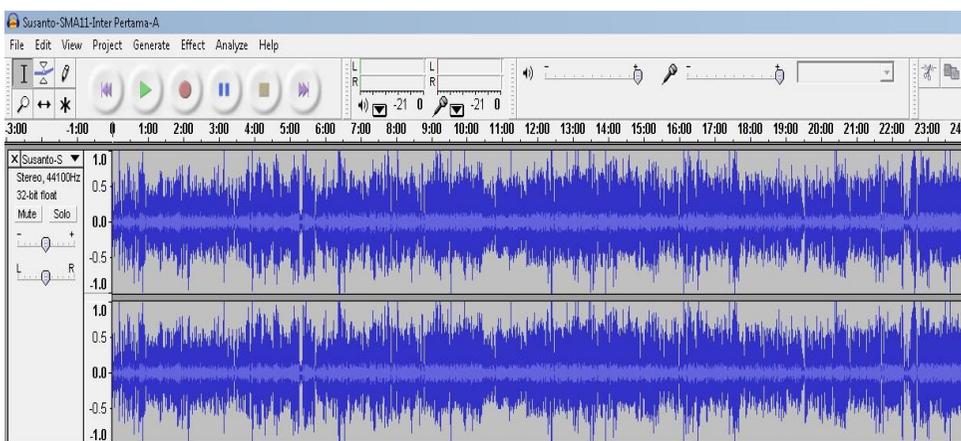
Figure 3  
The Power Point Interface



## 2. Audacity

Audacity (A) is free and open source software for recording sound that runs on Windows, Mac, and Linux and can be downloaded from <http://www.audacityteam.org>. Audacity can be used for recording any sound of our choice, whether it is voice, music, audio playing on the computer, and so on. Specifically, Audacity is a simple software for editing sounds, for instance cutting, copying, pasting and deleting part(s) of the recording, inserting silences, pauses or music, splitting recordings into separate tracks, mixing tracks, raising or lowering the volume, speeding the recording up or down, and even improving the audio quality by removing constant background noise (Martínez, 2010).

**Figure 4**  
**The Audacity Interface**



### 3. Camtasia

Camtasia (C) is not free software. It is available at <http://techsmith.com> for about \$99. According to Silva (2012) Camtasia is a screen-capture software that directly records all movement and activities on screen that we are working on such as typing in word-processing application, surfing the Internet, using photo editing or web design software and interacting with social networks or online activities.

**Figure 5**  
**Camtasia Interface**



#### 4. Internet

Internet (I) is the a network consisting of cables and radio signals used to connect millions of computers to other computers to form the Internet that can be used to exchange massive database of information (Morrison & Lowther, 2010).

### THE INTERSECTION AMONG POWERPOINT, AUDACITY, CAMTASIA AND INTERNET (PACI) MODEL

There are four knowledge and skills are arising from the intersection between PowerPoint, Audacity, Camtasia and the Internet. The figure below is the intersections between P,A,C,I that the researcher named the PACI model.

#### 1. PowerPoint and Audacity

The first knowledge and skill is the intersection between PowerPoint and Audacity (PA). Any instrumental music or sounds as back sound that have been downloaded from the Internet can be added into PowerPoint slides. However, it is better to add these instrument music or sounds into Audacity because the editing features are better done with this software. Audacity is used for recording sound, voice or the other audio, or compounding two sounds or voices, depending on the text in the presentation.

The other benefit of Audacity is its capability to decrease noises during the recording phase. We can delete these noises wherever the location. With Audacity, we can decrease or increase the volume of the instrument, sound or recorded narration. Also, it can be used to speed up or to slow down the instrument or narration depending on the text or explanation on the PowerPoint slides.

## 2. **Audacity and Camtasia**

The second knowledge and skills are the intersection between Audacity and Camtasia (AC). It is used for transferring the voice or narration or music from the Audacity into Camtasia. Since the function of Camtasia is to produce things becomes a video, so it will be better if the video has been integrated or mixed with sounds, narration or any kinds sound related to our lessons which can be imported and edited by using Audacity. While the Internet benefit on this stage is a media to look for some free instrument to enrich the sound of the objects or for instrument only.

