

EVALUATING A SYNCHRONOUS ONLINE TEACHER DEVELOPMENT PROGRAM ON CREATING CALL TEACHING MATERIALS

Corry Caromawati

Departments of Informatics, Faculty of Industrial Technology, Institut Teknologi Nasional
E-mail: corrycaromawati@gmail.com

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Abstract: This study investigated the effectiveness of a four session online teacher's development program on creating CALL teaching materials. The sessions were conducted through a synchronous computer-mediated video communication platform and set two learning outcomes; 1) fostering teachers' technological skill to create a computer-based teaching material, 2) building teachers' knowledge to evaluate the qualities of a Computer-Assisted Language Learning (CALL) material using the CALL appropriateness framework (Chapelle, 2001). The sessions were designed based on the project-based learning framework and TPACK-in-Action model. This case study collected the data through the screen captured videos, chat logs, teachers' reflection journals, teachers' final projects, and teachers' material evaluation skills demonstrated by the end of the TDP. The data were then analyzed qualitatively. The results showed that despite some significant time ineffectiveness and technical issues, the sessions successfully achieved the learning outcomes. Additionally, the teachers considered the overall sessions useful in developing their technical knowledge to develop CALL materials and assuring their quality. These results advocate for some technical supports from the institution and strong commitment of the participating teachers.

Keywords: *synchronous learning, online teacher's development program, CALL*

INTRODUCTION

The rapid development of technology inevitably influences the practice of English language learning and teaching. Therefore, many higher educational institutions in Indonesia have provided their students computer and its applications for learning English. Unfortunately, due to the lack of teacher's technological knowledge, many invested technology cannot be functioned as much as expected. This reality becomes a concern of the stakeholders. Some of them consider it as a waste of money and some think that technology is not actually needed. Despite the skeptical thoughts, many still hold on hope that the technology support provided can be utilized to facilitate their students' language learning by

developing the teacher's knowledge through long-term or short-term training or workshop. These teacher's training programs or workshops in this study are treated as teacher's development programs (TDPs).

Teacher's knowledge is indeed one of very crucial aspects to assure the effectiveness of the use of technology for instructional purposes (Kadel, 2005). Thus, it is not surprising that many TDPs on Computer-Assisted Language Learning (CALL) are offered in this particular context. CALL here refers to any computer-related application used for language instructional purposes. A number of CALL TDPs are offered online to overcome distance and time barriers (Dede, 2006), particularly when they are

internationally offered. Being delivered online, these TDPs benefit the teachers not only to deal with distance and time issues, but also to get them more confident in using technology. In practical realization, these online TDPs are delivered either synchronously or asynchronously. They use tools such as Moodle, FutureLearn, Schoology, etc. to deliver them asynchronously, and utilize Adobe Connect to deliver them synchronously. A countless number of these TDPs offer teachers to learn how to use technology to develop teaching materials and assuring the appropriateness. Of these TDPs, however, little is known if the material evaluation is performed in a structured way.

In general, the term materials itself is defined as anything which are used to facilitate the learning of a language (Tomlinson, 1998), while the term CALL materials is used to include CALL products created using technological resources (Levy, 1997) encompassing tasks, software, website, online courses, programs, packaging and learning environments (Levy & Stockwell, 2006). Based on the definition, it means that teaching materials are created in order to support learners' language learning process. For that purpose, the process of second language acquisition (SLA) is often used as a foundation for decisions that go into the design and evaluation for CALL (Chapelle, 2009; Hubbard, 2006). Thus, as teachers develop CALL teaching materials, Chapelle (2003) strongly suggests that they need to possess understanding of what become the foundation of quality materials from Second Language (SLA) perspectives.

To achieve this goal, Chapelle (2001) had developed a framework to help teachers better evaluate the appropriateness of a CALL teaching material that they have developed. This

framework has six criteria to judge from the material, they are *Language Learning Potential, Meaning Focus, Learner Fit, Authenticity, Positive Impact, and Practicality*. First, *Language learning potential* refers to the degree of how much the CALL material evaluated provides an opportunity to learn a new language or skills. Second, *Learner fit* refers to the degree of how much the CALL material evaluated is suitable for the learners based on their proficiency level, cultural background, learning strategies, etc. Third, *Meaning focus* refers to the degree of how much the CALL material draws learner's attention to meaning of the targeted language, not only focuses on forms, being taught by the teachers. Fourth, *Authenticity*, on the other hand, refers to the degree of how much the task (of the CALL material) conducted in class relates to the students' world outside the classroom walls. Fifth, *Positive impact* refers to the benefits of using the CALL material to the students beyond the language learning itself. Lastly, *Practicality* refers to the feasibility of using the CALL material use. It means the teachers need to ensure the availability of the resources such as software, hardware, and any other technology-related tools.

