



Difficulty of Mathematics teacher competence in applying curriculum online

doi <https://doi.org/10.53402/ajet.v1i2.16>

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PDF

Submitted

Keywords:

Keywords:

Master teacher difficulty Curriculum readiness

Abstract

The study aims to analyze the readiness and difficulty of online learning. Survey of the Ministry of Education 2020, 58% ineffective learning process, 38% lack of guidance, 35% poor communication, 62% need internet access, 59.5% object to homework. Research aims; 1) knowing the four teacher competency readiness when online, 2) knowing the location of the difficulty of teacher competence in the online process, 3) knowing the assessment method used. Method by presenting data, reduction and conclusion. The results of the analysis, 1) The material provided does not match the initial ability standards, the books provided do not make it easier for students, the teacher has difficulties in writing symbols. Professional competency assessment is 62%, pedagogic, the teacher does not have a module as a learning aid tool, the teacher has difficulty writing integral symbols, logarithms, matrices and mathematical induction on google meet. 2) The difficulty of the teacher when operating the google meet media, the teacher does not master how to write symbols, the difficulty of proving, the difficulty of expressing the concept, the difficulty of the internet network, the difficulty of correcting the homework, the difficulty of applying the method. Rating 45% disagree with the pedagogic, the book given the concept is too difficult, the impact is that understanding does not develop and is only accepting answers from the teacher without any active interaction. 3) 60% disagree with the assessment method, the material being tested is more difficult than what is taught, as a result the learning outcomes are not as expected. In conclusion, students expect the teacher to compile their own material in the form of a module and pour models, methods, strategies

03-03-2022

Accepted

19-05-2022

Published

28-02-2022

How to Cite

Halomoan, J. H. L. (2022). Difficulty of Mathematics teacher competence in applying curriculum online. *Asian Journal of Educational Technology*, 1(1), 44-54. <https://doi.org/10.53402/ajet.v1i2.16>

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

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[AJET] Editor Decision	22-04-2022 12:34 PM
[AJET] Editor Decision	19-05-2022 12:35 PM

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Difficulty of Mathematics Teacher Competence in Applying Curriculum Online

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ABSTRACT

The research is to 1) find out the four teacher competency readiness online, 2) find out where the difficulties of teacher competency in the online process are, 3) find out the assessment method used. The survey conducted by the Ministry of Education and UNICEF in 2020 noted that out of 100% surveyed, 58% thought the learning process was not effective, 38% lacked guidance from teachers, 35% had poor communication. Assistance, 62% need smooth internet access and 59.5% expect no work from home (PR). Qualitative methods with survey and interview techniques. The technique used is to distribute instruments to students, then conduct an interview session. The survey data were harmonized with the results of the interviews. Data analysis by presenting data, reducing and drawing conclusions. Conclusions are interpreted into sentences. Results, 1) The material provided is not in accordance with the initial ability standard, the book provided does not make it easier for students, the teacher has difficulty in writing symbols. Professional competency assessment 62%, pedagogic, teacher does not have a module, difficulty writing integral symbols, logarithms, matrices and mathematical induction online. 2) Difficulty operating the media, difficulty proving, difficulty correcting homework, difficulty in applying the method, there are 45% disagree with the pedagogy, 3) 60% of students disagree with the assessment method, the material tested is more difficult than what is taught, and learning outcomes not as expected. In conclusion, students expect a module and, appropriate methods, strategies and make assessment indicators in the module.

KEYWORDS

Curriculum readiness;
Master teacher
difficulty


Received: 15 January 2022

Accepted: 30 January 2022

Published: 28 February 2022

Introduction

The curriculum is one tool to achieve a better educational goal (Holy, 2020). An unexpected thing appeared in 2019 which made all levels of society not think about daily activities except maintaining health. The emergence of a new type of disease that has caused problems from 2019 until now in Indonesia (Yunus et al., nd 2021). This disease is classified as a new type of disease, flu, cough, loss of sense of smell, shortness of breath and death (Yuli et al., 2019). Scientists think that this type of disease is easier to attack the elderly and people who already have a body disease (Liu, Liao et al 2018). As a result of this unfinished virus, there is a huge lack of information and speculation regarding community activities, especially education (Tosepu et al., 2020). Throughout Indonesia education, all learning processes are carried out online, this is due to the policies passed by the respective governments and regions. The problems faced by teachers are quite a lot and parents become the control of students to learn from home. The process of implementing the curriculum in Indonesia going online is something new (SMB & Pekanbaru, 2020). In 2020, the Indonesian Ministry of Education conducted a survey of 4,000 students in all provinces in Indonesia. From the survey results, 58% of students experienced a burden during the implementation of online learning, 38% of students lacked guidance and communication. Furthermore, 35% think communication aids are bad and 62% expect internet access to be smooth and free. Hasiru, Badu, & Uno (2021), 62% of students expect the internet they have access to smoothly, Long before the onset of the covid 19 disease learning process aids such as online media, are already available and often

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developed by scientists in the sense that education carried out by online sex is not a reason to say the online learning process is difficult (Riyana & Pd, nd2020). A total of 188 countries in the world have used the internet as a means of the educational process, such as online learning, internet schools, school tutoring processes and thesis guidance or student final assignments. In early 2020, researchers conducted a survey of students from three schools in Bekasi. From the survey, the researchers found that there were no concepts of material online, many students looked for answers from the internet, they got answers but they didn't understand the origin of the answer key, students did not understand the structure of problem solving.