## 3. **Camtasia and PowerPoint**

The third knowledge and skills are the intersection between PowerPoint and Camtasia when the whole completed PowerPoint slides are transferred directly to Camtasia to be made into movie file. It is strongly suggested to ensure that all animation on PowerPoint slides are designed correctly because if there are any mistakes on the slides, it will need time to edit these mistakes. The connection between these two applications is to make a presentation more alive by producing it as a video.

## 4. **PowerPoint, Audacity, Camtasia and Internet (PACI) model**

The last knowledge and skills are of these four knowledges and skills of PowerPoint, Audacity, Camtasia and Internet (PACI) model. These four knowledge and skills cannot be 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 specific lessons and in this research is Grammar lesson. In this research, the specific lesson was Grammar. In short the PACI model covers several applications that have been described. The purposes of PACI model are to make supplemental multimedia of the PACI model of technology-integrated materials to make the presentation more attractive and efficient by producing it as 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.

To produce the first and second projects in the Computer Literacy topic, the researcher and Pre-service EFL teachers drew on the Model of Instructional Design by Alessi & Trollip (2001), and Mayer (2009). The first phase of their design are similar in planning which comprises defining

the scope, identifying the learner characteristics, establishing the constraints, producing a planning document, and determining and collecting resources. Second phase is the design which comprises developing initial content ideas, conducting task and concept analysis, doing a preliminary program description, and creating flowcharts and storyboards. The last phase is development which comprises preparing the text, creating the graphics, producing audio, producing animation and video, assembling the pieces, preparing support materials, doing an alpha test, making revisions, and finally doing a beta test.

To understand how to operate the PACI model in terms of technical skill, the 14 weeks with 90 minutes face to face time with the help of Facebook colose-group discussion were integrated during the Computer Literacy course. The details of this course's contents and activities are described on appendix 1.

## **IMPLEMENTING BLENDED LEARNING IN THE CLASSROOM OF COMPUTER LITERACY COURSE**

The process of teaching and learning during Computer Literacy was the main data for this research. The learning target or goals of this course is to enable Pre-service EFL teachers to design and create their own presentation during their program as well as to make multimedia to support their future teaching, (English-Department-Study-Program, 2009).

Blended learning or mixed or combined learning was the approach that the researcher applied by combining technology with traditional face to face instruction in a teacher-directed environment without Internet or e-learning components (Allen & Seamn, 2007; Hilliard, 2015; Picciano, 2007; Shea, 2007). BL is technology facilitated learning that retains a strong and deliberate role for the teacher in the learning process (Oliver, 2005). Simply, BL courses combine the delivery of "traditional face-to-face class activities" (Picciano, 2007, p. 9) with "computer-mediated" (Graham, 2006, p. 5) and online instruction (Hilliard, 2015; Picciano, 2007).

### **A. Experiences in Implementing Face to Face Method in the Computer Literacy Course**

During the face to face process, some technical issues arose because of insufficient hardware facilities such as the low processor and memory of the

computers and low bandwidth available in the campus area. For example, due to insufficient Internet bandwidth in the computer laboratory, not all laptops could access the Facebook closed-group discussion to open the links provided (Limbong, 2015). In addition, not all computers were installed with Camtasia software, hence all Pre-service EFL teachers had to bring their own laptops (Sweeney & Drummond, 2013). Although all Pre-service EFL teachers brought their own laptops, the rendering process (preparing the PACI model) for making a video of the multimedia often failed. The main reason was that the laptops were not faster enough to render the multi-tasking of the multimedia.

The Camtasia software is not free and not all Pre-service EFL teachers were able to buy the software. As a result, not all of them were able to finish the draft of the project in time. They often borrowed other Pre-service EFL teachers' laptops that had the software. As a result, not all groups were ready to present their projects. Furthermore, not all Pre-service EFL teachers lent their laptop as they were still busy with their own projects. Although the Camtasia software was installed in the Computer Laboratory, it could not be used every time as it was used by other lecturers.

