Scaffolded Teachers' TPACK Lesson Design Model (STLDM) in ELT: A Digital Wisdom during Covid-19 Pandemic

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Abstract. The massive spread of the Covid-19 pandemic that results in the school closure demands the movement of learning mode from direct interaction to online learning. To satisfy current demand, the learning design needs to be revised, even renew. As technology massively integrated in EFL classroom, the TPACK framework is viewed to be important to maintain the effective technology-rich classroom which also focusing on the content material and pedagogical aspects. This article presents the STLDM (Scaffolded Teachers' TPACK Lesson Design Model) in ELT as guideline in developing TPACK-based lesson design. Digital wisdom is accommodated in the design since the integration of technology is concerned. This model includes a two-stage development process in which the first step works on constructing the instructional objective, the second stage works and similar to specifying the design goals in determining the decision for achieving the objectives. It is assumed that the model brings betterment in the TPACK of teachers massively and shifts in the lesson design.

Key words: *technology; teacher professional development; TPACK; STLDM*

INTRODUCTION

The rapid spread of Corona Virus Diseases (Covid-19) is compelled almost all countries to take alternative action. Health systems becomes the main focus, however it also affect the education systems. Around 1.4 billion students in more than 156 countries were out of school in just over three weeks (World bank Group Education, 2020). The school closure is seen as an alternative to protecting students and young people, reducing their chances of spreading the harm virus to others. The world organizations suggests that school closures have beneficial effects in reducing the spread of infectious diseases (Adda, 2016). The type of school closure is varied depends on government policies. Full closures are being implemented by almost one hundred and fifty six nations, such as Malaysia, Peru, France, etc while closures partially are only enforced in some nations, such as the US, where the firstly closed occured in the danger area, or Finland, where early school pupils were able to attend school and whose parents work in critical social sectors. Finally, Sweden introduces the holding schools open which says the cost of closing schools does not outweigh its benefits.

The critical situation of the massive school closure demands an alternative option in learning. Distance learning assumed to be the last option to overcome the disruption of the learning process. Replacing traditional classes to online learning have to however solve online learning tools unequal access. Teachers and managers' expertise and experience in using distance learning technology is also a crucial factor. In addition, extending distance learning requires a rigorous model to avoid more increasing learning gaps in education system. A rapid movement to distance-learning taking into account schools 'ability to provide quality classes, and students' ability to possess the design and resources to internalize this content, threatens to worsen the already high learning disparities (World Bank Group Education, 2020).

The technology emergence within the classroom compels teachers as a designer to create the relevant lesson design. Paved on Shulmans' work, Mishra and Koehler (2006) presents TPACK, to teach with technology effectively (Gomez, 2015). Hsu (2012) emphasizes the importance of designing the teacher build up programs and elationship with the TPACK betterment professional placements. The Scaffolded Teachers TPACK Lesson Design Model (STLDM) was launched as a guide to the lesson design of teachers. Voogt and McKenney (2017) suggest that the rather of specifically teaching the TPACK method, TPACK software is implemented to explore teachers' learning design

implicitly. It would specifically help the teachers as it directs the activation as psychological resources of appropriate TPACK information to promote design. For example, when formulating the lesson goals, the PCK prompt allows teachers to examine learners about their learning challenges and potential misconceptions (Chai and Koh, 2017). The model scaffold the teachers' TPACK in planning the lesson design for their teaching practice.

Teachers' role as a designer to create effective TPACK-based lesson design then requires teachers as "digital immigrants" to maintain digital wisdom. The teachers' professional development is challenged then for professionally formulating the relevant lesson design in the digital era particularly when online learning is assumed to be the most appropriate model. This article presents the conceptual views on the STLDM in ELT to be the basic consideration in developing TPACK-based lesson design. The TPACK framework as a way of thinking in technology, pedagogy as well as content knowledge integration is presented as the cornerstone in STLDM.

Teacher Professional Development and Technology during Covid-19 Pandemic: A Digital Wisdom

Since direct interaction courses were designed, it means the teachers needs adjustment to suit online instruction (Moorhouse, 2020). However, using online learning and teaching technologies simply for providing information to students is not enough, because digital technology provides educators with multiple opportunities to engage students in beneficial activities namely interactive materials development as well as evaluation from peer, and increases the desire of learners to acquire knowledge and language (García, 2015) Taking a role as main knowledge and information facilitator, education has obliged to respond to connectivity and technology (Pennock-Speck, 2013). Recent advancements in educational technology allow teachers to use a range of technology resources (such as simulations and animations). Researchers became particularly interested in learning how teachers integrate technology into teaching (Hughes, 2005; Margerum-Leys and Marx, 2000; Nies, 2005; Zhao, 2003 in Bustamante, 2019).