More facts onstudy (Basilaia & Kvavadze, 2020)60.5% were able to operate the media as a learning tool, but inconsistently, there were 59.5% of students who refused the assignments given by the teacher. In the study, 60% of assignments resulted in students' stress levels. The researcher asked several teachers about the online learning process during the pandemic, the teacher argued that it was difficult to explain math material. The teacher also believes that the implementation of the learning carried out is not in accordance with what is expected from the curriculum (Julaeha, 2019). The grades that students get online do not match the facts (Noor, 2020). In connection with this opinion, there are things that are inconsistent with the scores obtained by students with the opinions of students and the difficulties experienced by the teacher. The use of technology when studying in Indonesia has an impact on the mental, knowledge and attitudes of students and teachers in compiling materials according to the curriculum (Raziq, Ahmady, Martini, & Kusnayat, 2020). Octaviani (2021) online learning, 92% of students have difficulty discussing with the teacher and with each other. From 100% of respondents, 5% need to have a new model online, 87% of the online learning process must have tools, and 13% need to reduce material from the curriculum. Of the respondents who study online, 92% have quite a lot of problems and difficulties. The decision taken by the government to enforce learning from home is perpendicular to the wishes of the community which all teachers and students must follow. in this case the teacher must be ready and prepare all learning devices that are in accordance with the existing curriculum (Pandemic et al., 2003). Teachers are expected to be able to master the content of the curriculum itself, what is required of the teacher is cognitive, affective, and psychomotor abilities as well as being oriented towards the formation of the character of students as much as possible (Manik, Saraswati, Ngurah, & Agustika, 2020).

The main objective of the curriculum is to achieve the national education process by taking into account the development of students, the needs of national development, as well as the development of science, information technology and cultural arts. Educational problems faced now make it difficult for teachers curricula (Sawitri, 2020).Law Number 14 of 2005concerning Teachers and Lecturers, article 10 paragraph (1), a teacher's success in teaching is measured by four competencies, namely pedagogic, professional, social and personality competencies. Sikdiknas (2012) in achieving a success there are two main factors in the implementation of the curriculum, the first is the suitability of the competence of educators in designing learning. The second is divided into three parts, namely (i) availability of the modules used, ii) government assistance, guidance and supervision; and finally (iii) school and school management. The curriculum requires teachers to carry out learning activities based on integrative thematics and a science approach (Teachers, Elementary, & Riau, 2021). The solution offered in the first stage is to compile material in the form of modules, then prepare assessment indicators, compile assessment instruments, choose learning methods used by schools and implement them.

Destination

- 1) To measure the Four Readiness Competencies of teachers online
- 2) To find out where the difficulty of teacher competence is in the online process
- 3) Knowing the assessment method used.

Literature review

Teacher Difficulties and Application of Learning

Difficulty comes from the word "Difficult". In the life of students, an educator is a helper and an example for him. The teacher's profession is special, the teacher is always called a source of information and a source in answering all problems faced at school (Zakaria, Kaluku, & Rontos, 2021).Munawaroh (2019) the teacher is someone who can provide knowledge, exemplify skills, examples of character and good experience to students. Main Roles and Duties of Teachers.Santika (2020) there are three main tasks of the teacher, the first is the profession, the task of society and the task of humanizing humans. The teaching profession is expected to be able to develop professionally, teach and train students at divided levels (Lumbantoruan & Male, 2020). The levels are elementary school, junior high school and high school. One thing that is required from

the teacher is to master professional competence or knowledge (Lumbantoruan & Uly, 2021). Teachers are also required to be able to educate with special skills in their respective fields and be able to apply them in difficult times such as pandemic situations. Professionalism must be equipped with qualified skills, so the message you want delivered by educators can be absorbed by students (Ayu Marida, Halomoan 2020). Educators who are able to humanize humans mean that teachers cannot discriminate between one's competences in terms of educating students. A teacher should set an example so students can imitate. Imitating the attitude shown by an educator is something that is mandatory in the world of education (Setyowati, 2020). Even so, teachers certainly have shortcomings and difficulties in learning. The causal factors faced by an educator according to Uno (2018) are from themselves and from outside (Yudana, 2020). As human beings, teachers cannot escape the difficulties of one particular case. In cases like this caused by factors from the teacher's internal (Competence) (Supandi et al., 2020). In addition to the problem of competence, the difficulty factor can come from outside oneself or the surrounding environment. In supporting performance there are things that are quite essential, namely how the conditions of the work environment are comfortable, adequate learning aids, feeling included, respecting opinions and getting help or solutions (Halomoan, 2022). The assistance in question is professional services in a good and fair manner carried out by school principals, school owners, supervisors, and those who are responsible for improving the learning process towards better learning outcomes (Evi, 2020)

