LEARNING TO TEACH IN A DIGITAL AGE: ICT INTEGRATION AND EFL STUDENT TEACHERS' TEACHING PRACTICES

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Abstract

The integration of ICT in teaching and learning processes has been important as it will facilitate teachers to develop their students' skills and knowledge including in teaching English as a foreign language (EFL). However, research focusing on the integration of ICT in teaching English by EFL student teachers in Indonesia during their teaching practices has been limited. This study examined the ICT integration used by student teachers from a public university during their teaching practices in four high schools in Indonesia. This qualitative inquiry with a case study approach focused on video-based observations and focus group discussions as techniques of data collection. We utilized random sampling for the video-based observation and purposive sampling for the focus group discussion with 60 participants in the discussion and 10 classes in the observation. We organized our analysis and discussion around the field facts and participants' perceptions on the contexts whether or not the integration of ICT was carried out in their pre-teaching practices. Despite the fact that most participants who were student teachers informed that they had good competency levels and experience on the use of technology and believed that technology would have many benefits in improving their teaching performance, the findings of this study showed that they did not integrate ICT in their teaching practices. The major reason for this lack of technology use was the school condition. The findings can be a reference for the importance of a systematic and comprehensive development of method of the teaching practice in the 21 century to help the appropriate transition of student teachers, as they will become professional teachers in the future.

4

1. Introduction

ICT training has been a significant part of many teaching training in ensuring aspiring teachers are prepared in utilizing technology in their teaching (Gülbahar, 2008). Therefore, it is worth to analyze whether technology forms teachers' part of helping activities from the first time of teaching to change learning way suited the 21st century ways, becoming technology oriented. Teaching practice, which is the first activity, implemented to train future teachers before they are ready to be teachers is the first spot to practice. This first chance for those teachers aims at establishing student teachers' own teaching philosophies and practices. Some researchers informed on why most teachers were not used to using technological devices and systems in their teaching activities because it was neither their original training nor their teaching habits when they begin to teach (Prensky, 2001; Rosenthal, 1999). So, when technology was first used, teachers faced difficulties and challenges. Verloop, Van Driel, and Meijer (2001) state that the cognitions of teachers cannot be switched easily because it needs years to form. However, technology would have potentials in promoting teaching innovativeness through having important tools utilized to facilitate learning. Hence, it has played important roles in education in these days.

Nowadays, most programs for teacher training around the world support technology-training components. Because of the training, today's student teachers are in an environment which is more supportive of integrating technology as part of their teaching compared to their predecessors. New teachers are not supposed to apply unnecessary teaching habits established by the predecessors (Yuksel & Kavanoz, 2011). They could easily introduce innovation to their teaching techniques to support technology use. Much research on the ICT application has been focusing on the investigation of teacher education programs to explain how much they prepare for the integration of ICT into their classes (Liu, 2012; Murley, Jukes, & Stobaugh, 2013).

However, limited studies specifically observed student teachers' transition when they go to the field of teaching on whether they implement the skills and knowledge they obtained from the technical training programs or not. This study focused on investigating the integration of ICT of English as a Foreign Language (EFL) student teachers from a public university during their teaching practices in four high schools in Indonesia. In this study, there were questions:

1. How do student teachers integrate the use ICT in their teaching practice?

2. What are the student teachers' beliefs in dealing with the ICT benefits in their teaching activities?

3. What are the hampering factors faced by student teachers in using ICT in their classrooms?

2. Review of Literature

Some studies have documented the investigation of technology application carried out by student teachers. Plenty of the studies revealed that there is gross under-use of technology by student teachers in the teaching activity (Al-Ruz & Khasawneh, 2011; Liu, 2012). Mostly, the lack of technology use in the teaching and learning process has been included in studies of the field of teacher training program (Liu, 2012; Scheeler, 2008). Nowadays, it is crucial to integrate or relate the use of technology for newly recruited teachers or student teachers who will be teachers in the future when they go for teaching practice. Teaching in the 21st-century has changed, which requires people involved in education including teaching to manage the integration of technology in their classes to meet the requirements of currents literacy (Kong et al., 2014). Oblinger and Oblinger, (2005) state that student who lives in digital eras have mostly been familiar with the use of technology including student teachers.

