

The Analysis Of TPACK'S Ability To Increase The Professionalism Of Elementary School Teachers in DKI Jakarta

Muhammad Hayun¹, Maesaroh Lubis², R.Andi A.Gunadi³, Masroro Diah Lestari⁴

^{1,3,4} Faculty of Education, Jakarta Muhammadiyah University; aa.gunadi@umj.ac.id

² Faculty of Teacher and Education, Tasikmalaya Muhammadiyah University; maesaroh.lubis@umtas.ac.id

ARTICLE INFO

Keywords:

TPACK Ability;
Professional;
Jakarta Elementary School
Teacher

Article history:

Received xxxx
Revised xxxx
Accepted xxxxx

ABSTRACT

The purpose of the study is to analyze the Technological Competence, Pedagogics, and Content Knowledge (TPCK) of elementary school teachers and how to integrate and implement TPACK in learning. The research method used is descriptive quantitative survey research with the population and sample is elementary school teachers in DKI Jakarta which are taken randomly using simple random sampling technique. Data collection instrument used the TPACK self assessment instrument developed by researchers. The results of this study are 1). The use ICT in learning by elementary school teachers in DKI Jakarta has not been maximized, this is caused by low skills of technology, 2). The use of online learning platforms, both synchronous and asynchronous is still monotonous, not many choices are used, even direct to be conventional 3). The use of learning applications that help in the presentation of subject matter is still very low and monotonous.

This is an open access article under the [CC BY-NC-SA](#) license.



Corresponding Author:

Maesaroh Lubis
Tasikmalaya Muhammadiyah University; maesaroh.lubis@umtas.ac.id

1. INTRODUCTION

The 21st century learning emphasizes the individual skills that relates by creativity, critical thinking, communication and collaboration, problem solving, media and technology literacy, life and career skills (*Applied Educational System*, 2018. Tirtha Goradia, 2019).

In the era, education had challenges to build social-based knowledge that integrated with ICT in the learning process (Hernawati and Jailani, 2018). In the 4.0 industrial era, some of technological products have been produced and help people in many life, including education.

Technological advances, especially in the scope of ICT have contributed to the advancement of digital global era where the knowledge is develop very fast (Yalcin & Celiker, 2011. Sri Rahayu, 2017).

ICT is a tool/instrument used to make it easier to provide services, knowledge, transactions and interactions between individuals and community as well as make it easier to access new sources of knowledge that are extensive and open. The integration of ICT in learning requires teachers to have skills and knowledge about technology, media, teaching skills and subject matter to be taught in the class.

Teachers must have teaching knowledge and skills, and also able to combine pedagogic abilities and subject matter with technology in the learning process. TPACK is the ability that teachers must have in integrating the curriculum with learning technology including the ability to educate (teaching),

the ability of subject matter combined in the ability of technology in learning (Davin V Knolton, 2014).

Elementary school teachers should have adequate knowledge and skills both related to technology and subject matter. In addition to understanding the subject matter (*content knowledge*), the elementary school teachers must have the ability to manage learning (*pedagogical knowledge*) which has many kind of multicultural students characteristics.

In the elementary school age, individual skills begin to develop, including the critical power about digital era. Therefore it is necessary for teacher participate in facilitating learning with an approach to integrating subject matter and teaching skills with technology or known as TPACK (Technological, Pedagogical, Content Knowledge) which can help teachers and students more understand the subject matter.

2. METHODS

The research method used in this study is a quantitative research method with a descriptive survey approach. Descriptive survey research is a quantitative research approach that distributes instruments (tests or questionnaires) to determine someone's perceptions, knowledge and abilities of a problem that is analyzed by descriptive statistical or descriptive approaches such as mean, median, mode, variance, standard deviation or percentage and graph or diagram. A special characteristic of survey research is that the conclusions of the research results are generalized or applicable to the entire population even though the research data is only obtained from the sample (Endang Mulyatningsih, 2013).

