

EXPLORING THE IMPLEMENTATION OF TECHNOLOGICAL PEDAGOGICAL AND CONTENT KNOWLEDGE (TPACK) IN TEACHING ENGLISH AT SENIOR HIGH SCHOOL

Fidya Rahayu Apriyani^{1*}, Eva Fitriani Syarifah², Afieff Fakhruddin

¹ English Department, Universitas Majalengka, Majalengka, Indonesia

² English Department, Universitas Majalengka, Majalengka, Indonesia

3 English Department, Universitas Majalengka, Majalengka, Indonesia

*Authors: fidyarahayuapriyani04@gmail.com evafitrianisyarifah@unma.ac.id

afieffakhruddin@unma.ac.id

ABSTRACT

TPACK means teacher's ability to facilitate students. A good learning process needs complex understanding that correlates three knowledge resources; technology, pedagogy and content. From TPACK, we know that teachers knowledge about how to facilitate students learning from certain content by pedagogy and technology approach. This research aims to explain the implementation of TPACK in teaching English at senior high school and to explain the obstacle experienced by English teacher in implementing TPACK in teaching English at senior high school. This research was conducted in one of the senior high school. This research used a case study with a qualitative method. Sample in this research is one English teacher. The process collecting data is done through observation, interview and questionnaire. The research results show the implementation of TPACK in teaching English in senior high school can be categorized as good in implemented TPACK based on sixth component, Technological Knowledge, Pedagogical Knowledge, Content Knowledge, Technological Pedagogical Knowledge, Technological Content Knowledge, Pedagogical Content Knowledge and Technological Pedagogical and Content Knowledge of TPACK. The obstacle faced by the English teacher in implementing TPACK in learning process, teacher was poor in one component Technological Knowledge such as lack of IT literacy. Based on the research, researcher it can be conclude that in implementation of TPACK in teaching English it was found that there were still several part of TPACK component that had not been implemented properly in classroom learning. The researcher suggested that this research can be a guideline for other researchers in conducting research on TPACK. Other researchers can also explore teachers obstacle in teaching English based on the TPACK framework.

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INTRODUCTION

TPACK could help the teachers to explore their knowledge regarding the technologies which are appropriate for addressing the subject matter and the pedagogy. Kim (2018) states that the use of TPACK improved the effectiveness and caliber of the teaching and learning process. It is a common observation that a number of instructional versions lack variety. Students were disinterested in the class because of the repetitive teaching style used in every meeting. For this reason, it is important that technology be used in the teaching process currently.

The integration of technology gives students the chance to learn and comprehend the subject matter in a more accessible way in the classroom. The key is that technology can indirectly improve the quality of the teaching and learning process if it is integrated with content and the pedagogical expertise of the teachers. Related to this problem, the integration of Technological Pedagogical and Content Knowledge (TPACK) in teaching English is very important and needed in nowdays the classroom.

In digital era, teachers not only need to master pedagogy and content but also need to integrate with technology. The problem faced in teaching English are the teachers only mastering pedagogical (Atai & Shafiee, 2017) or content knowledge (Ashrafzadeh et al., 2015). In addition, there are also who have implemented both pedagogical and content knowledge (Al Jaro et al., 2017). However, the reality shows that there are still many teachers who have not used and integrate technology in the learning process in the classroom. Teachers are still preoccupied on classical or conventional learning in delivering learning material, as if they are less willing to get out of comfort zones that demand to continue to innovate and update information. Therefore, the latest learning issues and trends state that a teacher must have competence on Technological Pedagogical and Content Knowledge (TPACK).

The researcher compiles various previous studies to enhance the uniqueness of the current research. Saricoban et al (2019) about TPACK assessment with pre-service EFL teachers as the research subject. This study aimed to measure TPACK levels in pre-service EFL teachers used a survey method in quantitative study. Another study by Yudi et al. (2016) which examined the in-service education procedures of Indonesian EFL teachers. The goal of this study is to determine how a TPACK-oriented teaching practice course might assist Indonesian EFL teachers in improving the level of their EFL lesson plans and activities. Twenty high school teachers from various regions of the province of East Java were present. Aniq and Drajati (2019) conducted study about how EFL teachers understand the seven domains on the TPACK platform and how they see their own TPACK development. a case study was utilized in this research. Twenty EFL teachers participated in semi-structured online interviews to provide information.