Curriculum

Fitri & Yuanita (2020) in learning, it is necessary to have a clear and straight curriculum that the learning process must refer to a document called curriculum. The curriculum aims to describe plans, and learning materials. Including models, methods and teaching strategies that are the basis for every teacher so that they can achieve learning targets and objectives well. In the curriculum demanded is a learning process which is defined as a change in a person's behavior through interaction with other people (Yuhana, 2019). Teachers are expected to be facilitators in learning in accordance with the form of curriculum material that has been prepared. Other procedures that must be submitted include schedules, models and methods as well as the media used in the learning process. A professional teacher prepares himself before entering the world of teaching, the following is a form of readiness of a teacher (Indonesia et al., 2020). The curriculum must pay attention to learning objectives where the process from a formulation leads to a good result. The learning objectives are not only on the final result but more on the methods, APA strategies used in achieving these learning objectives. Changes in the behavior of students must also be clearly visible towards a better direction and continue to grow. The main goal that must be known by the teacher is WHAT must be achieved from the learning. With the clear objectives of the learning, the teacher can easily measure the level of success of students (Indonesia et al., 2020). The curriculum can also be implemented online, although the essence is not conventional (Online, Writing, Java & School, 2020) online learning can be interpreted as a way of interaction between educators and students. Online or online carried out in separate places but at the same time. Online learning is not much different from face-to-face learning. However, in online learning, information and communication can be hampered due to internet interference. To overcome internet disturbances, teachers are required to prepare other alternatives in delivering material, such as videos or learning modules (Santoso, 2012). Online learning was introduced for the first time at the University of Illinois with a computer-based learning system method (Hardiiyanto, 2018). Online Training in an Online World basically has the same idea as e-learning. (Kuhlmann, Stegmaier, & Konrad, 2019). Online learning is defined as "a large collection of computers in networks that are tied together so that many users can share their vast resources (Tan, Ling, & Karim, 2020)

Teacher Competence

Eis Rahmawati, et al, (2020) In measuring the success of teachers during the learning process, apart from looking at the learning outcomes of students, it is necessary to ask students for their responses about teaching competencies. The competencies in question are:

1) Teacher's Pedagogic Competence

Teachers must have pedagogical competence. Pedagogic competence is defined as how the abilities that must be possessed by teachers and designing

learning materials related to the basic abilities of children who are being educated. Pedagogy itself is a science for the method of educating students.

- 2) **Teacher Professional Competence**
The teacher is a person who is professional or transparent in educating, assessing and evaluating students. Professional competence is the ability of a teacher to manage, design learning and apply it according to his profession properly. Things like this can start from teaching skills, the ability to master the material you want to teach and reach the stage of mastering
- 3) **Social Competence**
Social competence is how the communication skills of a teacher in delivering previously designed material. This competency is supported by the APA methods and media used in communicating with others. Teachers interact with other people every day, especially communicating with students.
- 4) **Personal Competence**
Personality competencies are competencies possessed by teachers with good and reasonable personalities, attitudes and speech that should be used as examples or role models by their students

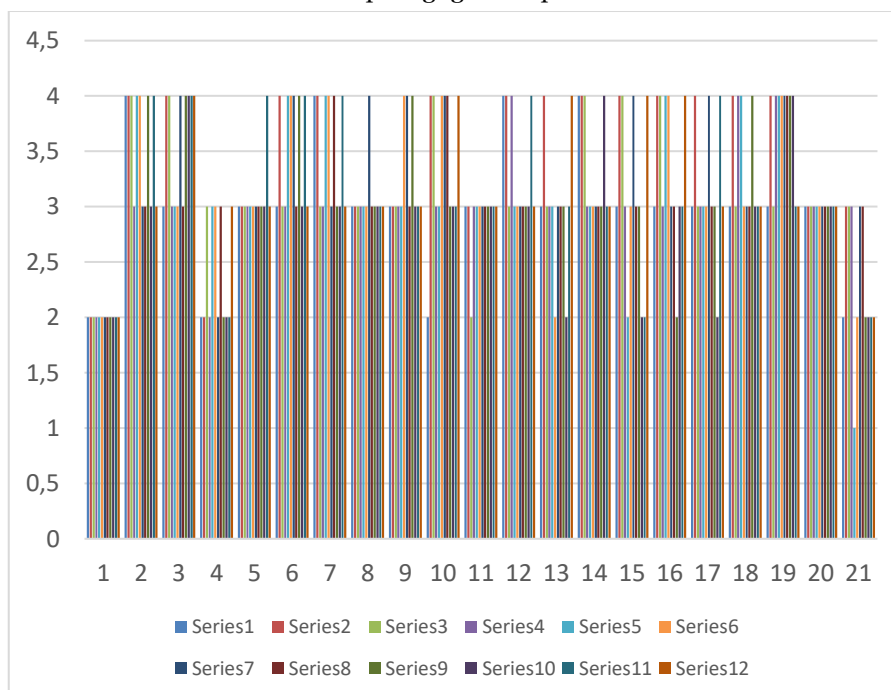
Methods

The type of method is a survey with secondary data and interviews with primary data (Benuf et al., 2020). The population of all Class XI SMA Yadika 11 Jatirangga, Bekasi with a total of 5 classes and the sample used is one class, namely Class XI IPA 1 totaling 250 people with an average age of 16-17 years. The technique used to obtain data is to provide instruments and conduct interview sessions to students. The instruments that have been prepared and the interview guide are focused on measuring the four teacher competencies (Hafiz et al., nd2020). The analysis is carried out by presenting data, then reduction and the final stage of drawing initial conclusions. The results of the instruments were aligned with the results of the interviews. Intersecting data are aligned and the final conclusion is drawn (Jrpp, Number, & Rofiki, 2020).

