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PEDAGOGIC AND PROFESSIONAL COMPETENCIES IN S1 MATHEMATICS EDUCATION STUDENTS AS PROSPECTIVE HIGH SCHOOL MATHEMATICS EDUCATORS

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ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi sejauh mana mahasiswa S1 Pendidikan Matematika memiliki kompetensi pedagogik dan profesional yang sesuai dengan standar pendidik. Kompetensi pedagogik dan profesional merupakan dua komponen utama yang wajib dimiliki oleh calon pendidik agar dapat menjalankan tugasnya secara optimal. Penelitian ini menggunakan pendekatan kuantitatif dengan metode deskriptif dengan subjek penelitian terdiri dari 110 mahasiswa Program Studi Pendidikan Matematika yang terdiri dari 3 kelas dengan dosen yang berbeda. Teknik pengumpulan data yang digunakan pada penelitian ini berupa tes, tes yang digunakan berupa tes objektif yang berbentuk pilihan ganda (multiple choice) untuk memperoleh pemahaman mendalam tentang kompetensi pedagogik dan profesional. Hasil penelitian ini diperoleh, kompetensi pedagogik mahasiswa S1 program studi pendidikan matematika sebagai calon pendidik adalah sebesar 80,12 dengan kategori baik. Nilai tertinggi untuk kompetensi pedagogik mahasiswa terdapat pada aspek manajemen kelas dan penilaian yang efektif. Sedangkan nilai kompetensi profesional mahasiswa S1 program studi pendidikan matematika sebagai calon pendidik adalah sebesar 80,42 dengan kategori baik. Nilai tertinggi untuk kompetensi profesional mahasiswa terdapat pada indikator menggunakan konsep-konsep aljabar dan menggunakan pola dan fungsi dengan nilai sangat baik. Kesimpulan penelitian ini adalah kompetensi pedagogik dan profesional pada mahasiswa S1 pendidikan matematika sebagai calon pendidik tergolong dalam kategori baik.

Kata Kunci: Kompetensi Pedagogik, Kompetensi Profesional, Pendidikan Matematika

ABSTRACT

This study aims to identify the extent to which S1 Mathematics Education students have pedagogic and professional competencies that are in accordance with educator standards. Pedagogic and professional competencies are the two main components that must be possessed by prospective educators in order to carry out their duties optimally. This study uses a quantitative approach with a descriptive method with the research subject consisting of 110 students of the Mathematics Education Study Program

consisting of 3 classes with different lecturers. The data collection technique used in this study is in the form of a test, the test used is in the form of an objective test in the form of multiple choice to gain a deep understanding of pedagogic and professional competence. The results of this study were obtained, the pedagogic competence of S1 students of the mathematics education study program as prospective educators was 80.12 with a good category. The highest score for students' pedagogic competence is found in the aspects of classroom management and effective assessment. Meanwhile, the professional competency score of S1 students of the mathematics education study program as prospective educators is 80.42 with a good category. The highest score for student professional competence is found in indicators using algebraic concepts and using patterns and functions with very good scores. The conclusion of this study is that the pedagogic and professional competence in S1 mathematics education students as prospective educators is classified as a good category.
***Keywords**: Pedagogical Competence, Professional Competence, Mathematics Education*

INTRODUCTION

Higher education is the main pillar in building the quality of human resources who are competent, professional, and able to contribute to the development of science, technology, and industrial needs (Gulo, 2022). Every study program in higher education, including the mathematics study program, is designed with the main goal of producing graduates who have competencies in accordance with national and international standards. Therefore, the graduate profile is an important element that describes the qualities, abilities, and character that graduates are expected to have after pursuing education.

In a world that continues to evolve rapidly due to globalization and technological revolutions, the need for graduates who not only master theoretical science but also have relevant practical skills is urgently needed (Siregar et al., 2024). The world of industry, education, and research demands graduates with comprehensive abilities, which include analytical skills, problem solving, communication skills, and a strong personality. This graduate profile is a guide in curriculum design, learning processes, and evaluations in higher education (Ananda et al., 2022). The birth of Law No. 14 of 2005 concerning educators and lecturers (Ministry of National Education, 2005) and government regulation No. 19 of 2005 concerning National Education Standards, basically government policies in it contain government efforts to organize and improve the quality of educators in Indonesia (Dananjaya, 2023). Educators are important subjects in a series of learning process implementations.

