CHAPTER I

INTRODUCTION

1.1. Background of the Study

Various technologies such as film projectors, radio, instructional television, cassette players, and Video Cassette Recorders have been used in educational practices particularly in teaching and learning process since 1970s. Information and Communication Technology (ICT) tools integration in classroom have even more become popular among educators since the invention and development of personal computers with CD-ROMs, digital cameras, and the internet (Green, 2001; Sharp, 2006 in Keengwe, Onchwari, & Wachira, 2008). Since then, many researchers have tried to establish the relationship between technology use and student learning achievement (Wenglisky, 1998; Sivin-kachala and Bialo, 2000; Russell, 1999; Jonassen, Howland, Moore, & Marra, 2003). Most of these studies revealed that technology integration gives a great impact on student's learning achievement, attitude toward their own learning, and self-esteem as long as they are used productively to facilitate learning. However, recent study showed that there is an overwhelming gap between the way students are learning and the way they are living with technologies (Partnership for 21st Century, 2004).

Called as *Millenials*, Students today are living in digital era where they engage with technologies and use them to connect and communicate with the world (Partnership for 21st Century, 2004). They are also rich with ICT experiences. A survey conducted by Asosiasi Penyelenggara Jaringan Internet Indonesia (APJII) showed that by October 2016, 132.7 million people in Indonesia are active internet

users and 768 thousands of them are younger population, 13-18 years-old. The survey also indicated that 67.2 million people access internet from their computer and smartphones, 63.1 million from only smartphones, and 2.2 million from only computer (Kompas.com, October, 2016). Following this, the result of *e-commerce* survey by International Data Corporation (IDC) Indonesia revealed the top 5 (five) Indonesian internet activities; 17.8% accessing internet for business communication purpose (email), 17.3% for entertainment (music and video), 15.6% for social communication (social media, e.g. Facebook, Instragram, Twitter), 14.6% for online shopping, and 12.9% for professional networking purposes (swa.co.id, November, 2016). Another study by Kaiser Family Foundation (2005) (citied in Fernandez [2008]) also revealed that millenials are investing one third to one fourth of their twenty-four hour day using some sort of ICT; television 3.04 hours, DVD/Movies/Videos 1:11, 43 minutes reading printed material, 1.44 hours listening to audio media, 1.02 hours on computers, and 49 minutes playing video games. These statistics are viewed to be significant to show that young generation today, students, are indeed growing up in a digital world. However, research indicated that even though this generation of students are familiar with technology and live with it, they may not know how to use it for learning (Karchmer-Klein & Shinas, 2012).

This corresponds with what Boyd (2002) revealed that technology integration does not show any significant support to students' learning achievement and does not effectively engage students in learning. This condition occurs because technologies are ineffectively integrated, less frequently used, cooperated in limited ways that do not support students learning, and still functioned within traditional

classroom environment such as for word-processors and presentational devices (Cuban, 2001; Boyd 2002). If teachers are changing their pedagogical approaches and strategies while integrating technologies to support a more students-centred environment and meaningful learning, the condition will be different (Boyd, 2002).

To create a meaningful learning with technology, teachers need to understand a set of knowledge. This knowledge refers to Technological Pedagogical Content Knowledge (TPACK) (Boyd, 2002). TPACK is the intersection of Content Knowledge (CK) –knowledge about the subject content matter, Pedagogical Knowledge (PK) –knowledge about how to teach the content, and Technological Knowledge (TK) –knowledge about various technologies and how to operate them, Pedagogical Content Knowledge (PCK) –knowledge about teaching certain subject content, Technological Content Knowledge (TCK) –knowledge about how to present specific subject content using technology, and Technological Pedagogical Knowledge (TPK) –knowledge about how technology is operated in teaching (Scmidt et al., 2009 in Singer, 2016).

Teacher professional development program named Pendidikan Profesi Guru (PPG), projected by The Ministry of Research, Technology, and Higher Education Indonesia is established to prepare qualified teachers who are professional, ready to face current world challenge and meet the National Education Standard (Dikti, 2017). To be highlighted, during the program, the student teachers are demanded to master TPACK demonstrated by the ability to design and implement ICT-based learning. (Belmawa, 2017).

In Indonesia, studies on teacher's TPACK in the English as a foreign language (EFL) has been rarely undertaken. Out of the limited number of studies,

one study was carried out by Mahdum (2015). It investigated the in-service EFL teachers' perceptions towards the use of TPACK using self-assessment questionnaire. The result showed that the teachers are in "good" TPACK category. However, Koh (2013) argued that even though a teacher is self-assessed to have good TPACK, it is not guaranteed that they can carry out ICT which promotes meaningful learning as technology integration does not only involve knowledge but also competence. So, it is suggested that when teachers integrate ICT, they need to meet the five dimensions of Howland et al.'s (2012) framework of meaningful learning with ICT; active (students manipulate content learning), constructive (students synthesise information), authentic (the content learning presented real-world phenomenon), intentional (students self-diagnose and fix their learning gaps), and cooperative (promotes divergent knowledge construction). These are teaching strategies Howland et al. believed must be employed when integrating ICT in teaching and learning process to support meaningful learning.

In light of this background, this study was intended to find out the common ICT tools and in which learning activity types they were integrated in the ICT-based learning activities as reflected in the student teachers' lesson plans and to describe the relevance of the ICT-based learning activities with the five dimensions of meaningful learning with ICT. To help researcher meet the second research purpose, this study employed Koh's (2013) rubric which provides assessment score for the five dimensions of Howland et al.'s (2012) framework of meaningful learning with ICT.

1.2. Research Questions

This study was conducted to give answers to these questions:

a. What are the ICT tools found and in which learning activity types are they integrated in the ICT-based learning activities as reflected in the student teachers' lesson plans?
b. How relevant are the ICT-based learning activities as reflected in the student teachers' lesson plan with the five dimensions of meaningful learning with ICT?

1.3. Purpose of the Study

This study aimed at finding out the common ICT tools and in which learning activity types they are integrated in the ICT-based learning activities as reflected in the student teachers' lesson plans and describing the relevance of the ICT-based learning activities with the five dimensions of meaningful learning with ICT.

1.4. Scope of Study

This study was carried out only based on lesson plans. The focus of this study was only to find out the common ICT tools and in which learning activity types they are integrated in the ICT-based learning activities as reflected in the student teachers' lesson plans and to describe the relevance of the ICT-based learning activities with the framework of meaningful learning with ICT. It is important to note that assessing whether ICT integration support meaningful learning or whether the teaching and learning processed as pictured in the lesson design promoted meaningful learning is out of the scope of this study.

1.5. Significance of Study

This study was conducted to establish a description of ICT-based learning activities as reflected in the lesson plan of student teachers with respect to the framework of meaningful learning with ICT. Knowledge gained from this study

was expected to establish a general reflection of the student teachers' ability in designing ICT-based learning activities to promote meaningful learning with ICT. Hence, it may become a consultative tool towards the development of teacher professional development program and to assist educational policy makers, curriculum supervisors, and teachers with developing ICT integration for meaningful learning. Additionally, considering that this topic of study might be relatively new to the English education field, this study was expected to become a starter to invite other educational researchers addressing this topic.

CHAPTER II

LITERATURE REVIEW

2.1. Pendidikan Profesi Guru

Pendidikan Profesi Guru (PPG) is a teacher professional development program for pre-service teacher. This one-year program is to prepare graduates who have obtained undergraduate degree in both education and non-education universities who have talent and passion in becoming professional teachers (*Undang-Undang tentang Sistem Pendidikan Nasional*, 2003). PPG is established by the Ministry of Research, Technology, and Higher Education to give answers to the problems of teacher shortage and unbalanced distribution and underqualified and low-competent teachers in Indonesia, especially in the underdeveloped, border and outermost regions of the country, known as *3T (terdepan, terluar, dan tertinggal)* (Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementerian Riset, Teknologi, dan Pendidikan Tinggi, 2017). Besides, this program is motivated by the mandate stated in *undang-undang no. 14/2005* about teacher and lecturer that the candidate teachers must have academic qualification, master teacher competencies, hold certificate of educators and have the ability to realise national education goals.

