

Measurement of Content Validity of School Field Introduction Applications based on Technological Pedagogical and Content Knowledge (TPACK) for Teacher Professionalism

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Abstract. Research to measure the level of content validity of the Technological Pedagogical and Content Knowledge (TPACK)-based School Field Introduction Application for students of the Early Childhood Education Teacher Education study program. The research method uses a development research approach. Applications are tested by experts to judge applications based on expert test instruments. The analytical technique used is using Aikens V Analysis to determine whether the application is content-worthy to use. The results of the content validity test the application was declared content valid, construction valid and linguistically valid by the experts with a v value of 0.80 with high criteria. In addition, the measurement suitability test by the experts obtained an ICC reliability value of 0.550, which can be stated that the experts have measured it is appropriate when compared to other experts. The conclusion of the research is that the Melin application of Technological Pedagogical and Content Knowledge (TPACK)-based School Field Introduction to teacher professionalism is feasible to use.

Keywords: content validity, tpack, professionalism.

1 Introduction

Education requires the role of a teacher, which is one of the main components. The teacher becomes an actor who has an important role in achieving success or educational goals. The implementation of the education system in Indonesia is always supported by the presence of teachers who are strengthened by the Law on Teachers and Lecturers that regulates it.

Teachers have a very important role in providing guidance to students to become qualified, competitive and productive human beings. A professional teacher is an educator who can implement relationships in a multidimensional form that has intellectual, intellectual and social responsibility. Teachers are expected to work professionally in completing their tasks in learning activities [1].

In general, professionalism can be interpreted as a person's commitment to be able to continue to improve his abilities and qualities continuously [2]. Brock (2013) mentions that a professional person can connect between competence and character for the moral responsibility he bears when working. Professional work is a job that can only be filled and carried out by someone who is specifically formed and prepared to be able to fill the job [3].

Teachers must have four competencies that must be mastered. The four competencies are pedagogic competence, personal competence, social competence, and professional competence. So that the teaching profession must be filled by people who are professional in the field of education. Teachers who have these four competencies are expected to be able to form a professional teacher who is ready to design, manage and implement learning to evaluate it.

The dimensions of professionalism of an Early Childhood Education teacher can be seen from seven professional dimensions: knowledge, qualifications, professional training and development, Skills, Autonomy, Values, Ethics, and Awards [4]. Teachers in carrying out their duties must follow the development of theories, regulations and the latest technological developments in accordance with the times in the field of education.

Education in the 21st century brings its own challenges for a teacher. Teachers need to learn and adapt to the challenges of the times. At this time, teachers are required to be able to master the latest technology that can support their activities. Small to large changes occur in the implementation of learning. Conventional learning by teachers has changed in the 21st century. Technological resources are created and can be used by teachers in learning activities in the classroom. Even teachers and students can be in their respective places without having to meet in one place. Technology-assisted learning can be implemented not necessarily at the same time. Teachers and students can carry out teaching and learning activities within a certain time span.

Technology in today's life is no longer foreign and new, but has become the closest part of everyday life. Likewise, in the world of education, technology can no longer be separated from the world of education. However, it is necessary to realize that the presence of technology cannot replace the important role of the presence of the teacher in the classroom. Although the existence of modern technology and rapid technological advances have provided tools to improve the effectiveness of the learning process, it has not been able to replace the role of the teacher as an important variable in achieving educational success [5]. Teachers are prepared to face changing times through education to prepare prospective teachers and professional teachers.

Universitas Negeri Medan (UNIMED), as one of the Educational Personnel Education Institutions in Indonesia, of course, needs to prepare a curriculum for the preparation of professional teachers in accordance with the challenges of the times. One of the professional teacher preparation programs implemented at UNIMED is the Introduction to School Field Course (*PLP*). The PLP course is expected to provide prospective teachers with an understanding of the various processes involved in implementing learning activities in schools, as well as have critical, analytical and innovative abilities at completing various tasks for a teacher. Students must complete the PLP course in order to ensure that they are prepared in terms of how to become a professional teacher candidate. Students are given various activities to be able to carry out various knowledge gained while studying in class by observing the learning process at school, practicing to be able to develop learning tools, providing assistance

to students. Observation activities in schools receive guidance and direction from supervisors and lecturers on a regular basis to be able to get a reflection of what has been observed and done.

Early Childhood Education Teacher Education Study Program, Faculty of Education, through research the KDBK team has developed a *PLP* model based on Technological Pedagogical and Content Knowledge (TPACK) as the basis for developing the professionalism of Early Childhood Education teachers. As we know, to become a professional teacher in the 21st century, it is not enough to just master the pedagogic elements and the field of expertise (content knowledge), but it is necessary to have integrated pedagogic, content, and technology skills. Integrated pedagogic knowledge, content knowledge, and technological knowledge are known as TPACK or Technological Pedagogical and Content Knowledge [6]. TPACK is also a way to think about effective technology integration, recognizing technology, pedagogy, content and context as interdependent aspects that teachers need to teach [7].