The success of the student learning process is determined by the educator's ability to manage learning which is part of the educator's pedagogical competence. Pedagogic

competence is a special competence, as a differentiator between the educator profession and other professions (Rahman, 2021). Pedagogic competence is related to the ability of educators to plan and implement learning, evaluate learning achievement, and improve students (Astuti, 2017).

In improving the quality of education, it can also be improved by improving the quality of educators (Permana, 2017). Improving the quality of educators is not only seen from the welfare of educators but can also be done by improving the professional competence possessed by an educator and the pedagogic competence that he has. This competency is basically very important for an educator to have. Not only an educator, prospective educators must also prepare themselves carefully starting from college. Because basically teaching students can master the material or understand the material being taught. Because with good education, it will create professional educators.

Basically, competence is a description that a person must do in his work, as explained in Law Number 14 of 2005 concerning Educators and Lecturers Article 1 paragraph (10) which states that competence is a series of cognitive, psychomotor, and affective that must be possessed, protected and controlled by educators and lecturers in making progress (M Rizqi, 2017). So educators are obliged to have high dedication to the task performed, because if this task is handed over to what is not an expert it will have a bad effect.

As explained by Sukmawati, educators as professional educators must have the ability to have competencies that have been released and be able to show their quality as professional educators, because competence is the mastery of each person's activity skills that contain the cognitive, skillful, and affective aspects of relevant work at appropriate standards (NIRA, 2022). The indicators of educator proficiency that must be possessed by the Regulation of the Minister of National Education (Minister of National Education No. 16 of 2007) concerning indicators of academic level and educator competence explain that this educator competency standard is improved in four main competencies, namely pedagogic, personality, social, and professional competence (Sari, 2017). The four competencies are integrated in educator professionals. Pedagogic competence is the ability to manage students that includes the scope: (1) the ability to understand student characteristics; (2) the ability to learn; (3) the ability to evaluate learning outcomes; and (4) the ability to develop potential students (Zega et al., 2024). And professional competence is proficiency in mastering learning materials in large and in-depth. The scope of professional competence is: (1) The ability to master the material, order, principles, and perspectives that support the subject; (2) the ability to develop learning materials that are presented creatively; (3) Ability to develop professionalism continuously by carrying out reflective actions; and (4) the ability to utilize information and communication technology to develop oneself.

UIN Sunan Kalijaga also sets the profile of graduates in the Mathematics Education study program consisting of three profiles, namely, First, Prospective Mathematics Educators, Second, Mathematics Education Research Assistants, Third, Mathematics Education Edupreneur. The main role of graduates of the Mathematics Education study program of UIN Sunan Kalijaga Yogyakarta is as a mathematics educator. They can work as mathematics educators at various levels of education, both elementary and high school with noble, inclusive, knowledgeable, and up-to-date morals in the field of mathematics education. They are responsible for teaching and guiding students in understanding mathematical concepts and mathematical thinking, helping them develop logical, critical, creative and analytical thinking skills, and preparing them to face challenges in the field of mathematics. As researchers in the field of mathematics education, graduates have a role in conducting research that aims to increase understanding of inclusive, up-to-date and applicable mathematics learning, as well as identify factors that affect students' mathematics learning outcomes, or evaluate the impact of mathematics education innovations. Their research can make a valuable contribution to the development of mathematics education and problem solving in mathematics education in society. Meanwhile, as an edupreneur in the field of mathematics education, graduates have a role in creating and managing innovations in the field of mathematics education that are integrated with Islamic, cultural and technological values and have an inclusivity perspective. They can establish Educational Institutions, Educational technology companies, or Education start-ups that focus on developing innovative and effective math learning solutions. They may also develop math education products and services, such as textbooks, learning software, or online learning platforms.

Thus, graduates of the Mathematics Education Study Program of UIN Sunan Kalijaga Yogyakarta have an important role in increasing understanding and appreciation of mathematics, as well as improving the quality of mathematics education as a whole in society. By filling the role of educators, researchers, and edupreneurs, they can make a meaningful contribution in shaping a better future of mathematics education.