In this survey research, the object or population are elementary school teachers in DKI Jakarta to determine the level of teacher TPACK ability in learning that has been done. Meanwhile, the sample or respondents of this study were elementary school teachers who were randomly selected using a *simple random sampling technique*. Measuring the teacher's TPACK ability can be done in many ways, both of quantitative and qualitative. In general, there are 5 ways that can be done to measure TPACK, these are ; 1) *self-report-measurement*; 2) *open-ended questionnaire*; 3) *performance assessment*; 4) *interviews*; and 5) *observation* (Abbit, 2011; Koehler, Shin, & Mishra, 2012, Rahmadi, 2019:69). In this study, the researcher used a *self-report measure* which is a method that takes respondents to choose the level of conformity of a statement with real conditions that occur in the respondent (Rahmadi, 2019).

The data analysis technique used is descriptive analysis technique, is analyzing filed data with descriptive statistical analysis techniques such as analysis of average, variance, standard deviation, graph or table. The data analyzed included Teacher Technology Knowledge (PK) knowledge ability data, Teacher Pedagogic Knowledge ability data (PK), Teacher Content knowledge ability data (CK), and pedagogic content technology knowledge data (TPACK). In addition, the researchers also took a percentage approach by categorizing the abilities of the TPACK teachers with 5 categories/levels of Roger's model, including; **Recognizing** (knowledge), where teachers can use technology/ICT and recognize the alignment of technology/ICT with content but do not integrate technology in their learning, **Accepting** (persuasion), where teachers establish favorable or unfavorable attitudes towards content learning with appropriate technology. **Adapting** (decision), where the teacher is involved in activities that direct the choice to adopt or refuse learning with appropriate technology/ICT. **Exploring** (implementation), where teachers integrate learning in elementary school with appropriate technology/ICT actively. **Advancing** (confirmation), where the teacher evaluates the results of making decisions about integrating learning in primary schools with appropriate technology.

3. FINDINGS AND DISCUSSION

3.1. Result

These data were got from DKI Jakarta teachers who were selected by random on totaling 88 teachers to take and fill out questionnaires related to the experience and ability of teachers in using technology in learning, as well as designing and integrating technology in the classroom. Based on the data was got from filling out the questionnaires that distributed to SD DKI Jakarta teachers, the ability scores were got based on the descriptive statistical table below:

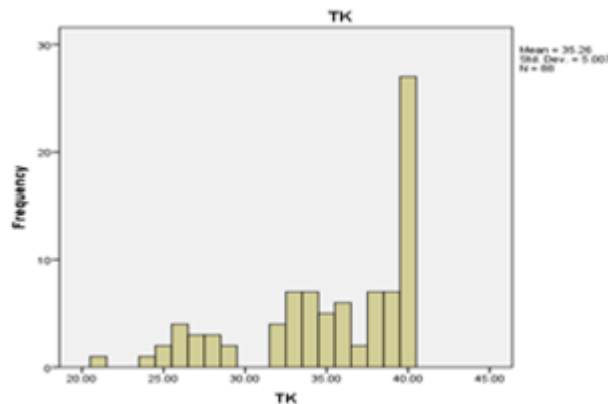
Table 1. Descriptive Statistics

	N	Mean	Std. Deviation	Variance
TK	88	35.2614	5.00688	25.069
PK	88	67.9659	7.37571	54.401
CK	88	63.1364	6.95500	48.372
TPK	88	51.8409	5.45807	29.790
PCK	88	65.7386	6.65141	44.241
TCK	88	49.4091	5.45333	29.739
Valid				

3.1.1. Technological Knowledge

Based on the results of the distributed questionnaires, it was found that data relating to ownership of a computer/laptop and/or smartphone was 1.13% who did not own and 98.86 had a laptop or smartphone. Meanwhile, based on the descriptive statistical table above for the ability/knowledge of technology, the average value of ability is 35.26 from a maximum score of 40, std deviation of 5 from the average value of the data. This can also be seen in the graph below:

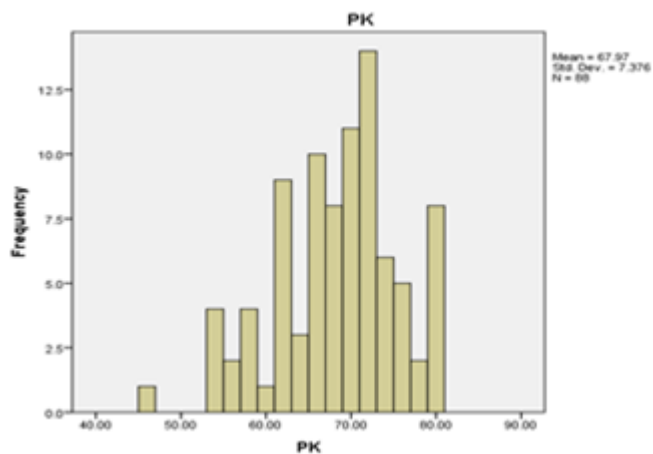
Chart 1: Average Technological Ability of DKI Elementary School Teachers



1.1.1. Pedagogical Knowledge

In the pedagogic ability variable in the table above was got an average score is 67.96 from a maximum score of 90 with an std.deviation score is 7.37 or variance of 54.40. This can be seen in the graph below:

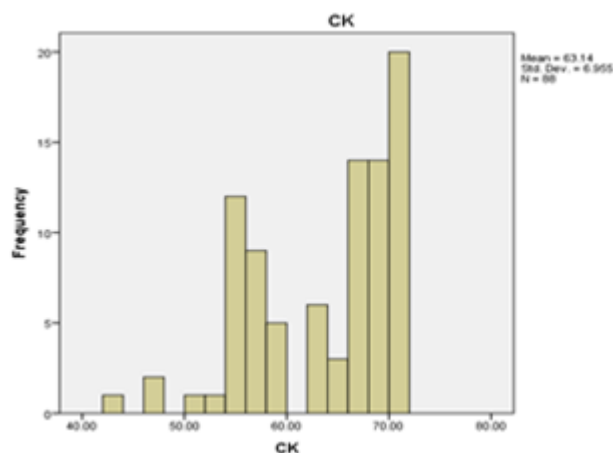
Chart 2: Average Pedagogical Knowledge of DKI Elementary School Teachers



1.1.2. Content Knowledge

In the Content Knowledge variable was got the average score of content ability (knowledge) is 63, 13 from a maximum score of 70 with an std. deviation score of 6.9 which means that the ability of SD DKI teachers in constructing content, teaching materials and teaching abilities are very good, this can also be seen in the graph below:

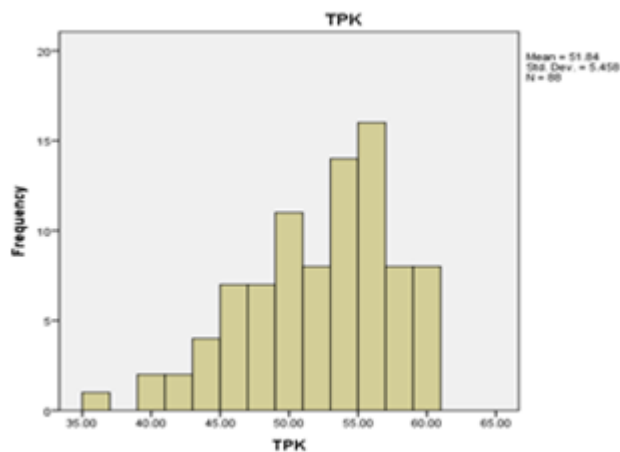
Chart 3: Average Content Knowledge of DKI Elementary School Teachers



1.1.3. TPK (Technological Pedagogic Knowledge)

In the TPK (Technological Pedagogic Knowledge) variable, the average content ability (knowledge) score is 51.84 from a maximum score of 60 with an std. deviation score of 5.4 which means that the ability of SD DKI teachers Jakarta in terms of integrating technology with educational capabilities is still in the medium category, this can also be seen in the graph below.

