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INTEGRATION OF TPACK CURRICULUM FRAMEWORK FOR TESL PRE-SERVICE TEACHERS: A REVIEW

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Abstract

The TPACK model serves as an important role in fostering pedagogical improvement of education in the twenty-first century learning. The use of ICT and technology in twenty first century classroom is an important element that requires a level of knowledge and expertise of teachers in achieving the learning objectives. This study is a systematic literature review about TPACK of 12 journal articles, published between 2011 and 2016. The purpose of the review was to investigate the integration of TPACK among ESL/EFL pre-service teachers in teacher education programs. Expected finding shall serve as an improvised integrated model that covers the gap and enhance the TPACK Curriculum framework. This study provides a number of integral suggestions on for the betterment TPACK Curriculum Framework for pre-service teachers in teacher education programs.

Keywords: TPACK, technology integration, pre-service teachers, ESL/EFL pre-service teachers.

INTRODUCTION

Teacher education institutions are expected to produce quality and knowledgeable pre-service teachers and guiding them to impart the information and communication technology (ICT). Highlighting this issue, teacher education institutions have incorporated the ICT courses in their syllabus (Polly, *et al.*, 2010). The development of technological knowledge (TK) and skills have become the primarily focused. The goal is to train pre-service teachers' capabilities and strengthen their ICT aptitude towards their future clinical experiences. Nevertheless, the experimental evidence proves that they are not quite ready and fully equip themselves to integrate the use of ICT in teaching and learning in the classroom efficaciously (Kay, 2006).

In recent years, Malaysia government has initiated a number of significant changes in education as Ministry of Education (MOE) implementing new policies which priorities education at all levels (Grapragasem, *et al.*, 2014). Rising the international education standards was the main focus and building nations that are ready to meet the challenges in the education of millennium and to raise public expectations about the educational system in the country.

It has raised overwhelming perspectives from the nations as a whole. The preliminary report of Malaysia Education Blueprint 2013-2025, in establishing guidelines for the improvement of education has acknowledged eleven shifts to transform the system and can be embraced by all Malaysian including educationists and academics to parents and students (Ministry of Education, 2012). Transforming teaching into the profession of choice is one of the shifts in the blueprint that can be viewed as an important factor in producing a quality teacher, a crucial aspect in education system (Ministry of Education, 2012). Producing qualified teachers can contribute to the excellence of schools. The factor of excellence and wisdom of the students is determined by the quality of

teachers (McCaffrey, *et al.*, 2003). Intentionally, teachers will obtain the best training possible, from their teacher training programmes through to the point of retirement. The journey of a great teacher will involve them in a peer-led culture of excellence wherein teachers mentor one another, develop and share best practices and hold their peers.

The implementation of smart ICT throughout Malaysia as the 7th shift in Malaysia Education Blueprint 2013-2025 highlighted the intention in increasing the efficiency of the technology savvy, while promoting thinking skills among educators and students (Ministry of Education, 2012). Providing the internet access and virtual learning environment is an ongoing effort to prepare students and teachers with the latest technology skills (Ministry of Education, 2012). Hence, the government has implemented various programs to improve the readiness and the use of ICT among teachers and students. The Ministry of Higher Education has also presented The Malaysia Education Blueprint (MEB) for Higher Education 2015-2025. It contains six characteristics for higher education students that lead to 10 shifts in achieving student's aspiration (Blueprint 2015) The 10 Shifts concentrate on performance of the education system. Addressing one of the concern is about experiential and technology which enables learning by globalizing online learning as the 9th shift, will become an essential pedagogical approach that will benefit higher education students and global community.

Review Purpose

Looking at the education trend, preparing pre-service teachers by integrating TPACK in teacher education curriculum is crucial because they are required to be proficient with the relevant intelligence towards the process of becoming the outstanding teachers (Mahdum, 2015). This manuscript is not envisioned to serve as a comprehensive review of the growing of TPACK related research but rather to focus specifically on the integration of TPACK among TESL EFL pre-service teachers.