Pedagogic and professional competencies are the two main components that must be possessed by prospective educators in order to carry out their duties optimally (Pratiwi et al., 2021). Pedagogic competence refers to an educator's ability to understand student characteristics, design effective learning, and evaluate learning outcomes (Diana, 2023). Meanwhile, professional competence includes mastering learning materials in depth and broadly in accordance with the field of expertise taught,

In the context of mathematics education, this competency is very important because mathematics is often considered one of the complex subjects and requires an effective approach to improve student understanding (Asshagab et al., 2023). This is in line with the opinion of Saragih, (2019) that higher education, especially the study of mathematics education, has a great responsibility in shaping students as competent prospective

educators. The learning process in higher education is designed to develop both types of competencies holistically. However, challenges in the development of pedagogic competencies often arise due to various factors, such as a less relevant curriculum, limited teaching practice experience, and a lack of integration between theory and practice in the learning process.

Along with the times, the demands on the quality of educators are increasing. Educators are not only expected to be able to deliver material well but are also required to understand the needs of students, utilize technology in learning, and create a fun learning atmosphere (Sibagariang et al., 2021). Therefore, it is important to measure the pedagogic and professional competence of S1 mathematics education students to ensure that they are ready to face these challenges.

This competency measurement not only serves as an evaluation of students' abilities, but also as feedback for higher education institutions to continue to improve the quality of their educational programs. From the results of the measurement, it can provide an overview of the aspects of competencies that are already strong and the aspects that still need development, thus, strategic measures can be designed to produce graduates who are not only academically competent, but also able to make a real contribution to the world of Education.

This study aims to identify the extent to which S1 Mathematics Education students have pedagogic and professional competencies that are in accordance with educator standards. The results of this research are expected to contribute to curriculum development, improving the learning process, and improving the quality of prospective educators to be able to compete in the 21st century education era.

METHODS

This study uses a quantitative approach with a descriptive method that aims to measure the pedagogic and professional competence of S1 mathematics education students as prospective educators later. Sugiyono (2017: 81) explained that the quantitative research method is a method based on the philosophy of positivism, used in researching research samples and populations (J. A. Kurniawan & Nawawi, 2020). The descriptive research method is a method in researching the status of a group of people, an object, a condition, a thought, or a current event (Sugiana & Fadli, 2023). The descriptive method is used to create a systematic, factual and accurate description of the existing phenomenon. Quantitative descriptive research is research that describes variables as they are, supported by data in the form of numbers generated from actual circumstances (Machali, 2021).

This research was conducted at Sunan Kalijaga State Islamic University Yogyakarta, precisely on Jl. Laksda Adisucipto, Papringan, Caturtunggal, Depok District, Sleman Regency, Special Region of Yogyakarta. The selection of this location is based

on the relevance of the Mathematics Education study program at the university. The population in this study is part of the students from the Mathematics Education study program. Which consists of 3 classes with different lecturers. Each class consists of ± 30 students. To examine all the things in the research site, the subjects involved in this study amounted to 110 students, who would answer questions given related to pedagogic and professional competitions for them to become qualified educator candidates. The data from these students is expected to provide results in ensuring their readiness to become competent educators. This research was conducted in the odd semester of the 2024/2025 academic year.

In this study, the phenomenon to be researched is "Pedagogic and Professional Competence in S1 Mathematics Education Students as Prospective Educators". The variables in this study are pedagogic competence and professional competence so that the researcher needs 2 instruments, namely:

1. Instrument for student pedagogic competency test
2. Instruments for student professional competency tests

The variables and instruments have been determined, so the next step is to make indicators. Determining the right indicators requires in-depth knowledge of the variables being studied and the supporting theories. This is then rephrased into questions or statements. This process is called the instrument grille. The following is a grid of research instruments in the form of a table.

The grid of test instruments for this study can be seen in table 1 and table 2.

Table 1. Pedagogic competency instrument grid

No	Aspects	Indicator	Sum Grain
1.	Classroom Management	5	16
2.	Effective Implementation of the Learning Process	3	3
3.	Effective Assessment	3	8
4.	Use of Technology	2	3
	Total	**13**	**30**

The above instrument is made to dig up information in depth from the research subject, by providing space for students to provide objective answers. Aspects that will be measured through this instrument include pedagogic competence in S1 mathematics education students as prospective educators, this approach allows researchers to obtain

more varied data, because students can provide their answers specifically and clearly. This competency is related to the ability to effectively educate, which not only focuses on delivering material but also on developing students' potential (Purwandari, 2017). In the Independent curriculum, pedagogic competence is very important to support adaptive and student-centered learning.

