Investigating Students' Profiles and Perception of Using TPACK Framework of Primary Teacher Education Program

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Abstract: That teacher need to possess knowledge and skill about technology integration into the framework of technological, pedagogical content knowledge (TPACK). The implementation of teacher education program has not yet integrated technology. This results in a lack of teacher's ability to use and integrate technology into learning. The present study aims to describe the student's profile and perception of using TPACK framework. Survey research was employed in the study. The study involved 100 participants of students took part the 2019 cohort teacher education program. The results of the descriptive analysis found that technological skill of the participants placed the lowest position, when it was combined with pedagogical skill (TK-PK or TPK), then the two components become the highest component. The same thing happens when the combination between PK-CK or PCK, then the CK skill will increase.

Keywords: technology integration, TPACK

1. INTRODUCTION

The program of preparing teacher both pre-service and in-service teacher training education have long been conducted by Indonesia government. In order to adjust to future needs, the need for 21st century learning, teacher education program is necessary to cover the information communication and technology (ICT) in its curriculum. One of the efforts to fulfil the needs of future teacher with the demands of the student's needs, with which they are millennials, can be done by integrating information communication and technology into the instructional process. For this reason, prospective teachers need to be prepared by integrating technology into future learning (Sancar-Tokmak, Surmeli & Ozgelen, 2014).

Mishra and Kohler (2006) asserted that teacher need to possess knowledge and skill about technology integration into the framework of technological, pedagogical content knowledge (TPACK). As we acknowledged so far, TPACK or sometimes mentioned as TPCK is a young field of study. Graham (2011) stated that the TPACK framework has the potential to provide a theoretical background for teacher education programs in preparing teacher candidates or in in-service teacher program to integrate technology into instruction. In parallel

to Graham's view above, Thouvenelle and Bewick (2003) stressed out the importance of teachers' roles in meaningful integration of technology for young learners. Technology integration means that the use of technology and implement it in the learning process into the classroom in order to support an intended learning outcome. In addition, teachers or educators must be always committed to the use and integrate technology into the instructional process.

In terms of teachers' attitudes towards technology, Ertmer, Ottenbreit Leftwich, Sadik, Sendurur, and Sendurur (2012) found that teachers' attitudes towards technology play an important role in their integration efforts. Ertmer, Conklin, and Lewandowski (2001) stated that pre-service teachers' beliefs about technology will be shaped by educators who help them increase their competence in technology integration, and TPACK is believed to assist in improving technological confidence (Mishra & Koehler, 2006). Angeli and Valanides (2009) recommended that if teachers make good and proper use of information and communication technology (ICT) in the classroom, it is possible to create better learning environments for students.

This statement leads us that the availability of technology is unavoidable to support student's learning process. In line with the above statement that positive first-

hand experiences of pre-service teachers may affect their future applications of information technologies (Bhattacherjee & Premkumar, 2004). It means that teacher education program needs to provide students with the skills of information communication and technology (ICT) that is integrated into the instruction. To achieve the purpose, the content of curriculum of the teacher education program must include technology necessary for teacher candidates or students of teacher education program.

The term TPACK or TPCK is a rather relatively new field of study, which is still searching for a generally accepted and solid theoretical conceptualization (Angeli & Valanides, 2015). To date, that the framework of TPACK research and development has impacted the practice of teachers, professional development providers, administrators, and other stakeholders invested in meaningful educational uses of technology (Harris et al., 2017). Keep in mind that TPACK is developed as a framework and theoretical foundation directed to provide an understanding of the importance of teaching quality through technology by integrating it into instruction. In fact, as we have observed so far, the implementation of teacher education program has not yet integrated technology.

These results in a lack of teacher's ability to use and integrate technology into learning. That is why, this study was conducted to explore the student's profiles and their perception of integrating TPACK framework. For reason, teacher education program needs to begin with adapting theory into the curriculum to prepare preservice and in-service teacher education by integrating technology into instructional process (Chai, Koh & Tsai, 2010; Jimoyiannis, 2010).

