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Article

Technological Pedagogical and Content Knowledge (TPACK) of In-Service English Teachers in Pati, Central Java, Indonesia

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ABSTRACT:

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This study looks at the Technological Pedagogical Content Knowledge (TPACK) of Pati's higher school English teachers. This study will scrutinize how in-service teachers construct and use TPACK in their classrooms. The data were collected from 10 English teachers in Pati who were chosen using simple random selection. The questionnaires consist of 45 items designed to assess in-service English teachers' self-assessment of the seven TPACK subdomains. The TPACK of Pati's higher school English instructors was at the 'high' level. It means that the teachers were quite successful in developing and implementing their TPACK. Nevertheless, the integration of all TPACK frames still needs to be enhanced.

Key words: English Teachers, TPACK

INTRODUCTION

The Indonesian government has been steadfastly striving for more than seven decades to establish a standard method of teaching English language that may help students fulfill the needs of economic, scientific, and technological changes (Chu & Seltzer, 2010). The primary goal of this adjustment is to raise the standard of the school's teaching-learning process and instructional design (Pajarwati et al., 2021). The Indonesian government has made various attempts to raise the level of English proficiency among instructors and students. (Prasetya et al., 2022)(Poedjiastutie et al., 2018). (Rini & Mansur, 2019) also states the Indonesian government has made a variety of efforts to improve education quality and respond to the global challenge of the twenty-first-century era, in which people are expected to have a variety of skills to help them function in many societal elements. Since it comprises the approaches, methods, techniques, and activities used to teach the language as well as the content and is based on a policy, curriculum design and evaluation, as a part of the development process, are at the core of English teaching and other topics

Every teacher aspires to become a professional teacher through a series of hard work that will be recognized by people both implicitly and explicitly (Malihah,

2017). Previously, To be a competent teacher, one just needed to be proficient in both topic and pedagogy. The instructor was thought to be able to instruct pupils effectively with these two qualities, instructors should presently include technical competence in their repertoire of masteries. Digital media integration, then, goes beyond conventional lesson preparation or even instructional design frameworks

In today's education system, the instructional activity must use technology as a formal principle recognized by the state to live in today's condition of the post Covid-19 pandemic (Hartati et al., 2019). (Mustikasari, 2016) stated, "Teacher is the center of attraction in the classroom since he plays an important role in the classroom." Teachers are expected to be able to integrate such competencies into their teaching needs.

The present research (Öz, 2015) proposed that creating a technologically advanced environment for language learners and integrating content, pedagogy, and technology expertise into the current teacher education paradigm will improve the quality of learning and teaching for pre-service teachers. (Jaipal-jamani & Figg, 2015) researched how three middle school science teachers gained knowledge about how to teach with technology while planning and implementing a science blog activity over four weeks. Moreover, (Septiyanti, 2020) investigated the perception of TPACK among English Education students at universities, how students obtain TPACK in learning, and the role of lecturers in assisting students in obtaining TPACK in learning.

Because most teachers are still unconcerned about the importance of technology in education, this issue has become a source of contention. Teachers must prepare at the nexus of curricular requirements, students' learning needs, and educational technology in order to effectively integrate them into lessons. the affordances and restrictions of existing technologies, and the reality of school and classroom situations.

There is a dearth of study on how Pati in-service teachers build and use TPACK when instructing upper-level students, particularly in rural settings. Therefore, in order to add to the body of knowledge about TPACK and alter existing research, the researchers performed a study concerning technological pedagogical and content knowledge (TPACK) based on the development and implementation of the instructors in Pati.

The researchers want to concentrate on addressing the following questions in light of the scientific background previously described: How do Pati's in-service teachers create and use TPACK in their lessons? In order to address the research questions based on the aforementioned issues, this study is being carried out. The following are the study's goals: To discuss the development and implementation of TPACK by in-service teachers in Pati.

