

# Profile Technological Pedagogical Content Knowledge (TPACK) Prospective Teacher of PPL Participants

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**Abstract**— TPACK is a framework that becomes the initial capital and must be mastered by a teacher. The ability to TPACK a teacher will greatly influence how teachers carry out classroom learning. This study aims to describe the profile of TPACK from prospective teacher students who are PPL participants, then analyze the ability of student TPACK based on 4 subdomains forming TPACK. Studies show that the TPACK of PPL participants is significantly influenced by content knowledge. On each subdomain indicator, it was found that the ability of TPACK students was still low due to the inability of students to integrate content knowledge with technological knowledge and pedagogical knowledge in supporting classroom learning. The real implications of these findings are in the form of recommendations about the right learning patterns in improving the ability of prospective teacher TPACK.

**Keywords**— TPACK, Prospective Teacher, PPL

## I. INTRODUCTION

Prospective teachers are human resources who are prepared to become professional teachers. Teachers are said to be professional if they can master 4 competency standards. These competencies are pedagogic competence, personality competence, social competence, and professional competence [1].

Facing the industrial revolution era 4.0, a professional teacher is not enough just to master the 4 competency standards. A professional teacher is also required to master technology in learning in the classroom [2]–[4]. Professional teachers must be able to integrate technological capabilities, pedagogical competencies and professional competencies they have [5], [6].

The integration of technology in learning has been developed by Mishra and Koehler into a conceptual framework that contains the relationship between three knowledge. The conceptual framework is Technological Pedagogical Content Knowledge (TPACK) which consists of technological knowledge, pedagogical knowledge, and content knowledge. For this reason, this research was conducted to describe the initial ability of TPACK students of Musamus University teacher candidates.

## II. METHODS

This research is a descriptive study conducted to see the real state of the object under study. The method used is a mixed research method. The mixed research method in question is a qualitative research method that is combined with simple (statistical) data processing.

The study was conducted in February and ended on April 2019. The population in this study was 168 students who were prospective teachers who were carrying out Field Experience Practices (PPL) in 2019 which are currently in the final semester of the undergraduate program. The sample in this study was voluntary and was not related to PPL values or assignments. A total of 116 students responded to the survey with a participation rate of 69.05%.

The researcher acts as a human instrument, meaning that the researcher has the function of determining the focus of the research, selecting data sources, conducting data collection, analyzing data, interpreting and drawing conclusions. Validation of the instrument is carried out by the researcher himself, with an evaluation of the understanding of qualitative methods and insight into the field of research. The data source in this study consisted of primary and secondary data. Primary data obtained from direct observation of the first source. While secondary data is obtained from the results of literature studies and interviews with several tutors. The data obtained is then reduced by removing information that is not needed. Then the data is presented and then verify the data.

Quantitative data analysis in this study was to determine the ability of PPL TPACK students. The method used in data analysis is descriptive analysis using a scale of inadequate, poor, capable, capable, and very capable and converted on a scale of 1 to 5.

This research was conducted in five stages: 1) making question items, 2) validity and reliability of items, 3) collecting data, 4) analyzing data, and 5) concluding. The instrument used was a TPACK questionnaire that had been modified according to the character of the study sample. The questionnaire contained 13 question items based on 4

TPACK subdomains/construction introduced by Mishra and Koehler. This questionnaire was adapted and modified from several previous studies) [7]–[9]. To adjust between the question items on the instrument and the character of the sample then the validity and reliability of the instrument are carried out. The questionnaire is an online-based questionnaire sent via social networks that are used generally by students (WhatsApp). Then the data analysis was performed using a simple statistical equation test to find out the results obtained. The last stage is drawing conclusions based on data that has been analyzed.

### III. RESULT AND DISCUSSION

#### A. Result

The results of this study are based on 13 question items representing 4 subdomains of the TPACK ability of prospective teacher students. The profile of TPACK's ability of students can provide information about the readiness of students to carry out classroom learning. This is in line with the results of Srisawasdi research stating that the TPACK ability possessed by a prospective teacher influences how to teach learning material in the classroom [3], [10]. There are 6 components of knowledge that makeup TPACK but in this study, it is focused on analyzing 3 components, namely: Content Knowledge (CK), Pedagogical Content Knowledge (PCK) and Technological Content Knowledge (TCK).

*Content Knowledge* is a form of knowledge about the subject matter to be taught. Based on the data analysis, it was found that the CK profile of the prospective teacher of PPL participant is presented in Figure 1 below.

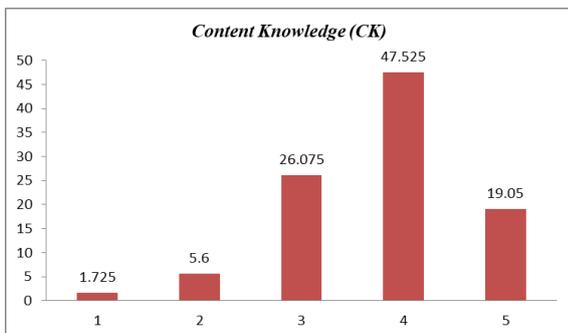


Fig. 1. Score Percentage Component CK

*Pedagogical Content Knowledge* relating to knowledge about teaching approaches that are consistent with the characteristics of the content to be taught and also knowledge of how content elements can be arranged for better teaching. Based on the data analysis, the PCK profile of prospective PPL teacher participants is obtained in Figure 2 below.