Educators must understand the characteristics of students, their physical, psychological, social, and cognitive development. This includes the ability to recognize the learning needs of each student both individually and in groups. This is in line with the opinion Crisnawati et al., (2022) that by knowing the characteristics of students, it will be easier for teachers to be able to carry out the learning process properly. The learning process basically refers to the character of students, this we can realize together that not all students have the same characteristics in a class. Therefore, teachers should also recognize the character in order to be able to balance between one character and another because it is impossible for a teacher to give the same treatment with a different character.

Table 2. Professional instrument grille

No	Indicator	Question indicators	Sum Grain
1.	Using numbers, relationships between numbers, various number systems and number theory	3	3
2.	Using measurement and estimation	2	2
3.	Using mathematical logic	3	3
4.	Using geometric concepts	3	3
5.	Using statistical and opportunistic concepts	3	4
6.	Using patterns and functions	2	2
7.	Using algebraic concepts	3	3
	Total	**19**	**20**

The above instrument is made to dig up information in depth from the research subject, by providing space for students to provide objective answers. Indicators that will be measured through this instrument include professional competence in S1 mathematics education students as prospective educators, this approach allows researchers to obtain more varied data, because students can provide their answers specifically and clearly.

Professional competence is one of the main competencies that must be possessed by educators, especially teachers. This competency includes the ability to master learning

materials, learning methodologies, and the use of technology and resources to support the educational process. It is in line with the opinion Umi & Nopriansyah, (2019) Professional competence is the ability to master learning materials broadly and deeply to guide students to meet educational competency standards. In the context of the Independent Curriculum, teachers' professional competencies play an important role in creating learning that is relevant, innovative, and adaptive to student needs (W. Kurniawan et al., 2024).

Educators must deeply understand the learning strategies and learning materials taught, both in terms of basic concepts and their development. This mastery includes the ability to explain the material in a way that is appropriate to the student's level of understanding. This is in line with the opinion Anitah, (2007) That learning strategies are not only limited to activity procedures, but also include learning materials or packages. The learning strategy consists of all *Components of learning materials and procedures* which will be used to help students achieve certain learning goals.

The instrument used in this study is in the form of a test, the test used is an objective test in the form of multiple choice *(multiple choice)* with alternative 4 answer options. A multiple-choice test is a test where each question item has more than one number of alternative answers (Rosyidi, 2020). Each multiple-choice test consists of two parts, namely (1) a statement or also called *STEM* and (2) alternative answer options or referred to as *option* (Susanto, 2023).

The advantage of the multiple-choice test is that it can be used to measure all levels of learning objectives, from the simplest to the most complex. In addition, the scoring of test results can be done objectively. Respondents were asked to choose one right answer. The author uses the guttman scale by setting two categories of straining as follows:

Table 3. Categories Scoring Alternative answers

Alternative Answer	Score
True	1
Wrong	0

Description :
0 - 20 = Very Bad
21 – 40 = Less Good
41 – 60 = Pretty Good
61 – 80 = Good
81 - 100 = Very Good

Before making test question items, what is done is to compile a grid first. In this study, the grid is in the form of questions related to the pedagogic and professional competence of students as prospective educators. The grid or commonly referred to as the

specification table of the questions to be made. This grid is a reference for the writer of the question, so that whoever writes the question will produce a question whose content and level of difficulty tend to be the same. Sudjana, (2021) explained that in obtaining accurate data, it must meet conditions such as: (1) the researcher's problem must be clear. (2) the source of data and information must be clear. (3) the instrument must be objective and valid. (4) the type of data should be clear and (5) the instrument should be easy to use.

RESULTS AND DISCUSSION

Pedagogic competence is the ability of an educator to manage, master, and interact in learning with students (Rosni, 2021). Educator pedagogic competence is the basic mastery of education in managing student learning activities, starting from understanding the characteristics of students, developing potential, evaluation, to influencing the high and low motivation of students to learn (Kusen et al., 2019). Although there are many competencies that need to be mastered, pedagogic competence can be said to be a basic mastery that must be learned first by teachers whose goal is to improve student learning achievement (Febriana, 2021).