2. METHOD

The present study is to describe data of student's profiles and perception of TPACK framework. For the purpose survey research was implied. Using questionnaires technique data of the profiles and perception were collected. The survey was conducted to search for student's profiles and perception of TPACK framework.

The study involved 100 participants of students of teacher education program, especially elementary teacher education program. Participants asked to fill out the form sent via Google link. There were 120 total number of students recruited as teacher education program participants. Participants who filled out the questionnaires were those who took part the 2019 cohort teacher education program for Elementary School Teacher Education (Pendidikan Guru Sekolah Dasar, PGSD) conducted at State University of Malang in the period July – August 2019.

There were two types of instruments used in this study. Both of them were instrument for measuring students' profiles and measurement for measuring TPACK. These instruments were developed by adopting

and adapting instrument of TPACK competence (self-assessment) (Schmidt et al., 2009). Questioner TPACK questionnaires were distributed to 100 respondents (students) through Google link with some considerations. First, the participants or respondents were still scattered in each participant's area, so that it was not possible to read printed questionnaires. Second, it will more time efficient when deployed using a network because the participants have a WhatsApp group. Finally, data recapitulation becomes faster and safer. Two weeks after survey was conducted, data collection progressed very well.

As mentioned in the previous section, the data collected in this study included the profiles of students, consisting of ages, gender, student's status, academic background, period after graduate, last education background, period of work experience, study program and field of work. The data, the profiles of students and perception of TPACK framework, were analyzed by using descriptive statistic and presented in the form of bar chart and percentages.

3. RESULTS AND DISCUSSION

In the previous section was explained that there 100 of 120 students completing the form via Google link. Data collected were analyzed by using descriptive statistics. The results of further research analyze were presented as shown in the form of bar chart, figure 1.

As shown in Figure 1, in terms of students' age, as many as 29 % were those aged 20 to 30 years, and 71% those aged between 31 to 40 years. Based on gender, there were 20% male students and the rest are 80% female students. According to student status, that is whether or not they are as master students, there 23% were as master student (yes) and 77% were not master students (no).

Data of technological knowledge, content knowledge, pedagogical knowledge, pedagogical content knowledge and technological content knowledge, technological pedagogical knowledge and technological, pedagogical, content knowledge were analyzed by employing descriptive technique. The results of using descriptive statistic as shown in the following Table 1. Figure 2, shows us the result of analysis presented in bar chart.

As shown in figure 2 above, relating to students' perceptions are as follows: (1) perceptions of technological knowledge obtained were 73.77 %; (2) students' perceptions of content knowledge were 77.70; (3) students' perceptions of pedagogical knowledge were 80.00%; (4) students' perceptions of pedagogical content knowledge were 79.81; (5) students' perceptions of technological content knowledge were 76.95 %; and (6) students' perceptions of technological pedagogical knowledge were 80.20. Amongst the students' perceptions of the components of TPACK gaining the highest mean score from 100 participants was technological pedagogical knowledge (TPK) component, that is x = 80.20.