However, it is proven not effective in terms of technology integration in either curriculum or teaching activity. It is believed that training effectiveness could increase the levels of teachers' competency in using technology in their teaching delivery (Koh & Frick, 2009). In some studies, the lack of limited trainings was a major factor in technology disintegration in teaching activity (Gibson & Oberg, 2004; Gülbahar, 2008; Liu, 2012; Vanezky, 2004). However, nowadays where most students are digital natives, technology has played important roles in the lives of the current generation (Kelly-McHale, 2013; Nishino, 2012; Vodanovich, Sundaram, & Myers, 2010).

Digital natives are characterized by high enthusiasm in using technology on daily basis. This fact delivers reasonable expectations and hopes that these students more likely integrate ICT into teaching activities. However, studies done by Allsop et al. (2009), Hadiyanto et al. (2017), and Lei (2009) indicated that most student teachers used technology applications and devices more on their personal use than on their teaching and learning activities. For example, Lei (2009) who investigated student teachers' attitudes, beliefs, and technology experience and expertise found that student teachers spent most of the time (80%) on social communication, with merely approximately 10% of that time for learning activities. Allsopp et al. (2009) conducted a study on evaluating the influential effects of a computer initiative (one-to-one among the participants) in order to integrate systematic technology for undergraduate students in one education program found that most participants integrated sorts

of technology applications and devices maximally for their personal use outside the classrooms instead of using them in their teaching and learning activities (technology disintegration).

Some influencing factors of technology disintegration in pre-service teaching programs are self-efficacy, school culture, conflicting beliefs, and teachers' limited training (Al-Ruz & Khsaweh, 2011; Anderson & Maninger, 2007; Gibson & Oberg, 2004; Gülbahar, 2008; Koh & Frick, 2009; Liu, 2012; Niederhauser & Perkmen, 2010; Vanezky, 2004; Wang & Wu, 2015). In addition, Teo (2009), Yücel, Acun, Tarman, and Mete (2010), and Aslan and Zhu (2014) believed that besides those factors, supporting facilities, technology attitude, and computer anxieties were also factors in technology disintegration in pre-service teaching programs.

Competency levels in technology use have been in many studies linked to self-efficacy of educators (Wang & Wu, 2015). A study done by Al-Ruz and Khasaweh (2011) that examined a model in which technology application carried out by the participants who were student teachers was in correlation with both university-based and school-based factors. They informed that in the integration of technology, self-efficacy played the most important role. Similar research results doneby some other researchers such as Anderson and Maninger (2007), Koh and Frick (2009), and Niederhauser and Perkmen (2010) who revealed that self-efficacy has been the most important determiner of student teachers' willingness to utilize technological software and in their teaching and learning activities.

School culture is another factor influencing the lack of the use of technology in the classrooms by student teachers in their pre-service teaching. Inan and Lowther (2010) in their study revealed that student teachers in first year teaching practice were required to learn the school cultures and the way to become teachers that influences all activities in the teaching and learning process. Further, school culture plays a very important role in giving influences to new teachers or student teachers to use technology in their classrooms (Al-Ruz & Khasawneh, 2011). The school cultures are very significant to support the use of technology because they encompass some factors, for instance; school leadership's expectations, ICT technical and pedagogical support, attitudes and perceptions towards technology use, and ICT policies. The phenomenon happens because when the integration of technology is an element of the school culture, the teachers will not have isolated feeling in their efforts to apply ICT in the teaching and learning. Therefore, for student teachers who do their teaching for the first time, the inclinations of the school cultures will help adopt or not adopt the ICT integration in their classrooms (Allan, Law, & Hong 2003). Also, Conway et al. (2005) investigating new

teachers' challenges in technology integration found that the issues of time and the validation needs in dealing with the first time teaching. According to Conway et al. (2005), new teachers are often reluctantly afraid to neglect the norms or cultures they find in the school and to try new things including integrating ICT in their teaching activities. In another study, Gorder in 2008 states that teachers with experience have more opportunity with the use of technology, should they be willing to use it. The reason is that established teachers are more adaptable with the school cultures than that of new teachers. The established-teachers would have opportunities to be more creative than new teachers who are still trying to get accustomed to teaching and learning in the schools. This fact may help explain several thought-provoking results of findings obtained by some studies which revealed that new teachers of today, believed as more technology savvy than that of their predecessors, do not use ICT in their teaching activities as it is expected (Allsopp et al., 2009; Lei, 2009).