Some of the previous studies mentioned above focused on other variables, such as teachers perception of TPACK components and only on TPACK implementation. In this study, the researcher focused on the implementation of TPACK in teaching English at senior high school and the obstacle experienced by teacher in implementing TPACK. The study aimed to explain how does implement TPACK in teaching English and what obstacle teacher faced in implementing TPACK. The researcher are interested in conducting research with the following questions 1) How is the Technological Pedagogical and Content Knowledge (TPACK) implemented in teaching English at senior high school. 2) What are the obstacles experienced by English teacher in implementing TPACK.

METHODS

This study employs a case study as research design. According to Orum (2015), A case study select very limited number of individual as the subject of study, uses in depth investigation and is linked to the theoretical framework. It can be seen by the number of subject in this research was very limited one English teacher. This research provide descriptive data, so the findings cannot be represented by numbers or statistics. The researcher using observation, interview and questionnaire as instruments to collect data regarding how TPACK implement in teaching English at senior high school and the obstacle experienced by English teacher.

This research was conduct at one of senior high school in Cirebon. The subjects in this research is an English teacher. The researcher chose an English teacher who teach in 10th grade. The researcher chose to focus on one teacher because this approach allows for very detailed and depth data collection.

RESULTS AND DISCUSSION

The Result of Observation

Researcher conducted observations with two classes at one of the high schools in Cirebon. Researchers want to know the implementation of Technological Pedagogical and Content Knowledge (TPACK) and the obstacles experienced by teachers in teaching English.

The results of the observation are as follows:

a. Technological Knowledge (TK)

Technological Knowledge (TK) is knowledge dealing with the ways to implement and use technology. Researcher found some data from the implementation of TPACK in terms of technological knowledge (TK) based on observation researcher found result that teacher has good in TK. Teacher

already has adequate technological devices for the subject they teach. During learning, teachers use adequate technology such as LCD projectors to view learning videos from YouTube and powerpoint presentations, use laptops and handphone to improve learning strategies. Teachers also use learning applications such as Google Classroom to send assignments, use Kahoot and Quizizz applications at the end of learning as a form of student evaluation.

b. Content Knowledge (CK)

Researcher found the results that during class the teacher was good at mastering and delivering material about the present continuous tense. Teachers can present examples of present continuous tense sentences in a fun way such as by using songs and giving games to students. So that students make more easily understand the content presented. Teacher in the classroom was able to master the content in accordance with what was taught. Teacher not only master the content but also have the ability to the suitability of the content. In this component, teacher are required to be professional in mastering the content because content knowledge is the competency that most determines success in teaching and learning process. Teacher was good in implemented content knowledge in the classroom.

c. Pedagogical knowledge (PK)

In this component, researcher found the results that teachers can start the good teaching and learning process. However, teacher also have mastered and can use the right strategies in teaching. With the teacher knowing the right approach such as using songs, so that students easily practice directly in accordance with the material about the present continuous tense. It can be concluded that in the content knowledge component the teacher is good at mastering the material and is able to provide material that is in accordance with is taught during learning.

d. Technological Content Knowledge (TCK)

In this Technological content knowledge component, the researcher has result that teacher have a good understanding of integrate technology with appropriate content during the teaching and learning. In this component teacher has good in implemented technological content knowledge, seen from the way teacher involve technology in the content during the teaching and learning process. Teacher have also been to choose the most suitable technology tools for the subject matter. For example, during the teaching and learning process teacher to choose learn using projectors and laptop to provide an understanding of present continuous tense through video on YouTube.

e. Technological Pedagogical Knowledge (TPK)

Technological Pedagogical Knowledge (TPK) From the results of observations that researcher found that teachers were able to use various technologies in learning, for example using laptops, handphones, LCD projectors. However, teachers also adapt to the needs of not all material related to technology. However, during the observations, researchers found that the teacher has mastered various technologies in the classroom for learning well and the teacher was also able to link technology with various learning applications, for example Kahoot and Canva.

f. Pedagogical Content Knowledge (PCK)

In component Pedagogical Content Knowledge, it was found that PCK is well implemented in the teacher teaching in the classroom. This can be seen from how teacher combine a method with a particular topic to improve students abilities. The teacher may choose game and song to persuade passive and anxious students. Teacher applies this active learning approach to improve students pronunciation, speaking skills and brainstorms by asking questions about students daily activities related to the topic through song. In between activities, the teacher asks students what they do at home. This stimulates students to talk and share their experiences.