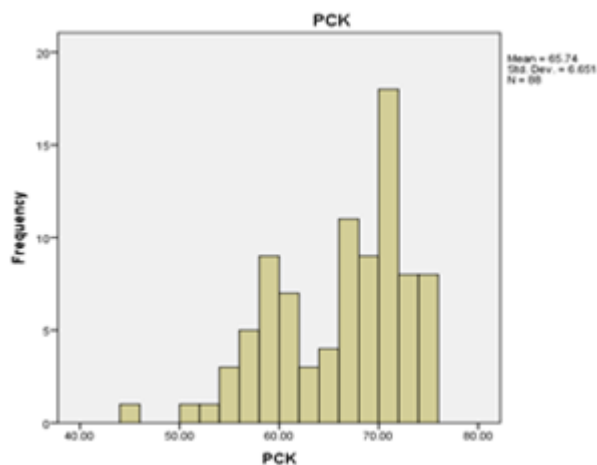
Chart 4: Average TPK Knowledge of SD DKI teachers



1.1.4. PCK (Pedagogical Content Knowledge)

Based on the results of data processing that is presented in the form of descriptive statistics, the pedagogic content knowledge (PCK) ability of DKI Jakarta Elementary School teachers with an average score of 65.73 from a maximum score of 75. This means that the ability of DKI Jakarta Elementary School teachers in the PCK aspect is still in the medium category.

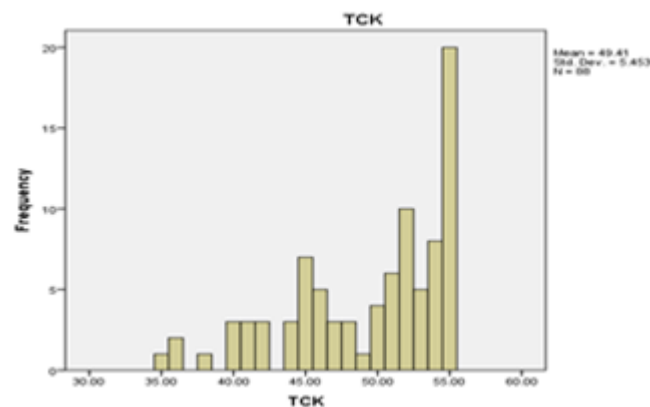
Chart 5: Average PCK of DKI Elementary School Teachers



1.1.5. TCK

In the TCK ability, the average value of SD DKI Jakarta teachers is 49.40 from a maximum score of 55. This means that the ability in TCK SD DKI Jakarta teachers is in the medium category, this can be seen in the table below .

Chart 6: Average TCK of DKI Elementary School Teachers



3.2. Discussion

The use of technology in learning among elementary school teachers in DKI Jakarta has not been massive even supported by any budget and the availability of technology facilities and services by the government and the private sector, because there are many of teacher like to use traditional and conventional methods in learning. Also, there are many elementary school teachers who are nearing retirement age. This is also based on the data was got in the field an average of 35 out of a maximum score of 40 means that they are still good ability.

In terms of pedagogic knowledge and content knowledge, they are in good category. However, about integrating technology in learning, the use of technology-based media there are still in good competence. That mean has not yet achieved expectations as a teacher in the capital of country with support of good facilities.

The use of online learning modes both synchronous and asynchronous by SD DKI Jakarta teachers is still use common or conventional platforms such as WA Group and Youtube.

Even during the Covid-19 pandemic, which requires teachers to be more creative and have many alternatives in learning is still not maximized, this is also influenced by the ICT ability of teachers there are in the medium category.

