

Exploring pedagogical potentials of technology: professional development for English teachers of vocational higher education

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Abstract - The education transformation from teacher centred to student centred by doing PF learning has inspired most of educator to be more selective and creative to develop the way they handle their teaching learning process. It is supported with the condition that all education must be held online due to the pandemic situation. The teachers' ability in utilizing technology for their teaching learning process needs to be developed. This study aims at investigating the teachers' readiness in exploring the potential of technology in form of professional development by exploring the pedagogical content knowledge of the teachers. Modifying action research in mixed method are used as methodology in this research. Data were obtained through a focus group discussion and workshop which was followed by a semi structured interview. Findings for this study have enhanced the understanding of some aspects that teachers put into consideration while designing technology-integrated lessons; identifying goals, analysing learners, planning instructional activities, and choosing the technology tools. However, teachers must be triggered by cognitive prompts in order to support them in making decisions about learning objectives, activity stages, and technology tools to integrate.

Keywords: pedagogical potentials of technology; content knowledge; teacher's professional development; technology tools

1. Introduction

In this twenty-first century, all aspects of human being cannot be separated from the integration of technology. Technology has been integrated into human life via computers, mobile devices, social media platforms, etc. The integration of technology results in numerous innovations and changes in social, cultural, and economic areas. Technology integration must be adopted so as to teach English language in an effective way, which is crucial in today's world. In other words, foreign language teaching should not be based on traditional methods in which learners are passive recipients of information (Valeev, Latypova & Latypov, 2016). Nowadays, the main focus of English language teaching is no longer teacher-centred, but student-centred teaching approach that gives students opportunities to improve their analytical skills, problem solving skills, as well as skills in deep learning, lifelong learning, self-directed learning, reflective learning, and motivation. This is done in order to achieve learning outcomes that meet all of the learning process's objectives.

There are several activities in the learning process that bring many advantages in the learning process in English classes. Students can work in pairs or groups to compare and discuss their answers, or to read and respond to one another's written work, suggesting improvements (Zohrabi et al, 2012). Students may collaborate in discussions or role-playing to share ideas, opinions, and experiences. According to Nagaraju (2013), these activities bring some advantages to students such as when students are working together in English they talk more, share their ideas, learn from each other, feel more secure and less anxious, and use English in a meaningful way

The role of the instructor in student-centred classrooms is to encourage learners to do more discovery learning and to learn from each other; the instructor focuses on constructing authentic, real-life tasks that motivate learner involvement and participation. The students are seen as unique and distinct learners. This entails acknowledging that students in any classroom learn at different rates and in different ways, that they have different abilities and talents, that their feelings of efficacy vary, and that they are at different stages of development. Learning, according to this model, is a constructive process that is relevant and meaningful to the learner and is linked to the learner's prior knowledge and experience.

The effect of post Covid19 outbreak have disrupted conventional schooling, resulting in nationwide school all over the world. While the educational community worked hard to maintain learning continuity during this time, children and students had to rely more on their own resources to continue learning remotely via the Internet, television, or radio. The curriculum in all level of education started from Elementary to Higher Education must be switched to flexible curriculum design that can be applied for virtual system, or at least in hybrid system. The reality that all activities must be forced to be carried out in online system during the pandemic made all educators realise that the teaching learning process must be altered to Students-Centred Learning (SCL) by utilizing ICT. It is said that the use of technology serves as a tool to motivate teachers and learners to work in new ways and expand opportunities. Technology can make teaching fast, easy, organized and innovative (Saydakhmatova, 2020).

When teachers are only equipped with technology skills but lack knowledge to integrate it in the classroom, they may underuse or overuse technology's potential in their teaching. Although personal computers have been in schools for almost 40 years and networked computers are now available in most classrooms in the developed world. Ertmer and Ottenbreit-Leftwich (2013) note that most teachers are not using technology to effect meaningful changes in student outcomes but primarily as aids to delivering content.