g. Technological Pedagogical and Content Knowledge (TPACK)

Technological Pedagogical and Content Knowledge (TPACK) is the seventh knowledge domain. The finding of observation with the final elements of technological pedagogy and content knowledge (TPACK). Studies revealed that most teachers' TPACK proficiency was adequate. It demonstrated how an English teacher may implement the following seven TPACK components: pedagogical content knowledge,

pedagogical knowledge, content knowledge, pedagogical content knowledge, technological content knowledge, and pedagogical and content knowledge.

The English teacher were competent in delivering lessons that effectively integrated technology, subject matter, and pedagogical approaches. Some of them recognized that they use supportive technologies based on the TPACK framework, such as the Quizzizz application, to teach content in a suitable way. Others, however, teach content using technology to make it show more amazing to students, but they are unaware of the term for example, they use Google Classroom to evaluate students' weekly assignments.

The Result of Interview

The researcher conducted an interview with the English Teacher as the participant of the research. The researcher posed several question related to the findings from the observation.

1. Do you think there is a need to integrate technology into your teaching? (TK)

The researcher seeks to understand Teacher opinion on the importance of technology integration in teaching. Teacher responds based on their knowledge and experience.

Teacher said :

"The use technology in learning at this time is very important to support learning especially I teach in gen Z era. So, Technological Knowledge is needed for teacher. I usually use LCD projectors, laptop and handphone in teaching English. But not only that I also use supporting application such as Kahoot, and Quizziz And when students carry out the test, this school have application it self their name is EXAMORA".

Based on the teacher answer, it can be concluded that the teacher has implemented in integrating the technology in teaching and learning process in the classroom. By using technology that is tailored to the needs of the material to be taught to students, teachers can provide effective learning. the technology used by teachers varies by adjusting the material to be taught. for example, teachers use LCD projector technology and laptops as a technology.

2. What are the keyword in defining English Pedagogy? (PK)

The researcher wanted to understand teacher opinion on defining English pedagogy. Teacher responded based on opinion.

Teacher said :

"The keyword than defined pedagogy in teaching English is our understanding or ability in the subject or it can also be called our professionalism in developing the materials. And also the key defined pedagogy is effective learning."

Based on Teacher respon, it can be concluded that Teacher explain Pedagogical Knowledge is one of the most important things in teaching English. The result found were that the teacher explain that the key word of pedagogy in teaching English is the professionalism of a teacher towards delivering appropriate content during teaching and learning. Content and pedagogy choices can also provide affective learning. At this point, the teacher has good combined pedagogical aspects with content in teaching by selecting content that is appropriate to the material to be taught.

3. What types of knowledge and skills are required for the subject matter? (CK)

The researcher wanted to know teacher understanding of what types of knowledge and skills are needed for the subject matter. Teacher responded based on their experience and opinion.

Teacher said :

"I think content knowledge and skills need for the subject matter is that students can develop skills with a lot of practice especially in English. With the method in teaching English focused on students centered. Students should be communicative in English so that they can easy with the subject matter".

Based on Teacher respons, it can be conclude Teacher show that they develop content through student centered learning. Students are not only given theoretical understanding but also with practice, especially in communication.. In order for students to easily understand the material that teachers present, they must be able to communicate in English. According to the previous interview, English teachers are able to arrange objects by giving it and breaking it down into easily understood categories or components

utilizing a range of references. This indicates that the instructor have strong understanding of the topic. However, this should be continued and improved by the teacher.

4. Can you prepare your students for the effective use of technology for English learning? If so, how? (TPK)

The researcher wanted to know how teacher prepare their students for the effective use of technology in language learning. The teacher responses.

Teacher said :

"Yes, I can prepare students to use, technology effectively in language learning especially in English. First introduce what kind of technology so, that students can easy to understand what we want to use".

Based on the teacher's response, it can be concluded that teacher can implemented technology to students by first introducing the technology that will be used. So the students will find it easier to use technology. Teachers can properly integrate technology and pedagogy in accordance with the material to be taught.