Results

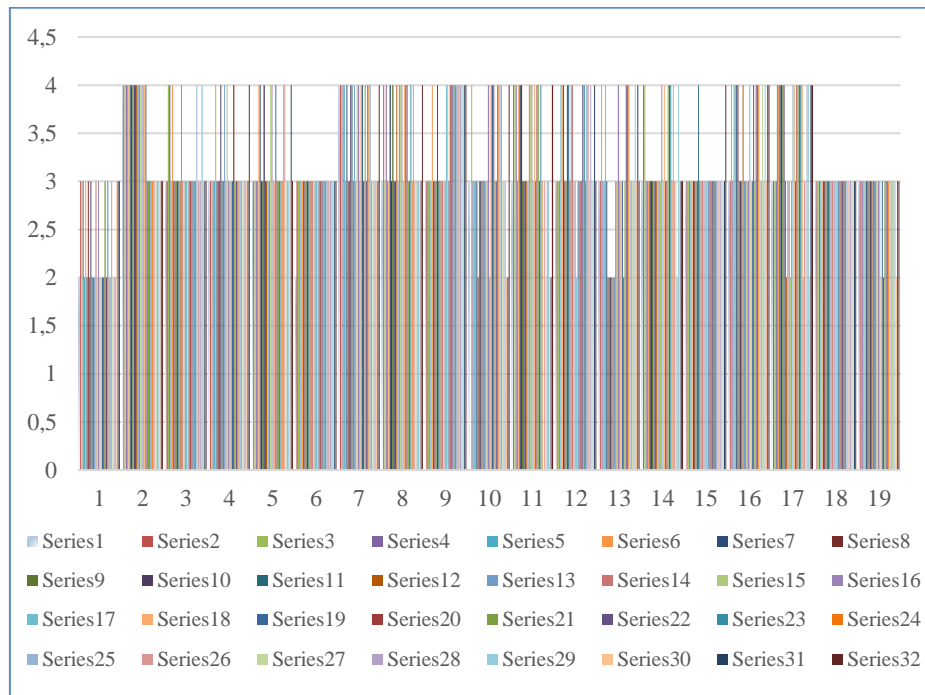
1) Results of Student Instrument Assessment.

- a) The results of the assessment of pedagogic competence



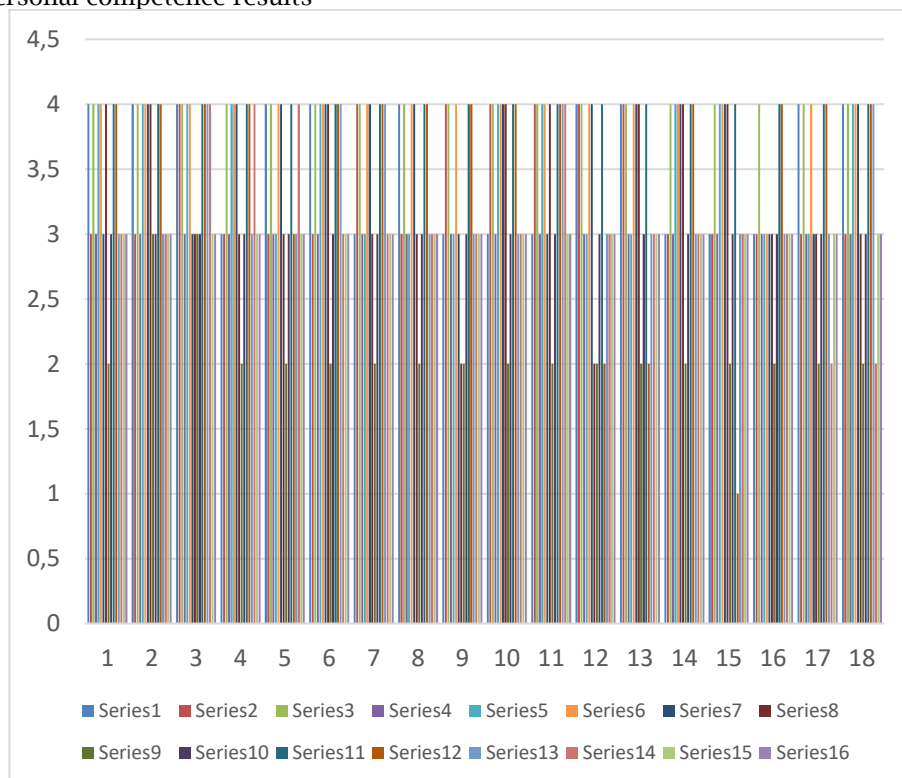
Bar Chart 1. Pedagogical Competency Results