PPG is run by numerous universities in Indonesia. Only the university that has the ministry approval may conduct this program (*Peraturan Mentri Pendidikan dan Kebudayaan* No 87, 2013). Until 2017, there are 23 universities spread throughout the nation and Universitas Negeri Jakarta is among them. The curriculum of PPG program in Universitas Negeri Jakarta is currently under

development. However, referring to the Guidebook of PPG Program (2017), after finishing this program, the student teachers are expected to master all teacher competences (pedagogy, professional, personal and social) and are able to meet the national education standard in planning, implementing, assessing learning, and giving feedback, assistance, and trainings to learners, conducting research and able to develop sustainable professionalism (Peraturan Menteri Pendidikan dan Kebudayaan, 2013). In terms of planning and implementing lesson, there is a specific demand from the ministry. PPG students need to implement TPACK (Technological, Pedagogical, and Content Knowledge). When choosing and implementing teaching-learning strategies, approaches, or models and media, students are trained and must be able to integrate technology (Belmawa, 2017). This also has been mandated in *Permendikbud no. 22 tahun 2016 tentang Standar proses pendidikan dasar dan menengah*, stating that in designing and implementing lesson, teacher should integrate ICT in systematic and effective ways with considering student's need and condition.

2.2. Millenial students and Learning in 21st Century

Teachers of today need to know that they are teaching different generation. It is seen significant that teachers need to start digging more information about who their students are and how they learn in digital world so that they will be able to adapt and adjust their teaching approach and strategies. As described in Fernandez (2008), today's students are *millenials.* Howe and Strauss (2000) revealed that millenials are active and ambitious, hyper-communicators, and expert multitaskers. The millenials know in what way they want to learn, which is to work on solving

problems that they see significant to their life and they prefer to do so collaboratively.

Another important thing to note which defines the characteristics of millennial generation is that they have enormous interest towards ICT (Information, Communications, and Technology) and ICT literacy (Howe and Strauss, 2000). ICT literacy defined by Burkhardt et al. (2003) is the use of information and technology resources, and the ability to recognize, locate, evaluate, and synthesize information and use technology effectively and in an ethical manner (citied in King, 2012). "Once mastered, this literacy, just like traditional forms of literacy, enables the mastery of other academic, professional, and personal competencies needed for 21st century success" (Partnership for 21st Century Skills, 2007b, p. 21).

In similar perspectives, Fenandez (2008) argued that today's students, the millenials find technology as their culture. They do not only use technology but it is a part of them. This 'digital natives' are born and raised in a digital world and are fluent with digital technologies. They are frequent users of text messaging, instant messaging, and social networks such as Facebook, Twitter, and Instagram. They download movies and music, and create videos and multimedia presentations for posting on Youtube or other websites to share with the world. These technologies provide this generation with access to peers around the world, and the freedom to pursue their interests in their own ways.

Living with technology rich environment, Woodall (2009) argued that students are not interested to traditional methods of teaching (citied in DeYoung, 2011). Watching videos or images during class, playing an internet multiplication game or even taking turns at an interactive whiteboard are no longer enough and

even insignificant (RAND Corporation, 2012). Levin & Arafeh (2002) revealed that students reported that technology rarely plays a significant role in classroom and is seldom integral to the outcome of learning. Teachers integrate technology into their instruction only as they feel comfortable; yet, much of what they are doing is not transforming their teaching practice in meaningful ways. Thus, they are experiencing education is not relevant and outdated with the world in which they are living.

From above discussions, it is clear that students require learning environments that utilise ICT in learning process that represent and reflect what they actually experience in life and could better prepare them for the future (King, 2012). Technology is a valuable tool that can transform the learning environment. When used comprehensively and effectively, technology changes the learning environment so that it is student-centred, collaborative, problem and project centred, communicative, and productive (King, 2012). These digital learning environments support student achievement and the development of 21st century skills. Consequently, it is important for teachers to understand how to use technology required for 21st century teaching and learning.

2.3. Technology, Pedagogy, and Content Knowledge (TPACK) Framework

In 2005, revised in 2006, Mishra and Koehler argued that rapid development of new digital technologies also did change the way students learned and teachers taught since technology integration appeared in classroom. So, they proposed a framework to explain technology use in teaching. They suggested that the integration of technology in instructions adds technology domain to Shulman's (1986) pedagogical content knowledge (PCK) framework. These domains consist

of Shulman's original constructs of pedagogical knowledge (PK), content knowledge (CK), and pedagogical content knowledge (PCK) augmented by the addition of technological knowledge (TK), technological content knowledge (TCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPACK).

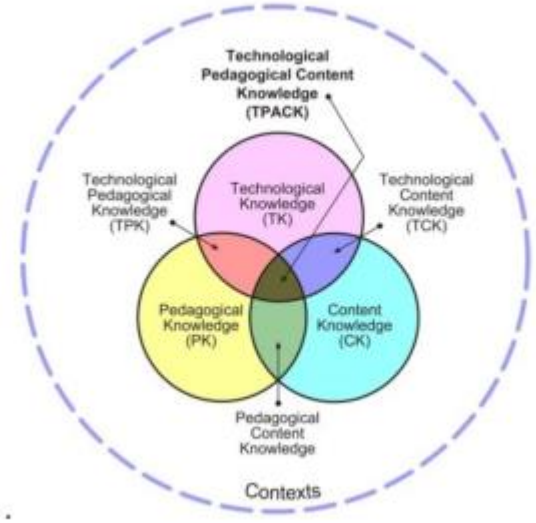

Figure 1. Graphic representation of the technological pedagogical content knowledge framework (Ervin, 2014, p. 10)

In their study, Mishra and Koehler (2006) explained the seven elements of TPACK (shown in Figure 1) as follow:

Content knowledge (CK) refers to the "knowledge about actual subject matter that is to be learned or taught" (Mishra & Koehler, 2006, p. 1026). It is essential for teachers to master this elements as it includes the knowledge of concepts, procedures, central facts, theories and explanatory frameworks that connect and organise concepts and ideas within the field they are teaching.

Pedagogical knowledge (PK) refers to the methods and processes of teaching and includes knowledge in classroom management, assessment, lesson plan development, and student learning. In other words, it describes the knowledge teachers have about how to teach and how learning occurs.

Pedagogical content knowledge (PCK) deals with the ability to implement pedagogical approaches, methods, and procedures to deliver or teach subject content (Shulman, 1986). It is viewed that PCK is adapted differently based on the content areas. This is due to the idea that as content and pedagogy knowledge blends, they need to be adjusted in ways that make sure teaching practices within the subject area contribute positively to students learning.

Technology knowledge (TK) is the knowledge about various technologies, ranging from low-tech technologies such as pencil, books, chalk, and paper to digital technologies such as digital video, interactive whiteboards, the Internet, and software programs. Having TK means possessing the skills required to bring particular technologies into function. In the case of advanced technologies, the skills and knowledge to operate computers systems, hardware and software are included.

Technological content knowledge (TCK) refers to the knowledge of how to function technology to present, teach, and deliver specific subject content. It is necessary to note that this elements suggests that teachers should know not only the contents they are teaching but also the strategies to teach them need to change due to the technology application.

Technological pedagogical knowledge (TPK) refers to the knowledge of how to function various technologies for teaching and learning. It is reflected on

the performance of choosing and operating technological tools based on its fitness in appropriate pedagogical strategies.