5. Can you teach English effectively without using technology to help students learn in the language? (PCK)

The researcher wanted to know how teacher can provide effective learning without using technology to help students learn the language. Teacher respond based on experience.

Teacher said :

"of course, teaching must be flexible. In teaching we must be able to adjust to what is in the classroom. Must be able to the needs and condition of student in the learning process. Teacher must be able in all aspects when faced with technology should provide effective teaching as well as doesn't use technology we must be able to provide learning too".

From the teacher response, it can be conclude that the teacher can provide learning according to needs. Whether using technology or not, teachers must still be able to provide effective learning to students in teaching English.

6. What is your understanding of Technological Pedagogical and Content Knowledge? (TPACK)

The researcher aims to search deeper into teacher understanding about TPACK.

Teacher said :

"TPACK is an approach that collaborates between the use of technology in the teaching process and teachers professionalism in pedagogical aspects. TPACK is important for teacher to integrate technology, choose the content with appropriate strategies and method in teaching English. TPACK can make a efficient and effective learning."

Based on the teacher answers, it can be concluded that the teacher has a good understanding of TPACK itself. Referring to the teacher answer, TPACK is important for teachers, not only integrating technology, but teachers are also required to understand pedagogy and choose content that is appropriate to learning. TPACK is the best solution for teachers to create effective learning. Based on the result, Teacher can implemented TPACK according to the 3 components of TPACK itself, namely technology, pedagogy and content.

The Result of Questionnaire

In addition to data from observations and interviews, researcher also used questionnaires to collect data. Researcher, gave questionnaires to English teacher to find out the implementation of TPACK in English language teaching and also the obstacle experienced by teacher during the implementation of TPACK. Researcher found the results of the questionnaire that teacher have good in implemented TPACK. Researcher gave questionnaires to teachers with several questions containing how the implementation of TPACK and also the obstacles faced by teacher in implementing TPACK. Based on answers referring to the questionnaire question "Why do teachers need to master the TPACK approach?" the teacher responded that because nowadays, technology is one of the tools to support make learning easier. from the explanation above, it can be concluded that the teacher has mastered and understand the good implementation of TPACK. Researcher also found the results that refer to the questionnaire question "What

are the best steps for implementing TPACK in teaching English?". Teacher responded that the best step in implementing TPACK is to pay attention to 3 components in learning, choose the good of methods, strategies and learning media. The third component is the right thing to do in taking good steps for teaching. Based on teacher responses it can be conclude, that teachers have been able to implement TPACK with good steps by fulfilling each of the 3 components themselves.

The researcher also asked questions about the obstacles teachers face integration technology in teaching English with the question "What are the obstacles teachers face when integrating technology in the classroom?". The teacher responded that sometimes the obstacles teachers face in implementing technology are limited student internet quota and also inadequate student gadgets. Sometimes teachers are still not optimal in mastering technology in learning. because using technology that is not optimal will wasting time and make the learning process ineffective.

From the explanation above, it can be concluded that the results of the questionnaire show that teacher are good at implementing technology in the classroom. However, teachers still encounter several obstacles when learning in class. Teachers feel they lack knowledge about IT literacy so teachers still need to take a lot of training on technology so that they have more knowledge about technology which can produce more effective learning. From the results of the teacher questionnaire, it was also stated that the obstacles experienced by teachers when integrating technology included inadequate student internet quotas, student handphones that were not supported and also some existing facilities that could not be used.

Discussion

Based on the results of observations, interview and questionnaire, researcher identified teacher have good in implemented technological knowledge (TK) in using technology effectively. According to Koehler et al, (2014), the ability to use technology effectively is the important component of TK. Teacher believe that they can understand the use of technology however, sometimes they encounter obstacles when applying technology. teachers doesn't know how to overcome difficulties related to technology or applications tools because they lack IT literacy.