Based on their previous experience and level of competence, high-quality professional learning is "tailored" to teachers, is compliant as well as sensitive to their desires and needs, and compatible with the standards of school and criteria of curricular, district and country. Thus, qualified proffesional development is willingness as well as include the aspects of sovereignty and choice (Borko and Putnam in Bautista and Ruiz, 2015). The statement highlights the position of teachers' professional development that need to fit the teachers' need and interest as well as the curricular requirements. Due to this consideration, teachers' professional development currently need to go along with the demand for digital literacy skill in facing the teaching challenge in online learning during Covid-19 pandemic.

TPD is led to mastery of Technology for Enhancing Language Learning (TELL) which is famous all throughout world pandemic. This technology-based teachers' professional development requires teachers' digital wisdom in usage. The terminology of Digital wisdom first coined by Prensky (2012) to incorporate technology into our thinking and determining the decisions, do prudently, as well as sharing the effect. Digital wisdom requires finding technology combination. This is the experience obtained from the innovative application of emerging technologies. In other words, digital technologies will make the user genuinely more prudent and digital wisdom stems to the careful application of digital technology (Sadiku et al, 2012). To teachers, 'digital wisdom' is prudent in using technology for encouraging and improving the the quality of learning. Therefore, in supporting the teachers' professional development in the technology used during the Covid-19 pandemic, teacher training programs have also been established to improve teachers' understanding of TPACK and ICT skills and technical knowledge of teachers.

TPACK Framework as a Basis for Teacher Support

TPACK was initiated as a framework for comprehending required knowledge in integrating the technology successfully (Mishra & Koehler, 2006). TPACK framework as shown in Figure 1 consists of seven components relating primarily to the pedagogical, content and knowledge aspects, such as (1) Technological knowledge (TK) referring to knowledge of technologies; (2) Content knowledge (CK) referring to subject matter ; (3) Pedagogical knowledge (PK) which refers to the teaching method and process and includes

assessment, classroom management, and lesson planning; (4) Pedagogical content knowledge (PCK) is the knowledge about material being learned (content of teaching); (5) Technological content knowledge (TCK) which is knowledge deals with technology representation in teaching; (6) Technological Pedagogical Knowledge (TPK) referring to the knowledge on the technology for learning and the impact of it and (7) Technological Pedagogical Content Knowledge (TPACK) referring to the integration of educational technology, pedagogical aspect and teaching content or teaching materials in teaching (Schmidt 2014).
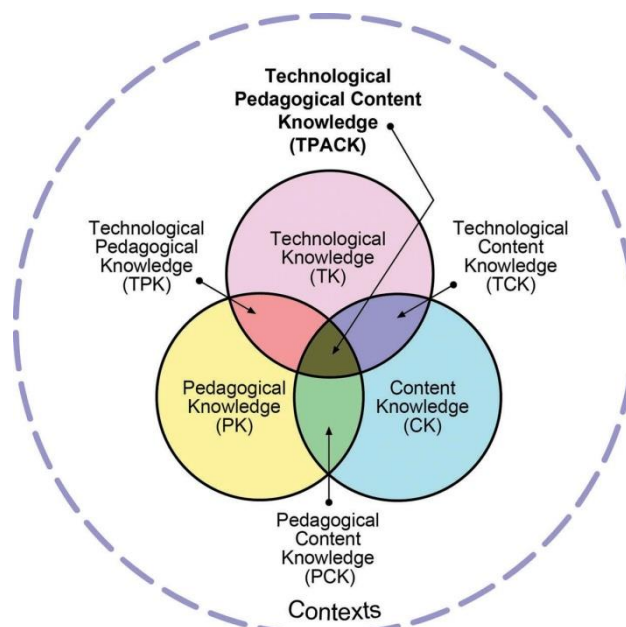

Figure 1. Mishra and Kohler TPACK framework (2006)

Some points can be highlighted from the nature of TPACK. First, technology is seen as an instrument that aids in the learning process. That is, the technology used will enhance the subject matter's representations. Secondly, TPACK is a constructivist approach as the researchers suggested that learning techniques from scaffolding could be used. This is suggested because technology can help students obtain complex concepts based on how they are applied and implemented in the class. Finally , current order of integration technology in the class implies that a concept representation is selected after the goals are identified, and then a piece of technology is aligned to the concept or practice type.