By using this framework, teachers will be able to develop appropriate CALL materials for the students in their context whenever they apply their technological knowledge and/or acquire any new one. It means they combine their technological along with pedagogical knowledge not only to create CALL materials but also to assure their quality.

In this digital era, teachers have roles either as CALL practitioners, developers, researchers, or trainers (Hubbard & Levy, 2006). For the purpose of classroom practice, most teachers are expected to be at least the users (practitioners) and creators (developers)

of CALL materials. Thus, it is crucial to integrate the knowledge and skills of developing CALL teaching materials and assuring their quality. Cohen, *et al.* (1993) as cited in Desimone (2011) defines the term teacher development in general as “teachers’ experience through a vast range of activities and interactions that can increase their knowledge and skills, improve their teaching practice, and contribute to their personal, social, and emotional growth.” This experience is needed to empower them developing their professional skills. Empowerment is an important process to enable teachers engage in, share control of, and influence events and institutions that affect their world (Murray, 2010). In CALL, Hubbard and Levy (2006) also emphasize the importance of TDPs in order to help fostering teacher’s knowledge and skills to integrate technology into language classroom.

In designing TDPs, there are some frameworks recognized such as *Situated Learning*, *Reflective Learning*, and *Project-based Learning* (Healey, *et al.*, 2011). It is important to have a framework and a model in designing a teacher’s development program. The framework used in this study was the *Project-based Learning*. This framework is believed to provide a much richer and more lasting impression of the requisite knowledge and skills (p. 145). On the other hand, the model employed in the present study was TPACK-in-Action model applied by Tai in her study in 2013. She applied this model to promote teachers’ Technological, Pedagogical, and Content knowledge (Mishra & Koehler, 2006) needed by teachers to integrate CALL properly.

In developing countries such as in Indonesia, where many teachers have low level of technological knowledge, many CALL TDPs including the online ones only focus on how teachers develop their technological knowledge without

providing the underlying appropriateness principles of the materials they develop. Thus, it is important for TDP designers and providers in Indonesian context to be aware of this issue. Additionally, since the number of international programs offered online to Indonesian teachers is increasing, it is also important to explore the effectiveness of the programs offered. However, little research has done to investigate the effectiveness of online TDPs, more specifically the synchronous ones.

Given the facts aforementioned, the present study investigated the effectiveness of a synchronous online teacher’s development program in order to foster the teachers’ knowledge to develop CALL teaching materials using a particular computer authoring tool, and to evaluate the appropriateness of the materials that they have developed. It sought answers to following research questions:

1. To what extent was the online collaborative learning successful to English teachers in Indonesia?
2. What was the participants’ perception regarding their online learning experience and the benefits they gained?

METHOD

The participants volunteered in this project were two female in-service English lecturers named Lolita and Amrita from a private university in Bandung, Indonesia. For the purpose of privacy, their names in this study was not their real names. These two teachers were professional English teachers. They graduated from a well-known university of education in Bandung, Indonesia, and possess an English education degree. Both were highly experienced in terms of teaching English as a foreign language as they started teaching English since 2006. Nonetheless, they had different degree of

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experience in terms of technological knowledge. Amrita integrated limited, if any, usage of the available technology for teaching. In the regular basis, however, she used the internet and computer to access information about a particular topic in English language such as grammar, vocabulary, or activities that might help her execute her lesson plans. On the other hand, Lolita had more experience using technology in her EFL classes. During her teaching career, she had incorporated several coursework and tools to support her teaching practice. Both had no experience using JCloze and no structured way to evaluate materials.

This study investigated a distant Teacher Development Program (TDP) delivered real time. It was distant since the researcher was living in the United States of America (USA) when the study was conducted. The two participants, however, lived in Indonesia. The TDP prepared the teachers to be CALL developers by setting two main objectives, to foster the teachers' knowledge on creating a technology-based teaching material and to evaluate its appropriateness using the suggested framework. To afford the target skills, the tools involved was J-Cloze particularly. It is one of the quizzes available in an authoring tool called *Hot Potatoes*. Thus, by the end of the training, the participants were expected to be able to create a J-Cloze quiz as a CALL teaching material. Afterwards, they were expected to be able to judge the appropriateness of each other's product.