According to Koehler et al, (2014) second component of Technological Knowledge is the role of teachers in staying current with developments in technology. It was shown that teachers already make use of learning tools like Kahoot and Google Classroom. Not only do they utilize these tools to help them carry out lessons, but they also frequently use other tools like quizzes to assess students' understanding. Teachers therefore cannot fulfill the demands of TK. In terms of the second aspect of the TPACK, Content knowledge (CK), shows that English teacher can elaborate with content by providing material and combine it into components that are easy to understand by using a variety of references. This refers that teacher have an good in content knowledge aspect. teachers have understand the learning concepts, methods and theories as well as the application of the subject matter as the first component of CK Koehler, (2014), They enhanced the lesson's theme by presenting relevant and accurate facts, such as images or YouTube videos, that are related to the subject being covered at the time. Furthermore, in the second component of CK, namely providing information relevant to the topic taught, teachers have shown a good level. Teachers use resources from the internet to gather relevant data about the subject for the students' references. In order to review the material, the teacher also assigns homework to the students in the form of separate assignments that are completed online using Google Classroom and turned in at the conclusion of each session. The last, the teacher always asks the class questions regarding the previous meeting's material before the class begins. The researcher demonstrated the teacher's strong CK level mastery. The teacher should, however, continue to expand on and enhance their material expertise.

Teacher have good knowledge in the form of pedagogical knowledge aspects. Pedagogical knowledge is the third component of TPACK based on Mirsha & Koehler (2014). Teachers have implemented pedagogical knowledge well without any problems because teachers can provide learning in accordance with pedagogical knowledge. During the class, teachers provide learning content by using pedagogical knowledge skills through the YouTube application such as offering a place of interaction for students to ask questions, allowing students to ask questions directly and ask questions in the classroom.

In the TPACK (Technological Pedagogical Content Knowledge) implementation, shows that English teacher define that TPACK is knowledge of how to integrate technology to apply teaching methods to various forms of subject matter (Mirsha & Koehler, 2014). The results showed that the teacher has a good level in terms of TPACK. The teacher informed that they shared the link of YouTube Video through google classroom for her students so that the students can study the material on their phones. The teacher can delivered the topic by using slide presentation using LCD projectors students can watch the video together with other students.

The obstacle experienced by English teacher this study indicate that the use of technology in the classroom, particularly in English language classes, has a positive effect on both the learning process and the students engaged in senior high school (Costley, 2014; Lubis, 2018). Despite this, teacher face a number of obstacles, including the need to be IT literate, technical problems with internet connections, time constraints, and the problem of coming up with relevant tasks. These kinds of obstacles are typical to the teaching and learning process. Here is where teachers need to take consideration the TPACK framework, which supports them in managing technology integration in the classroom (Kurt, 2018).

CONCLUSION

The researcher found that TPACK framework was implemented in teaching English. There were seven domains of TPACK that were found in teaching English. In TK domain, English teacher knew the various technologies and the features. They also could keep up the technological development. However, teacher have obstacles in several parts in implementation of technological knowledge. In PK domain, the English teacher have designed the lesson plan for their teaching, chose the appropriate teaching methods, designed the classroom as students-centered, and gave motivation and feedback to students. In CK domain, the English teacher has sufficient knowledge about the material that would be taught. English teacher also could teach integrated English language skills.

In TPK domain, the English teacher could choose the various technologies with the suitable teaching method. The English teacher prepared the subject matter using various technologies in the TCK domain. The English teacher also used the technologies to introduce students about foreign cultures. In PCK domain, the two English teachers could teach English without technology, but the English teachers should be creative in choosing the appropriate pedagogy integrated with the subject matter.

In the TPACK domain, teacher have met the TPACK indicators. Both cases have integrated technology, pedagogy and content. Teacher have own way of teaching English based on the TPACK framework. Therefore, teachers can develop TPACK based on their desire and of course, based on the result students' needs learning objectives.

Based on the research findings, the researcher suggested that this research can be a guideline for other researchers in conducting research on TPACK. Other researchers can also explore teachers obstacle in teaching English based on the TPACK framework.

REFERENCES

Al-Azzemy, A. F.-J. (2019). Evaluating Cognitive, Metacognitive and Social Listening Comprehension Teaching Strategies in Kuwaiti Classrooms. . *Heliyon*, 5(2), 1–16. <https://doi.org/10.1016/j.heliyon.2019.e01264>.

Alhababi, H. H. (2017). Technological Pedagogical Content Knowledge (TPACK) Effectiveness on English Teachers and Students in Saudi ArabiaDissertation: . University of Northern Colorado, Retrieved from <https://digscholarship.unco.edu/dissertations/456/>.

Al-Jaro, M. S. (2017). Content Analysis of the Pedagogical Content Knowledge inthe Curriculum of Yemeni EFL Teacher Education Programme. . *Arab World*

English Journal, 8(1), 264–279. <https://doi.org/10.24093/awej/vol8no1.19>.