METHOD

In accomplishing this goal, the researcher conducted a literature search to compile a list of journal articles and conference papers that described the TPACK framework among pre-service teachers in teacher education programs. Started in April 2016 the initial list included approximately 55 articles listed in Google Scholar. The researcher also identified additional manuscript through keyword searches in electronic databases (Taylor and Francis Online, ProQuest New Platform, and JSTOR). A combined search of Taylor and Francis Online generated 20 references, 15 articles retrieved from ProQuest New Platform and 8 papers yielded from JSTOR. A total 98 papers were retrieved. The search terms included TPACK that retrieved 40 articles; followed by technology integration whereby 20 papers yielded. The third keyword deployed was pre-service teachers retrieved 32 papers and the forth keyword TESL / EFL pre-service teachers retrieved 13 articles. After removing duplicate references that the researcher identified from the multiple sources, the researcher compiled a preliminary list of 70 articles. After the abstract screening that related to the study, 30 articles were excluded after full screening. During the process of compiling the collection of manuscripts from the list of references, the researcher found many articles included references to TPACK but did not describe it for TESL or ESL pre-service teachers. Out of 40 articles that described TPACK integration among pre-service teachers, finally 12 articles described the involvement of TPACK among TESL or EFL pre-service teachers.

Limitation of Study

This review was limited in scope of TPACK; technology integration; pre-service teachers, TESL/EFL pre-service teachers.

REVIEW OF LITERATURE

TPACK

Technological Pedagogical Content Knowledge (TPACK) is a theoretical framework, needed by teachers to interpret and understand the main purpose of the use of technology in the teaching strategies. The structure consists the integration, three domains of knowledge known as technology, pedagogy and content (Mishra & Koehler, 2006). Towards its establishment the acronym of TPCK

improved into TPACK to make it easier to remember and to establish integration between the three types of learning (Thomson & Mishra, 2007-2008).

TPACK is originally adopted from Schulman's construction of the PCK by incorporating technological knowledge that is placed along with the content knowledge and pedagogy. TPACK highlights the comprehension of teachers dealing with technologies that act as the knowledge of didactic tool (see Figure 1).

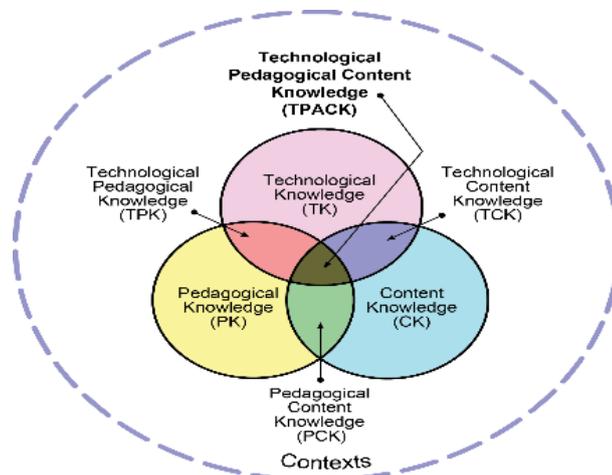


Figure 1. TPACK Framework (Mishra & Koehler, 2006).

Essentially, the knowledge interaction between three main segments, forming seven sub-segments of knowledge. They are known as Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK) and Technological Pedagogical Content Knowledge (TPCK).

TPACK in Teacher Education Program

The principal key in reaching the current generation of media savvy are teachers and pre service teachers (Raulston & Wright, 2012). Consequently, their commitment is vital. Teacher should have a creative mind, look at educational technology positively and be prepared constructing new ideas and experience. Mishra and Koehler (2007) describe TPACK as enabling pre service teachers to cultivate their apprehension on selecting the suitable technology approach in teaching. The combination of the three main segments and the interactions between them can strengthen on the application of TPACK structure. According to Olofsson, *et al.* (2011) teachers play a pivotal role in the acceptance and use of technology in classrooms.

Generally, pre-service teachers seem to have a basic comprehension of technology knowledge, at best enough to use it, but are not as capable of combining that knowledge with pedagogical practices (Byker, 2010). In addressing how teacher preparation programs develop the young future teachers in integrating technology successfully, Golas (2010) explains that teacher preparation programs should focus to impart the use of technology throughout its program in order to have the greatest impact on the teachers' future students learning. Supporting the utilization of elements of the TPACK framework in developing pre-service teachers' capability to integrate technology in the 21st century classroom, Lambert and Gong (2010) suggest pre-service teachers need training in how to connect the skills in teaching (PK), content (CK), and technology (TK).