According to Suprihatiningrum, pedagogic competence is an educator's ability related to students and the learning methods implemented (Hasanah et al., 2020). Meanwhile, according to Prayitno, pedagogic competence is the ability to manage students from an educator's insight related to education, and the characteristics of student diversity (DEFI, 2021). Pedagogic competence is a competency that has a great influence on student learning outcomes, especially how educators understand student character, so that if they want to present quality education, educators must master pedagogical competence.

Pedagogic competence is a requirement that must be possessed by an educator, if the educator does not have pedagogic competence, then learning will not be able to run, because pedagogic competence is needed by educators to be able to interact with students from the beginning of learning to the evaluation of learning. This is in line with the opinion of Dewanti & Muna, (2023) that mathematical communication helps students absorb the meaning of a thinking and reasoning process so that they can convey or communicate their ideas to others. Teachers' abilities in the learning process greatly affect the development of education (Sakti et al., 2019). This is because not all teachers can teach their students well or professionally. In fact, in carrying out teaching, many educators still have difficulty in providing teaching
to students so that it is difficult for students to understand the material.

The results and analysis of the research data that have been obtained are used to describe the pedagogic and professional competencies of students of the Mathematics Education Study Program, the data is obtained through an objective test of 50 items and

is divided into 2 tests, namely the pedagogic competency test (30 items), and the professional competency test (20 items). To facilitate data management, the students who were sampled in the study consisted of 110 students.

Student pedagogic competence can be seen in two activities, namely student pedagogic competence as prospective educators, and student pedagogic competence is used to determine the level of student pedagogic competence. Aspects for students' pedagogic competence in the implementation of learning consist of: (a) Classroom management (b) Implementation of the Effective Learning Process (c) Effective Assessment (d) Use of Technology.

The data on student pedagogic competence in 4 aspects can be seen in table 1

Table 1. Data on student pedagogic competencies in the aspect of learning implementation

No.	Assessed Aspects	Indicator	Value	Category
1.	Classroom management	- Understanding student characteristics in learning	58%	CK
		- Mention of mathematical learning theories	100%	SB
		- Mention the principles in learning	93%	SB
		- Understanding curriculum development	100%	SB
		- Communicate effectively with students	93%	SB
2.	Effective implementation of the learning process	- Presenting the principles of educational learning planning	69%	B
		- Develop a complete learning plan	92%	SB
		- Providing guidance for the development of students' abilities	83%	SB
3.	Effective assessment	- Understand the principles of assessment and evaluation of learning processes and outcomes	100%	SB

		- Conducting assessments on learning processes and outcomes	100%	SB
		- Using the results of assessment and evaluation	100%	SB
4.	Use of technology	- Choosing appropriate learning media or resources to help the junior high school mathematics learning process	58%	CB
		- Utilize appropriate learning media or resources to help the learning process	100%	SB

In understanding the characteristics of students in learning, educators must know the types of student learning difficulties and the intellectual development of students in learning as according to Mulyadi that learning difficulties have a broad meaning such as learning dependence, learning disability, learning dysfunction, low achievement, and slow learning and according to Jean Piaget, the stages of student intellectual development are divided into: motor sensory, pre-operational, concrete operational, and formal operations (Khotimah & Agustini, 2023). There are three theories of behaviourism, namely the learning theory of Thorndike, Skinner, and Bandura. Edward Lee Thorndike (1874-1949) proposed several learning laws known as the Law of Effec, learning will be more successful if the student's response to a stimulus is immediately followed by a sense of pleasure or satisfaction (Mudlofir, 2021). Burhus Ferderic Skinner stated that reward or reinforcement has a very important role in the learning process (Fouryza et al., 2018). Meanwhile, Bandura said that students learn through imitation.

Student learning outcomes must be given feedback, this is in accordance with Skinner's learning theory of reinforcement. There are two types of positive and negative reinforcement, Skinner added that if the student's response is good (supporting the effectiveness of achieving the goal), it must be immediately given positive reinforcement so that the response is even better, or at least the good deed is maintained. It is better if the student's response is lacking or unexpected so that it does not support the teaching objectives, it must be immediately given negative reinforcement so that the response is not repeated and turns into a positive response. This negative reinforcement can be in the form of reprimands, warnings, or sanctions (educational punishments) (Maula, 2019).