The inability of teachers to incorporate technology into their classroom instruction has become one of the primary reasons for the limited use of technology in the teaching learning process. Technology tools should be available to assist teachers in combining teaching strategies and subject-knowledge to be delivered, rather than focusing solely on technology skills in facilitating adequate technology integration in the classroom. (Donner et al, 2008). The critical component is to provide teachers with the knowledge and skills to use specific technology tools to deliver subject content knowledge using appropriate instructional strategies that support SCL. As a result, it is critical to encourage teachers to have not only technology skills but also the knowledge and skills to integrate technology tools into their teaching strategies and subject content knowledge. Teachers' pedagogical beliefs play an important role in the use of ICT in the classroom (Hermans et al, 2010; Prestridge, 2012; (Handayani & Sudiana, 2015) and should be considered as major foci in any approach to teacher professional development (TPD).

To support that condition, the government has implemented numerous programs to professionalize more than 2.7 million Indonesian teachers, including teacher certification programs, undergraduate degree facilitation, Teacher Competency Test (UKG), various types of training and workshops, and Teacher Education Programs (PPG) (Afrianto, 2018) to upgrade the Indonesian teachers' quality. The reality to change the image of teacher to be more professional is not an easy way because of the demand of education 4.0.

The unavoidable demands of education 4.0 and the post-pandemic conditions require teachers to improve their abilities and skills to improve their professionalism. The readiness of the teacher's skill itself determines learner achievement. Teachers must ensure that the graduates have the skills required by Industrial Revolution 4.0. Teachers Professionalism Development (TPD) is one solution for ensuring that teachers are constantly improving their skills and adapting to current issues. In terms of using technology in the academic setting, the pervasiveness of technology has had a significant impact on how students learn as well as how teachers teach. Technology integration provides ground for the expectation of educational achievement, enhancement, or excellence (Yang, Y.-T. C. (2015). Having the technological skill to use ICT can help learners develop higher order thinking abilities, increase participation and cooperation levels and increase teachers' creativity in designing teaching and learning strategies (OECD, 2020).

Teachers' knowledge and skills are necessary to be refreshed and updated since science and technology are growing so fast and the high competitiveness of living in modern society. Without refreshing or updating teachers' knowledge and skills, teachers may not be able to attract students into learning engagement to provide students with appropriate hard and soft skills for competitive living in modern society. Many professional development programs have been shown to be effective to improve teachers in integrating technology in their teaching learning process both in online platform and in face to face classroom (Kohnke, 2020). In other word, teachers who receive quality professional development are more likely to see an improvement in their skills and abilities (Liu et al, 2015). It is in line with National Educational Technology Plan which claims that Effective use of technology is not an optional add-on or a skill that we simply can expect teachers to pick up once they get into the classroom. Teachers need to know how to use technology to realize each state's learning standards from day one. (U.S. Department of Education, Office of Educational Technology, 2017)

The majority of professional development programs have focused on improving teachers' beliefs about their ability to integrate technology. For examples are Collaborative Professional Development for Technology Integration (Liu et al, 2015) and Evaluating Digital Contents for Teaching and Instructional Excellence (Kim et al, 2017; Xie et al, 2017). Another study about professional development of secondary school EFL Teachers

was done by Dewi (2019) who explore teachers' consideration in choosing certain technology tools in the context of technology-integrated lesson design activities to junior high school EFL teachers. From that study it can be concluded that teachers need to be triggered in formulating the learning objectives, learning activities and the learning tools to be used.

It is widely acknowledged that vocational education and training (VET) has a key role to play in alleviating potential negative effects that demographic change can have on EU economies and societies. Increasing labour-force participation and productivity by developing measures which encourage 'active ageing' and 'learning ageing' – including continuing vocational training – is high on the policy and research agenda (Cedefop, 2018). This condition generates Indonesian Government through Director General of Vocational Education in his strategic plan to increase the professional development activities focused on machinery and construction, creative economy, hospitality, nursing services through vocational cooperation with world of business and industry (Director General of Vocational Strategic Plan 2020-2024).