In the TPACK framework, selecting and organizing the right sorts of learning activities is essential because here is where technology is used (Bugueo, 2013). Additionally, TPACK acknowledges the importance of context, and solutions demand complex comprehension that goes beyond the fundamental concepts of content, technology, and pedagogy. Excellent technology, pedagogy, and knowledge will help and provide a thorough learning process when this learning approach is used. (Drajati et al., 2018).

The researchers hopes that the findings of this study will provide information about the meaningful description of the teachers' development and application of TPACK in their teaching. This study is beneficial in the following ways: The English teaching-learning fields of literature deal with the instructional process. The study's findings can enrich the design of the teaching activity. The findings of the study can inspire the teachers how to manage the current situation properly. The findings of this

study improve some institutions' quality, particularly in the English teaching and learning process at the research site.

In essence, these three knowledge pillars interact to create seven knowledge auxiliary pillars. Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), and Technological Pedagogical Content Knowledge (TPCK) are the categories (Education et al., 2015). According to Suprapto et al. (2021) prospective instructors who possess TPACK skills may include technology into the learning process by adhering to the instructional materials and the most effective teaching strategy depending on the needs of the students.

When new technology or software applications are introduced to instructors, they frequently discover that the professional development is primarily focused on their technological expertise without taking context, pedagogy, or content into account (Finger et al., 2010). Theoretically, the term "TPACK" (Technological Pedagogical Contents Knowledge) refers to a conceptual framework that places an emphasis on "connections between instructors' content knowledge, pedagogy, and technology interact with one another to achieve effective teaching" (Koehler et al., 2014). TPACK is a framework that researchers and educators may use to package and create learning models in order to accomplish learning objectives in a more suitable way (Suprapto et al., 2021). TPACK refers to the use of technology by educators to facilitate students' access to materials and the performance of scientific investigations (Eren, 2021).

Additionally, using domain-specific knowledge and techniques to direct students' learning using the proper information and communication technology is part of TPACK strategic thinking (Niess, 2011). (2011) Harris & Hofer The emphasis of the instructional planning technique that was provided with the instructors closely correlated the content-related learning demands of the students with combinations of deliberately chosen, content-based learning activities supported by advised educational technology. There are five fundamental choices for instruction: selecting learning objectives, practical pedagogical judgments on the nature of the learning experience, suitable activity types selection and sequencing, formative and summative assessment selection, choosing resources and techniques that will aid pupils in understanding the subject (Harris & Hofer, 2011).

The scope of this study focuses on the teachers' development and application about TPACK throughout their teaching in Pati, Central Java, Indonesia. They are 10 teachers from some different schools. There are different junior high school, senior high school, even the vocational school.

The limitation of this study is most of the respondents only come from Margoyoso district and there is a paucity of the detailed challenges for teachers in TPACK implementation. For further research is recommended to study in broader sites and to more scrutinize the teachers' role in assisting the student in TPACK. There is also a limitation, such as the fact that TPACK is more time-consuming for teachers because teachers have to design the lesson plan based on TPACK. The current study on TPACK would be an encouraging starting point for English teachers and learners to investigate this TPACK implementation further. However, The technique and the taxonomies themselves must be extensively evaluated, reviewed, and improved before being suggested for usage in other curriculum areas and/or in general. (Harris & Hofer, 2011).

The goal of this study is to learn more about the creation and use of TPACK by in-service teachers. In order to gather information for this study, the authors sent out a survey to teachers asking them about their knowledge of the seven sub-domains

of TPACK: technological knowledge (TK), content knowledge (CK), pedagogical knowledge (PK), pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK), and technological, pedagogical, and content knowledge (TPK) (TPACK).

The survey's target audience is English instructors. A questionnaire created from the results of this investigation (Mahdum 2015; Sahin, 2011.; Schmidt et al., 2009). For assessing in-service English instructors' self-evaluation of the seven TPACK subdomains, the test has 45 items. 14 TK items, 4 CK products, 7 PK items, 4 PCK items, 4 TCK goods, 9 TPK items, and 3 TPACK items make up the item. The response to each item is determined using a five-level Likert scale: 1. Disagree vehemently Disagree 2. 3. Neither sides of the argument are in accord. 4. Agree 5. Totally concur. Examining teachers' self-evaluations of the TPACK domains is the goal of the measure. The tool also includes a question for gathering education background information from responders.