#### **B. Experiences in Implementing Facebook Closed-group Discussion in the Classroom on Computer Literacy Course**

A Facebook closed-group discussion was created by the chairman of each class and all Pre-service EFL teachers were actively engaged in sharing the links as external resources of information. The researcher also often shared the links related to the specific information in the Facebook closed-group discussion. The researcher found that not all Pre-service EFL teachers engaged in discussing problems encountered during the Computer Literacy course. The main factors inhibiting Pre-service EFL teachers from engaging in the Facebook closed-group discussion were lack of personal Internet Data to access Facebook on their mobile phone and no Internet access at home. Also, not all Pre-service EFL teachers had advanced mobile phoned to access Facebook. The majority of Pre-service EFL teachers asked other Pre-service EFL teachers who had the Facebook information to provide it via short message text (SMS). One of the most serious impacts was that not all Pre-service EFL teachers were able to open the links on their mobile phone at home. They usually opened Facebook at campus the slow Internet connection was another issue that inhibit them from opening and watching the links of Facebook closed-group discussion.

The lecturer faced these issues by providing a lot time to recheck the Facebook closed-group discussion and answering questions from all members

of the four classes. It was not an easy job to handle these questions one by one. Also, he often ran out of the battery on mobile phone that always connected with the Facebook.

The special purpose of the lecturer in designing and developing the PACI model during the Computer Literacy course was to implement technological, pedagogical, and content knowledge especially content knowledge, technological knowledge and technological, content knowledge in a real context. This meant that the Pre-service EFL teachers would become familiar with TPACK framework and could learn the technology and use it to support teaching and learning of specific grammar lessons.

### **C. Experiences in Implementing Project-Based Learning in the Computer Literacy Course**

PBL was the approach the lecturer employed during the teaching and learning process. The main reason for adopting this approach was to make the Pre-Service EFL Teachers engage in working together by using research based-learning or experiential learning. By implementing Project-Based Learning, the expectation was that the Pre-Service EFL Teachers would experience interesting and meaningful learning and would be enriched with the knowledge they found by themselves (Sumarni, 2013).

However, the majority of Pre-Service EFL Teachers were not familiar with this approach. They lacked experience in being involved in the learning process through research assignments, authentic questions, and well-designed products. They were still incapable of autonomous work together over a particular period (Sumarni, 2013). The Pre-Service EFL Teachers preferred to adopt the traditional curricula in which they wanted to be passive learners. They still expected to be taught one by one as if high school students. As suggested by Sumarni (2013) these Pre-Service EFL Teachers' should be accustomed to follow the learning at campus with the learning approach that can internalize the values and spirit of the Scientific Method' (p. 479).

## **FINDINGS AND DISCUSSIONS**

The findings of this study summarized into several themes in regard to Pre-service EFL Teachers' experiences with project based-learning through blended learning between traditional face to face and Facebook closed-group discussion

methods during the Computer Literacy course, as described and discussed below.

#### **A. The Experiences of Pre-service EFL Teachers toward Project-based Learning in Computer Literacy**

The interview data showed that some Pre-Service EFL Teachers were not familiar with PBL approach, although the majority were happy with this approach because it allowed them to become active learners, with central roles in designing, planning and implementing by working together with other members when they did were working on their own projects. They agreed with Wati's expressions as stated below:

I seldom practice the project-based learning, but I like it as it is a good approach for learning something from others when we worked together. I myself do not know much about these software, but I always ask another student to directly teach me to do this project. But, he was always busy with his own assignments, so that I afraid to take his time.

The four groups of pre-service EFL teachers also wanted to learn the technical skills, not only from the Internet and other pre-service EFL teachers but also directly from the lecturer who showed, demonstrated and guided them to overcome the issues working on the project. For example, Efflin from group B expressed his opinion:

I hope that the lecturer not only gives the links and short explanation to learn the software, but he should guide us to do the project in the classroom. We still need a lot of exercises so that we may directly experience learning about the software in detail.