In other word, Professional development is a critical issue for Vocational and Training (VET) Teachers in higher education, because VET teachers need to continuously develop a diverse set of skills and update their pedagogical and industrial knowledge (OECD, 2020). In this context, PD can be a tool for improving teachers skills, changing how they teach and putting research results to be more competence based (Cedefop, 2018). It is clearly understood that the difference between VET teachers and general education teachers in education levels and fields of study is also largely due to the fact that vocational teachers may instead have non-academic qualifications or hands-on experience (industrial competency). Nonetheless, this indicates that some VET teachers might need to increase their skills, particularly their pedagogical skills and vocational skills, along with basic, digital and soft skills (OECD, 2020).

Considering the fact that digital technology is the most significant thing in this digital era, and realizing that VET hold an important role to create ready to work manpower in industrial world, Professional Development of English teachers in higher vocational colleges is the premise and guarantee to promote the reform of English teaching in higher vocational colleges and to achieve the goal of international talent cultivation. Strengthening the professional development of English teachers, promoting the reform of English teaching, and cultivating compound international talents with high language proficiency and professional knowledge are the objective requirements of the development of higher vocational education (Hong, 2019).

Integration of technology is typically defined as purposeful use in language pedagogy of some kind of modern technology. Even though there is often a distinction between technology integration and technology use (Garrett, 2009; Qin & Shuo, 2011; Stockwell & Hubbard, 2013), however the words are used interchangeably. Some researchers have looked into the potential of technology in language learning in the context of Indonesia. Those studies looked at various aspects of language learning, such as teaching writing skills via Edmodo (Purnawarman et al, 2016), Facebook (Rodliyah, 2016), Twitter for EFL Pronunciation (Mompean, 2016), and Blog (Sari, 2014), teaching grammar via Facebook (Sumakul, 2014), and Teaching English Using Telegram Application (Putra, 2021). In addition, some other studies discussed the possibility of using technology to teach content courses (Lie, 2013), as an alternative in language teaching (Mali, 2016), and Teachers' Consideration in Technology-Integrated Lesson Design (Dewi, 2019). The last study was exploring teachers' consideration in designing lesson activities by utilising of technology in Secondary schools level.

Scholars conclude that integrating technology into teaching and learning is a critical skill for the 21st century classroom which focuses on learner-centred (Pawan et al., 2003; Chai et al., 2013; Mulder, 2014). Koehler at al (2014) proposed a framework for

describing the types of knowledge required by a teacher for effective technology integration in teaching and learning. Consequently, teachers are required to leverage the digital technologies for teaching and learning to ensure effective communication and curriculum delivery to the students. By supporting teachers with knowledge of integrating technology in their teaching learning process, it is expected that learners-centred approach in English teaching and learning can be realized.

A model that can be applied in adopting technology in teaching is Technological Pedagogical and Content Knowledge (TPACK). TPACK model provides a framework for identifying the teacher knowledge required to integrate technology effectively within the complexities of the larger context of teaching (Mishra & Koehler, 2006). In TPACK, Technological Knowledge – TK, is most effective when it is combined with deep Content Knowledge – CK (curriculum subject matter) and Pedagogical Knowledge – PK (teaching strategies and knowledge of the learner). While the intersection of Content Knowledge and Pedagogical Knowledge is largely understood to be at the heart of effective teaching, adding Technological Knowledge into the mix provides an effective filter for teachers to really examine the way that they think about technology integration (Dewi, 2019).