Additionally, pedagogical belief is revealed as one of factors in the disintegration of ICT in classrooms (Ertmer, 2005; Kelly-McHale, 2013; Nishino, 2012). A meta-analysis done by Ertmer (2005) evaluating the correlation between teachers' pedagogical beliefs and their ICT integration found that it is meaningless trying to switch classroom practices in terms of technology application without addressing teachers' beliefs. Those things are difficult to verify since they are dealing with implied caution. However, they are possible to verify from the observation of people's action. The study with observation approach conducted by Kelly-McHale (2013) and Nishino (2012) have shown that there have been the inconsistencies in this matter to various factors; teachers' limited theoretical understanding, conflicting beliefs, and the school culture (Kelly-McHale, 2013; Nishino, 2012).

Most of the previous studies were conducted through survey as the research methodology (Gülbahar, 2008; Kelly-McHale, 2013; Liu, 2012; Nishino, 2012; Vodanovich, Sundaram & Myers, 2010; Yeung, Taylor, Hui, Lam-Chiang, & Low, 2012). However, this study elaborated qualitatively with a case study approach utilizing observation and focus group discussion as the instruments of data collection. To comprehend the student teachers' use of technology or its limitation to be more elaborative and informative, observation would be appropriate to see the fact in the field. Focus group discussion would make the research to be more appreciative in terms of circumstances and information, which was directly obtained from student teachers' perception.

3. Methods

3.1 Design of the study

We utilized a qualitative case study approach to examine ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia. A qualitative case study is an intensive and holistic description, explanation, and analysis of "a bounded system" (Merriam, 1998, p. 27) or phenomenon such as a person, a program, an institution, a process, a social unit, a group, and a policy (Mukminin, Kamil, Muazza, & Haryanto, 2017; Mukminin, Ali, & Fadloan, 2015). Furthermore, Merriam (1998) states that to investigate a topic of study that has not been studied intensively, an exploratory case study might become one of the approaches to be used as is the case with ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia. Through scrutinizing a formerly understudied topic, qualitative scholars might have occasions for conducting a study on relevant issues and may provide a framework or foundation for other inquiries (Merriam, 1998; Prasojo et al., 2017; Mukminin & McMahon, 2013). For the purpose of our study, we decided to use a case study as our approach that would help us to examine ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia.

3.2 Research site, sampling procedures, and participants

The participants of this study were all student teachers registered for the university's 2016-2017 pre-service teaching program and all classes of the collaborated schools in the Province of Jambi. We used random sampling for the observations (10 classes) and purposive sampling for the group discussions. Finally, sixty student teachers were willing to get involved in this research consisting of 34 females and 26 males. The age-range of the participants was 19-29 years. The complete information about the participants can be viewed in Table 1.

Table 1.The distribution and information of participants

Discussion Group	No. of participants/ Gender	Age	Scale of Technology Familiarity		
			Very familiar	Familiar	Not familiar
G 1	5 males (M1, M2, M3, M4, M5) 5 females (F1, F2, F3, F4, F5)	20-23	6	3	1
G2	4 males (M6, M7, M8, M9) 6 females (F6, F7, F8, F9, F10, F11)	20-22	8	2	0