The data showed that majority of pre-service EFL teachers had seldom experienced *project-based learning*, not only when they were in the high school, but also during their teacher training program. As a result, their experiences of solving the problems were scarce. Although they were familiar with this approach, by giving them the wide chance to gain experience and understanding of the problems by searching, discussing and finding the solutions with their own learning style they were able to improve their academic achievement, motivation and creativity in the real context. This finding is similar to the findings of with previous study that

underlined that through *project-based learning*, students are given a huge potential to experiment with interesting and meaningful learning experiences (Sumarni, 2013). This finding suggested that all lecturers should provide pre-service EFL teachers with *project-based learning* so that they can experience finding the solution to their problems during the teaching and learning processes. The expectation of adopting *project-based learning* approach is for the pre-service EFL teachers to become constructivist learners in cooperating with each other in finding and building their own knowledge by experiencing learning by doing and learning from mistakes or trial and errors activities through active learning (Yusofa et al., 2012).

### THE EXPERIENCES OF PRE-SERVICE EFL TEACHERS TOWARD FACEBOOK CLOSED-GROUP DISCUSSION METHOD IN THE CL COURSE

All Pre-service EFL teachers agreed that through Facebook closed-group discussion they would be able to obtain any information, not only about the content of CL, links, webs, and other information for knowing the technical skills about PACI model, but also directly to find all the information regarding the comments, feedback and suggestions from lecturer and other Pre-service EFL teachers that are usually uploaded on the Facebook closed-group discussion. Below is Ita's opinion:

Any comments and feedback from the previous presenters and lecturer were directly seen by all of us, and we could directly apply it to our own projects, so as not to make the same mistakes again when we had our turn to present the project in the next meeting.

All Pre-service EFL teachers expected to have access to the Internet so that they could directly see and explore the links that were uploaded into Facebook closed-group discussion. They expressed their disappointed about low Internet access, not only in computer and language laboratories, but also around the campus area. As expressed by Joni and agreed by all Pre-service EFL teachers,

I realized that the Facebook closed-group discussion was very important for accessing any links, information, feedback and comments to improve our knowledge and skills. However, we experienced that the Internet

connection was not enough to download that information. My own Internet data that connected to my mobile phone was not able to download the video or YouTube link. I did not even have Internet access at home; hence I often spent my own money to buy the Internet data.

From these interview data, it can be concluded that integrating Facebook closed-group discussion was important to support Pre-service EFL teachers' understanding about the PACI model. However, their progress was slow due to the unavailability of Internet access in the campus area. The Pre-service EFL teachers had to provide funds to access the Facebook closed-group discussion. From this finding, the lecturer and all Pre-service EFL teachers expected the faculty to provide high Internet access that could help them to increase their knowledge and skills. My previous study (Limbong, 2015) suggested that the role of faculty was crucial in increasing the quality of lecturers and Pre-service EFL teachers by providing advanced hardware, software and Internet access.

## THE EXPERIENCES OF PRE-SERVICE EFL TEACHERS TOWARD FACE TO FACE METHOD IN THE COMPUTER LITERACY COURSE

All Pre-service EFL teachers still preferred to have F2F method in the CL course. They agreed that Facebook closed-group discussion was important, but some technical issues such as trouble-shooting, slow laptops to render the video, and crashes in software processing were the critical problems that need to be solved immediately. All the groups expressed similar expectations, as Robiah expressed below:

Observing, doing, and guiding directly from lecturer, must be very helpful for us and the shortcut to do the PACI model were my expectation. Although, we still may learn those strategies from the Internet, the lecturer must have simple and easy strategies. Therefore, I still preferred to have F2F in addition to learn from Facebook closed-group discussion.

The above quotation showed that all Pre-service EFL teachers expected to have guidance, not only to improve their knowledge about the technical skills but also to acquire strategies to overcome the technical issues. Most of

them were capable of mastering the technical skills, but were still unable to deal with the technical issues.

Therefore, besides the guidance from the lecturer, hands-on instructions by technicians were needed as well. In the real context during designing, planning and implementing the PACI model, only few Pre-service EFL teachers knew how to record their voice by using an external device such as a mobile phone and external microphone. Most Pre-service EFL teachers directly recorded sound or voice using their laptop speaker which produced bad record quality of recorded voice. The lecturer uploaded strategies into Facebook closed-group discussion for the benefit of other members.