The data was collected from 10 in-service high school teachers in Pati who were chosen using simple random sampling. Google Forms used to administer the questionnaires. The data from this investigation were evaluated in a descriptive manner. The information was gathered with the permission of the respondents. The questionnaire in this study was used to divide into three groups based on technological pedagogical and content knowledge (TPACK) criteria: high, medium, and low adopted from (Syifa, 2021) The category is as follow;

No	Categories	Average
1	High	4.00-5.00
2	Medium	3.25-3.99
3	Low	1.00-2.99

RESULT AND ANALYSIS

Pati In-Service English Teachers Profile

According to the statistics obtained, The majority of English instructors who are now employed in Pati hold undergraduate and graduate degrees. They aren't any Diploma students. It indicates that, in accordance with Ministry of Education Regulation No. 16 Year 2007, in-service English instructors for high schools in Pati have satisfied the government's academic qualification standards.

Table 3.1 Respondent Profile based on Educational Background

Educational Background	Number
Diploma	-
Undergraduate	80%
Master	20%
Total	100%

TPACK Profile of In-service English Teachers

Table 3.2.1 English Teacher in Pati Score of **Technological Knowledge (TK)**

No	Statement	Mean	Category
1	I know how to solve my own technical problems	4,5	High
2	I can learn technology easily.	4,2	High
3	I keep up with important news technologies.	3,8	Medium
4	I frequently play around the technology.	3,6	Medium
5	I know about a lot of different technologies.	3,7	Medium
6	I have the technical skills I need to use technology.	3,7	Medium
7	I know about basic component of computer.	4,0	High
8	I know how to use word processing program.	4,3	High
9	I know how to use spreadsheet.	3,8	Medium
10	I know how to use presentation program.	4,5	High
11	I know how to use printer, scanner, projector, and digital camera.	4,4	High
12	I can save data in digital media	4,5	High
13	I use internet as communication media.	4,5	High
14	I use internet as my teaching source	4,3	High

The average TK scores for Pati's English instructors fall into the "high" category, as shown in table 3.2. It suggests that the educators are literate in and skilled in using technology. According to the collected data, the instructors who are confident in their ability to solve technological problems, who are competent with presentation software, who are able to save data on digital media, and who utilize the internet as a communication tool receive the highest mean score of 4,5.

Table 3.2.2 English Teacher in Pati Score of **Content Knowledge (CK)**

No	Statement	Mean	Category
1	I have sufficient knowledge about literacy.	4,1	High
2	I can use a literary way of thinking.	4,1	High
3	I have various ways and strategies of developing my understanding of literacy.	4,0	High
4	I keep developing my knowledge repertoire in literacy.	3,8	Medium
	Total	4,0	High

According to the table 3.2.2, the mean CK scores of English teachers in Pati are in the 'high' category. It indicates that the teachers had positivity in term of English knowledge. Some teachers believe that they have sufficient literacy knowledge and apply it.

No	Statement	Mean	Category
1	I know how to assess student performance in a classroom.	4,5	High
2	I can adapt my teaching based-upon what students currently understand or do not understand.	4,2	High
3	I can adapt my teaching style to different learners.	4,2	High
4	I can assess student learning in multiple ways.	4,1	High
5	I can use wide range of teaching approaches in classroom setting.	4,0	High
6	I am familiar with common student understandings and misconceptions.	4,0	High
7	I know how to organize and maintain classroom management	4,2	High
	Total	4,2	High

Table 3.2.3 English Teacher in Pati Score of **Pedagogical Knowledge (PK)**

table 3.2.3, the mean PK scores of English teachers in Pati are in the 'high' category. It indicates that the teachers had positivity in classroom management. Based on the data obtained, the teachers understand how to assess the instructional process particularly on the students' performance as the mean score is 4,5.

