

Pedagogic Competency of Prospective Mathematics Teacher Students through the Implementation of the Cooperative Model of Team Assisted Individualization Type in Junior High School

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Abstract

This research aimed to find out the pedagogic competency of prospective mathematics teacher students through the implementation of the cooperative model of Team Assisted Individualization (TAI) type in junior high school. The subject of this research was the mathematics education study program students Teacher Training and Education Faculty Cokroaminoto Palopo University that consists of two subjects. Data collection techniques in this research were observation, and documentation. The data that had been obtained was analyzed by using Miles and Huberman model data analysis techniques. The results showed that the pedagogical competencies of prospective mathematics teacher students were 1) the aspect of understanding the characteristics of students, in this aspect students understood students only in terms of cognitive namely by reviewing the material that had been studied and giving questions of inducement, 2) aspects of learning design, students designing learning by using existing tools (RPP and LKPD), which are modified according to need. 3) Aspects of the implementation of learning, students are able to carry out learning according to the procedures contained in the implementation plan of learning, but still low in classroom management 4) aspects of the evaluation of learning outcomes, evaluation of learning outcomes conducted by the subject is only limited to giving a quiz on the learning process. evaluation of spiritual and social attitudes not carried out in the learning process.

Keywords: *Pedagogic competency, prospective mathematics teacher students, team assisted individualization*

1. Background

Teacher is a key component in a learning mathematics (Ma'rufi, Budayasa & Juniati, 2018). The success of a learning is influenced by the professionalism of a teacher. Professional teachers must have four teacher competencies. According to Law No. 14 of 2005 concerning Teachers and Lecturers is explained there are four competencies that must be possessed by a teacher, namely pedagogical competence, personality competence, social competence and professional competence.

Pedagogic competence is absolutely owned by both teachers and prospective teachers. Pedagogic competence is the ability in terms of managing learning. According to Nengsih, (2017) pedagogical competence is a specific competency, which will differentiate teachers

from other professions and will determine the level of success of process and learning outcomes of their students. Republic of Indonesia Government Regulation number 19 of 2005 concerning national education standards in the explanation of Article 28, paragraph (3), item A. explain pedagogical competence is the ability to manage student learning, which includes an understanding of students, the design and implementation of learning, evaluation of learning outcomes, and the development of students to actualize the various potentials they have. The aspects of pedagogical competence in the research that is investigated include understanding students, the design and implementation of learning, and evaluation of learning outcomes.

Prospective teacher students are students who are prepared to become a teacher in the future. Therefore, important teacher candidates have 4 teacher competencies, mainly pedagogical competencies. Students who have low pedagogical competence will get difficulties in teaching their students later. As an effort to improve the pedagogical competencies of prospective teacher students, it is necessary to trace the pedagogical competence of students, so that the strategies that is used, can be appropriate and can improve the pedagogical competencies of prospective teacher students. To explore the pedagogical competence of students, students undertake the learning process. The learning process that is undertaken by students in this study is a learning process by applying the cooperative model type of Team Assisted Individualization (TAI).

Cooperative model of Team Assisted Individualization (TAI) type is a model of cooperative learning where students with their individual abilities work together in small groups with different abilities (Slavin in Nurhasanah, 2017). According to Pratiwi, Mardiyana & Subanti (2014) team assisted individualization in mathematics is a program that combines cooperative learning with individual learning to fulfill the needs of a variety of different classes. The purpose of the cooperative learning model of team assisted individualization type is to minimize teacher-centered learning, increase student knowledge, abilities, and motivation by group learning.

Based on the description, the formulation of the problem in this research is how the pedagogical competencies of prospective mathematics teacher students in applying the cooperative learning model of team assisted individual type in junior high school. The purpose of this study is to explore the pedagogical competencies of prospective mathematics teacher students in applying cooperative learning models of team individual assisted types in junior high schools.

2. Methods

This type of research was qualitative research. Qualitative research in this study is defined as a research procedure that produces descriptive data in the form of written or oral words from people and observed behavior (Creswell, 2016). This research was carried out at SMP Negeri 7 Palopo and SMP Negeri 1 Suli. The subject of this research was the mathematics education study program students Teacher Training and Education Faculty Cokroaminoto Palopo University consisting of 2 high academic subjects.

Both subjects will learn by using a cooperative model of team assisted individual type of two meetings. There are two research instruments, namely the main instrument and supporting instruments. The main instrument was the researcher himself. Supporting instrument was observation sheets. Observation and documentation data collection techniques. the technique of checking the validity of the data was carried out using time triangulation techniques. The technique of anlysis data used miles and hub data model analysis, namely 1) data reduction, 2) data display, and 3) conclusions.