To achieve the learning outcomes, the participants joined four sessions of online collaborative learning which was initially allocated within two hours slot each. These four sessions were designed based on the TPACK-in-Action model. Some technological-based or CALL tools were utilized in the TDP. They included a synchronous computer mediated

communication (SCMC) application, *Google Hangouts* and *WhatsApp* to communicate remotely. The considerations of using *Google Hangouts* were first, it has some necessary features for online learning and collaboration such as group chat and *screen sharing*. Second, even though the participants had never used *Hangouts* prior to the workshop and were not familiar with it, *Google* had been widely used in Indonesia and considered user friendly. Asynchronous computer mediated communication such as E-mail was used to send the reflection journals and *WhatsApp* chat were used to facilitate questions and answers regarding the technical issue or content of the training. A brief introduction to *Google Hangouts* was conducted in a pre-session slot, and participants were also assigned to download *Hot Potatoes 6.3* and *Dropbox* before the sessions. Considering the 12-hour time difference, it was considered the best to have sessions on Saturday and Sunday mornings (US time) or Saturday and Sunday evening (Indonesian time).

Case study research method was applied in this study since it investigated a particular individuals from a particular community (Gilham, 2010, p. 1). The data was analyzed using qualitative method. The data collected was from different sources such as screen captured videos (SCV) of the sessions using *Screencast-O-Matic PRO*, observation and field notes (O & FN), participants' reflection journals (RJ) sent by email, chat log (CL) in *WhatsApp* chat application, and the artifacts (AR) created and their justification on the artifacts (Jus). This set of data collection was used to answer the research questions.

The screen captured videos (SCV) provided some evidence of what was going on during the sessions so that some justification whether it went

smoothly as planned could be determined. The data from the recorded sessions was supported by some other data collection particularly from the observation and field notes. Additionally, we also communicated in *WhatsApp* (CL) when anything unexpected happened during the sessions, or to coordinate the sessions. This recorded data was also used to support the analysis. However, the teachers' reflection journals (RJ) and their products (AR) provided essentially important data sources in this study. AR provided information of the teachers' feeling and perceptions on every session of the training. On the other hand, the artifacts created by the participants and their evaluation played a role to support the justification of the achievement of the targeted outcomes of the sessions.

RESULTS AND DISCUSSION

The results from the pre-session interview revealed that these two teachers had never created a CALL material in *JCloze* prior to the sessions, and they were even unfamiliar with *Hot Potatoes*. Additionally, they claimed that they used their instinct as a teacher to evaluate whether a (CALL) material is appropriate or not. In other words, they had not had a structured way to evaluate CALL material prior to the TDP. Thus, they were excited to join the sessions.

The sessions were timely planned and agreed way ahead before they were started. Some initial technical trials were also conducted to get the participants ready and familiar with the main tools they were going to use, *Google Hangouts*, *Hot Potatoes*, and *DropBox*. These trials were considered to be *technical training*. Even though the training was conducted, some timing and technical issues were inevitable. The first timing problem was setting the most convenient time for both

countries, the United States and Indonesia. The settled time schedule, at the weekends, was apparently the participants' family time. Thus, sometimes the participants had to leave the sessions to take care of family matters. This strongly affected not only the time efficiency but also the execution of the collaborative work particularly between the two participants. Another factor affected the sessions was the low proficiency level of one of the participant's technological knowledge. She was left behind compared to the other participant's comprehension and task completion when it involved technology.

The second issue was slow and unreliable internet connection which made the participants were not able to receive clear voice or lost connectivity to the forum. When the former occurred, we tried to solve the problem by using the chat box in *Google Hangouts* to deliver the message (as shown in Figure 1) to keep the communication going and hoping to get better internet connection. When the later happened, one of them would disappear in the middle of the session. For example, Amrita failed to join the first session due to this trouble. Another example, Lolita lost her internet connection and missed the detail information regarding the homework on creating a quiz. This caused some misunderstanding that led her creating a quiz using a *J-Match* instead of *J-Cloze*. Therefore, when she converted the quiz into *J-Cloze*, we found some errors due to the incompatibility of her product. This problem also caused the minimal collaborative work between Lolita and Amrita that made Amrita only worked with the instructor for most of the time.

knowledge to upload it to Dropbox, as well as compile it with its context and a help option in a WordPress blog. It is acknowledged from the pre-session interview that these skills had not been possessed prior to the TDP.