Table 3.2.4 English Teacher in Pati Score of **Pedagogical Content Knowledge (PCK)**

No	Statement	Mean	Category
1	I can select effective teaching approaches to guide student thinking and learning in literacy.	4,4	High
2	I make my own lesson plan.	4,4	High
3	I can make difficult lesson easier for students to understand.	4,3	High
4	I make questions by my own to measure my students' understanding towards the lesson.	4,6	High
	Total	4,4	High

Teachers must acquire PCK because pedagogy and knowledge cannot be separated in the teaching and learning process. The highest mean shows that the teachers are able to make their own measurement about the students' comprehension during the lesson

Table 3.2.5 English Teacher in Pati Score of **Technological Content Knowledge (TCK)**

No	Statement	Mean	Category
1	I know about technology that I can use for understanding and doing literacy.	3,9	Medium
2	I know computer applications related to literacy.	4,1	High
3	I use the technologies to develop learning activity and students' tasks	4,0	High
4	I use technologies as my source to develop my own knowledge	4,4	High
	Total	4,1	High

Teachers' beliefs toward technology and their expertise of technology-based learning should be preserved. Hence, the statement of using technology to develop the

instructional process is the highest mean score.

Table 3.2.6 English Teacher in Pati Score of **Technological Pedagogical Knowledge (TPK)**

No	Statement	Mean	Category
1	I can choose technologies that enhance the teaching approaches for a lesson.	4,1	High
2	I can choose technologies that enhance students' learning for a lesson.	3,9	Medium
3	My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom.	4,3	High
4	I am thinking critically about how to use technology in my classroom.	4,4	High
5	I can adapt the use of the technologies that I am learning about to different teaching activities.	4,2	High
6	I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	4,2	High
7	I can use strategies that combine content, technologies and teaching approaches that I learn about in my coursework in my classroom.	3,9	Medium
8	I can provide leadership in helping others to coordinate the use of content, technologies and teaching approaches at my school and/or district.	3,8	Medium
9	I can choose technologies that enhance the content for a lesson.	4,0	High
	Total	4,1	High

In this instance, teachers can select and alter the technology required for a specific teaching technique. The implication is the teacher more pay attention to think critically about the technology usage in the classroom.

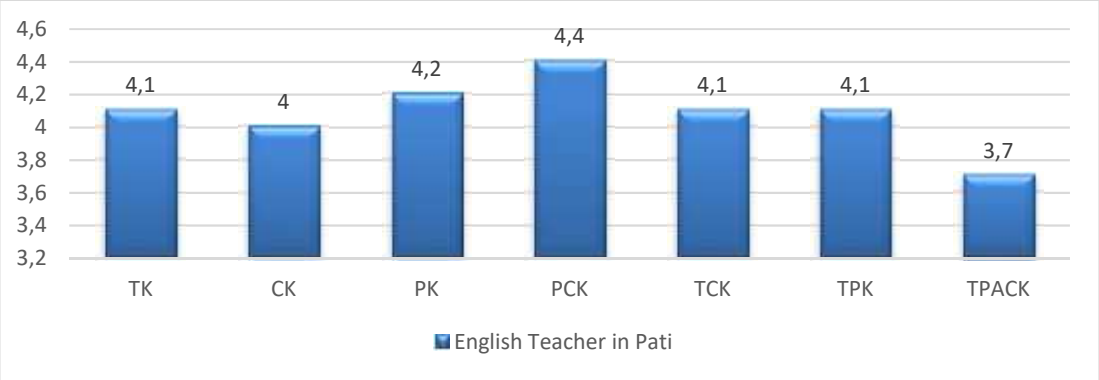
Table 3.2.7 English Teacher in Pati Score of **Technological Pedagogical Content Knowledge (TPACK)**

No	Statement	Mean	Category
1	I can teach lessons that appropriately combine literacy, technologies, and teaching approaches.	4,1	High
2	I help my colleagues to understand how to integrate literacy, technologies, and teaching approaches.	3,6	Medium
3	I use various approaches with various software to enhance students' understanding in learning literacy	3,4	Medium
	Total	3,7	Medium

The mean TPACK score of English teachers in Pati is in the 'medium' category. It suggests that the teachers have already successfully adopted the TPACK. However, they still need some improvements about the balancing of students, teacher, and technology.