FINDINGS OF THE REVIEW

The papers focussed on TPACK among TESL or ESL pre-service teachers and have been reviewed and identified into several aspects such as the integration of TPACK, implementation of TPACK and assessment related to TPACK among ESL/EFL pre-service teachers (2011-2016). The research methods include 4 categories which are Survey studies, Case studies, Model Development and Instrument Development and Validation. The summary of the reviewed papers is provided in Table 1

Table 1. Summary of reviewed research papers (TPACK among TESL/EFL pre-service teachers).

References	Research Method	Research Approach	Research Title
Kurt, <i>et al.</i> (2014)	Survey observation	Mixed	TPACK in practice: A qualitative study on technology integrated Lesson planning and implementation of Turkish pre-service teachers of English
Muniandy and Veloo (2011)	Survey	Quantitative	Managing and Utilizing Online Video Clips for Teaching English Language: Views of TESOL Pre Service Teachers.
Liu, <i>et al.</i> (2014)	Concept Paper	Concept Paper	TPACK: A New Dimension to EFL Teachers' PCK
Yuen Fook, <i>et al.</i> (2011)	Survey	Quantitative	Pre-Service Teachers' Training In Information Communication And Technology For The ESL Classrooms In Malaysia
Öz (2015)	Questionnaire	Mixed	Assessing Pre-service English as a Foreign Language Teachers' Technological Pedagogical Content Knowledge
Tai (2013)	Survey	Mixed	From TPACK-in-action workshops to English classrooms: CALL competencies developed and adopted into classroom teaching
Easter (2012)	Document Analysis Observation interview	Qualitative	Preparing pre service teachers technology and literacy
Koh and Divaharan (2011)	ICT Instructional Model	Qualitative	Developing Pre-Service Teachers' Technology Integration Expertise Through the TPACK Developing Instructional Model
Sahin (2011)	Instrument Development and Validation -Survey	Quantitative	Development of Survey of Technological Pedagogical and Content Knowledge (TPACK)
Kurt, <i>et al.</i> (2013)	Survey	Quantitative	Technological Pedagogical Content Knowledge Development of Turkish Pre-service Teachers of English
Charbonneau-Gowdy (2015)	Case Study	Qualitative	It Takes a Community to Develop a Teacher: Testing a New Teacher Education Model for Promoting ICT in Classroom Teaching Practices in Chile
Ersanli (2016)	Survey Journal Entries	Mixed	Improving Technological Pedagogical Content Knowledge (TPACK) of Pre-Service English Language Teachers

Survey Studies

A total of 4 survey studies has been conducted on ESL/EFL pre-service teachers mainly on the development and implementation of TPACK. A study by Yuen Fook, *et al.* (2011) investigated the ESL pre-service teachers' attitude, competency and preparation of ICT integration. The study involved 70 TESL pre-service teachers who have completed their teaching practice. The result concluded that these pre-service teachers were positive in integrating ICT in the teaching activities. The study suggested teachers should be wise to ICT use in the classroom.

Furthermore, Tai (2013) conducted a study "From TPACK-in-action workshops to English classrooms: CALL competencies developed and adopted into classroom teaching". The study investigated on the impact of CALL workshop by using TPACK as a framework. The findings showed that TPACK-in-Action CALL workshops had a great impact on their teaching strategies in an English language class.

In addition, a study by Kurt, *et al.* (2013) reported a survey on Technological Pedagogical Content Knowledge Development of Turkish Pre-service Teachers of English. The result showed that there was a statistically significant increase in TK, TCK, TPK and TPACK scores of PTs of English from the beginning to the end of the study. Concurrently, Ersanli (2016) has also explored on Improving Technological Pedagogical Content Knowledge (TPACK) of Pre-Service English Language Teachers. The study involved 59 pre-service English language teachers enrolled in an ELT Methodology Course at a state university in Turkey. The findings of the study showed a significant improvement in language learning and teaching materials. Oz (2015) also examined the model of TPACK for EFL pre-service teachers' level of TPACK development and explored the combination of content, technology,

teaching practices for quality classroom lessons. On the other hand, a survey on self-assessment was developed by Baser, *et al.* (2015). The survey reviewed on the development and validation of an instrument to provide an assessment tool for pre-service foreign language teachers that addresses subject-specific pedagogies and technologies.