Technological pedagogical content knowledge (TPACK) refers to the knowledge required by teachers for integrating technology into their teaching in any content area. Teachers have an intuitive understanding of the complex interplay between the three basic components of knowledge (CK, PK, TK) by teaching content using appropriate pedagogical methods and technologies.

In practice, TPACK, as an extension of PCK, is demonstrated when teachers know how the technology they use influences both pedagogical strategies and content representations. The theoretical framework of TPACK provides a blueprint for how these three domains dynamically interact with one another. Perhaps more importantly, TPACK provides educators and researchers with both the concepts and vocabulary to describe the relationship between the three domains of teacher knowledge (Ervin, 2014). This shared language "bridges the gap" between research and practice, enabling guidance on how to apply TPACK in various contexts, including teacher preparation and professional development (p. 11).

To illustrate what TPACK looks like in practice, Hofer and Swan (2008) provided an example from a high school history class. In order to utilize an online resource related to the Italian Renaissance, the teacher must not only have knowledge of the period (Content Knowledge), he or she must also know how to navigate the site (Technological Knowledge), and how to implement a structured student "research" unit (Pedagogical Knowledge). Guiding students online (Technological Pedagogical Knowledge), recognizing and overcoming barriers to student learning (Pedagogical Content Knowledge), and providing strategies for

reading informational and historical online texts (Technological Content Knowledge), all contribute to the teacher's overall facilitation of the project (Technological Pedagogical Content Knowledge).

According to Hofer & Grandgenett (2012), how well a teacher is able to determine the best fit between the content, pedagogy, and technology depends on the teacher's own level of TPACK (citied in Levin, 2014). In this way, it can be seen that TPACK is more than merely the sum of its parts. The complexity of what TPACK is and how it can best be developed and assessed is a challenge to both teacher educators and researchers (Levin, 2014).

Mishra and Koehler (2006) argued that this knowledge is both different from and greater than the knowledge of an expert in content, technology, or pedagogy. The TPACK conceptual framework helps articulate clear instructional strategies, and acts as a lens through which to view the development of necessary teacher knowledge as it relates to the effective integration of technology into instruction.

2.4. The characteristics of Meaningful Learning

Meaningful learning was a hot topic of discussion in educational psychology and philosophy in the past. Numerous scholars have been documented to have conceptualised what meaningful learning is and pointed out its characteristics. The first conception of meaningful learning can be tracked down from Wertheimer's study. He stated that meaningful learning or so he called as *sensible learning* occurs when "the transition takes place from blindness or ineptness to orientation, understanding, mastery; and when mind develops" (in Chen, 2000, p.27). These characteristics are forms of learning outcomes that Wertheimer believed to be encouraged.

In the following decades, Katona (1940) proposed another characteristics of meaningful learning. It is characterised by "apprehension of relations, understanding of a procedure, and insight into a situation" in the process of learning. So, according to Katona, meaningful learning can only be possible to take place when learner understand relations, procedures or situations rather than repeatedly drilling contents.

Unlike the previous scholars, Wertheimer and Katona, Ausubel (1968) argued that meaningful learning occurs when there is a personal recognition of the links between concepts and better understanding of the knowledge concepts will result from proper negotiations of meaning across links that are created with relevant learner's prior knowledge. To be concise, Meaningful learning is a process whereby learners connected new information received with their pre-existing knowledge or personal experience (in Keengwe, Onchwari, & Wachira, 2008 and Koh, 2013).

Proceeding with Ausubel's analysis, an educational psychologist, Jere Brophy (1989) proposed similar concept which is called *meaningful understanding*. He viewed that learner's understanding towards the new information they learn can be said meaningful if learners are exposed to "coherent bodies of information organised around key concepts and generalisation that are related to one another and to learner's prior knowledge and experience" (p. x). Brophy's further explained that meaningful learning is not likely to occur if students are merely memorising factual information and reproducing it to response to school examination.

To be different from the conceptions of meaningful learning that have been drawn previously, a humanist, Carl Rogers (1961) places greater weights on the

change of the whole person's psychological condition rather than his or her cognition state. He proposed a new term referring to meaningful learning, called *significant learning.* He viewed that learning is more than just an accumulation of facts. It is about changing individual's behaviour, attitudes, and personality. He believed that when individuals actually learn, the new knowledge is reflected in how they represent themselves in existence, meaning that it will change the way they behave, talk, think, and make choices in their life.

In his study, Rogers (1961) (in Chen, 2000) also described the characteristics of necessary learning environment for significant learning to occur. First, learners are alert to the problems they are facing and take them as something serious and significant and second, teachers should engaged emotionally with learners, built trustworthy, empathic, and friendly relationships with learners and create warm, accepting, and safe learning environment for all learners without exception. From this, it can be concluded that Roger's significant learning occurrence is greatly influenced by teacher's traits or characteristics and their relationship with learners which established during the process of learning and interaction both in and out of the classrooms.

2.1. Table of the characteristics of meaningful learning

Year	Name of Scholar	Terms used	Characteristics
1930	Wertheimer	Sensible Learning	When real understanding occurs, transition from blindness or ineptness to orientation, understating, mastery, and mind develops.
1940	Katona	Meaningful learning	Apprehension of relations, understanding of a procedure, insight into a situation
1968	Ausubel	Meaningful learning	Involves the acquisition of new meanings and relevant to learner's prior knowledge
1989	Jere Brophy	Meaningful understanding	Connected and coherent key concepts, and learned

			concepts relates to learner's prior knowledge and experience.
1961	Carl Rogers	Significant learning	Makes difference in individual's behaviour, attitude, and personality.

From above elaboration on the characteristics of meaningful learning (see table 2.1), it can be reflected that the characteristics of meaningful learning are emerged as both the outcomes and process of learning. Cognitive and personal development are the most significant learning outcomes of meaningful learning and the interconnectedness of new knowledge to learner's prior knowledge and the opportunity given to learners to apply the new knowledge to their problems or new situations are said to be the features of the process of meaningful learning. The development or growth of learner's cognition and personality also can be observed when learners are able to relate and connect between concepts and achieved their personal objectives. A process in which learners are moulded to become serious, to find new information, to comprehend, and to make relations between topics is also described as meaningful learning.

2.5. Conceptual Framework

This section is composed to explain the conceptual framework of the rubric as proposed by Koh (2013) and the analysis instruments.

2.5.1. Framework for meaningful learning with ICT

Different from the characteristics of meaningful learning which encompasses the whole lesson as it touches the area of learning process and outcomes, the framework for meaningful learning with ICT offers the pedagogical strategies teachers may use when integrating technology into their instructions to promote meaningful learning. In other words, it explains only how ICT must be

used in certain pedagogical ways to help students acquire meaningful learning. The framework of meaningful learning with ICT can be understood from Howland et al.'s (2012) study. Howland et al. (2012) (citied in Koh, 2013) argued that ICT can support meaningful learning as long as its usage meet the following five dimensions of meaningful learning with ICT; active, constructive, authentic, intentional, and cooperative.

"Active" refers to the amount of time students spend with ICT. The longer students are given the chance to use ICT, the more "active" it is. However, Koh (2013) saw that this is an example of surface-level ICT integration where students only actively do drill and practice exercises. It does promotes students engagement with ICT but it does not support deep engagement with the content they are learning. Koh further argued that that even physically students are active, does not mean they think deeper. Thus, when integrating ICT, teachers need also to follow the second dimension which is "constructive".