G 3	6 males (M10, M11, M12, M13, M14, M15) 4 females (F12, F13, F14, F15)	20-23	6	4	0
G4	4 males (M16, M17, M18, M19) 6 females (F16, F17, F18, F19, F20, F21)	20-25	5	5	0
G5	3 males (M20, M21, M22) 7 females (F22, F23, F24, F25, F26, F27, F28)	19-22	7	2	1
G6	4 males (M23, M24, M25, M26) 6 females (F29, F30, F31, F32, F33, F34)	20-23	8	2	0

3.3 Data collection and analysis

In our study, data collection consisted of a demographic background, survey video- based observations, and focus group discussions. This study was done over one year from June 2016 to July 2017 with all participants. All participants completed a demographic survey consisting of two sections, personal demographic information (gender, age, semester, study program) and technology information (technology familiarity and length of time of technology use a day) as presented in Table 1. In addition, in the focus group discussions, we asked all participants to give their perceptions opinions on the topic given and the integration of ICT in their pre-service teaching practice. The focus group discussions were recorded using smartphone. We set all group discussion protocols. We focused on the needs, influential factors, and problems faced on the ICT integration in teaching activity. All participants were involved in all focus group discussions according to their own group (e.g., focus group discussion 1 or G 1). We used Indonesian language in the focus group discussions.

In this study, we also used video recordings to obtain the data because according to Sadalla and Larocca (2004), the video recording is suitable for studying complex phenomena such as teaching practices, full of liveliness, and dynamism influenced by several variables simultaneously. For them, "video recording allows recording even fleeting and non-repeatable events, which are very likely to escape direct observation" (p. 423). The observation sessions were conducted to see the facts happened in the field. Observation is a way to understand peoples' behavioral figures to get data about a phenomenon on some certain conditions (Creswell, 2007). The data from the recording were analyzed by putting the data into a computer program (Atlas TI), coding the data, and elaborating them. One

researcher who happened to be a video editor did the process of coding. For the focus group discussion data, analysis across and between the data continued when no thematic patterns remained. Although the student teachers varied from different programs and with different supervisors, the obtained data were treated equally without focusing on special or particular technology use in the process of teaching.

In analyzing the qualitative data, we computerized and printed the data. First, we transcribed all of the data. Then we carefully read all the transcripts. In our study, all data were captured from the focus group discussions and observations were reread with the temporary lists of codes that had been made to inventory essential statements pertinent to the topic and to deepen understanding of our data among participants. After rereading all transcripts line by line, we coded the data to search final themes. Next, we translated them into English. Finally, we elaborated the data and presented them. We also did the review and examination for redundancies and connecting the data (Creswell, 2007). We held an integrating review on the data obtained.

3.4 Ethical Considerations and Trustworthiness

Our qualitative case study used human beings as our key source of the data. To protect our research participants who participated in this study, the ethical consideration (e.g., informed consent form) was applied. We also concealed such as the places, the real names of participants through the use of pseudonyms. Also, participation in our study was voluntary. We asked every participant to sign informed consent forms before she or he was involved in this study and they were allowed to stop participating in this study whenever they wanted. Also, to deal with the trustworthiness of data and interpretations (Abrar et al., 2018; Creswell, 2007; Habibi et al., 2018; Mukminin et al., 2017), the findings and conclusions were returned to our participants to get their feedback. Moreover, thick and rich descriptions (Merriam, 1998) and narratives of student teachers' ICT integration during their teaching practices in four high schools in Indonesia were provided, including verbatim instances from the transcribed data.

4. Findings

This study examined the ICT integration by student teachers from one public university during their teaching practices in four high schools in Indonesia. Going through the video-based observations and focus group discussions, we identified three salient interrelated

themes including: ICT application, beliefs about the technology integration, and hampering factors.

4.1 ICT application

Through the video-based observations, we found that the majority of the participants never applied technology in their teaching activity. The fact that merely 12 participants integrated ICT in their teaching activity was interesting to analyze. Additionally, there was an important phenomenon revealed that 10 participants of the technology users were female participants.

Most of the technological devices used revealed from the observation were laptop and projector screen. They used both devices to facilitate presentation with some applications including Microsoft PowerPoint, PDF reader, Microsoft excel, and Microsoft words. However, the participants mostly used Microsoft PowerPoint. The presentations applied by the participants included texts, pictures, diagrams, pictures, and videos. A few of them used their smartphone(s) in the delivery of their lesson. The student teacher who used their smartphones made use of YouTube video, Google pictures, and textual references downloaded from some websites.