Aniq, L. N. (2019). Investigating EFL teachers' perceptions on their TPACK development: how EFL teachers view seven domains on TPACK framework. *Leksika: Jurnal Bahasa, Sastra dan Pengajarannya, 13(2), 95-101.*

Ashrafzadeh, A. D. (2015). The Effect of Familiarity with Content Knowledge on Iranian Medical Students' Performance in Reading Comprehension Texts: A Comparative Study of Medical and TEFL Students. *Journal of Language Teaching and Research, 6(3), 524–534. <https://doi.org/10.17507/jltr.0603.07>.*

Atai, M. R. (2017). Pedagogical Knowledge Base Underlying EFL Teachers' Provision of Oral Corrective Feedback in Grammar Instruction. *Teacher Development, 21(4), 580–596. <https://doi.org/10.1080/13664530.2016.1277257>.*

Costley, K. (2014). The positive Effects of Technology on Teaching and Students Learning. *Telematics and Informatics, 119(1), 27-40. <https://doi.org/10.1177/1742766510373715>.*

Creswell, J. W. (2018). Research Design Qualitative,. *Los Angeles: Sage Publications.*

Gill, L. &. (2017). A Qualitative Analysis of Pre-service Primary School Teachers' TPACK Development Over The Four Years of Their Teacher Preparation Programme. *Technology, Pedagogy and Education, 26(4), 1–18. <https://doi.org/10.1080/1475939X.2017.1287124>.*

Golonka, E. M. (2014). Technologies for Foreign Language Learning: A Review of Technology Types and Their Effectiveness. *Computer Assisted Language Learning, 27(1), 70–105. <https://doi.org/10.1080/09588221.2012.70031>*

Himmelsbach, V. (2019). Technology in the Classroom in 2019 : 6 Pros & Cons The pros : Retrieved July 17, 2019,. *from https://topchat.com/blog/6-pros-cons-technology-classroom/%0ATechnology*.

Hoài, P. T. (2021). The Application of Quizizz Games on Students' Mobile Phones in English Classrooms at Van Lang University. *Ho Chi Minh City University of Education Journal of Science, 18(3), 442–452. [https://doi.org/10.54607/hcmue.js.18.3.2844\(2021\)](https://doi.org/10.54607/hcmue.js.18.3.2844(2021))*

Koehler, M. J. (2014). Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers. *Journal of Research on Technology in Education, 42(2), 123.*

Koehler, M. J. (2016). Support for Technology Integration: Implications from and for the TPACK Framework. *In Handbook of Technological Pedagogical Content Knowledge (TPACK) for Educators: Second Edition. <https://doi.org/10.4324/9781315771328>*

Kurt, G. A. (2014). TPACK in practice: A qualitative study on technology integrated lesson planning and implementation of Turkish pre- service teachers of English. . *ELT Research Journal*, 3(3), 153–166. <https://dergipark.org.tr/en/pub/eltrj/issue/5483/74461>.

Lin, H. &. (2020). Improving Strategies for Information-Based Educational and Teaching Abilities of Newly Appointed College Teachers Using the TPACK Hierarchical Model. . *International Journal of Emerging Technologies in Learning*, 15(14), 220–235. <https://doi.org/10.3991/ijet.v15i14.15307>

Niess, M. L. (2015). Transforming Teachers‘ Knowledge: Learning Trajectories for Adancing Teacher Education for Teaching with Technology. In *Technological Pedagogical Content Knowledge: Exploring, Developing, and Assessing TPCK* (pp. 1–331). Boston: Springer. <https://doi.org/10.1007/978-1-4899-8080-9>.

Ramorola, M. Z. (2014). Challenge of effective technology integration into teaching learning. *Africa Education Review*, 10(4), 654–670. <https://doi.org/10.1080/18146627.2013.853559>.

Sarıçoban, A. T. (2019). A Technological Pedagogical Content Knowledge (TPACK) Assessment of Preservice EFL Teachers Learning to Teach English as a Foreign Language. . *Journal of Language and Linguistic Studies*, 15(3), 1122–1138.

Taopan L.L, D. N. (2019). Discovering the teachers beliefs in TPACK framework for teaching English in high school. *Indonesian Journal of Informatics Education*, 3(1).