b) Professional Competence



Bar Chart 2. Professional Competency Indicator Result

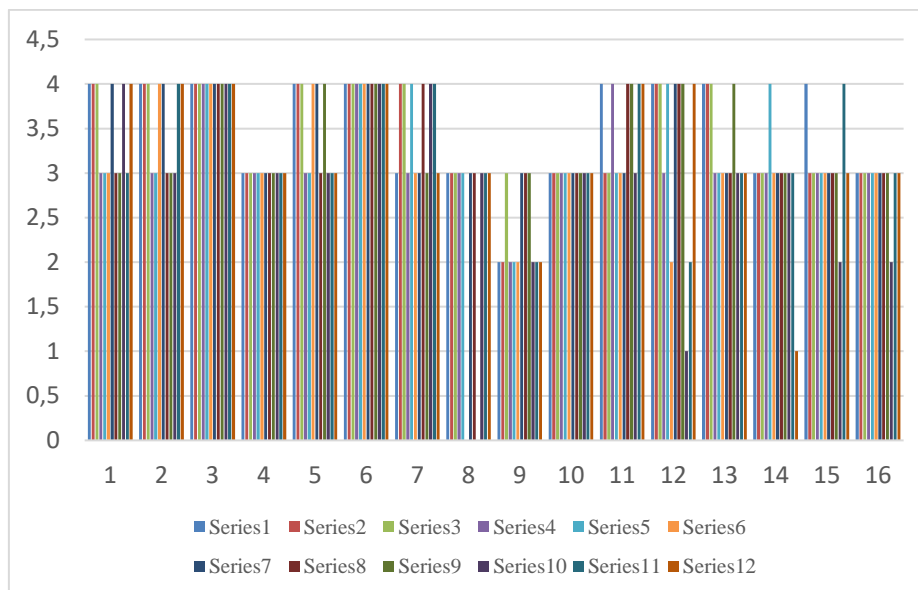
c) Personal competence results



Bar Chart 3. Personality Competency Indicator Results

The bar chart above shows that personality competence gets an assessment of 10% disagree, 5% strongly disagree and the rest categories agree and strongly agree

d) Social competence results



Bar Chart 4. Results of Social Competency Indicators

2) Interview result

Table 1. Coding of Interview Results

Code	Keywords	Number of Respondents 10 People	Interpretation
	Pedagogic	7	Difficulty implementing online learning strategies, models, and methods
	Professional	9	Unprepared and having difficulty compiling material in the form of modules, difficulty writing symbols online
	Social	3	Communication is often lost due to unstable internet network.
	Personality	2	Lack of socialization and care when learning online

From table 1, what students often talk about is related to the professional competence of teachers. Teachers when learning online do not compile material, there are no modules, delivery of material is not conceptualized, writing symbols is lacking, and the use of technology media is less. In the interview, the second order of pedagogic competencies is methods, strategies and learning and assessment techniques. The initial conclusion based on the coding table from the interviews was that the teachers were not ready in terms of professional and pedagogic competence. The teacher does not prepare materials, the assessment process, methods, strategies and the use of media is not optimal. Teachers only provide textbooks as the main source

Discussion

1) Preparation of the Four Competencies of teachers online

Existing facilities in schools help teachers and administrative officers in carrying out the learning process and providing services to students. The form of communication used is the help of the Google Meet application. In addition, the school enforces teachers to use WhatsApps (WA), Google Forms, Google Classroom, Google Drive, Youtube, WA group subjects, in sending assignments. However, when interviewed by a mathematics teacher, there were several obstacles in the preparation of the material and its application. This makes students burdened in studying in learning textbooks. Teacher In the interview session, that in compiling material that refers to the curriculum, it is very difficult and takes a long time. The teacher also admitted that in explaining the material in the textbook many difficulties were found, writing symbols, checking assignments, prove a mathematical concept. The students gave an assessment of professional competence 62%. The results of interviews with students gave responses, the teacher did not have a module that was compiled by himself to facilitate the learning process. Students argued that the teacher when explaining the material in the textbook

experienced many obstacles. The teacher's opinion was confirmed correctly with the opinion of the students with difficulties when writing mathematical symbols, so that the concepts built were not fully accepted by students. The process of experiencing difficulties hinders smooth learning. The textbook provided by the teacher is less effective for students, so the interaction discussing the material taught by the teacher is not in accordance with the learning outcomes that have been regulated in the curriculum. Nevertheless, teachers continue to carry out learning that refers to the curriculum. The difficulty of explaining the material requires accuracy of proving formulas, accuracy of pictures and accuracy of graphics to be known by students as well as concepts and flow of completion of sample questions and questions that are not contained in the book. The professional competence of teachers and the use of Google Meet application media are limited. Most of the students' responses answered that they did not understand how to solve the problem, did not understand the WHAT formula used in solving the problem, did not have ideas for solving the problem, and did not understand how to draw graphs. This results in students' understanding being incomplete or even not understanding at all in terms of understanding and solving a mathematical problem. Though the solutions in overcoming problems such as examples of questions, proof of formulas,

The factor is that the teacher does not seem strong enough in preparing the material in online form and the teacher also needs a media application that is easier to operate with complete symbols. Whereas the theory says a teacher must design or compile material and adjust it to the initial abilities of the students being taught. The preparation of the material can be poured in the form of modules or teaching materials. Modules prepared by the teacher can be distributed to students as a basis for independent study at home. The theory also says that by preparing the material, the assessment process and the media in delivering the material is a form of teacher readiness.