The implementation of the TPACK-based *PLP* model carried out in the Teacher Education for Early Childhood Education Faculty of Education UNIMED, the achievement of the technology dimension as one of the dimensions of professionalism according to Brock (2013) in Teacher Education for Early Childhood Education Faculty of Education UNIMED students is the lowest compared to the achievement of other dimensions of professionalism (knowledge dimension, skill dimension, value dimension), and ethical dimensions). Students are already able to operate computers and other software, but the integration of TPACK in learning is something new for students. Students need the right media to help them integrate TPACK in learning as well as help them develop professionalism as prospective teachers. The integration of TPACK in learning in early childhood education is indeed not easy to do, it requires professional development of teachers who focus on ICT and the development of multimodal learning platforms [8].

The implementation of the TPACK-based *PLP* model needs to get technological support to be able to help develop the professionalism of prospective Early Childhood Education teachers in the Early Childhood Education Teacher Education program. students are in the school environment. The purpose of the study was to determine the accuracy of the content of the *PLP* application development to improve the professionalism of a teacher candidate named Melin.

2 Method

The research was conducted with a development approach. Tests are carried out to test the validity of the content of the developed application. Validation was carried out by three experts. Validation was carried out using an expert validation instrument consisting of 3 review factors, namely Content, Construction, and Language. Content validity analysis uses the Aikens'V formula and reliability testing uses ICC reliability to test the agreement of experts in assessing and validating the developed application.

3 Result and Discussion

Content validation was carried out by three experts to measure the accuracy of the content from the Melin application as an e-learning medium for *PLP* courses based on Technological

Pedagogical and Content Knowledge (TPACK) to develop the professionalism of Early Childhood Education teachers. Three experts were given access to be able to assess the accuracy and feasibility of the application before the use test was carried out.

Experts provide an assessment of the Melin application using an expert validation instrument. The expert validation instrument consists of three aspects, namely content aspects, construction aspects, and language aspects. Experts provide an assessment according to what was found based on 28 indicators in the instrument. The expert's assessment was then analyzed using the Aikens V formula which can be seen in the Table 1.

Table 1. Test Results Content Validity by Experts

Indicator	V	Criteria	Indicator	V	Criteria
1	0.83	Valid	15	0.92	Valid
2	1.00	Valid	16	0.67	Valid
3	1.00	Valid	17	0.58	Valid
4	0.75	Valid	18	0.75	Valid
5	1.00	Valid	19	0.67	Valid
6	0.92	Valid	20	0.75	Valid
7	1.00	Valid	21	0.83	Valid
8	0.67	Valid	22	0.83	Valid
9	0.75	Valid	23	1.00	Valid
10	0.92	Valid	24	0.75	Valid
11	0.75	Valid	25	0.67	Valid
12	0.67	Valid	26	1.00	Valid
13	0.75	Valid	27	0.83	Valid
14	0.75	Valid	28	0.92	Valid

Based on table 1, it can be seen that the results of the content validity test using the Aiken V formula get a value of 0.80, more than 0.3, so that the Melin application is declared content valid. The validity values for each indicator are quite diverse. Some indicators get a fairly low value when compared to others, namely indicator 17 with a V value of 0.58. Indicator 17 asks if there are clear instructions on how to use the application. Researchers have not provided clear enough instructions to users when using the Melin application, so experts assess and provide suggestions to add clearer instructions for use to make it easier for users.

Content validity is able to provide a description of the attributes that are being researched and measured by several experts. The validity of the Melin application content is able to provide an overview of the completeness of the initial design of the Melin Web-based application development to support the implementation of the introduction of the school field, especially regarding the professionalism of Early Childhood Education teacher candidates. Instructions on how to use it are indeed a very important attribute for users, because developers do not meet directly with users to explain each stage or what students must do when using the melin application. The analysis is continued by testing expert agreement in measuring.

The results of the expert's assessment were then tested for ICC reliability to measure the consistency and suitability of the experts in measuring the development of the Melin application

as an e-learning medium in *PLP* courses based on Technological Pedagogical and Content Knowledge (TPACK) to develop the professionalism of Early Childhood Education teachers. The analysis was carried out using the SPSS application and the results obtained in the Table 2.