The zoom or google meet application as a conference application is still a difficult problem to operate or use optimally, this can be seen in the diagram below:

Figure 7: Application Use in Asynchronous learning

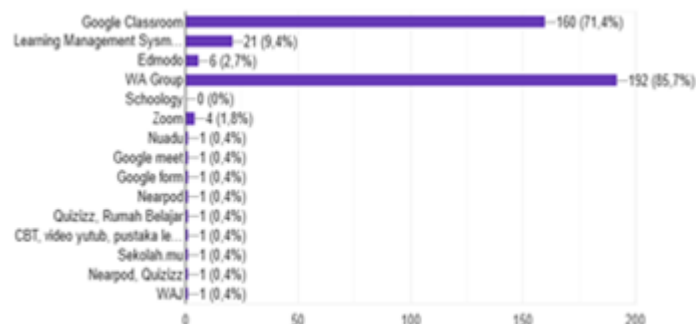


Figure 8: Use of Applications in Synchronous learning

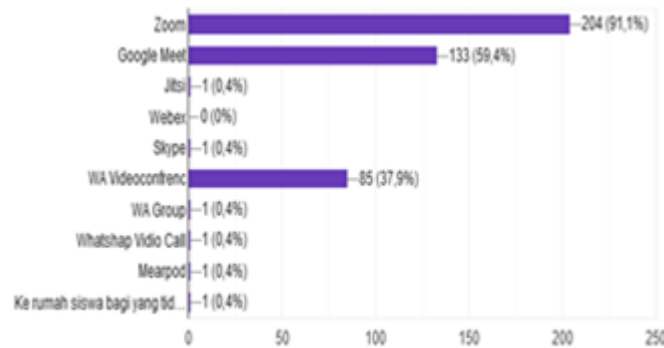


Figure 9: Use of Applications in learning evaluation



Based on the chart, it can be seen that the use of online applications in learning is only applications that have been used by most people so that it seems conventional even though it is relatively new among Indonesian people.

4. CONCLUSION

These descriptions and explanations, these below are several conclusions about the ability of DKI Jakarta Elementary School teachers to integrate TPACK in learning, especially during the pandemic, these are :

1. The use of ICT in learning by DKI Jakarta Elementary School teachers has not been maximized, this is caused by low technological capabilities.
2. The use of online learning platforms does not have many choices, and even tends to be conventional, such as WA Group, Youtube or Zoom.
3. The use of learning applications in asynchronous form is also still not optimal, such as the use of LMS, Google Classroom or other applications, although there are many choices.

REFERENCES

- Mulyatningsih, Endang.(2011). Metode Penelitian Terapan Bidang Pendidikan. Bandung : Alfabeta
- Supardi, dkk. (2010). Profesi Keguruan. Jakarta : Diadit Media
- Punya Mishra dan Matthew J. Koehler.(2008). Introducing Technological Pedagogical Content Knowledge. Reseachgaga.
- Punya Mishra, dkk. (2014). The Technological Pedagogical Content Knowledge Framework. Handbook of Research on Educational Communications and Technology, Springer, 2014.
- Goradia, Tirtha.(2018). Role of Educational Technologies Utilizing the TPACK Framework and 21st Century Pedagogies: Academics' Perspectives. IAFOR Journal of Education Vol.6
- Rahayu, Sri.(2017). Technological Pedagogical Content Knowledge (TPACK): Integrasi ICT dalam pembelajaran IPA abad 21. Researchgate.
- Denise A. Schmidt dkk.(2009).Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers. Journal of

- Research on Technology in Education. No. 2. Vol. 42 Tahun 2009.
- Shannon Guerrero.(2010).Technological Pedagogical Content Knowledge in the Mathematics Classroom. *Journal of Digital Learning in Teacher Education*. No. 4 Vol. 26. Tahun 2010.
- Knolton, Davin V.(2014).Technological, pedagogical, content knowledge (tpack): an exploratory study of adjunct faculty technology proficiency. Department of Educational Leadership College of Education, Kansas State University.
- Muhammad Yusuf Rahim.(2011).Pemanfaatan ICT sebagai media pembelajaran dan informasi pada UIN Alaudin Makassar. *Jurnal Salusena*, Vol. 6 No. 2.
- Rahmadi, Imam Fitri.(2019).Technological Pedagogical Content Knowledge (TPACK):Kerangka Pengetahuan Guru Abad 2, *Jurnal Pendidikan Kewarganegaraan* Vol. 6 No. 1
- Hernawati K, dan Jailani. (2018). Mathematics mobile learning with TPACK framework, *Journal of Physics: Conference Series*