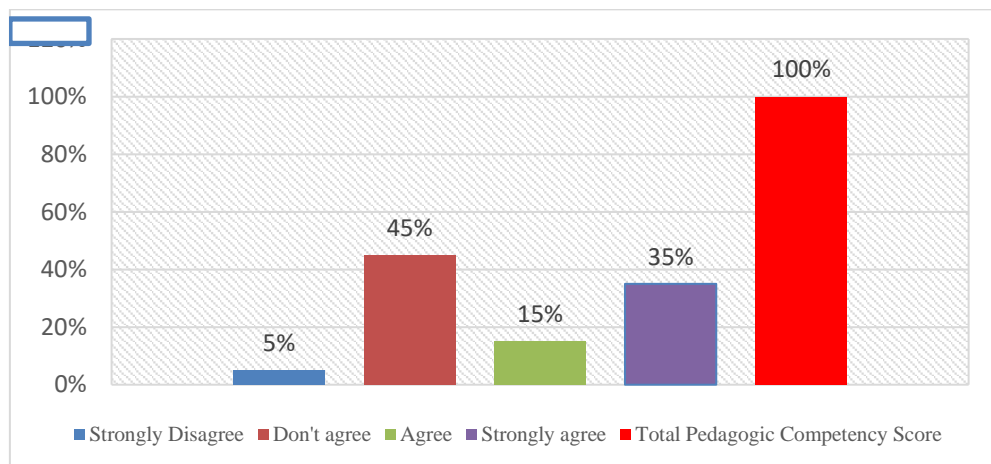


Figure 1. Percentage of Student Responses to Pedagogic Competency Indicators

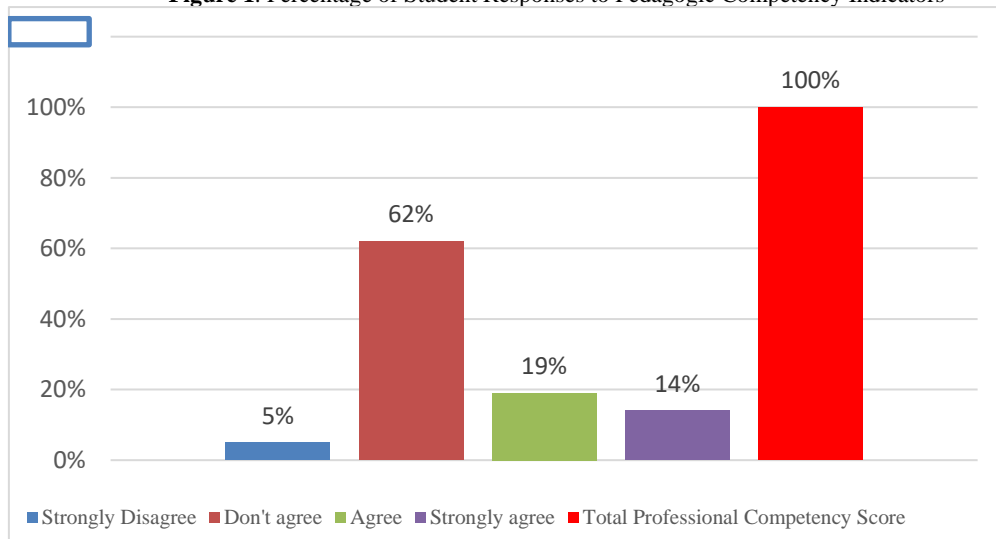


Figure 2. Percentage of Student Responses to Indicators of Professional Competence