Considering that not all teachers are well prepared in integrating technology into teaching learning process, this study investigated on how a Technology-Supported English Language Teaching Professional Development program conducted to help teachers integrate technology to be used in SCL classroom, in form of workshop for VET teachers. In this study, the process of exploring the pedagogical potentials of technology were delivered by the professional trainers by sharing their knowledge with a group of trainees through workshop in form of forum group discussion, role-playing, and skill demonstration. Therefore, the research questions are as follows. a) What strategies work can be implemented in engaging and encouraging VET teachers to optimize the use of ICT in a student-centred approach? b) How can the PD Workshop support teachers in learning technology tools to be integrated into their teaching and learning activities? c) How do English teachers of VET evaluate the success of technology-integrated English lessons?

2. Method

2.1 Research Design

This study used a qualitative research design to investigate the use of technology in English Teaching Process in Vocational Higher Education. All English Teachers in State Polytechnic in Indonesia were invited to join the workshop on Exploring the pedagogical potentials of technology in ELT. The workshops were carried out in online system using zoom for 3 weeks. During workshop the questionnaires were distributed to the participants to recognize the participants knowledge about the integration of digital technology in their teaching learning process, especially during the Covid19 outbreak. Beside the questionnaire, the selected participants were asked about their understanding of technology integration in their English teaching class. The workshop were held in 32 hours of activity (3 days in 3 weeks) and its progress will be monitored in a group discussion forum via WhatsApp at the end of every month to see the progress of the activity.

2.2 Data Collection Instruments

The data were collected by using closed-ended and open-ended questionnaires to the participants of TPD Workshop. The questionnaires address both internal (personal) and external (environmental) factors. The former consists of teachers' attitudes toward professional development as well as their sense of self-efficacy. The latter consists of time, funding, principal influence, colleagues' influence, and college culture. Then, in-depth-interviews are conducted to obtain descriptive data from the participants during the workshop. It is very valuable and useful as the primary data collection method because it will enable us to interact with the

participants closely so as to explore their knowledge about the way the participants manage the classroom. The process of interviews are divided into two: before the workshop and after the workshop. The first interviews are about their personal information, educational background and teaching experiences. The second interviews are done during the workshop with questions about their understanding about technical learning tools used in the workshop and the way to integrate it in their teaching learning activity. While the last interview are done after the workshop with questions concerning about their progress in understanding self-access materials in the internet until how to optimize the use of those free access learning tools to be integrated in their teaching learning activity.

2.3 Participants

The participants were English Teachers of 44 State Polytechnics under the Ministry of Education, Culture, Research and Technology. They were selected by using a set of technological knowledge survey which consisted of five sections which should be filled out by prospective participants: 1) Personal Identity, 2) Access to the Internet, 3) Interest in and Attitude towards using ICT, 4) ICT application competence, 5) Willingness to participate in the study. Besides, it also selected based on the recommendation given by their own management of their institutions. The result of the survey will be analysed to obtain a clear illustration of the participants who will be chosen to follow the workshop. Then, the result of the chosen participant will be announced through WhatsApp Group of VET English Teachers.

2.4 Data Sources

In a qualitative study, a combination of data sources is often used to ensure the rich understanding of the phenomena (Cresswel, 2003). The triangulation of data sources allows the researcher to capture multiple perspectives, which can contribute to the reliability of findings. The sources of data on this study include; 1) Semi-Structured Interview, 2) Focus Group Discussions, 3) Observation and fieldwork, and 4) Documents. The illustration of the relationship between the research questions, data sources, instruments, and the stages of research at which each data set is collected can be seen in table 1.