Different from the first dimension, "Constructive" makes sure students to engage with the content knowledge presented by ICT. "Constructive" can only be achieved if students are not passive listeners or viewers to ICT platforms but they actively 'interact' with them and the content presented through them, manipulate objects and information or use ICT for any activity that helps students develop their understanding, that involves students to do and think at the same time, and that requires students to integrate, organise and reflect upon content knowledge, and to give response in form of ideas and interpretation beyond the knowledge they are presented to.

These two dimensions correlate with the concepts of active learning as proposed by Bonwell and Eison (1991). Active learning is generally defined as any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing. It is significant to note that the core element of active learning are student activity and engagement in the learning process. The importance of student engagement is widely accepted and there is considerable evidence to support the effectiveness of student engagement on a broad range of learning outcomes (Prince, 2004). So, it cannot be said "active" if students passively receive information from the instructor. Bonwell (1991) suggested that students must do more than just listen. They must read, write, discuss, or be engaged in solving problems. Most important, to be actively involved, students must engage in higher-order thinking tasks such as analysis, synthesis, and evaluation.

"Authentic" dimension refers to the use of ICT to present learning materials which represent real-world problems. ICT, for instance videos, can be used to provide problem solving within real-world phenomenon. However, utilizing real-world materials is not enough. ICT integration should be extended in such a way to help students connect their personal experiences to the learning content and engage in solving real-world problems. This strategy is seen to be more "authentic". This corresponds with the concept of authentic learning which is promoted by participating and working on real-world problems (Har, 2005). It engages learners by the opportunities of solving real-world complex problems and finding out solutions. In this way, learners practice the skills and knowledge that are relevant and real to workplace situations and learn it at the same time. From above

discussion, it can be concluded that “authentic” dimension works with the ‘what’ aspect of the content and ‘how’ learners engage with the content.

“Intentional”, is conceptualised as the use of ICT to help students reflect their learning. It is indicated as “intentional” when students use ICT platform to diagnose and fix their learning gaps in respect to the content knowledge they learned. In other words, students use ICT to assess and evaluate their understanding towards the subject content.

“Cooperative” is the last dimension in the framework of meaningful learning with ICT proposed by Howland et al. (2012). It is explained as the learning activity in which students use ICT-based tools to collaborate with their peers, share, reflect, and exchange ideas and experiences with respect to the subject content through divergent activity. Divergent activity refers to learning activity which support divergent knowledge which demonstrates the extension of students understanding of content knowledge. For instances, writing report, creating concept maps, or making a prototype of human organ. This is only the kind of collaborative activity that Howland et al insisted to be encouraged when using ICT. Meanwhile, convergent activity which demonstrates convergent knowledge (refers to the reproduction of content knowledge such as making a summary of a book chapter) is not significant to be integrated with ICT as it does not necessarily enhance the “Constructive” and “cooperative” dimensions.

Besides Howland et al., Jonassen et al. (2003) also suggested that ICT can support meaningful learning if it engages students in four ways. First is when ICT is used to construct new knowledge not reproduce it. It is similar with what Howland et al. had elaborated that ICT should be used to help students acquire

divergent knowledge. Second is when ICT platforms can be performed to encourage conversations among students in which they can share and exchange their ideas and negotiating meanings rather than reception or putting students as passive learners. Third is when ICT integration gives chances to students for doing collaborative work instead of competition in which students will be drown into negative learning environment where there is possibly not interaction between students and thus no meaning negotiation which supports to divergent knowledge construction occurs. The last is when ICT is incorporated in ways that allow students reflect to what they have learned and help students diagnose and fix their learning gaps. The key to the last condition is students are should be the actors to do the reflection. It is different from being "prescribed" which is observed through the use of ICT platforms that dictates students what is wrong and how to fix it.

From above discussions, it can be concluded that both frameworks of meaningful learning with ICT offers pedagogical strategies on how ICT must be integrated. Both frameworks emphasise on "active", "collaborative", and "reflective/intentional". This infers that the framework of meaningful learning deals more with how the technology used rather than the technology itself. In other words, it does not matter how advanced the technology platform is. What matters the most is teachers' belief and ability in integrating technology into certain pedagogical approaches and strategies. This corresponds with what Valdez et al. (2000) argued that the success or failure of technology use depends more on "human", meaning that teachers' interaction, beliefs and attitudes towards teaching and learning play greater role to whether or not ICT integration is successful, effective, or meaningful.

2.5.2. ICT Application in Classrooms

By definition, anything which allows us to get information to communicate with each other or to have an effect on the environment using electronic or digital equipment is ICT (Butzin, 2000). Research on the use of ICT in the classrooms has revealed two major ways how students use computers in schools (Mann, shakeshaft, Becker & Kottkamp, 1999). The first way students can use the computer in school is as a tutor, meaning students are learning from computers. A computer becomes a tutor for students when it presents information to the students and the students respond. When teachers use the computer in the tutoring capacity, the software or internet website being used is skill-based and drill-oriented. Simple drill and practice programs and even more comprehensive learning systems are examples of the computer as a tutor for learning.

The second way computers can be used by students is as learning tools. It means that students are learning with computers. When teachers use the computer as a learning tool, the computer is used in a variety of ways such as PowerPoint presentation, Internet Research, Web Page Design, multimedia presentation or other productivity tools. Here the computer becomes a tool for students to research, analyse data, and communicate creatively, critically, and reflectively their learning experiences (Mann, shakeshaft, Becker & Kottkamp, 1999).

The West Virginia Basic Skills Longitudinal Study (WVBL) and Florida's Project CHILD showed that when students use computers as a tutor to receive information they showed gains of at least 11% on state tests due to the use of technology over those students who do not use technology. Students also did better when the computers are in the classrooms rather than in a lab setting. The

advantages of computer use extended through high school, where students learning from computers had better grades, took more advanced placement courses, and were more likely to graduate than those who did not use computers (citied in Butzin, 2000).

The West Virginia study and the Florida study showed us that students gain an advantage when technology is integrated into the traditional work of teachers and that the effects of learning from computers are lasting. It also suggested that when technology is well integrated into effective teaching methodology, it is possible to engage students more into learning experience and boost their learning achievement and surprisingly it is sustainable over time.

2.5.3. Lesson Plans and ICT-based Learning Activities

Teachers may use teachers' guides or textbooks as a sole source for planning, as a routine to reduce planning time. Smith and Geoffrey (1968) and Hudgins (1971) note that some teachers do rely heavily on a text or similar type material (curriculum guides, prepared kits, teachers' editions) to provide the content and methods of instruction. In 1975, John Zahorik asked 194 teachers to list the decisions they made prior to teaching. The majority listed activities (81%) as the topic they considered first, followed by content (70%), objectives and materials (56%), evaluation (35%), diagnosis (25%), organization (21%), and instruction (16%).

Yinger (1979) conducted a single subject, longitudinal study of a teacher's planning and attempted to record what the teacher did in planning. The results of this study indicate that Yinger's teacher focused on four specific routines in planning (activity, instruction, management, and executive actions). In the

specification of lesson plans, he found that six topics were specified in the plans. These were location (physically in the classroom where the activity would be held), structure and sequence (set up of materials, whole/part class or individual instruction, take down), duration (length of time that the activity/lesson requires), participants (grouping), acceptable student behaviour (students' actions that the teacher considers appropriate and acceptable), instructional moves (instructing, questioning, presenting information, monitoring, and evaluating, and offering feedback), and content and materials (concerns the conceptualisation of the activity and how to complete it). To be similar, in 1979, Walter synthesized the research to that date on teacher planning and decision making and concluded that when formulating lesson plans, teachers primarily focus on the contents to be taught, and subsequently, the learning activities which will engage students.