3. Results and Discussion

The results of observations of pedagogical competencies of prospective mathematics teacher students include 4 aspects, namely: 1) students' understanding, 2) learning design, 3) learning implementation, and 4) evaluation of learning outcomes.

Students' Understanding

Table 1. Results of pedagogical competency observations of prospective mathematics teacher students for understanding students

Subject	Students' Understanding
I	At the first and second meeting, students' understanding of the subject is only on the cognitive aspects of students. The subject understands the cognitive abilities of students when doing apperception by giving questions to students, during group discussions by visiting each group and giving direction to groups that have difficulty, at the time of exposure to the results of group discussions and by giving a quiz at the end of learning
II	At the first and second meeting, students' understanding of the subject is only on the cognitive aspects of students. Subjects understand the cognitive abilities of students by means of the beginning of the learning. subject calls randomly some students to be tested in terms of the ability to multiply operations. Subjects also understand the cognitive abilities of students when doing apperception by giving questions to students, during group discussions by visiting each group and students who have difficulty when working on LKPD, and when presenting the results of student group discussions

Based on Table 1, there is a tendency for both subjects to understand students' aspects. Understanding of students is done by both subjects only limited to the cognitive aspects of students, namely by giving questions inducement, monitoring the way of group discussion, as well as in the process of presenting the results of group discussion of students. Understanding of students in other aspects such as student learning styles, student characters, and so on were not visible from both subjects during the learning process.

Learning Design

The learning tools used in subject I and subject II consist of lesson plans, student worksheets and evaluation sheets in the form of quizzes. Learning devices that is used in subject I in learning was the learning devices that already exist, but it was modified according to the material to be taught. "learning tool that is used, i got from the internet, I just changed the material and the identity of the school." Said subject I, "The RPP and LKPD that I used were obtained from the internet, but I adjusted to the material being taught." Said subject II.

The learning implementation plan that is used by the subject contains components namely 1) school identity, 2) subject or theme / sub-theme identity, 3) class / semester, 4) time allocation, 5) KI, KD, and indicators of competency achievement, 6) learning objectives, 7) subject matter, 8) models and methods used, 9) media and materials used 10) learning resources, 11) Steps in learning, and 12) assessment of learning outcomes.

Learning Implementation

Table 2. Results of observation pedagogical competencies of prospective teacher mathematics students in aspects of learning implementation

Subject	Pelaksanaan pembelajaran
I	Preliminary activities at meetings 1 and 2 was conducted by the subject, namely, Saying greetings, praying before learning, doing apperception by delivering prerequisite material and conveying learning activities to be carried out. The core activities carried out by subjects at meetings 1 and 2 are: explaining the material being studied, distributing LKPD, directing students to work on LKPD

Subject	Pelaksanaan pembelajaran
I	<p>individually, organizing students into several groups directing students to discuss the work results of LKPD in groups, guiding students who have difficulty, directing students to present the results of their group discussions, and evaluating in the form of quizzes. In the group discussion process, it appears that there are still many students who do activities outside the learning process.</p> <p>Closing activities, at the meeting 1 and 2 closing activities conducted by the subject that is delivering material to be studied next meeting, and say hello.</p>
II	<p>Preliminary activities conducted by subjects at meetings 1 and 2 are greeting and directing students to pray, checking the attendance of students, doing apperception by delivering prerequisite material, and testing the multiplication ability of some students randomly as well as conveying learning activities to be carried out</p> <p>The main activities that was carried out by subjects at meetings 1 and 2 were: explaining the material being studied, organizing students into several groups, distributing LKPD, directing students to work on LKPD individually, directing and guiding students in discussing the work results of LKPD in groups, directing students to present the results of their group discussions, and evaluating in the form of quizzes. However, in the evaluation meeting 1 in the form of a quiz was not carried out, because the time spent in the group discussion process was not in accordance with the learning plan. In the group discussion process, it appears that there are still many students who do activities outside the learning process.</p> <p>Closing activities, at the meeting 1 closing activities conducted by the subject only by saying hello. At the meeting 2 closing activities conducted by the subject that is delivering the material to be studied next meeting, and say hello.</p>

Based on Table 2, the steps of learning that was undertaken by both subjects, tend to be in accordance with the learning plan that is made, which is using the steps of the cooperative of model team assisted individualization of type. Although at the meeting of 1 subject II, quizzes were not carried out, due to insufficient time. In the learning process carried out by both subjects, both meetings 1 and 2 were seen in the group discussion process, there were still many students who did activities outside the learning process, causing the classroom situation to be less conducive. Interaction between subjects and students and between students and students is less active.. It is seen that the ability to elaborate subject classes is still relatively low.