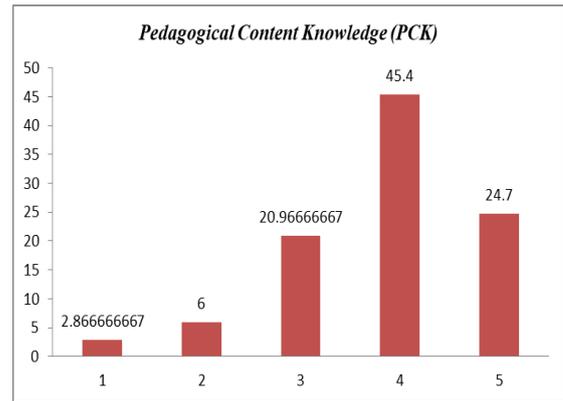


Fig. 2. Score Percentage Component PCK

*Technological Content Knowledge* is a form of knowledge about the integration of technology in the learning process including knowledge about the selection of technology by the content to be taught. Based on the data analysis, it was obtained the TCK profile of PPL participant teacher candidates presented in Figure 3 below.

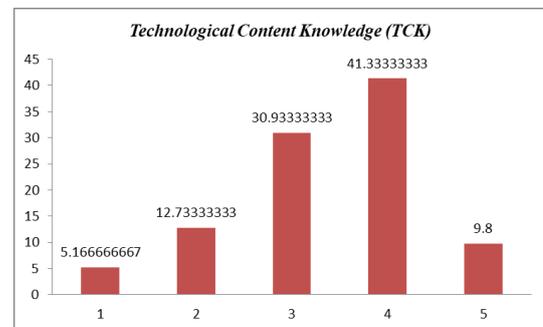


Fig. 3. Score Percentage Component TCK

*Technological Pedagogical Content Knowledge* is the integration of technological knowledge, pedagogical knowledge and content knowledge including how to facilitate student learning from certain content through pedagogical and technological approaches. Based on the data analysis, a TPACK profile of the PPL participant teacher candidates is obtained in Figure 4 below.

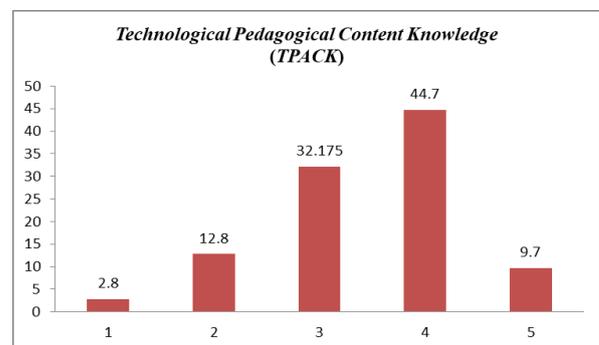


Fig. 4. Score Percentage Component TPACK

#### B. Conclusion

The results of the analysis on the CK component show that of the 116 prospective teacher students who implemented the PPL there were 47.5% who were in the

able category. These results illustrate that these prospective teacher students already have sufficient knowledge about the material to be taught at the school where PPL is implemented. This is because students learn the contents of the subject matter to be delivered before entering the class and also actively develop more understanding of the subject matter to be taught.

The results of the analysis on the PCK component show that of the 116 prospective teacher students who implemented PPL there were 45% who were in the category able to connect between knowledge content and pedagogical knowledge. This is indicated by the ability of prospective teacher students to develop a curriculum or syllabus and also be able to develop their learning implementation plan (RPP) and be able to carry out educational and dialogical learning. However, most (around 65%) of these prospective teacher students are still inadequate and some are not even able to choose learning approaches and strategies that are suitable with the material to be taught and also unable to make difficult teaching material easily understood by students and unable to make your questions to measure students' understanding of the material being taught.

The results of the analysis on the TCK component show that of the 116 prospective teacher students who implemented PPL there were 41% who were in the category able to connect between technological knowledge and content knowledge. This is indicated by the ability of students to choose the basic competency material for appropriate learning in teaching using technology, conducting learning processes with media technologies such as multimedia microscopes, LCD projectors, and computers. However, around 59% of students have not been able to identify learning materials that require technological facilities to facilitate students in learning and have not been able to develop student activities and tasks involving the use of technology.

Overall, the results of the analysis show that the 3 components that makeup TPACK, the most significant of which is content knowledge (CK). This can be seen from the ability of students to master learning material. However, there are 55% of students still not showing significant results in integrating the knowledge of content with technological knowledge and pedagogical knowledge. Some disadvantages that still need to be improved are the use of learning technology in teaching material to students adapted to pedagogical competencies and also the application of learning strategies that combine content, technology, and teaching approaches. The use of technology-based learning media can make students more interested in taking lessons and easier to understand the subject matter [11]

#### IV. CONCLUSION

Profile of TPACK ability of prospective teacher who takes part in PPL is in a low category. This is because the inability to use technology to manage learning materials becomes easier. Likewise, with the selection of strategies and learning approaches, they have not been able to make difficult teaching material easily understood by students.

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