Based on Permendikbud No. 23 of 2016, the principles of assessment of learning outcomes are: valid, objective, fair, integrated, open, comprehensive and sustainable, systematic, criterion-based, accountable (Rozana et al., 2023). The learning outcomes made by educators in the field of study they teach are not only useful for themselves and their students, but must also be utilized by all school staff, such as principals, homeroom teachers, supervisors, and also to fellow educators if needed in order to improve the quality of education in the school concerned. The scope of assessment of the learning process and outcomes is, (1) attitude is habits, motivation, interests, talents which include how students attitude towards educators, subjects, parents, school atmosphere, environment, methods, media and assessment, (2) knowledge, (3) skills, this explains whether students are skilled in reading, writing and arithmetic, whether students are skilled in drawing, sports, and so on.

The use of technology in students by choosing appropriate media or learning resources to help the learning process of mathematical concepts that demand high precision, repetitive concepts or principles, can use computer programs as the medium as stated by Kusumah (2003). According to him, computer programs are ideal to be used in learning mathematical concepts that require high precision, repetitive concepts or principles, and precise, fast and accurate completion of graphs (Nur'aini et al., 2017). One of them is Mathlab.

Based on the data above, it shows that the pedagogic competence of students of the Mathematics Education Study Program as prospective educators in the classroom management aspect is in the very good category (SB) as many as 4 indicators and the remaining 1 indicator with a fairly good category (CB), This condition is supported by the results of research by Sakti et al., (2019) pedagogic competence is the ability of an educator to carry out learning and student management including competency teaching skills Pedagogics is the ability of an educator to understand the characteristics of students, master learning theories, educational learning activities, understand and develop students' potential, communicate with students, assess and evaluate and be able to utilize learning technology. in the aspect of implementing an effective learning process, it can be seen that the student's pedagogic competency score consists of 2 indicators with a very good category (SB) and the remaining 1 indicator with a good score (B), in the third aspect, namely effective assessment, it can be seen that all indicators are in the very good category (SB), and the last aspect of the use of technology in detail consists of 2 indicators with 1 indicator ranked in the fairly good category (CB) and 1 other indicator in the very good category (SB), this is in accordance with Yuliana, (2020) who argues that technology factors are not a determinant of good or bad learning that technological factors are not a determinant of good or bad learning but how educators and students can improve the learning process properly and correctly in order to improve the quality of education.

This shows that most students already understand the indicators of learning implementation.

Student professional competence can be seen in two activities, namely student professional competence as prospective educators, and student professional competence is used to determine the level of student professional competence, and professional competence during the implementation of learning. Indicators for students' professional competence consist of: (a) using numbers, relationships between numbers, various number systems and number theories (b) using measurement and estimation (c) using mathematical logic (d) using geometric concepts (e) using statistical and opportunistic concepts (f) using patterns and functions (g) using algebraic concepts.

The data on student professional competence in 7 indicators can be seen in the following table 2:

Table 2. Professional competency data on students

No	Indicator	Question indicators	Value	Category
1.	Using numbers, relationships between numbers, various number systems and number theory	- Analyze the relationships of different types of numbers	62%	B
		- Solving problems related to number series	28%	KB
		- Using the residual factor theorem in problem solving	45%	CB
2.	Using measurement and estimation	- Estimating the area of an irregular flat building	63%	B
		- Determining the results of estimation and operation of several numbers	53%	CB
3.	Using mathematical logic	- Applying penens mode or tolens mode and syllogism	42%	CB

		in drawing conclusions		
		- Determining the default of a compound statement	6%	SKB
		- Define a statement that is equivalent to a known statement	24%	KB
4.	Using geometric concepts	- Analyze flat builds based on their properties	56%	CB
		- Solving problems related to congruence and/or flat-building	19%	SKB
		- Resolves issues related to flat build area	77%	B
5.	Using statistical and opportunistic concepts	- Solving problems using the concept of averaging	39%	KB
		- Determining the media determination procedure on group data	35%	KB
		- Using combination rules to solve opportunity problems	44%	CB
6.	Using patterns and functions	- Solving problems related to quadratic functions	73%	B
		- Determining the inverse of a two-function composition	41%	CB

7.	Using algebraic concepts	-	Using the concept of single-variable linear equations in solving real problems	52%	CB
		-	Using the concept of single-variable linear inequality in solving real problems	82%	SB
		-	Using discrimination to solve quadratic equation problems	42%	CB