Evaluation of Learning Outcomes

Table 3. Results of pedagogical competency observations of prospective mathematics teacher students evaluating learning outcomes

Subject	Evaluation of Learning Outcomes
I	<p>At the first and second meetings, the learning evaluation process is carried out only from subject I, namely by giving a quiz to students after the discussion process is complete. The giving of this quiz is meant to know the extent of students' understanding in understanding the material being studied. An evaluation of spiritual and social attitudes did not appear from the two learning process meetings conducted</p>
II	<p>At the first meeting, the evaluation of student learning outcomes was not carried out by the subject, both in terms of knowledge, and from spiritual and social attitudes, this is because the time spent at the time of the discussion was not in accordance with what was planned so that the evaluation was not carried out. At the second meeting, the subject evaluates the learning outcomes of students by giving individual quizzes at the end of learning, giving these quizzes to the subject to determine the level of understanding of students towards the material being taught.</p>

Based on Table 3, pedagogical competence in the evaluation aspects of learning outcomes of both subjects, tends to evaluate learning outcomes only on students' material knowledge by giving a quiz at the end of learning. Evaluations of students' spiritual and social attitudes are not carried out during the learning process.

Discussion

Pedagogical competence of mathematics teacher candidates includes 4 aspects, namely student understanding, learning planning, learning implementation, and evaluation of learning outcomes. In the aspect of student understanding, prospective teacher students understand students by giving inducement questions and monitoring and directing class discussion. Understanding the character of students is important to do, this can help in overcoming the difficulties experienced by students in the learning process. According to Mashari (2015) teachers who do not understand students will cause learning practices that do not provide possibilities for the development of students' potential.

Learning planning aspects, in this aspect the learning tool used by the subject is an existing learning device, but modified according to needs. The learning implementation plan used by the subject contains components of the 2013 curriculum learning implementation plan. Based on the Minister of Education and Culture Regulation Number 22 Year 2016 Regarding Basic and Secondary Education Process Standards, the components of the learning plan (RPP) consist of: 1) school identity, 2) identity of the subject or theme / sub-theme, 3) class / semester, 4) subject matter, 5) time allocation, 6) learning objectives 7) basic competencies and indicators of competency achievement, 8) learning materials, 9) learning methods, 10) learning media, 11) learning resources 12) learning steps, 13) assessment learning outcomes

Aspects of the implementation of learning, the learning process carried out by the subject has included the steps of the cooperative type team assisted individualization model in accordance with the learning plan. However, the ability of subjects in managing class is still low, where there are still many students who do activities outside of learning activities, so that the class is not conducive. However, the ability of subjects in managing class is still low, where there are still many students who do activities outside of learning activities, so that the class is not conducive. According to Indriyani, Asriati, and Parijo (2013), a good learning process can be known by the existence of better design and implementation of learning activities including the management of learning spaces (classrooms), student management and learning management. Whereas Weber (in Aulia & Sontani 2018) explained that classroom management is more directed to a complex set of behaviors where the teacher arranges and maintains classroom conditions that will enable students to achieve learning goals efficiently.

In the evaluation aspect, in learning activities, evaluation is very important to know the level of success of the learning process. According to Lestariningsih (2014) evaluation activities are a process to determine the decision or assessment of the extent of students' absorption of the material that has been given. In the learning process carried out by the subject, evaluation of learning is done only on the knowledge of student material, evaluation of spiritual attitudes and social attitudes is not carried out by the subject.

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4. Conclusion

Based on the results of research and discussion, the conclusion of this study is the pedagogical competence of prospective mathematics teacher students, namely: 1) aspects of understanding the characteristics of students, in this aspect students understand students only in terms of cognitive namely by reviewing the material that has been studied, giving

teasing questions, and guiding class discussion process, 2) aspects of learning design, students design learning by using existing tools (RPP and LKPD), which are modified according to needs. 3) Aspects of implementing learning, students are able to carry out learning according to procedures but are still low in managing classroom interactions. 4) aspects of the evaluation of learning outcomes, evaluation of learning outcomes conducted by the subject is only limited to the provision of quizzes in the learning process to determine the level of understanding of students towards the material being taught. evaluation of spiritual and social attitudes, the subject is not carried out in the learning process.

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