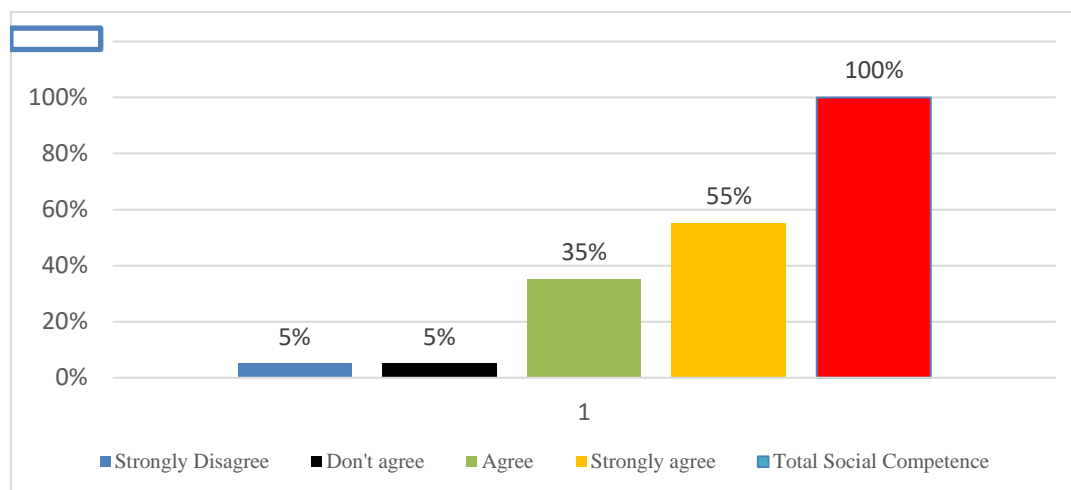


Figure 3. Percentage of Student Responses to Personality Competence

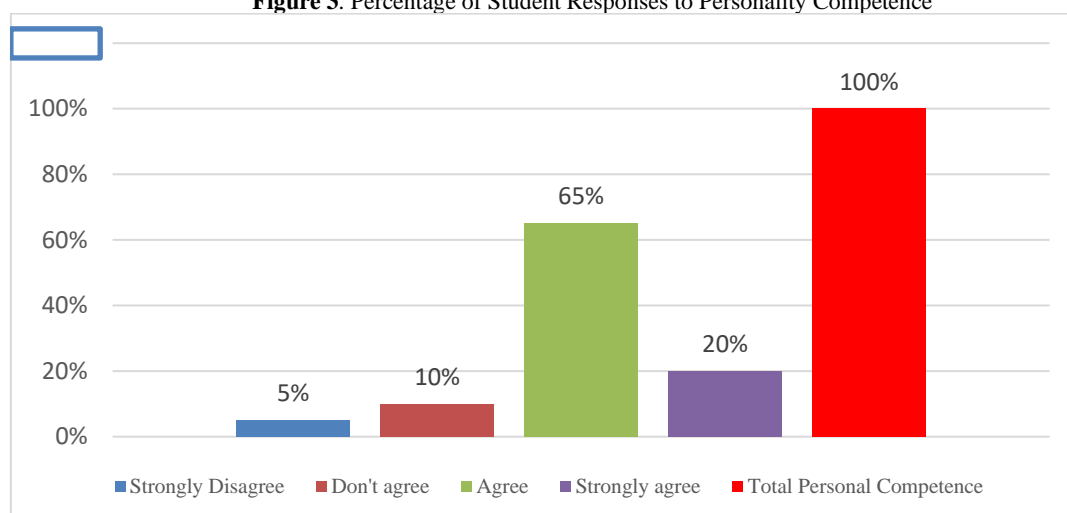


Figure 4. Percentage of Student Responses to Social Competency Indicators

Results assessment of student instruments, 45% disagree with pedagogy and 5% strongly disagree, 62% disagree and 5% strongly disagree with professional competence, 10% disagree and strongly disagree 5% with personality competence and 5% disagree with and 5% strongly disagree with social competence. Of the four competencies there are two that are highlighted, namely the first professional competence, 62% disagree and 5% strongly disagree and the second part pedagogic competence 45% disagree and 5% strongly disagree. This data is in line with the reduction results from observations and interviews of researchers when seeing the learning interaction process taking place less effectively and actively, the textbook which is the main source also does not represent the basic abilities expected by students

2) The difficulties of the four teacher competencies during the online process

The difficulty factor is from the results of coding researchers' interviews with teachers when implementing learning, in operating the google meet application which is used as a tool. Explaining concepts, proofs and symbols used makes it difficult for teachers to transfer initial understanding to the final understanding stage. The book provided by the teacher is not strong enough to answer questions from students, the module does not exist, the material is not prepared by the teacher, and the allocation of time is limited. The students argued that this case continued the next day and resulted in less effective learning of mathematics in online classes. Teachers also have difficulty implementing learning models and strategies. The results of the instruments distributed to students were confirmed correct during the interview

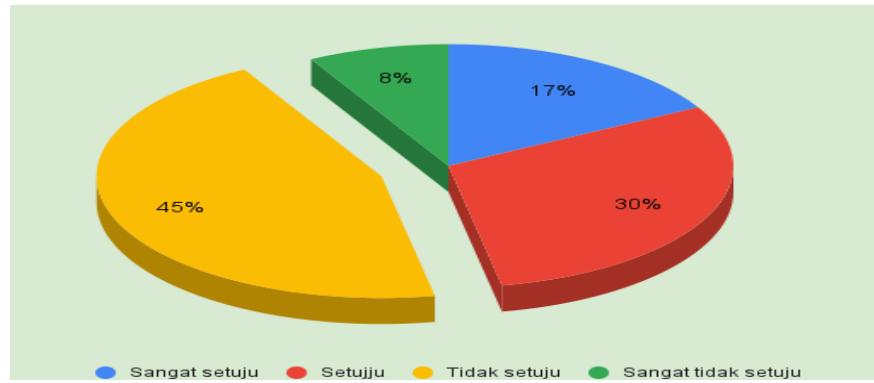


Figure 5. Percentage of Student Responses to Implementation

By looking at the data above, the difficulty factor experienced is in line with the theory and is more dominant than the difficulty factor of the teacher when learning online.