In the last session, Lolita and Amrita demonstrated their new skills that they had gained from the four online meetings. They showcased their products including their justification of the appropriateness of their products. They tried each other's product and provided peer feedback as the evaluation of its qualities. In addition to the teachers' own justification and peer feedback on their learning products, the instructor also provided feedback to their products. Additionally, the

instructor assessed their ability in judging their own as well as their peer's product.

In her piece of work (see Figure 3), Amrita targeted this exercise for students in Product Design department taking English class II. Thus, she chose a video presenting tips for making excellent logo. Her decision to focus on singular and plural nouns was based on her knowledge that her students lacked of language accuracy, particularly in differentiating singular and plural forms. The task designed by her was completing the quiz to predict the vocabulary, listening and watching a video on YouTube, comparing the previous answer to the prior answers.

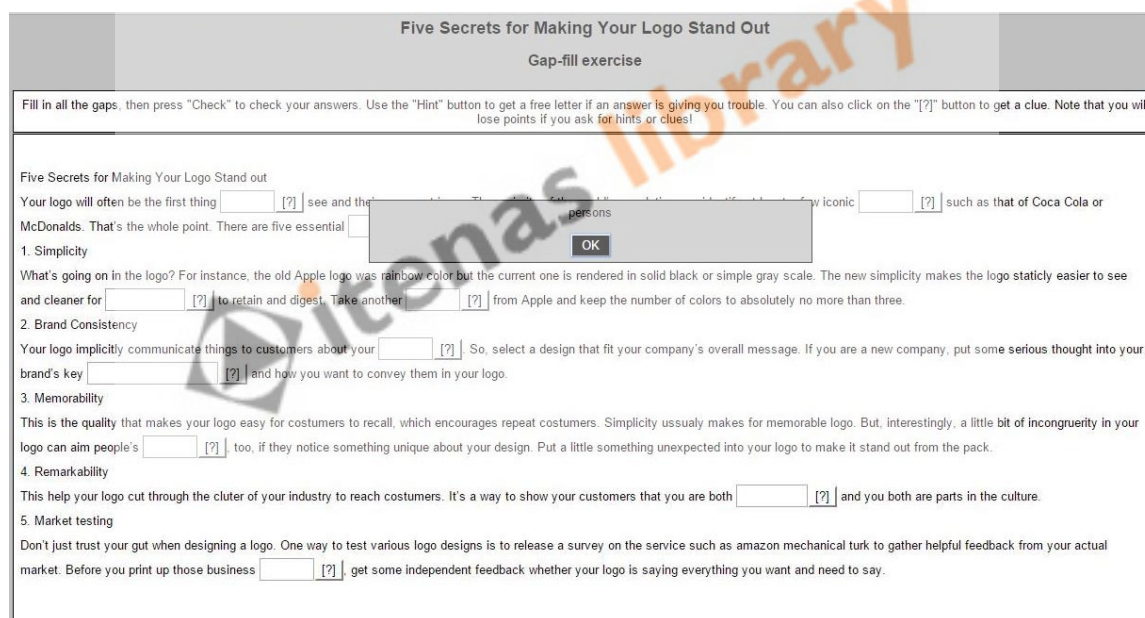


Figure 3. Amrita's J-Cloze quiz (AR)

Lolita's learning product (see Figure 4), on the other hand, targeted Engineering and Design students taking English course in her institution. Her product mainly focused on verb phrases. This exercise allowed the students to learn appropriate idiomatical

expressions in any given contexts. Even though there were some dislocation of the words on the exercise caused by the format changing from JQuiz to JCloze, Lolita practically was able to create a quiz in JCloze.