As for learning activities, in 2011, Van Olphen, Hofer, & Harris (2011) proposed ICT-based learning activity types for world languages learning. These activity types are believed to provide a systematic, pedagogically meaningful scaffold that guides teachers' instructional thinking, decision-making, and technology integration. These ICT-based learning activities were drawn from the American Council on the Teaching of Foreign Languages (ACTFL) Standards for Foreign Language Learning, which state that communication in the target language is understood as a process that involves three modes: (a) interpersonal –involves two-way written or oral communication with active negotiation of meaning (b) interpretive –focuses on the appropriate interpretation of meanings (c) presentational –involves only one-way communication and thus offers no opportunities for negotiation of meaning between presenters and audience.

Because thoso three modes require students to work on different skills as they develop their communicative competence, Van Olphen, Hofer, & Harris (2011) had conceptualised and organised these activities into five genres that address different abilities: (a) listening, (b) speaking, (c) reading, (d) writing, and (e) viewing.

Listening Activity Types. Listening skills may seem more passive or less demanding than other language skills. However, when students are engaged in listening activities, they employ different competencies. For instance, when trying to comprehend and interpret a message, they need to know morphology, syntax, vocabulary (grammatical competence), the social and cultural expectations of native speakers in the language studied (sociolinguistic competence), how to use pronouns and conjunctions in a cohesive and coherent manner (discursive competence), how to make educated guesses to compensate for gaps in their knowledge (strategic competence). In language learning, some of activities under this genre are listening to a conversation, listening to a broadcast, and listening to a story. Brief description and possible technologies for the activities are provided in table 2.1

Table 2.1. Listening Activity Types

Activity Type	Brief Description	Possible Technologies
Listen to a conversation	Students listen to a conversation in L2, either live or recorded (e.g., from a textbook supplement, radio broadcast, skit, guest speakers).	CD, Web audio site, audioconferencing
Listen to a broadcast	Students listen to a broadcast in L2 (e.g. radio, television, news, performances).	Web radio, podcasts
Listen to a story	Students listen to a story written and read aloud in L2	CD, audiobook, Web (e.g., TeacherTube, podcasts)

Speaking Activity Types. Speaking is an act of making vocal sounds to converse or express one's thoughts and feelings in spoken language. Speaking skills encompass the ability to communicate effectively, convey message in a passionate, thoughtful, and convincing manner. Some instances of speaking learning activities in language learning are having a conversation with a partner, engaging in an oral question-and-answer activity, and performing role plays. Brief descriptions and possible technologies for these activities are provided in the table 2.2.

Table 2.2. Speaking Activity Type

Activity Type	Brief Description	Possible Technologies
Having a conversation with a partner	Students converse with a limited number of others in L2 (improvised or with prompts	Audio/video conference, telephone
engaging in an oral question-and-answer activity	Students ask and/or answer questions from others in L2 (e.g., exchange personal information, request directions, interact with guest speaker)	Audio/video conference,
Performing role plays	Students speak in L2 in character in a simulated situation (e.g., ordering dinner in a restaurant, checking in at the airport, skit, play, impersonation, puppet show)	Video camera, audio recorder

Writing Activity Types. Writing in L2 focuses on both the process and the product. When working with writing skills, students can engage in all three modes of communication— interpersonal, interpretive, and presentational. In addition, writing abilities involve the same four competencies mentioned above (grammatical, sociolinguistic, discursive, and strategic) that enable learners to convey meanings with accuracy across cultures. Some activities related with writing activities, their brief descriptions, and possible technologies used are provided in table 2.3.

Table 2.3. Writing Activity Type

Activity Type	Brief Description	Possible Technologies
Engage in a written question-and-answer activity	Students ask and answer questions about different topics (e.g., daily routines, personal traits, target culture, likes and dislikes)	Word processing software, chat, email, online discussion
Write a paper	Students compose a written response (e.g., position paper, essay, report) to a prompt (e.g., art critique, passage from textbook, newspaper article)	Word process software, blog, wiki
Creating a newspaper/newsletter/newsmagz/ Brochure	Students synthesize information from textbooks, encyclopedias, website to develop a print-based or electronic periodical.	Word process software, desktop publishing software, web authoring software, spreadsheet

Reading Activity Types. The cognitive processes involved in reading in a foreign language are similar to those described for the listening skills. Students bring into play grammatical, discursive, sociolinguistic, and strategic competences when attempting to comprehend and interpret a written message. The following activity types may be performed either silent or aloud (see table 2.4).

Table 2.4. Reading Activity Type

Activity Type	Brief Description	Possible Technologies
Reading a story	Students read and analyse stories by relevant authors from their target language to get acquainted with different literary styles	Web, ebook reader
Reading a newspaper	Students read and extract information from newspapers and magazines from different countries where their target language is spoken	Web
Reading a book/novel	Students read and analyse books and novels from different literary traditions and authors	Web, ebook reader

Viewing Activity Types. Viewing abilities are critical for "zooming into" the target language culture. Through viewing activities, students can observe authentic interactions among native speakers, learn about differences among dialects, accents, registers, and body language without leaving the boundaries of their classroom. As with reading and listening, students learning an L2 bring into play the same four competencies to comprehend and interpret a message. The viewing activity types below vary in the degree of challenge offered to students in terms of comprehension and interpretation of meanings (see table 2.5).

Table 2.5. Viewing Activity Type

Activity Type	Brief Description	Possible Technologies
Watching a performance	Students attend a live performance or watch a recorded event (e.g. Music performances, concert, play, opera).	Youtube, DVD
Observing a live interaction	Students attend or watch interactions in the target language to get acquainted with different communication styles in different settings.	Web, videoconferencing, Youtube

CHAPTER III

RESEARCH METHODOLOGY

3.1. Research Design

This study was designed to employ qualitative content analysis as it catered for the analysis and meaning making of textual data (Weber, 1990). This method was used to identify, examine, interpret and evaluate the characteristics of textual data against pre-established standards (Krisppendorff, 2004), which supported the objectives of this study. Accordingly, Corbin and Strauss (2008) explained that content analysis is suitable for eliciting meaning, gaining understanding and developing empirical knowledge from data found in documents (citied in Bowen, 2009).

3.2. Data and Data source

The data analysed in this study were ICT-based learning activities which were the learning activities which involved ICT tools. The data were collected from 18 lesson plans of the student teachers who are enrolling in PPG program in Universitas Negeri Jakarta. The lesson plans used as the data source in this study were the ones that the teachers designed at the end of the semester. It was deliberately chosen as it was considered to represent the teachers' learning outcomes throughout the semester (Koh, 2013). It is important to know that when the student teachers designed the lesson plans, they were not specifically instructed to design ICT-based lesson plan.

3.3. Research Instruments

3.3.1. Researcher

As this was a qualitative content analysis study, researcher played central role as the instrument both to collect data and analyse or interpret data generated from the source into meaningful information (Storr, 2012).

3.3.2. Rubrics

To describe the relevance of the ICT-based learning activities as reflected in the lesson plan with the framework of meaningful learning with ICT, the Rubric for Assessing TPACK for Meaningful Learning with ICT by Koh (2013) as shown in appendix A was employed.