The lowest mean score was technological knowledge (TK) component, x = 73.77. Based on this result of the descriptive analysis we found that technological skill of the participants placed the lowest position. When it was combined with pedagogical skill (TK-PK or TPK), then the two components become the highest component. The same thing will happen if the combination between PK-CK or PCK, then the CK skill will increase.
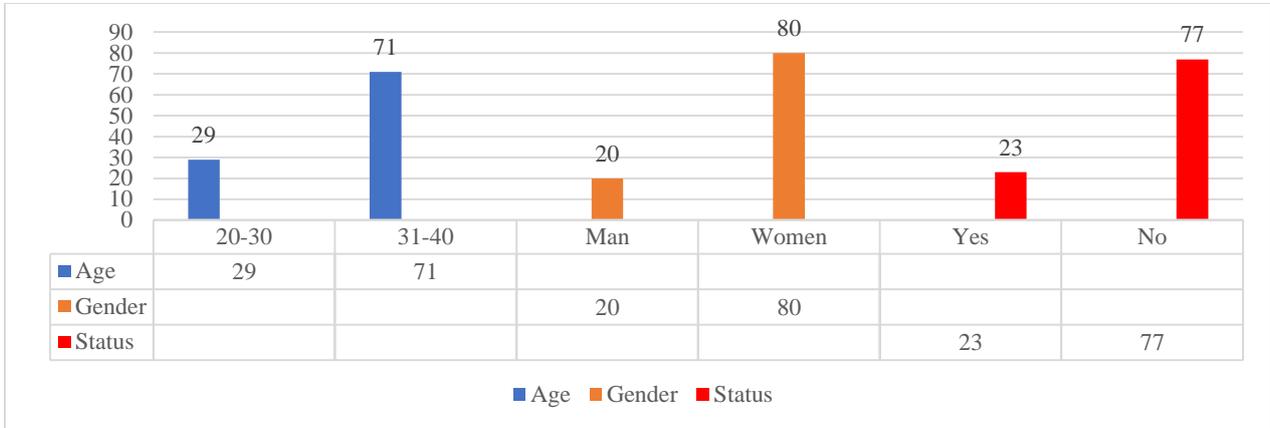

Figure 1 Bar Chart Including Age, Gender, Student's Status

Table 1 Descriptive statistic of TPACK

|	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
TK	100	55	100	73.77	9.927	98.547	.822	.478
CK	100	60	100	77.70	8.540	72.939	1.349	.478
PK	100	68	100	80.00	9.319	86.838	.005	.478
PCK	100	56	100	79.81	9.886	97.739	.472	.478
TCK	100	55	100	76.95	9.479	89.846	.869	.478
TPK	100	65	100	80.20	8.874	78.747	.607	.478
TPACK	100	56	100	77.13	10.059	101.184	1.308	.478
Valid N	100							
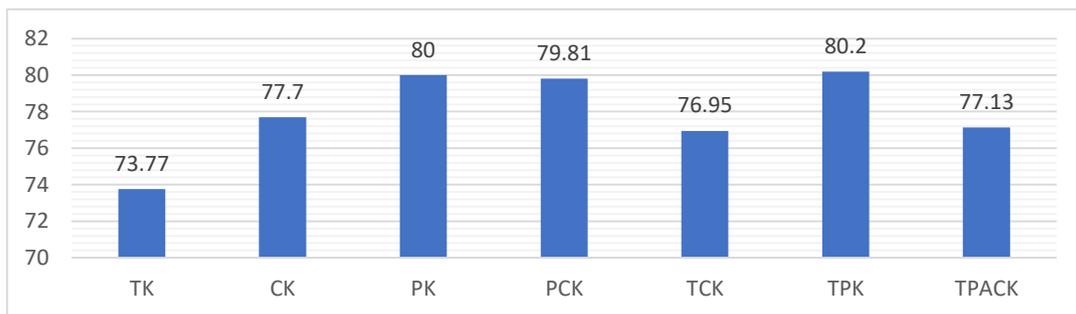
Figure 2 Bar chart of TK, CK, PK, PCK, TCK, TPK and TPACK

4. CONCLUSION

The results of statistical analysis, research findings are as the following: 1) most of the students of teacher education program in the Primary Teacher Education were 31 to 40 aged, 2) viewed from gender, they were female and 3) most of them were undergraduate level. Related to students' perception of the TPACK framework, the highest mean score from 100 participants was technological pedagogical knowledge (TPK) component. The lowest mean score was technological knowledge (TK) component. Based on this result of the descriptive analysis

we found that technological skill of the participants placed the lowest position. When it was combined with pedagogical skill (TK-PK or TPK), then the two components become the highest component. The same thing happens if the combination between PK-CK or PCK, then the CK skill will increase.

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