TPACK takes into account that each classroom environment is different due to variations in the proffesional development environment and available resources A complex structure developed by TPACK to explain the knowledge needed by teachers for curriculum design , implementation, and evaluation as well as technology instruction (Niess, 2011). The strategic thinking of TPACK involves comprehending where, how and when to use knowledge in specific domain and technique to direct student class activity with correct ICTs.

The Scaffolded TPACK Lesson Design Model (STLDM) and Course Design

Technology integration requires teachers' skills in developing TPACK based lesson and course design which integrate technology in teaching practice. The demand for online learning or distance learning due to the total or partial closure of the school in the pandemic era compels teachers to think more about incorporating of technological, content, and knowledge in the single package of their lesson design. Lesson design is defined as a teaching approach where the learners' become the main consideration and the teaching goal is vividly design (Eisenhower, 2007). It means that lesson design pay more attention to students as the subject of learning to achieve the targeted goal thus the designed should be arranged based on the students' situation and the distinct teaching goals.Effective lesson designs primarily concentrate on organizing the activities of the students, instead of planning what that instructor should do.

Research reveals that teachers require

advanced learning in integrating technology in the TPACK framework. A research carried out by Yeh et al (2015) on evaluating the level of ICT competence of Taiwanese teachers' with TPACK system adaptation shows that teachers' ability levels are largely in the level of adoption. Regarding the appropriateness of current teacher-education initiatives to prepare teachers to incorporate comprehensive ICT courses. This situation is driving teachers to scaffold the teacher's TPACK -STLDM.

The design models of STLDM were integrated by Chai, Koh, Ho, and Tsai (2012) to create a guide in lesson planning including essential articulation of prompts by Angeli and Valanides (2009). Chai et al. (2012) reinforced it by incorporating epistemic prompts as a guideline in designing the lesson. For example, as teachers select their educational media, questions such as "What is the appropriate pedagogical approache? What do you think about cyber wellness?" would be addressed. The study reveals that teachers obtained the guideline of lesson planning well and significantly increased their perception about effectiveness for TPACK (Chai et al., 2012). This design tend for emphasizing the need for (1) involving teachers in design-based learning; (2) scaffolding teachers to enable, locate, or produce appropriate TPACK; and (3) promoting knowledge synthesis and the development of lesson design specifically for 21CL (Koh, Chai, Wong and Hong, 2015).

STLDM is focused on design approach learning to improve teachers' TPACK. This synthesizes essential epistemic prompts to enable appropriate information and epistemic tools to help teachers frame the concept and promote decision-making on concept (Angeli & Valanides, 2009; Koh et al, 2015; Kramarski & Michalsky, 2010; Mishra & Koehler, 2006).This includes a two-stage development process in which the first step works on constructing the instructional objective, the second stage works and similar to specifying the design goals in determining the decision for achieving the objectives.

In their study, Chai and Koh (2017) are presenting the example of STLDM implementation, which enacted the model for all Singaporean teachers in a 12-week compulsory technology education course which is divided into three phase. The first phase was took place on the first-fourth week. In this phase, the teaching approach in using technology (ICT) for pedagogical purposes is introduce to teachers. Immerse learning and self-directed learning, aspects of cyber wellness, and skills in lesson design. Teachers then prepare a community lesson on topics related to cyberwellness to apply what they learned and practice the lesson design that they have design in this phase. The next six weeks (fifth until tenth week) was used to discussed and learn t the broad Web 2.0 technology for supporting pedagogical aspect. Here, the understanding as well as the technology integration aims at supporting pedagogical knowledge in learning (TPK) to achieve the teaching goals. In this phase, the teachers also demanded to develop the design by contextualize their design for certain subject. Here, the content learning or learning materials are specifically design. The integration of TPACK elements happens in this phase. The teacher also asked to brows the technology for learning and get information on how to use it for teaching purpose and assessment. The rest of the week is used for designing the ICT-integrated lesson program individually. The teachers has freedom to choose the topic. The experiential learning conducted by teacher later on develop the TPK.