## CONCLUSION

The results suggested that blended learning is effective and efficient for designing and developing supplemental technology-integrated materials of the PACI model and supports Pre-service EFL teachers and researcher teaching competencies. Although not all Pre-service EFL teachers were familiar with the project-based learning approach, at the end of this course, they were being familiar on it and were able to produce multimedia of PACI model. Most importantly both the Pre-service EFL teachers and the researcher experienced the integration of TPACK during Computer Literacy course. The researcher and Pre-service EFL teachers realized that the content of Computer Literacy course may be shaped by the application of technology; teaching as well as learning was changed by the use of technology of Facebook closed-group discussion and the way researcher represented and communicated the content of Computer Literacy course to Pre-service EFL teachers. It was also revealed the role of the researcher change from being the primary source of information to being a support, collaborator, and coach, while Pre-service EFL teachers changed from passive to active designers and users of pedagogical technology.

The small number of participants to be interviewed and documents of Facebook group closed-discussion links were the limitation of this study. Further researchers may use mix methods for collecting the varieties of data in understading more details the pre-service EFL teachers' experiences towards project-based learning by using Facebook closed-group discussion and face to face methods in exploiting TPACK framework into practice.

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**APPENDIX 1:**

**The Computer Literacy Content and Activities**

**Table 1**  
**The Computer Literacy content and activities**

Week	Medium	Activities
1 <sup>st</sup>	Face to Face	<ul style="list-style-type: none"> <li>- Welcoming Pre-service EFL teachers,</li> <li>- Discussing Learning Contract,</li> <li>- Introducing the PBL approach,</li> <li>- Creating Facebook closed-group discussion,</li> <li>- Introducing the Computer Literacy topic goals and its projects,</li> <li>- Assigning the Pre-service EFL teachers to learn the PP-Audacity-Camtasia-Internet.</li> <li>- Asking Pre-service EFL teachers to make their own group</li> </ul>
Follow up the Face to Face first week class, lecturer started to upload and share some links (web, YouTube, and other engine searches) to support students		

<p>understanding about the PACI software. Lecturer also asked the Pre-service EFL teachers to share the links that they have already known for supporting their understanding the technical skills about the PACI model. In short, they must understand how to operate the PACI model (technical skills).</p>		
2 <sup>nd</sup>	Face to Face	<ul style="list-style-type: none"> <li>- Showing the previous PACI model (lecturer's and Pre-service EFL teachers' project)</li> <li>- Discussing the specific Software were used to create the previous projects</li> <li>- Asking and Answering sessions about the lecturer's expectation for creating the PACI model</li> <li>- Installing the software needed.</li> </ul>
<p>Every comments and feedback from Pre-service EFL teachers and lecturer were uploaded to Facebook closed-group discussion for reminder to all members by the chairman of the class.</p>		
3 <sup>rd</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Pre-service EFL teachers share the link for helping them to understand the PACI model</li> <li>- All Pre-service EFL teachers may comments about the link or offer another links that they think easier to follow and understand.</li> <li>- During FtF session, the lecturer asked the Pre-service EFL teachers' progress about PACI</li> <li>- Lecturer asked for other Pre-service EFL teachers' help if other have difficulty in understanding PACI model</li> <li>- Lecturer gave some solutions and clarification about PACI model</li> <li>- Assigning the Pre-service EFL teachers to choose their specific Grammar to be presented for the next meeting in group (Project Group presentation)</li> </ul>
4 <sup>rd</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Three of groups were started to design and plan their PACI model</li> <li>- The draft of the project were freely uploaded to Facebook closed-group discussion for getting comments from others and lecturer before the presentation day</li> <li>- Presenting draft multimedia from three or four groups.</li> <li>- Comments and feedback from lecturer and also from Pre-service EFL teachers were demonstrated particularly by lecturer</li> </ul>
<p>In the three first group presentations, many comments and feedback were given by lecturer for making multimedia with the PACI model. Those comments and</p>		