Table 1 Research Questions, Data Sources, Instruments, and Data Collection Procedures

Research Questions	Data Source	Instruments	Stages of research
1. What strategies work can be implemented in engaging and encouraging VET teachers to optimize the use of ICT in a student-centred approach?	Pre-workshop semi- structured interviews - FGDs during workshop - Post-workshop semi- structured interview	List of questions	-Stage 1 pre-workshop - Stage 2 workshop - Stage 2-3 workshop and action learning
2. How can the PD Workshop support teachers in learning technology tools to be integrated into their teaching and learning activities	- FGDs during lesson design activities - Documents (Technology-integrated lesson plans) - Fieldnotes	- List of questions - Technology integration assessment rubric	Stage 3 Action learning
3. How do English teachers of VET implement technology-integrated English lessons?	- Classroom observations - Reflections - Fieldnotes	- List of questions - Rubric for classroom observation	- Stage 3 Action Learning - Stage 4 Reflection

3. Results and Discussion

The result of this study shows that technology is really required by teachers in English Teaching process. The process of integrating technology in teaching learning process through three weeks workshop on exploring the pedagogical technology in English Teaching. In this workshop all participants are demanded to develop the planning and the implementation of the technology-integrated English lessons by focusing on how the Professional Development workshop support teachers in learning technology tools to be integrated into their teaching and learning activities and how effective is the technology integration implemented in the English teaching learning process. It can be seen that the continues workshop enable teachers to be more creative and innovative in developing teaching materials starting from planning and developing the learning

outcome by implementing the technology-integrated English lesson. The three days workshops were carried out in different week by different objectives.

The first day workshop is directed to raise teachers' awareness of the importance of integrating technology into language teaching to respond to the demands of today's education and the needs of today's students. The second day workshop aimed to develop teachers Technological Knowledge (TK), Technological Content Knowledge (TCK). The participant were invited to explore some potential technology tools for language teaching and learning, and followed by the discussion on the suitability of the tools to teach certain aspects in English Language Learning.

The third workshop focused on giving a demonstration to the participants on the use of some technology tools in English lessons and discuss the possible implication in their classroom, including some possible adjustments they suggest to do. Then discuss and reflect on the stages of the teaching demonstration (TPK).

The integration of technology into teaching and learning activities involved the consideration on the content to be delivered and the pedagogical approaches to deliver the content utilizing certain technology tools. The purpose of the Workshop on Exploring Pedagogical Technology in English Teaching as Teacher Professional Development in this study was to assist English teachers in 1) developing their technological knowledge (TK) to utilize certain technology tools, 2) developing their knowledge in using technology tools to teach certain topics/lessons (TCK), 3) developing their knowledge in using certain pedagogical approaches when utilizing technology tools (TPK), and 4) developing their knowledge in using certain pedagogical approaches when utilizing technology tools (TPK) (TPACK).

The three day workshop were organized with different objections. The result of the first day of the workshop showed that Microsoft PowerPoint was still the most frequently utilized tool by the teachers. Besides Microsoft PowerPoint, some other technology tools which have been used by teachers before they joined the PD Workshop Program were Audio, Video from YouTube, and Microsoft Word. Among the six technology tools, which was introduced in the workshop, Padlet was the most used tool by the teachers. All of the participating teachers integrated Padlet in some of their lessons because of several reasons. The first is its flexibility, which allows users to upload files other than text, such as documents, pictures, audio or video files, and hyperlinks. The second benefit is that it is a digital platform that allows teachers to personalize its use to the content teaching and learning goals. The third feature is its accessibility, which does not require users to create an account in order to view other people's posts.

From the second day workshop, it can be concluded that the technology tools preferred by teachers were the accessibility and the suitability of the tools with the curriculum goals, the instructional strategies, and the fitness among content, pedagogy, and technology. The first role of technology tools is facilitating teacher preparation and they have been used by teachers in preparing their lessons and facilitating their teaching instructions. The second function of technology tools is to increase teacher productivity. Canva, Answer Garden, Padlet, and Wheel of Name were classified as tools that help teachers create instructional media for their lessons. Teachers created these instructional media to lead into lessons, deliver a presentation, provide a virtual learning environment for students, or provide an alternative assessment tool.