DISCUSSION

Figure 3.1 Mean Score of TPACK subdomains of English Teachers in Pati



PCK has the highest mean score, followed by TK. It means that English teachers in Pati are well-versed in both pedagogy and subject. In other words, they appear to be confident in their ability to use their technological knowledge appropriately in the classroom. It could be due to a variety of circumstances. One of the many factors impacting teachers' PCK is their educational background, with 80% of those polled holding an undergraduate degree and 20% master degree. It implies that they already possess the required skills to effectively educate.

Within the TPACK framework, teachers are required to develop not just their pedagogical and subject expertise, but also their technological knowledge. In order to encourage effective and efficient learning, they must be able to provide a subject using proper technology and approach. Furthermore, teachers must mix their teaching and ICT in order to work in parallel with the development of students' and global expectations. It is also projected that using ICT will help children learn faster and teachers educate more efficiently. Learning objectives can eventually be more easily reached. Thus, this research supports the present research related to TPACK (Jaipal-jamani & Figg, 2015; Öz, 2015; Septiyanti, 2020).

CONCLUSION

The TPACK of English instructors in Pati is deemed to be "good" overall. It shows that they were effective in fusing ICT, content, and a suitable approach to learning English. The final subdomains have the lowest mean score. Therefore, in order to improve language teaching and learning, instructors are urged to constantly develop their TPACK, particularly in integrating all subdomains.

Recommendation

It is advised that authorities and technology specialists work together to help instructors acquire this competency. It could take the shape of ICT instruction, a manual, or something else completely. By offering these, it is intended that educators would be as adept at using technology.

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REFERENCES

Bugueño, W. M. R. (2013). *Using TPACK to promote effective language teaching in an ESL / EFL classroom*.

Chu, M., & Seltzer, T. F. (2010). Myxedema Coma Induced by Ingestion of Raw Bok Choy. *New England Journal of Medicine*, *362*(20), 1945–1946. https://doi.org/10.1056/nejmc0911005

Drajati, N. A., Tan, L., Haryati, S., Rochsantiningsih, D., & Zainnuri, H. (2018). Investigating English language teachers in developing TPACK and multimodal literacy. *Indonesian Journal of Applied Linguistics*, *7*(3), 575–582. https://doi.org/10.17509/ijal.v7i3.9806

Dündar, E., & Merç, A. (2017). *European Journal of Foreign Language Teaching A Critical Review of Research on Curriculum Development and Evaluation in ELT*. https://doi.org/10.5281/zenodo.437574

Education, E., Program, S., Training, T., & Faculty, E. (2015). *Technological Pedagogical and Content Knowledge (TPACK) of English Teachers in Pekanbaru , Riau , Indonesia Mahdum*. *6*(5), 168–176. https://doi.org/10.5901/mjss.2015.v6n5s1p168

Eren, E. (2021). European Journal of Educational Research. *European Journal of Educational Research*, *10*(3), 1199–1213.

Finger, G., Jamieson-proctor, R., & Albion, P. (2010). *Beyond Pedagogical Content Knowledge : The Importance of TPACK for Informing Preservice Teacher Education in Australia Beyond Pedagogical Content Knowledge : The Importance of TPACK for Informing Preservice Teacher Education in Australia Introduction – Mo. May 2014*. https://doi.org/10.1007/978-3-642-15378-5

Harris, J. B., & Hofer, M. J. (2011). *Technological Pedagogical Content Knowledge (TPACK) in Action: A Descriptive Study of Secondary Teachers' Curriculum-Based, Technology-Related Instructional Planning*. *43*(3), 211–229.