3) Knowing the assessment method

The assessment method made by the teacher according to the students in the interview session was not completely objective. This coincides with the assessment of students with the results of the instruments distributed showing, 57, 14% disagree with the assessment method made.

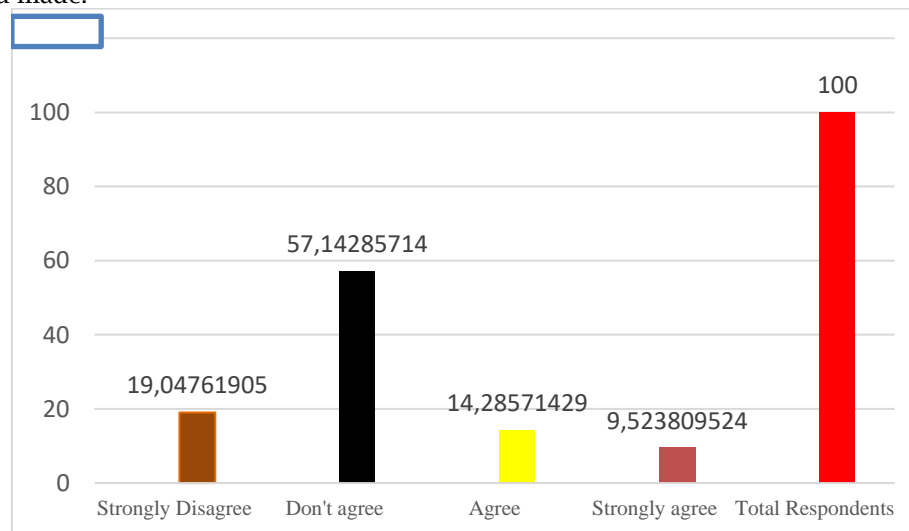


Figure 6. Percentage of Student Responses to Assessment Instruments

By looking at the diagram above, of course this is a concern for education when online learning is continuously carried out. This issue is in line with the theory that preparing the assessment process before learning begins and connecting with the material that must be measured is a form of objectivity in assessing learning outcomes both online and offline. The following is a snippet of interviews with students. *Agree with the rating given? Students' answers* 1) *The assessments made were not distributed to students at the beginning like face-to-face schools,* 2) *some of the materials in the lesson plans were not in the distributed textbooks,* 3) *the material tested was much more difficult than what was taught. What are your hopes for future improvements?* 1) *Distributing assessment instruments,* 2) *compiling material that is in accordance with WHAT being tested in the form of modules,* 3) *creating discussion groups among friends,* 4) *expecting a textbook compiled by the teacher himself which is equipped with examples and questions being tested,* 4) *provide special guidance for students who do not understand*

Conclusion

The student participants expect material in the form of modules that are designed and compiled by the teacher himself. In this module, instructions, models, methods and strategies are given in working on the existing questions. A real, factual example is given. Students also expect clear indicators and instruments to be distributed to students. By looking at the discussion for the value given to teachers during online learning, professional competence, 62% disagree and 5% strongly disagree, while the assessment of pedagogic competence, 45% disagree and 5% strongly disagree. Math teacher in high school must develop professional competence and pedagogic competence in certain materials, especially Integral material,

mathematical induction, mathematical logic. Students assess, the teacher's assessment method on learning outcomes exists 57, 14% disagree and 19, 04% strongly do not agree. Students hope that the learning outcomes assessment method is given to students. 45% of students disagree with the application of the curriculum that is not optimal online and expect a new curriculum, especially during the pandemic. Learners 55% strongly agree and 35% agree on the social competencies possessed by teachers, for social and professional competencies are still classified as good and very good categories.

Suggestion

Researchers suggest that. Activating the online library function as an additional easily accessible source of student learning, educators make indicators and assessment instruments and validate assessment instruments and can be accessed by students, create student assignments or projects related to material concepts and relate to the environment around students and the learning process fully uses methods and strategies, making it easy to measure the success of students. Arrange material in a structured manner and prioritize the basic abilities of students. Professional competency development for prospective teachers and teachers, teacher pedagogic competency training continues to be improved. Schools often provide training to teachers in compiling materials or modules to minimize difficulties in implementing the material taught in the classroom, improved training for educators in the development of the assessment process and the use of media used as a tool for the learning process and reviewing the current curriculum and developing it into online learning, especially during the pandemic.

Acknowledgements

This publication cannot be separated from the help of all parties. On this occasion, I would like to thank the Chancellor of the Indonesian Christian University, the Chair of the UKI LPPM, the Dean of FKIP-UKI, the Head of the Mathematics Education Study Program, FKIP-UKI, and the school where the research was conducted, namely SMA YADIKA 11 Jatirangga. I am grateful for the material and moral support that has been given, these results and publications are evidence that the UKI Leaders and the school support all researchers to develop themselves and find solutions to problems that exist in the community. With the publication of the results of this study, it is hoped that mathematics educators will be able to solve problems and find out where students' difficulties are. Finally, I would like to thank all parties.

Funding

This research received funding or a grant from the Indonesian Christian University LPPM. This has become a matter for every lecturer at the Indonesian Christian University. Every lecturer gets the right to get a grant twice a year and this research is one of them”

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