As for Muniandy and Veloo (2011) a questionnaire on the applicability of the video clips was developed and disseminated to 33 TESOL pre service teachers at university in West Malaysia. The result shows that pre service teachers highly accept the use of online video clips and they have a very strong attitude and readiness to use online video clips in their future teaching. The use of TPACK as a theoretical framework assists in technology integration among the pre-service teachers.

Case Studies

There are three case studies conducted for ESL/EFL pre-service teachers. The first case study has been conducted by Kurt, *et al.* (2014). The case study is about TPACK in practice: A qualitative study of technology integrated Lesson planning and implementation of Turkish pre-service teachers of English. The findings showed pre-service teachers considered the relationship between content, pedagogy and technology aspect during lesson planning and implementation. Another case study by Easter (2012). The case study reviewed how a teacher education program uses the TPACK framework when technology has been guided to pre-service teachers. The findings of this study revealed TPACK Framework act as a guide with recommendations on promoting technology literacy in pre-service teachers. On the other hand, a case study in Chile- It Takes a Community to Develop a Teacher: Testing a New Teacher Education Model for Promoting ICT in Classroom Teaching Practices in Chile by Charbonneau-Gowdy (2015) examined the best practice in teacher education program in using technology model and promoting best practices in their classroom. The findings suggested pre-service teachers need the support and involvement of larger teacher education program community as for them to integrate successful technology integration in the classroom.

Model Development

There is one study employs model development method by Koh and Divaharan (2011). The model further explained an instructional procedure for preparing pre-service teachers' Technological Pedagogical Content Knowledge (TPACK) during the instruction of Information and Communication Technology (ICT) tools. It explored three phases for developing teachers' TPACK through ICT instruction. The stages were: fostering teachers' acceptance and technical proficiency; pedagogical modelling; and pedagogical application. The findings suggested that more emphasis on field-focused-pedagogical modelling, product review, and peer sharing for the betterment of TPACK.

Instrument Development and Validation

There is only one paper reviewed on instrument development and validation. Sahin (2011) has carried out a research on Development of Survey of Technological Pedagogical and Content Knowledge (TPACK) The survey involves of seven subscales forming the TPACK model: 1) technology knowledge (TK), 2) pedagogy knowledge (PK), 3) content knowledge (CK), 4) technological pedagogical knowledge (TPK), 5) technological content knowledge (TCK), 6) pedagogical content knowledge (PCK), and 7) TPACK. The results reported the TPACK survey is a valid and reliable measure.

Discussion

TPACK presented by Mishra and Koehler is known as a theoretical framework, which can be used by teachers and pre-service teachers in integrating technology in their teaching. Teacher's knowledge regarding technology should be varied and the combination of technology, pedagogy, and content in the classroom should be fully optimized between one and another. Researchers recommend integrating TPACK across the teacher education institution's curriculum, and support pre-service teachers with the possibility to experience ICT that can support teaching within specific content areas (Voogt, *et al.*, 2013).

From the literature review, the studies provide a better understanding of how TPACK is integrated (using and managing technology with pedagogical approach and content knowledge) among TESL or EFL pre-service teachers at the certain countries which English Language is second or

foreign language in the countries. However, there is still a lack of further research on TPACK being conducted among TESL pre-service teachers in Malaysia and Asian countries. Therefore, a study should be carried out to address this issue.

CONCLUSION

The TPACK curriculum framework will enable pre service teachers to have a better chance to think and respond critically on the subject matter in an active way. This builds the self-esteem that will improve the way of expressing their teaching clearly and systematically and prepare them to use technology effectively. Through this review, it provides suggestions on for the betterment TPACK Curriculum syllabus for pre–service teachers, and ways in which we can plan innovative learning that effectively integrates technology in English Language Teaching. It also serves as an exploration of approaches for pre service teachers, educators or education policy makers on encouraging and improving technology integration of 21st century learning in Teacher Education Program. A further study on strengthening the syllabus in teacher education programs for ESL pre-service teachers is suggested.

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