During the discussion sessions, the participants informed their experience in using technology devices and discussed their ability in using technology. They reported that they have received sufficient experience of the technology involvement of their learning time in the university. They said there were also two educational technology courses and other courses involving technology in the teaching and learning activity. Four participants revealed,

We attended classes of technology learning. In addition to that, some of our
university's courses were taught using technology in its presentation. (M3)

In our learning time, we were asked to present our presentation using
projectors and laptops. In one course, the teacher utilized social media,
Facebook, Whatsapp, Youtube, and Telegram in delivering the lesson. (F29)

Here in the pre-service teaching program, our supervisor asked us to use
social media telegram and Whatsapp in order to discuss, report, do
assessment. It is very useful and could be efficient for the process of the
supervision. The same thing can also be implemented in our teaching. (F15)

During our study, we were taught how to use technology and even given

opportunities to practice how to use it in the lessons; we prepared lesson plans and made presentations. (M23)

The participants also informed that they were quite skillful in using technology. They mentioned some technology devices and applications that they were accustomed to using on a daily basis like email, social media, and games. We found that they used technology for education, communication, entertainment, and business. Some of the participants reported,

> I think I have good ability using technology. I use my laptop to do my assignments and many applications in my smartphone like email, social media, and games every day. I like movies through Youtube and buying things through some e-commerce providers. (F2)

> We are digital natives who are accustomed to using technology devices, computers, projectors, smartphones, and other tools. I communicate through email and social media using my smartphone. (MI5)

> I am convinced I can use technology during my teaching activity. I have got enough information about the use of technology. Besides, we love using our gadgets. (F19)

In addition to the group discussion result, the data of demographic questionnaire also informed that 40 participants were very familiar with the technology use. Meanwhile, 18 participants were familiar and only 2 participants were not familiar with the use of technology.

4.2 Beliefs about ICT integration

In the focus group discussion, we asked the participants one by one with a question on whether they believe the benefits of ICT integration in the improvement of teaching and learning in their classes. It was surprising that around 80% of participants (33 student teachers) had a strong belief that ICT had positive impacts on the teaching activities. They further believed that ICT could be media to poster students' knowledge and comprehension in learning. Technology, on their opinions, could be a tool to attract more attention, give more cutting-edge information, invite students activeness in the classrooms, deliver simplified concepts, make things more simple, provide any information in many forms such as videos, pictures, diagrams, and texts. Some of the excerpts of the focus group discussions revealed:

I think technology can make our teaching and learning more fun and efficient in terms of time and materials. We used for example social media in our teaching practice, between supervisors and us, and it was very beneficial in saving our time discussing things. The same idea also could be applied in teaching the student in the schools. (M7)

Technology has many functions on our teaching. It could make students more active in the teaching and learning process. (F6)

I think I could conclude that technology is very useful. Technology such as internet can provide any information that we need. The information can be in many forms like video, pictures, news and others. (F16)

On the other hand, the rest (5 student teachers) in the focus group discussions indicated that they did not believed in the improvement of teaching and learning activity in their classroom influenced by the use of technology. They also mentioned that they disliked the ICT integration in their teaching activity both in the schools and in the campus. They thought that using books and other conventional materials is still better than using technology. One participant summed up on this thing, "I am against my friends' opinions, and I think technology will not have any significant influence to our teaching and learning activity. Using technology would just waste our time. Books, whiteboards, and chalk for me are still the best."