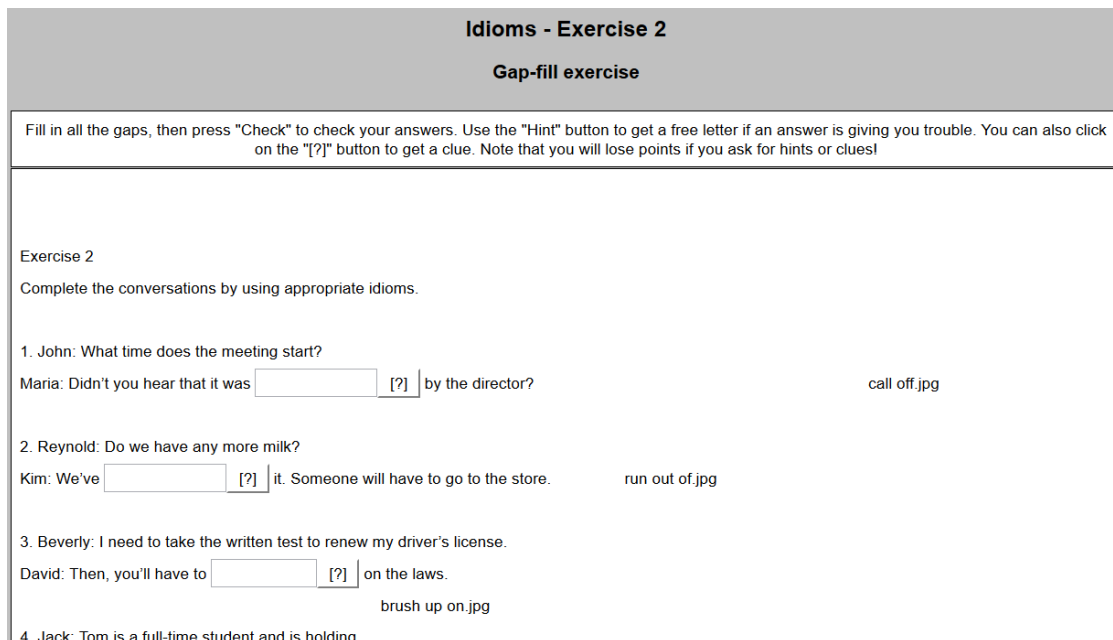


Figure 4. *Lolita's J-Cloze quiz (AR)*

In addition to technological knowledge, these two teachers also demonstrated to develop their skills to evaluate CALL materials, particularly their own projects in the TDP and their partner's project (peer evaluation). Their material evaluation was based on the CALL material appropriateness framework developed by Chapelle (2001). Their attained knowledge can be assessed through their justification of their own products as well as judging their peer's product.

As seen on Table 1, even though considered not perfect, both products showed to have good qualities overall. This may lead to the indication that the Learning outcomes of the sessions were achieved. Moreover, it is very interesting to see that the qualities of Amrita's product was considered slightly higher than her partner. Her product has more quality on Meaning Focus, Authenticity and Positive Impact criteria. Her mostly full attendance in the forum might have helped her gain more comprehension on the task.

Table 1. *Judgement evaluation on the final products (Jus)*

Qualities	Lolita's	Amrita's
Language learning potential	Good	Good
Learner fit	Good	Good
Meaning focus	Somewhat meaning focus	Primarily focus on meaning
Authenticity	Somewhat Authentic	Authentic
Positive Impact	Unknown	Content knowledge
Practicality	Good	Good

Based on the evaluation from the two participants and the instructor, both products had good quality of Language Learning Potential since they provided an opportunity for students. One product offered an opportunity to learn singular and plural countable nouns as well as

developing the students' listening skills, the other offered an opportunity to learn verb phrases. The evaluators considered both products suitable for the students in their context considering the students' language proficiency level. Regarding the Meaning Focus criteria, Lolita's product

did not have a full context. As a consequence, it was considered not as highly Meaning focus as expected. Amrita's product, however, provided a full context of the whole vocabulary introduced since they were within a contextual text.

Regarding Authenticity criteria, Amrita's product was considered more authentic than Lolita's considering her text was relevant to the students' field of study. While Lolita's product was not highly related to the students' target language use domain. Not only the Authenticity criteria, but the two products also had different degree of Positive Impact criteria. Amrita's product offered another knowledge that the students could afford; content knowledge. Lolita's product, on the other hand, did not provide any other impact. These two products, nonetheless, were considered to have equal degree of Practicality since their institution provided computer and could provide Hot Potatoes.

Considering the teachers' demonstrated skills and knowledge discussed above, the instructor considered that the online workshop to some extent achieved the objectives. Therefore, regardless of the technical issues occurred during the workshop, it benefitted the teachers by affording new knowledge to them.

Furthermore, the data from the teacher's reflections was analyzed to look at their perception regarding the online learning experience that they had completed and the benefits they gained. The results from the data analysis showed that the teachers' perception focused not only on the learning experience overall but also on the tools employed in the online learning. These two focuses were interpreted to be perception on the online learning experience considering the tools were inseparable parts of the program.