Based on the data above, it shows that the professional competence of students of the mathematics education study program in the implementation of learning, the value of each indicator obtained by students, namely in the indicator of Using numbers, relationships between numbers, various number systems and number theory are in the good category (B) as many as 1 indicator, poor (KB) 1 indicator, and the remaining 1 indicator of the fairly good category (CB), In the indicator Using measurement and assessment, it can be seen that the value of this competency consists of 2 indicators with a good category (B) and 1 indicator with a fairly good value (CB), in the indicator Using mathematical logic there are three categories, namely 1 category is quite good (CB), 1 category is very poor (SKB), and the rest is not good (KB), in the indicator Using the concepts of category geometry obtained quite well (B) 1 indicator, very poor (SKB) 1 indicator, and good (B) 1 indicator, and on indicators Using statistical concepts and opportunities are in the category of poor (KB) 2 indicators, and the remaining 1 indicator is quite good (CB), here are indicators Using patterns and functions consisting of 2 indicators with category 1 good (B) and 1 other category is quite good (CB) and the last indicator Using algebraic concepts the details consist of 2 indicators with 1 indicator ranked in the category of quite good (CB), 1 other indicator in the category of very good (SB), and 1 indicator in the category of quite good (CB). This is in line with the opinion of Dewanti, (2012) that in supporting the achievement of these indicators, education and mathematics education courses are needed. This can help students in developing their knowledge so that they become prospective educators, especially in the field of mathematics, who have values, attitudes, knowledge, and skills as education professionals in accordance with the vision, mission, and tasks of the Mathematics Education Study Program.

For the professional competence of students in the implementation of learning, the value of each indicator obtained by students in the implementation of educational learning is relatively low. which ranges from 6 to 82. This result is in line with the research of Sri Wulan Dari & Yulhendri, (2019) which states that professional competence in student teaching readiness is included in the lack of criteria. In this study, the values obtained on each indicator are not the same. The highest score was found in the indicator of using the concept of linear inequality of one variable in solving real problems, with a score of 82%. This means that students are already able to use single-variable linear inequalities in data analysis, scientific research, and mathematical model development to predict outcomes or solve complex problems.

By understanding and mastering these concepts, students can improve their analytical skills and be better prepared to face challenges in various fields, both academic and professional. Therefore, mastery of single-variable linear inequalities is not only relevant in the context of mathematics learning, but also provides significant benefits in daily life and future careers. While the lowest value appears in the indicator determining the default of a compound statement, with a value of 6%. The ability to determine the negation of compound statements is one of the important aspects of mathematical logic. However, in reality, many students face difficulties in understanding and applying this concept. In mathematical logic lessons, statement sentences must be distinguished from ordinary sentences in everyday language. Statement sentences or abbreviated as statements are not the same as ordinary sentences, because in ordinary sentences often choose appropriate words, which are capable, figurative or vague expressions and sometimes words with double meanings are used. On the other hand, in the statement this is not the case, but the sentence must be complete, not vague and clear. A logical feature in mathematics lessons, that what is meant by a statement is a sentence that is only true or false, not both at the same time, meaning that it is not right and wrong at the same time. While a sentence that is true or not, whether it is wrong or not is not a statement.

From the description above as a contribution from the results of this research that as professionals, educators must continue to improve their quality as teachers and educators because of the rapid progress of science in the era of globalization, mathematical logic is often considered as an abstract material and less related to real applications. This makes students less motivated to explore the concept of negation or the meaning of compound statements. Students may feel that mathematical logic is only relevant in certain courses. In fact, this ability is very important in many areas such as computer programming, data analysis, and decision-making. This inability of relevance can decrease interest in learning it.

CONCLUSIONS

Based on the results of data analysis and previous discussions, it can be concluded that the pedagogic competence of S1 students of the mathematics education study program as prospective educators is 80.12 with a good category. For student competence in the implementation of learning, the highest score of students is in the aspects of classroom management and effective assessment, while the lowest score is in the indicators of the implementation of the effective learning process.

The professional competence of S1 students of the mathematics education study program as prospective educators is 80.42 in the good category. For professional competence, the highest score of students is found in indicators using algebraic concepts and using patterns and functions with very good scores. This is because students can already use algebraic concepts according to learning objectives.

By mastering pedagogic and professional competencies, prospective educators from the S1 mathematics education program will be able to produce a generation of students who are not only competent in mathematics, but also have logical and analytical thinking skills that are useful in life.

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