This rubric indicates five pedagogical dimensions which can be addressed as the indicator of meaningful learning with ICT (Howland et al.'s, 2012 as citied in Koh, 2013). This rubric also shows certain scales of the five dimensions which determine the level of the relevance. This rubric were used within the guiding questions as follow:

a. Active

For how long does the lesson activity engage students to manipulate information about subject matter with ICT tools? The larger percentage of activity duration spent by students in using and manipulating ICT tools to learn the subject matter, the more it is considered as active.

b. Constructive

To what extent does the use of ICT tools in the lesson activity engage students in divergent expressions of subject matter rather than convergent knowledge expressions? Besides engaging in divergent knowledge expressions, to

what extent are these eliciting students' personal reflections about the content knowledge they are engaging with? Higher levels of the constructive dimension are indicated by knowledge expressions that are increasingly divergent and personally reflective.

c. Authentic

To what extent does the use of ICT tools in the lesson activity engage students to represent their personal applications of real-world phenomenon related to the subject matter being learnt? The more the activity facilitates students to make connections between their own experiences and the real-world phenomenon associated with the subject matter, the more it is considered as authentic.

d. Intentional

To what extent does the use of ICT tools in the lesson activity engage students to self-diagnose and fix their learning gaps with respect to the subject matter being learnt? To what extent are these processes carried out continually throughout the lesson activity? The more the activity provided opportunities for students to engage in continual self-diagnosis and remediation of learning gaps, the more it is considered as intentional.

e. Cooperative

To what extent does the use of ICT tools for group work during the lesson activity comprise of opportunities for divergent, knowledge-building talk about the subject matter either around or through the computer? The more the activity stimulated divergent talk, the more it is considered as cooperative.

3.4. Research Procedure

To answer the first research question, these steps were followed:

1. Code and categorise all lines, phrases, sentences and any other segments identified as learning activities into two: (1) ICT-based learning activities (2) non ICT-based learning activities. To give better picture, table 3.1 is provided.

Table 3.1. The coding table of learning activities stated in pre-service English teachers' lesson plan

No	Learning Activities	Codes	ICT	Non-ICT
1	Siswa menonton video percakapan tentang offering help/service	LA-301	√	
2	Siswa menyebutkan ungkapan penawaran jasa yang ada di video	LA-302		√
3	Siswa enjawab pertanyaan guru terkait dengan dialog/iklan yang diberikan	LA-303		√
Total			1	2
			3	

Ps: code meaning: LA (learning activity), 1 (number of data source), 01 (sequence of learning activity)

2. Identify the ICT tools used in the ICT-based learning activity and organise it in table 3.2

Table 3.2. Identifying ICT tools involved in the learning activity and activity type in which the ICT tools were involved

Code	ICT Tools	Activity Types			
		Speaking	Writing	Reading	Listening and Viewing
LA-301	Youtube				√

N = 1		N = 0	N = 0	N = 0	N = 1

3. Identify the activity types of each ICT-based learning activity with respect to the ICT-based learning activity type proposed by Van Olphen, Hofer, and Harris (2011) into: (1) speaking, (2) writing, (3) reading, (4) listening and (5) viewing and organise it in Table 3.2
4. Calculate the total number of all ICT-based learning activities in each activity type in table 3.2

To answer the second research question, these procedures were carried out:

1. Code the ICT-based learning activities and their follow-up activities and organise them in table 3.3

Table 3.3 Coding ICT-based learning activities

No.	ICT-based learning activities	Code
1	Siswa menonton Video Percakapan tentang offering help/service	ICT-3
2	Siswa menyebutkan ungapan menawarkan jasa yang ada di video	
3	Siswa menjawab pertanyaan guru terkait dengan dialog/iklan yang diberikan	

Note: 3=data source

2. Determine the relevance of each code (the ICT-based learning activities) to the five dimensions (Active, Constructive, Authentic, Intentional, Cooperative) using the rubric for assessing teacher's TPACK for meaningful learning with ICT as suggested by Koh (2013) in table 3.4

Table 3.3 Scoring the relevance of ICT-based learning activities

Code	Dimension				
	Active	Constructive	Authentic	Intentional	Cooperative

ICT-3	0	0	1	0	0
N=1	N=0 M=0	N=0 M=0	N=1 M=1	N=0 M=0	N=0 M=0

3. Consult the scoring result with experts. Involving more than one assessor is seen significant since this method opens a space for bias assessment.
4. Calculate the mean or average score of each dimension in table 3.3
5. Interpret and describe the scoring result with respect to the rubric of assessing teacher's TPACK for meaningful learning with ICT.

CHAPTER IV

RESULTS AND DISCUSSIONS

4.1. ICT Integration in Learning Activities

This study analysed 18 lesson plans for SMA grade XII as data source, gathered from student teachers of PPG program in Universitas Negeri Jakarta. The topic of lesson plan they chose were varied with respect to *Curriculum 2013* for English subject. The 18 lesson plans were broken down into 133 learning activities. Of these activities, only 12 (9%) student learning activities were identified as ICT-based learning activities. The rest, 121 (91%) learning activities were not found to incorporate any ICT tools.

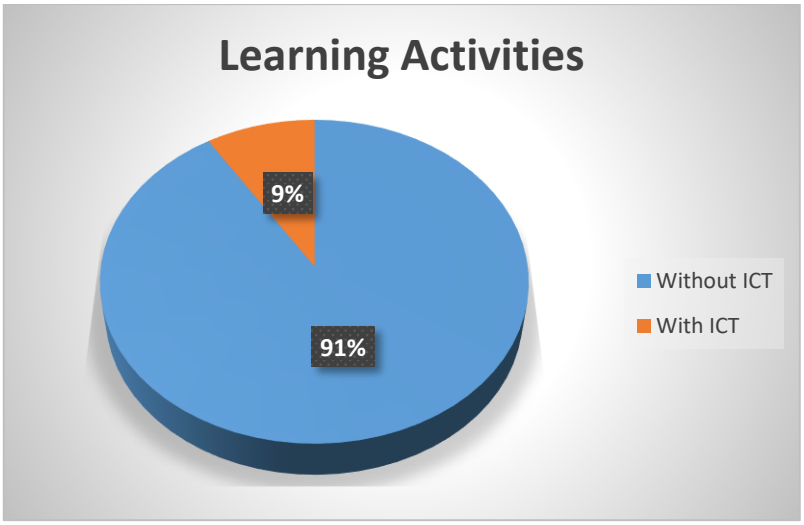

Chart 4.1. The frequency of ICT integration

These lesson plans might be designed based on student teachers' consideration that designing the whole teaching and learning activities with ICT integration seems unlikely since some schools may not have supported classrooms with sufficient ICT resources.Correspondingly, the nature of the curriculum also

does not support it. English subject is allocated approximately 90 minutes for each meeting. It could be a potential difficulty to integrate ICT in most of the learning activity. Moreover, another hindrance would also arise if students are not familiar with the ICT platforms. To anticipate this, teachers should spend certain amount of time to explain and demonstrate how to function the technology tools. This is obviously time consuming. Thus, it is seen no wonder if it was found most of the learning activities conducted without the aid of ICT tools such as teacher-students questions-and-answers activity, classroom feedback, and role plays.

> *"Siswa menjawab pertanyaan yang terkait dengan foto yang di berikan oleh guru."*
>
> *"Siswa mempraktekkan dialog mereka didepan kelas secara berpasangan."*
>
> *"Siswa mendapatkan umpan balik dari proses pembelajaran."*

Table 4.2. ICT-based learning activities identification

Code	ICT Tools	Activity Types			
		Speaking	Writing	Reading	Listening and Viewing
LA-101	Powerpoint				√
LA-301	Youtube				√
LA-401	Youtube				√
LA-701	Youtube				√
LA-801	Powerpoint				√
LA-901	Powerpoint				√
LA-903	Youtube (audio)				√
LA-1001	Youtube				√
LA-1501	Youtube				√
LA-1601	Powerpoint				√
LA-1701	Powerpoint				√
LA-1703	Youtube (audio)				√
N= 12		N=0	N=0	N=0	N=12

From the 12 ICT-based learning activities, it was found that Youtube and Ms. PowerPoint were the only ICT tools incorporated in the ICT-based learning

activities. These tools were functioned to transfer content knowledge in form of videos, audio music, charts, and pictures.