Table 2. Expert Test ICC Analysis Results

Cronbach's Alpha	Interclass Correlation
0,786	0,550

Based on table 2, it can be seen that Cronbach's alpha value of 0.786 is greater than 0.5 and the ICC value is 0.550, which is greater than 0.5. The results of the ICC reliability analysis of 0.550 indicate that the experts have given an assessment when compared to other experts on Melin's learning.

Melin as a learning in the way of web-based computer software. A website or abbreviated as web, usually written www stands for word wide web, can be interpreted as a collection of digital information consisting of several pages and contains text, images, video, audio, and others provided with an internet route displayed by a browser. It can also be interpreted that the website is an internet facility that connects one user to another in a series of interrelated links connected by hyperlinks . The use of e-learning is a way of implementing TPACK in learning.

The basic concept of TPACK emphasizes the relationship between subject matter, technology and pedagogy. TPACK (Technological, Pedagogical, Content Knowledge) is a framework for designing new learning models by combining three main aspects, namely technology, pedagogy and content/material knowledge. The interaction between the three components has the power and attraction to foster active learning focused on students. Here is an image of the skeleton of TPACK on figure 1.

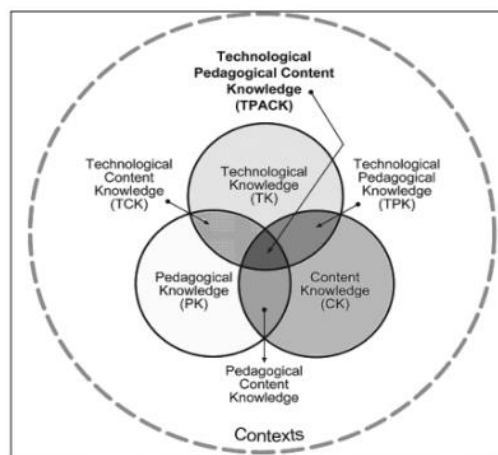


Fig. 1. TPACK Framework

here are seven variables that affect TPACK [6], namely:

1. Technological Knowledge (TK) is knowledge about how to use the right technology;
2. Pedagogical Knowledge (PK) is knowledge of the techniques of managing learning activities;
3. Content Knowledge (CK) is knowledge about the substance of the material or teaching materials that will be taught to students;
4. Technological Content Knowledge (TCK) is knowledge about how content can be sourced and utilized by technology;
5. Pedagogical Content Knowledge (PCK) is knowledge of one's technique in providing understanding to others from the material provided;
6. Technological Pedagogical Knowledge (TPK) is knowledge of how a technology provides facilities using a pedagogic approach in a discussion.

In TPACK, the emphasis is on how knowledge of technology (Technological Knowledge), knowledge of pedagogy (pedagogy knowledge), and knowledge of content (content knowledge) can be combined in a learning process which will make learning effective and successful in a learning context using e-learning. The e-learning system can be accessed by students easily [9]. The Melin system can be easily accessed via the internet.

The internet, which has become an important part of human life in supporting communication, is also used to support learning media through web-based electronic learning. Searching for information through the internet is one of the easiest ways without having to go to a certain place physically. There are several advantages of using the web as e-learning, namely:

1. Make it easy for someone to be able to learn from different places and different times.
2. Adjusting to what information is needed individually.
3. Make it easy to disseminate information via links to other students quickly.
4. Able to provide collaboration facilities in completing tasks.
5. Encourage students to be creative and independent in finding references.

Web-based e-learning facilitates communication between teachers and students when giving materials, eases assignments and collects assignments, and facilitates the assessment process [10]. Learning using e-learning can increase efficiency from conventional methods, improve learning outcomes, and even improve teacher professionalism. Therefore, the Melin application is appropriate to develop the professionalism of prospective Early Childhood Education teachers through the internet network.

E-learning for students is a learning medium that can increase learning motivation and facilitate the learning process independently and individually, while e-learning for teachers is a medium that helps facilitate the delivery of materials and student assignments. The development of an e-learning application needs to be considered. Namely, the material displayed must support the delivery of correct information, not only prioritizing the beauty side; pay close attention to the teaching and learning techniques used; Pay attention to the technique of evaluating student progress and storing student progress data when carrying out the introduction of the school field.

4 Conclusion

Research on the development of website-based applications based on technological pedagogical and content knowledge to develop the professionalism of a prospective Early Childhood Education teacher named Melin has gone through the expert validation stage. The application was declared content valid, construction valid and linguistically valid by the experts with a v value of 0.80 with high criteria. In addition, the measurement suitability test by the experts obtained an ICC reliability value of 0.550, which can be stated that the experts have measured it is appropriate when compared to other experts. Testing can be continued at the stage of trial use by students who will carry out learning about the introduction of the school field.

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