A study conducted by Chai and Koh (2017) reveals that the formulation of STMLD is substantially changed in the TPACK of teachers with the great size of effect and improvements in the design beliefs of teachers with the medium or small size of the effect. The findings indicate that learning the design is advisable as teacher educators seek to build TPACK for teachers. Related to the current situation in which online learning becomes the last option in committing the instructional process, the model portrays the teachers as a good guide for the course design. It also directs the initiation as psychological tools of specific information about TPACK to promote design.
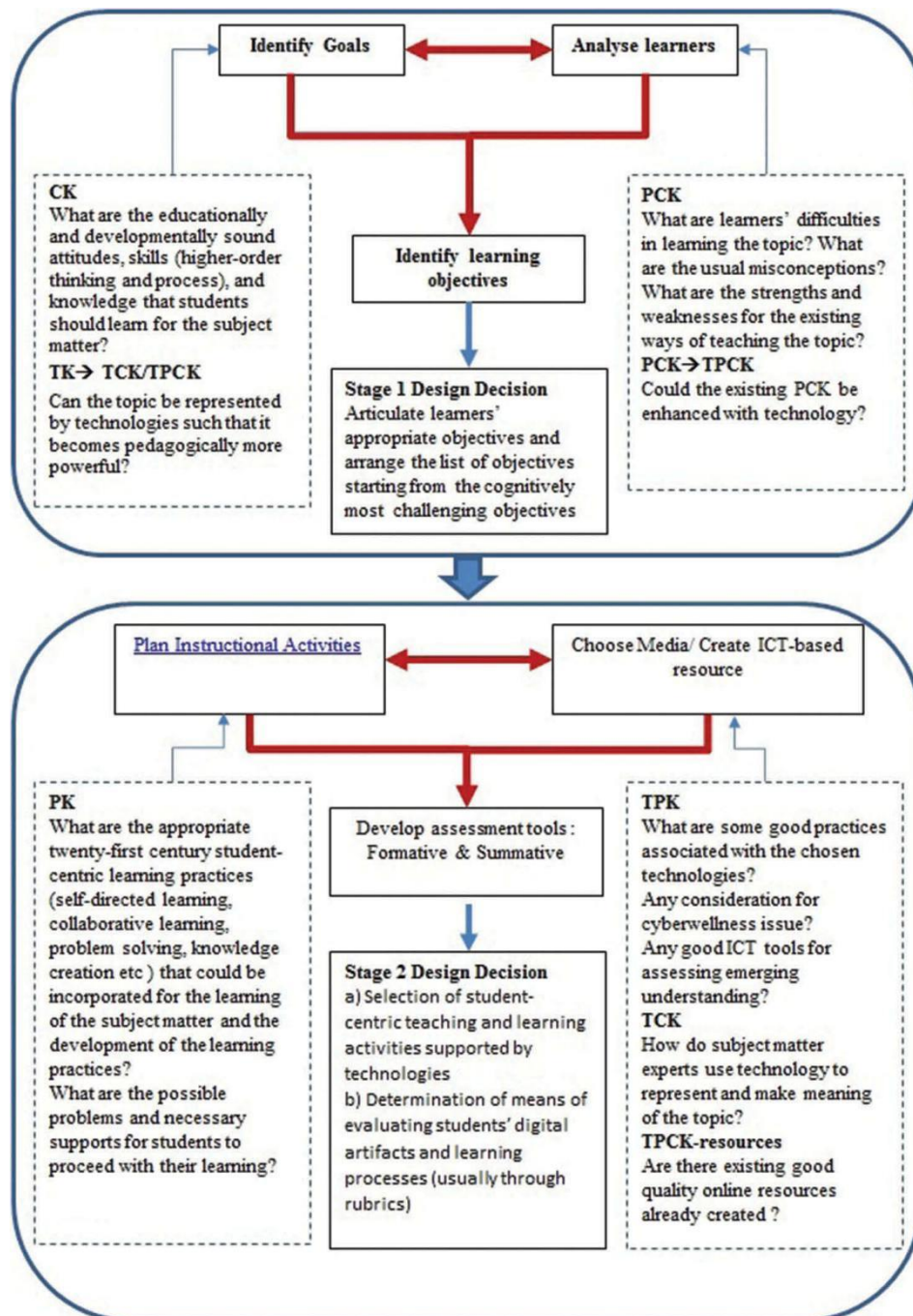
Figure 2. The Scaffolded TPACK Lesson Design Model (STLDM)
(adapted from Chai & Koh, 2017)

CONCLUSION

Teacher professional development, particularly regarding the integration of technology, is challenged since the movement from direct interaction to online learning due to Covid-19 world pandemic. The digital wisdom needs to be adopted in creating relevant lesson design that accommodates TPACK to result the excellent integration of those elements. The STLDM provides a guideline for combining the technology with other elements that are pedagogical and content knowledge within a single set lesson design. This model of TPACK framework-lesson design is rely on design approach learning to develop TPACK. It is believed that the model brings significant changes to the TPACK of teachers with large size of effect and adjustments in the lesson design of teachers with medium or small size of effect.

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