On the tools employed in the program, the participants brought up *Google Hangout* as the platform used to deliver the synchronous online program. As stated previously, the two participants had never used *Google Hangouts* for a video conference prior to the TDP. Given the fact that the two participants also had different prior technological knowledge, it was not surprising to find out that both participants went through different experience using it for the first time. Lolita, as she possessed higher technological knowledge than that of her partner, found it easy to use. It was found on her learning reflection journal that is shown in the excerpt below:

*"Even though it was my first time using Google Hangouts, it turned out that it is **very user-friendly** and linked to some apps and websites."*
(Lolita-RJ-Journal 1).

On contrast, Amrita kept encountering trouble in the pre-session, even though she had gone through a technical trial with me and self-trial with her spouse previously. Her technical issues were mainly caused by her low level of technological knowledge. In the beginning of the TDP, this issue occurred and caused her a lot of frustration. It was seen from her first reflection journal shown below:

*"Some hours prior to the first session, I couldn't wait for the session to begin ... However, the connection was very bad and I could not do it It had been great but when the session began, it was slowing down. I often had to reconnect. And when I could connect, I couldn't hear the others' voices but my own. I tried to fix the audio but I did not know how to do it. I wanted so much to do (join) the session but my limited ability in operating the laptop seemed to hinder it. **I was very frustrated.** I wanted to fix it but I didn't know how."* (Amrita-RJ-Journal 1)

It is important to note that this perspective was only found in the beginning of the first session. After the first session, it was observed that the position was changed. As discussed earlier in this section, Lolita confronted more technical issues than Amrita in most of the sessions.

Besides the tools, particularly *Google Hangout* as the platform, the teachers also brought up the interactivity of the TDP. It is interesting to find out that they had different opinions. Amrita considered the sessions highly teacher-oriented, while Lolita saw it differently. She claimed that the TDP was delivered interactively. There were shown in the excerpts taken from the reflection journals below:

"That I didn't really feel the collaborative atmosphere as the instructor was the only person who knew more and the other participants had less knowledge about the lesson." (Amrita-RJ-Journal 3).

"I think the sessions were delivered in an interactive way." (Lolita-RJ-Journal 2).

This different perceptions might have been caused by some issues when Lolita had to leave the forum to take care of family matters, and then the instructor led the collaborative project together with Amrita alone. Additionally, when assigning the collaborative evaluation on the model of the TDP to both participants, Lolita also had an issue that she could not join the session. It made Amrita worked alone with the instructor, who apparently became the leader of most of the steps in the TDP.

Regardless of the issues encountered during the sessions, the participants considered the sessions in the TDP useful and had opened their mind about the appropriate CALL teaching material. In their reflection journals, they admitted that prior to the TDP, they had developed and used

teaching materials without being able to justify their quality. After the sessions, they claimed to have not only learnt how to create a material in *Hot Potatoes*, but also how to evaluate its qualities. Below are the excerpts from their journals:

*"I am very thankful for having a chance to join this project. **The workshop is really useful.** This is not only helping me to brush up on the theories but also teaching me how to use and maximize *Hot Potatoes*. In addition, this workshop has reminded me to consider the qualities of a material when designing it. We have to be in students' shoes. We have to know what they need and what interests them."* (Lolita-RJ-Journal 5)

*"**They (the sessions) have changed my opinion about material development and technology in teaching** Now, every time I want to use materials, I simultaneously think about what qualities that the materials have and how they can be used to help students learn the language."* (Amrita-RJ-Journal 1)

In addition to their perception on the usefulness of the online TDP, the teachers even set more expectation for the future implication of CALL in their institution. Their expectations can be a reflection on their feeling or perspective over the TDP. From the wishes, it can be interpreted that they had positive learning experience. Lolita, for example, hoped that the knowledge afforded from the workshop as well as this kind of online learning could be implemented in the institution where she worked. She wrote on her journal,

"I hope we can apply this knowledge and this online learning model at the university where we teach as soon as possible" (Lolita-RJ-Journal 5).

Amrita, moreover, not only claimed to have gained knowledge from pedagogical point of view, but also from the managerial perspective. It was because she was a part of the English

language coordinator team. From the excerpt below, she stated that she had afforded inspiration of managing the language laboratory where the English team was based.