Hartati, T., Heryanto, D., Annisa, N., Nuriyanti, R., & Herman, A. (2019). *High Order Thinking Skill and Literacy Base Technological Pedagogical Content Knowledge (TPACK) in Order to Improve Students Learning Quality of in Job Primary School Teacher ' s Professional Educational Program*. *3*(1), 136–141. https://doi.org/10.20961/ijsascs.v3i1.32552

Jaipal-jamani, K., & Figg, C. (2015). *A Case Study of a TPACK-Based Approach to Teacher Professional Development : Teaching Science With Blogs*. *15*, 161–200.

Koehler, M. J., Mishra, P., Kereluik, K., Shin, T. S., & Graham, C. R. (2014). *The Technological Pedagogical Content Knowledge Framework*. 101–111. https://doi.org/10.1007/978-1-4614-3185-5

Malihah, N. (2017). The Importance of Understanding Problems in Teaching Speaking to EFL Learners. In *International Conference on Indonesian Islam, Education and Science (ICIIES)*.

Mustikasari, Rr. D. W. (2016). The Structure of Teacher's Directives of the English Lecturers of Muhammadiyah University Semarang. *Register Journal*, *4*(2), 154–170. https://doi.org/10.18326/rgt.v4i2.458

Niess, M. L. (2011). Investigating TPACK: Knowledge growth in teaching with technology. *Journal of Educational Computing Research*, *44*(3), 299–317. https://doi.org/10.2190/EC.44.3.c

Öz, H. (2015). *Assessing Pre-service English as a Foreign Language Teachers ' Technological Pedagogical Content Knowledge*. *8*(5), 119–130. https://doi.org/10.5539/ies.v8n5p119

Pajarwati, D., Mardiah, H., Harahap, R. P., Siagian, R. O., Ihsan, M. T., Training, T., Syarif, S., Riau, K., & Info, A. (2021). *Curriculum Reform in Indonesia : English Education*. *1*(1), 28–36.

Papanikolaou, K., Makri, K., & Roussos, P. (2017). *Learning design as a vehicle for developing TPACK in blended teacher training on technology enhanced learning*. https://doi.org/10.1186/s41239-017-0072-z

Poedjiastutie, D., Akhyar, F., Hidayati, D., & Nurul Gasmi, F. (2018). Does Curriculum Help Students to Develop Their English Competence? A Case in Indonesia. *Arab World English Journal*, *9*(2), 175–185. https://doi.org/10.24093/awej/vol9no2.12

Prasetya, A., Hitipeuw, I., Herdianto, R., & Dwi, F. (2022). International Journal of Educational Research Open Publishing management curriculum in Indonesia. *International Journal of Educational Research Open*, *3*(December 2021), 100103. https://doi.org/10.1016/j.ijedro.2021.100103

Rini, S., & Mansur, M. (2019). Teaching Higher Order Thinking Skills to Promote Islamic Junior High School Students' Achievement in English Classroom. *Ta'dib: Journal of Islamic Education*, *24*(2), 238–248. http://jurnal.radenfatah.ac.id/index.php/tadib

Sahin, I. (n.d.). *Development of survey of technological pedagogical and content knowledge (TPACK)*. https://www.researchgate.net/publication/228655720

Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers. In *Journal of Research on Technology in Education* (Vol. 123). www.iste.org.

Septiyanti, M. (2020). *(TPACK) Perception of English Education Students*. *8*(2), 165–174. https://doi.org/10.25134/erjee.v8i2.2114.Received

Suprapto, N., Sukarmin, S., Puspitawati, R. P., Erman, E., Savitri, D., Ku, C., Mubarok, H., Programme, E., Surabaya, U. N., Programme, E., Surabaya, U. N., Programme, B. E., Surabaya, U. N., Programme, S. E., Surabaya, U. N., Programme, M., Surabaya, U. N., & Info, A. (2021). *Research trend on TPACK through bibliometric analysis (2015-*. *10*(4), 1375–1385. https://doi.org/10.11591/ijere.v10i4.22062

Syifa, N. (2021). *English Foreign Language Teachers Teaching Using Technological Pedagogical Content Knowledge (TPACK) in The Era Of Covid 19 Pandemic (A Descriptive Qualitative Study)*.