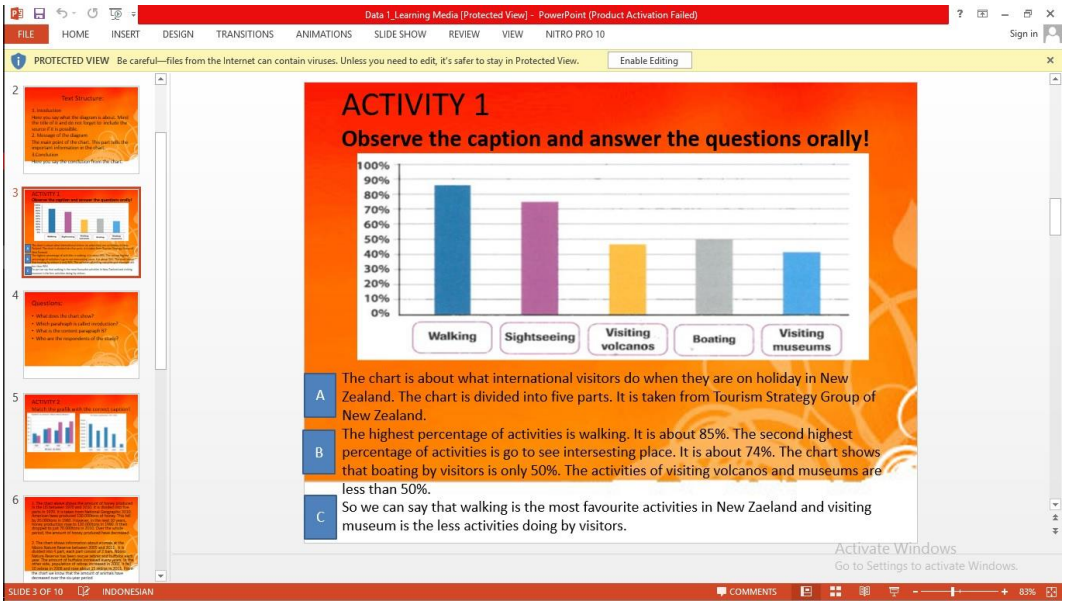

Figure 4.1. Sample of learning materials presented in Ms. PowerPoint

Knowing the fact that all ICT tools identified in the lesson plans were merely functioned as presentational devices, it showed that the students used it to help them observing the content knowledge. It is seen appropriate since the teaching-learning models as proposed in the curriculum employs scientific approach that one of the learning steps students must follow is observation. Also, even though the ICT tools seemed to be simple, it could be seen that the choice of using the ICT tools were intentional. It might be helpful for student teachers to present the content knowledge they were delivering and to manage students especially in a large class to pay single focus which was to the ICT tools only and the content knowledge it presented and the student teachers.

Since all the ICT tools were only used as subject content transmitters, it would give no surprise that when the ICT-based learning activities identified using

Van Olphen et al.'s (2011) genres, they were all related to Listening and Viewing activity.

> *"Siswa menonton video (from Youtube) percakapan tentang offering help/service"*

Meanwhile, if the language input is in form of written text, PPG students preferred using printed texts. It was found in the lesson plan of which topic was text-based such as job application letter, and procedural texts. Thus, no reading activity seemed to involve the use of ICT tools.

> *"Siswa membaca dua iklan lowongan pekerjaan."*

This decision was perhaps because presenting long-texts using presentational devices would be found unhelpful since students had different reading speed and they would be caught unfocused and feel bored as reading could be seen as 'silent' learning activity.

In terms of speaking activity, there was not found any ICT tools integration. For developing students speaking skills, student teachers seemed to prefer conducting direct speaking activities such as teacher-student oral question-answer, conversation with peers, role plays, and class presentation. The absence of ICT tools integration in this learning activity type might be because student teachers wanted to see and assess students' oral performance and thus, they could give direct feedback afterwards.

> *"Siswa mempresentasikan teks prosedur tentang penggunaan sebuah perangkat teknologi (in front of the class). (Then,) Siswa mendapatkan umpan balik dari proses pembelajaran."*

To be similar, no ICT integration was also shown in writing activities. In writing activities designed in the lesson plan, students were not required to use any ICT

tools. Instead, they were instructed to write manually using pen and papers in doing writing and written exercises.

> *"Siswa dapat menyusun beberapa bagaian surat yang acak menjadi surat lamaran kerja yang sesuai dengan persyaratan yang diminta."*

4.2. The Relevance with the Five Dimensions of Meaningful Learning with ICT

Identified using Koh's (2013) rubric for assessing TPACK for meaningful learning which adopted Howland et al.'s framework for meaningful learning with ICT, it is revealed that the learning activities using ICT designed by PPG students only met "authentic" dimensions in level 1 and with average score 0.67. It was rated low as it was seen that the content knowledge presented through ICT platforms only represented real-world phenomenon without indicating that these learning activities with ICT required students to investigate the subject content.

> *"Siswa mengamati gambar dan caption yang disajikan (then) siswa membaca caption. (After that) siswa mengidentifikasi unsur-unsur 5W+1H dan memasukkannya ke dalam table"*

Table 4.3. Score of the ICT-based learning activities to the five dimensions of meaningful learning with ICT

Code	**Dimension**				
	Active	**Constructive**	**Authentic**	**Intentional**	**Cooperative**
ICT-1	0	0	1	0	0
ICT -3	0	0	1	0	0
ICT -4	0	0	1	0	0
ICT -7	0	0	1	0	0
ICT -8	0	0	1	0	0
ICT -9	0	0	0	0	0
ICT -10	0	0	1	0	0

ICT -15	0	0	1	0	0
ICT -16	0	0	1	0	0
ICT -17	0	0	0	0	0
N= 10	N=0 M=0	N=0 M=0	N=8 M=0.67	N=0 M=0	N=0 M=0

Meanwhile, few of the learning activities with ICT were found to be at level 0 as researcher identified that the content knowledge presented –in this case, songs-- through ICT tools has no representation of real-world phenomenon. This is due to the fact that students were only invited to deal with the language aspect not the message or issue the song carried.

> *"Siswa mendengarkan lagu yang berjudul "I Believe I Can Fly". (Then) siswa melengkapi lirik lagu yang rumpang"*

Besides, even though the ICT-based learning activities has incorporated ICT tool, "active" dimension was scored 0. This is due to the use of ICT which was only for transferring content knowledge. These learning activities did not show any indication that students required to *actually* use the ICT tools. Accordingly, "constructive" dimension was also rated 0 as besides the ICT tools were used for transmission of subject content, it did not encourage students to do any convergent nor divergent learning activity with ICT tool.

Since ICT tools were only used for viewing and listening activities, "intentional" dimension were not recognised. To make students diagnose and fill their leaning gaps, and do learning reflection, all of the student teachers designed it to be carried out through class feedback and no ICT tools were identified to be integrated in the activity. To be the same, "collaborative" dimension had 0 score as

there was not found any learning activity with ICT which showed students doing work in groups.

More comprehensive description to the relevance of the ICT-based learning activity to the five dimension of meaningful learning with ICT can be seen in the following example of ICT-based learning activities using Youtube:

> *"Siswa menonton video (from Youtube) percakapan tentang offering help/service. (After that,) siswa menyebutkan ungkapan menawarkan jasa yang ada di video (and) menjawab pertanyaan guru terkait dengan dialog iklan yang diberikan (orally)"*

Since the students only passively used the ICT tool (Youtube), this ICT-based learning activity was not seen relevant to the "active" dimension. It would only be relevant if students were instructed to do engaging activity with the ICT tool such as browse the video by themselves instead of being presented and left with no choice. The other absent dimension was "constructive". It could be understood from the previous discussion that "constructive" can be promoted through engaging student with convergent activity. In other words, students were invited to 'interact' and think at the same time using the ICT tool or other ICT tools. However, in the presented ICT-based learning activity, it seems that there was no ICT tool involved in the *follow-up* activity after watching the video. In terms of "authentic" dimension, the ICT-based learning activity only met the score 1 (one). It is due to the fact that ICT tool was only functioned to present content knowledge that represented real-world phenomenon (see figure 4.2).