4.3 Hampering factors

The culture and condition of the schools' facility became the main concern revealed in the focus group discussions. They mentioned limited and broken tools, electrical instability, and poor classroom situations. In the observation of the classrooms situated in the schools, the projectors were not attached permanently. If teachers wanted to use them, they had to take them from cupboards situated in teacher offices. The participants also informed in the discussions that the school did not provide enough projectors for every class. In addition, they also reported that some classrooms were not supporting the technology integration. Three of them shared their opinion,

The stability of electrical power should be considered. We have no enough sources like personal computer, projector, and other tools. However, the attempt to promote the integration of technology should be encouraged. (F14)

The facility is the thing that does not support the integration of technology in the classroom. Broken and limited equipment is one of the factors. (F34)

Sometime some tools are not working in some classroom, the socket [electric], projector cable, internet connection, and other tools. (M22)

All schools have been equipped with computers' labs and free internet connection. However, the participants could not utilize those facilities maximally. They argued that there were complicated processes or they had to wait for the labs' schedule if they wanted to use the labs. The computers were not sufficient and the internet connection was not stable. One of the participants said that the process of school's labs booking was complicated. Some computers were even broken and sometimes they must share the computer. Another female participant informed she was dissatisfied with the school facility. In that school, the facility cannot be used anytime and the connection of the internet there is not good.

5. Discussion

This study informed that the participants had sufficient trainings and experiences. They were accustomed to using technology in their daily activity. In relation to teaching activities, most of them believed that technology had positive benefits in teaching improvement. However, they did not integrate technology in their teaching practice due to the school condition. This study informed that most participants did not integrate ICT in their teaching. The findings are similar to many other previous studies (e.g., Gibson & Oberg, 2004; Gülbahar, 2008; Liu, 2012; Scheeler, 2008; Vanezky, 2004). Only few of them used technology in their class. The participants who integrated technology in their teaching mostly used Microsoft PowerPoint to deliver their presentation in the classroom. In addition, some students sometimes used internet –based technology such as YouTube video, Google pictures, and textual references downloaded from some websites.

Findings revealed by previous studies (Allsop et al., 2009; Hadiyanto et al., 2017; Lei, 2009) indicated that 21st-century students were digital natives or technology savvy and spent much time using technology in their everyday lives. In this study, the participants revealed similar information that they were quite skillful in using technology. They mentioned some applications that they are accustomed to using on daily basis. Some of the participants reported that they use technology for education, communication, entertainment, and business. Some major previous studies (Gibson & Oberg, 2004; Gülbahar, 2008; Liu, 2012; Vanezky,

2004) revealed that limited technology trainings and experience as the major factors of technology disintegration in pre-service teaching program. On the contrary, the findings of this study showed that there have been sufficient trainings and experience including experience they obtained from universities courses that brought technology into the classroom. In addition, they stated that they had confidence using technology in their teaching activities due to their experience and involvement in the use of technology. Similarly, some studies also revealed that technology training is not a factor hampering the integration of technology in teaching activity (Allsop et al., 2009; Hadiyanto et al., 2017; Lei, 2009).

Condition of the school facilities and school culture were the two hampering factors in technology integration faced by the participants. Limited and broken tools, electrical stability, and classroom situation are among the hampering. In addition, school culture is the other factor. The participants informed that there were complicated bureaucracy or they had to have long-waited line to use the labs. One of the participants said that there process of school's labs booking was complicated and most senior teachers did not use in their classes. The factors are in line with the findings of some previous other studies (Allan, Law, & Hong 2003; Allsopp et al., 2009; Al-Ruz & Khasawneh, 2011; Lei, 2009; Conway et al., 2005; Gorder, 2008; Inan & Lowther, 2010).

6. Policy recommendations

The findings of this study informed that the establishment of ICT integration in the pre-service teaching programs among student teachers was a complicated task as participants needed more time to use it in their teaching practices.. Even though student teachers were skillful, experienced and trained in terms of using technology, it did not mean that they would integrate technology in the pre-service teaching programs as this study informed. It is significant to deliver facilitating conditions to encourage the ICT integration. These conditions take various forms both physical and theoretical. The existence of supporting technology resources is a foundation of the integration of any technology program including in the area of education. Nevertheless, the proper condition should be hand in hand with the culture and administration of the schools. The participants suggested that the facility and culture in the school could the integration of ICT in education. It was recommended that all related stakeholders would take a part in the improvement of the facility.

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