*"Being long in the profession, many times I only used available materials to teach without thinking deeper about the quality of the materials and how it could affect the achievement of the teaching goal. So, **the workshop had opened up my mind, and gave me ideas of other possible ways to manage our language lab**"*
(Amrita-RJ-Journal 1).

From the discussion above, it could be interpreted that the participating teachers considered the sessions useful. Not only giving them an opportunity to learn new knowledge, but the TDP also gave them a new kind of learning experience that they thought to be a possible way to apply in their context. Therefore, despite the frustrating feeling dealing with the internet connection and unfamiliar technological tool in the beginning of the TDP, it was concluded that the teachers perceived the online TDP beneficial and worth implementing in their context.

Even though the synchronous online TDP achieved the learning outcomes, it is still far beyond perfection. There are some aspects needed consideration and refinement. First, considering the technical issues related to the internet connection and time effectiveness, it is important to find some solutions to them before implementing the same model of TDP. A technical support from the institution will be favorable to allow teachers being online without internet issues. Another support from the institution such as allowing the teachers join the sessions during their working time will also boost the effectiveness more considerably.

Besides the TDP, this present study has also some imperfection that

can be improved for further studies. The limitation of the present study includes the fact that there were only two teachers participated. The results might have been different if there were more teachers involved. Therefore, for future practice, the number of the participating teachers should come into consideration when employing the same TDP for the future studies. Additionally, more assessors will also be needed for higher reliability.

CONCLUSION

This study explored the effectiveness of a synchronous online teacher's learning as a teacher's development program (TDP) in a private higher education in Indonesia. The effectiveness of the TDP was looked through the achievement of the learning objectives and the teachers' feelings and perspectives toward the TDP. The data provided evidence that the workshop overall achieved its objectives. It afforded new beneficial experience for teachers such as being in an online learning, and developing their own CALL teaching material using J-Cloze in a tutoring tool, *Hot Potatoes*. Teachers also gained new knowledge of evaluating the appropriateness of a teaching material and put more hope to implement CALL in their instructional practice. From the teachers' perspectives, they believed that the TDP was beneficial in terms of providing a new way of knowledge transfer as well as developing their knowledge.

The results of this study provided some take-home lesson learnt. The first lesson was that pairing teachers with different level of technological knowledge can be beneficial where the more expert helped the weaker, but at the same time it gave frustration to the weaker one when she realized that she was left behind. The second lesson was that to achieve the optimal benefits out

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of a synchronous online TDP, supports from institutions and strong commitment of the teachers are needed. The last but not least lesson from this study was that teachers' prior knowledge will help them afford any new knowledge they learn from a TDP. Therefore, it is important for teachers to keep updating their knowledge.

REFERENCES

- Chapelle, C. (2001). *Computer applications in second language acquisition*. New York: Cambridge University Press.
- Chapelle, C. (2003). *English language learning and technology*. Philadelphia: John Benjamin Publishing Company.
- Chapelle, C. (2009). The relationship between second language acquisition theory and computer-assisted language learning. *The Modern Language Journal*, 741-753.
- Dede, C. (2006). *Online professional development for teachers: Emerging models and methods*. Cambridge: Harvard Education Press.
- Desimone, L. M. (2011). A primer on effective professional development. *Phi Delta Kappan*, 92(6), 68-71.
- Healey, et al. (2011). *TESOL technology standards: Description, implementation, integration*. Virginia: TESOL, Inc.
- Hubbard, P. (2006). Evaluating CALL software. In *Calling on CALL: from theory and research to new directions in foreign language teaching*. San Marcos: CALICO, 5.
- Hubbard, P., & Levy, M. (2006). The scope of CALL education. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 3-21). Philadelphia: John Benjamins.
- Kadel, R. (2005). How teacher attitudes affect technology integration. *Learning & Leading with Technology*, 32(5), 34.
- Levy, M. (1997). *CALL: Context and conceptualization*. Oxford: Clarendon Press.
- Levy, M., & Stockwell, G. (2006). CALL dimensions. *Options and Issues in Computer-Assisted Language Learning*. New York: Lawrence Earlbaum Associates.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Murray, A. (2010). Empowering teachers through professional development. *English Teaching Forum*, 1, 2-11.
- Tai, S. D. (2013). *From TPACK-in-action workshops to classrooms: CALL competency developed and adopted into classroom teaching*. (Thesis doctoral). Ames, Iowa: Iowa State University.
- Tomlinson, B. (Eds). (1998). *Materials development in language teaching*. Cambridge: Cambridge University Press.