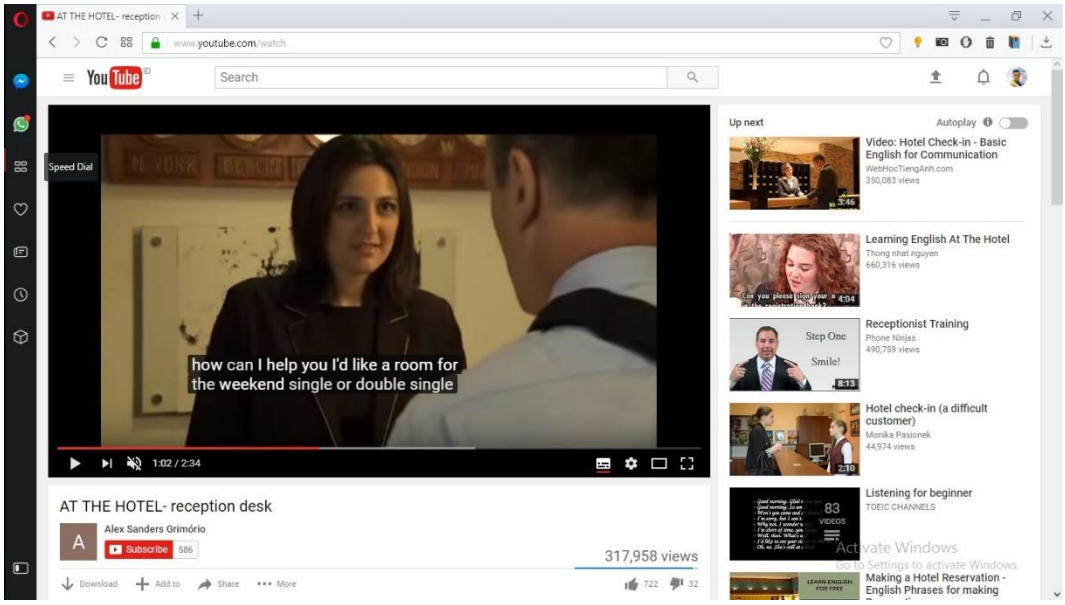

Figure 4.2. Sample of learning video from youtube presented to students

The video tells about a costumer who is trying to book a hotel room. The situation, narration, and dialogue presented in the video are seen to be 'authentic'. However, Howland et al's (2012) framework, does not only deal with the 'what' but also the 'how'. It means that, students must also be invited to do authentic learning activity. In this case, a sample of activity that could be done was using another ICT tool to investigate the situation, identify whether the man in the video had problems in booking a hotel room and help him by offering alternatives, or relate students' experience of booking a hotel room with the man's experience. This kind of activities is seen to be more 'authentic' than what the student teachers designed in the lesson plan (mentioning the expression of offering help found in the video). In terms of "cooperative" and "intentional" dimensions, the ICT-based learning activities did not reflect any of them. It was because the ICT tools were only used in listening and viewing learning activity without involving any group work or reflective activity.

From above findings and discussion, it could be concluded that student teachers' teaching strategies in designing ICT-based learning activities are still limited and it could be considered as scientific data to reflect the ability of PPG student teachers in integrating ICT into instructions that supports meaningful learning. However, it is still seen significant to consider the underlying influencing factors of student teacher's designing the lesson plans. It could be traced from the workshop courses they had undergone.

It cannot be denied that PPG program assessment and evaluation play a great role that influence the product learning of the students –in this case, lesson plans. Appropriate assessment will allow students to reflect what they have learned, know whether they have accomplished the program objectives, or fill their learning gaps. It also can be used to interpret the learning process occurred and outcomes to achieve. However, even though the ministry had determined the ability of integrating ICT into instructions to be one of the objectives of PPG program to achieve, it was found out that the assessment instruments used to assess students' lesson plans did not accommodate the objective (see Appendix D, point A). Besides this instrument, the assessment instrument for learning media also indicates that there is no obligation to integrate or use ICT platforms (see Appendix D, point B). By seeing the coverage of the assessment aspects in both instruments, it could be implied that whether or not ICT is integrated might not be seen as an issue or it even might be unnecessary.

CHAPTER V

CONCLUSION

5.1. Conclusion

From this study, it can be concluded that the ICT-based learning activities as reflected in the PPG student teachers lesson plans was still limited. Youtube and Ms. PowerPoint marked the only ICT tools integrated and they were functioned merely for content knowledge or lesson input transmission. Additionally, all the ICT-based learning activities were only related to viewing and listening activities. Besides, they were identified that they were only relevant with one out of five dimensions of meaningful learning with ICT which was "authentic" and it was scored 0 and concluded as low level of ICT integration since the ICT tools were only presenting real-world phenomenon without engaging students to do any authentic learning activity. It was also revealed that the ICT-based learning activities were not identified to be relevant with the other four dimensions which were active, constructive, intentional, and cooperative as the type of ICT tools, what they were integrated for, and in what learning activity they were integrated were also limited.

5.2. Study Limitations

Due to the fact that this study was only based on lesson plans and to describe the relevance of ICT-based learning activities with Howland et al.'s (2012) framework of meaningful learning with ICT, many research limitations can be addressed. First, lesson plans analysed in this study seemingly were in small

numbers. So, the occurrence of ICT integration and in which learning activity it occurs are less likely to be identified. This is due to the restricted access to collect the lesson plans. Second, the topic of the lesson plans were also limited. It was found that not all topics as citied in the curriculum of SMA grade XII were represented. This might give influence to the findings of the ICT-based learning activity types. Last, the influential factors to the lesson plan such as PPG student teachers' rationales in designing the learning activities with ICT, the national and school curriculums, or even PPG curriculum itself were not investigated and correlated with the lesson plan. This is due to the consideration that it was beyond the scope of this study.

The findings of this study cannot be used as evidence to determine whether or not the lesson design promotes meaningful learning. This is because meaningful learning cannot be determined by the use of ICT only but also other aspects such us learning activities that do not incorporate ICT, learning materials, learning strategies and process, and learning outcomes. Nevertheless, by employing Koh's (2013) assessment rubric, this study was able to show the description whether the ICT-based learning activities support meaningful learning or not.

5.3. Suggestion

Since research related to ICT integration for meaningful learning is seen to be still limited, this study is expected to become starter for future educational study addressing this topic. Thus, this study leaves several rooms. First, investigation through national and/or school curriculum is significant to carry out as it is used as the reference in designing lesson plans. So, the study can conduct deeper analysis as it may correlates the lesson plans with the curriculum. Second, it is advised to

analyse more numbers of lesson plans as it will be more “representable” to the results of the study. Third, besides content analysis, interviews with PPG student teachers could be considered to conduct to gather insights into the rationales of the learning activities with ICT designed in the lesson plans. Fourth, it is also worth considering to conduct evaluative studies on PPG curriculum as it is believed to influence the ability of PPG student teachers to integrate ICT for meaningful learning. Finally, future studies may take this study into broader area by analysing the interaction between learning activities which involve ICT and which do not within lesson plans and their implementation in the classrooms and how these activities contribute to promoting meaningful learning.

Not only for knowledge development, the result of this study is hoped to be the consultative tool for the development of PPG program, specifically for the establishment of PPG assessment instruments or rubrics to accommodate ICT integration assessment. It is also expected that school would provide ICT-friendly environment in which students can actually learning with ICT.