The third role of the technology tool is facilitating students' productivity. It was observed that teachers integrate some tools to assist students in doing some small group discussion and guiding them in brainstorming and sharing ideas. These tools were mostly creation tools, such as: Padlet, Vocaroo, Wooclap, Whiteboard Fi, H5P. In the lesson design activities, teachers have carefully chosen pedagogical activities which were considered suitable with the chosen technology tools. Last but not least, the teachers' use of technology in the classroom has resulted in a student-centred learning environment. Teachers could use the tools to encourage student engagement and collaboration.

Teachers created these instructional media to lead into lessons, deliver a presentation, provide a virtual learning environment for students, or provide an alternative assessment tool. They were also assured that all respondents would remain anonymous in this study. The participants were invited to go through the research stages to ensure that they were well-

informed about the stages that they would be following during this research. To initiate the discussion, the participants were introduced to the rapid changes in technology, which has a great influence in day-to-day life. Many aspects of people's lives have been shifted due to the advancement of technology, be it business sectors (i.e. shopping, banking, or transportation), in the way people communicate (i.e. virtual chat, social media, email), and also in educational sectors (i.e. web-based software and mobile applications potentials for education). The participants were invited to explore some software and mobile applications which have made today's live become much easier than before.

This session was ended by the discussion on the three important characteristics to develop the quality of teaching and learning with ICT stated by Pandya, P.J. (2016). The first characteristic is autonomy. It is said that using ICT tools; students can take control of their own learning. They can be more capable of working by themselves or with their peers/groups. The second this second workshop were to develop teachers Technological Knowledge (TK), Technological Content Knowledge (TCK). This four-hour workshop consisted of three sessions. The first session was for introducing the technology tools, the second session was for exploring the tools, and finally, the third session was for discussing the affordances of the tools. However, to give foundation to teachers on what constitutes the integration of technology, the first part of the second workshop was initiated by a discussion on the differences between using technology and technology integration. This second workshop aimed at developing teachers' technological knowledge (TK) and technological content knowledge (TCK). The participants were invited to explore some potential technology tools for language teaching and learning, and followed by the discussion on the suitability of the tools to teach certain aspects in English Language Learning.

The first session focused on giving a demonstration to the participants on the use of some technology tools in English lessons. a) Give teaching demonstration on the use of some technology tools in English Lesson. b) Discuss and reflect on the stages of the teaching demonstration (TPK). c) Review technology tools and discuss how to teach using certain technology tools (TPK). d) Plan technology-integrated lessons (TPACK). The participants were asked to review all the technology tools that they have learned during the workshop. They were asked to choose one or two tools that they are familiar and think of how they are going to integrate it into their lesson. Then, they were asked to design a simple lesson plan in which they will integrate those technology tools.

4. Conclusion

The purpose of this study was to investigate teachers' considerations in selecting specific technology tools when designing technology-integrated English lessons, as well as the extent to which technology-integrated lesson design activities assist teachers in articulating their considerations. With so many technology tools available today and the promises of technology integration, such as success, improvement, or excellence in education and the development of students' language ability. It is critical for teachers to have a sufficient understanding of technology and its integration in pedagogy in order to deliver good content knowledge.

Many contextual factors influence the planning of a technology-integrated lesson, including curriculum implemented in its institutions, students' learning needs, technology availability, and industrial need toward required manpower. As a result, this paper investigated how teachers identify learning objectives, analyse learners, design instructional planning, and select technology tools appropriate for their classroom and the institution need based on their study program which is suited with the industrial demand.

Teachers consider the identification of content/materials/skills to be delivered to students, as well as the learning objectives, when identifying goals. Teachers consider which activities require the integration of technology and which can be completed without the integration of technology when planning instructional activities. Teachers typically consider the affordances of technology to solve specific problems, as well as the identification of the potential utilization of technology tools to be integrated into lessons, when selecting technology

tools. In addition, the findings of this study also postulate that during the lesson design activities, teachers need to be triggered by some cognitive prompts in order to support them making some decision on the learning objectives, the stages of activities, and the technology tools they need to integrate.

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