feedback were upload on Facebook closed-group discussion for reminding other Pre-service EFL teachers to follow and avoid in the next group presentations.		
5 <sup>th</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Presenting the draft project multimedia of PACI model by other groups</li> <li>- Comments and feedback from lecturer and also from Pre-service EFL teachers were demonstrated particularly by lecturer</li> <li>- Some technical issues were arose and solutions were demonstrated by the lecturer and also from other Pre-service EFL teachers</li> </ul>
Every comments and feedback from Pre-service EFL teachers and lecturer were uploaded to Facebook closed-group discussion for reminder to all members by the chairman of the class.		
6 <sup>th</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Presenting the draft project multimedia of PACI model by other groups</li> <li>- Demonstrating the comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> <li>- Some technical issues were arose and solutions were demonstrated by the lecturer and also from other Pre-service EFL teachers</li> </ul>
7 <sup>th</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Presenting the draft project multimedia of PACI model by other groups</li> <li>- Demonstrating the comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> <li>- Some technical issues were arose and solutions were demonstrated by the lecturer and also from other Pre-service EFL teachers</li> </ul>
8 <sup>th</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Submitting the Group project multimedia (First Project)</li> <li>- Preparing the Second project (Second Project); Individual Project: The ten of grammar test and explanation.</li> </ul>
Lecturer uploaded some links how to make animated test and asked Pre-service EFL teachers to search and upload the links for helping all members to understand in making animated test.		
9 <sup>th</sup>	Facebook & Face to	<ul style="list-style-type: none"> <li>- Presenting the first draft of individual project (three or four Pre-service EFL teachers)</li> <li>- Demonstrating the comments and feedback from</li> </ul>

	Face	<p>lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</p> <ul style="list-style-type: none"> <li>- Demonstrating and answering the Pre-service EFL teachers' questions and give some comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> </ul>
10 <sup>th</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Presenting the first draft of individual project (three or four Pre-service EFL teachers)</li> <li>- Demonstrating the comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> <li>- Demonstrating and answering the Pre-service EFL teachers' questions and give some comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> </ul>
11 <sup>st</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Presenting the first draft of individual project (three or four Pre-service EFL teachers)</li> <li>- Demonstrating the comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> <li>- Demonstrating and answering the Pre-service EFL teachers' questions and give some comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> </ul>
12 <sup>nd</sup>	Facebook & Face to Face	<ul style="list-style-type: none"> <li>- Presenting the first draft of individual project (three or four Pre-service EFL teachers)</li> <li>- Demonstrating the comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> <li>- Demonstrating and answering the Pre-service EFL teachers' questions and give some comments and feedback from lecturer and also other Pre-service EFL teachers to address some issues in terms of text, animation, sound and so on.</li> </ul>
13 <sup>rd</sup>	Facebook & Face to	<ul style="list-style-type: none"> <li>- Submitting the Individual Project</li> </ul>

	Face	
14 <sup>th</sup>	Face to Face	<ul style="list-style-type: none"> <li>- Assessing the Pre-service EFL teachers together</li> <li>- Asking for comments and feedback to evaluate the overall Computer Literacy topic</li> </ul>

**APPENDIX 2:**

**Protocol of Interviews**

- (a) Do you like the blended learning approach during the Computer Literacy (CL) course? Why?
- (b) Do you often get involved on Facebook closed-group discussion (Facebook closed-group discussion)? Why?
- (c) Which one do you prefer between traditional face to face or Facebook closed-group discussion to understand the CL course?
- (d) Do you like the Project Based-Learning (PBL)? Why?
- (e) Have you practiced this approach before? When?
- (f) What did you experience with the PBL approach at the first time?
- (g) Have you familiarity with PowerPoint, Audacity, Camtasia and Internet software?
- (h) When did you learn the PACI knowledge? Where?
- (i) Did you learn to improve the PACI software from the Internet or friends?
- (j) Did your members group help you when you did the PACI project? Why?
- (k) Do you think that PACI Model is important in your future teaching?

**APPENDIX 3:**

**The Facebook Group-closed Discussion Links**

<https://www.facebook.com/groups/889225051176685/> the link for A class

<https://www.facebook.com/groups/1806315436250233/> the link for B class

<https://www.facebook.com/groups/940463489378681/> the link for C class

<https://www.facebook.com/groups/305671023128340/> the link for D class