

## Research Article

# Students' Perspectives on Selecta Capita of Mathematics Online Course on Their Ability to Develop Mathematics Task

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**Abstract.**

The main problem in implementing online lectures is how to adjust what students expect with the achievement of learning quality. This study examines students' perspectives on effective lectures on the ability to develop mathematics task. Quantitative descriptive research has been carried out on students of the mathematics education study program Universitas Negeri Semarang who took the Selecta Capita of Mathematics course. The subjects in this study were 101 first-year students in the mathematics education study program at Semarang State University for the 2021/2022 academic year. The data were obtained through questionnaires and analyzed by the descriptive statistics. The data that had been obtained and then tabulated in a table, the average value is searched, and presented in the appropriate graph. The results of the study indicate that the availability of learning modules and videos as learning resources is the most important thing that must be prepared during lectures. Furthermore, several other things such as synchronous lectures, discussions using the WhatsApp Group, the use of the learning management system, group assignments, virtual face-to-face meetings, and project assignments need to be prepared during lectures. These results are needed to be applied on team-based project learning models to develop students' abilities in developing math tasks.

**Keywords:** students' perspectives, selecta capita, mathematics online course, mathematics task

## 1. INTRODUCTION

The government always strives to improve the quality of national education by making various changes and reforms to the education system [1]. Teachers as important subjects in this renewal need to be equipped with pedagogical and professional competencies to obtain student learning success. As professional educators, teachers must have competency capabilities that have been released and be able to demonstrate their quality as professional teachers, because competence is the mastery of each person's activity skills that contain relevant cognitive, skills, and work affective sides at appropriate standards [2]. One of them is the 4C skills (Creative, Critical Thinking, Communication,

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and Collaborative) which can answer the challenges of the 21<sup>st</sup> century, so as to create quality human resources (students) who are able to compete in the era of openness [3–6].

The ability to develop innovative and contextual mathematics task is one of the abilities that prospective mathematics students must possess. Mathematics task need to be developed properly so as to maximize the achievement of students' basic competencies. For this reason, Universitas Negeri Semarang through the Mathematics Education study program has prepared it through the Selecta Capita of Mathematics course. This course will equip prospective mathematics students with materials related to how to develop basic competencies properly and correctly, analyze mathematics task that are oriented towards mathematical thinking skills and in accordance with developing trends in mathematics learning, and provide opportunities for students to be able to develop their own assignments. complete mathematics with problem solving. From this lecture activity, students will be equipped to fulfill the competence to develop relevant mathematics task.

However, uncertainty arises when the lecture mode must be carried out online. Students and teachers cannot directly discuss the material. Many problems were faced last night during the online lectures, such as internet connection, lack of student understanding, unavailability of good learning resources, and lack of time for students and lecturers to discuss directly.

The problem needs to be resolved. Students as subjects in the educational process need to be heard about their opinions to carry out effective online lectures. On the other hand, the quality of education is also still considered to ensure the achievement of graduate learning outcomes. Government policies related to Merdeka Belajar Kampus Merdeka also need to be observed so that they are in accordance with the standards that have been set. Thus, this study will examine how the perspective of students on the implementation of effective online lectures on the ability to develop mathematics task.

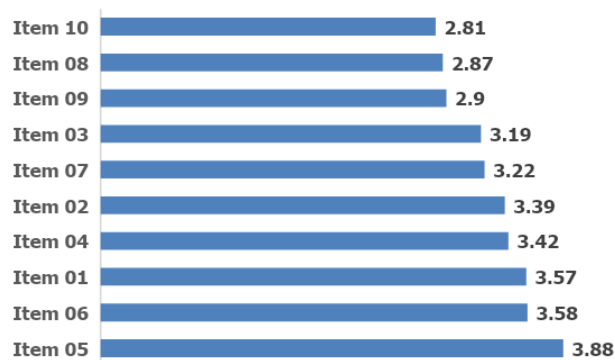
## 2. METHOD

Not much was done in this study. A survey was conducted on 101 students of the UNNES mathematics education study program to answer research questions. The subjects are students who take the Selecta Capita of Mathematics course in the 2021/2022 academic year. The survey itself was conducted using an online questionnaire assisted by a googles form. Quantitative descriptive analysis is used as a data analysis technique by

taking into account the size of the central data. The data that has been obtained will be presented in tables and graphs which are then made conclusions based on these results.

### 3. RESULT AND DISCUSSION

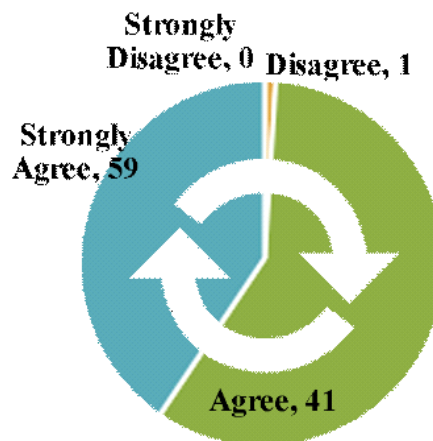
Ten statement items have been distributed to research subjects. Each student gave their response by choosing one of the options, namely strongly disagree, disagree, agree, and strongly agree. From these results obtained information as presented in Figure 1. These results reveal that the availability of modules as learning resources is one of the things that needs to be prepared to obtain effective lectures on the ability to develop mathematics task. Furthermore, it is necessary to sequentially prepare learning videos as learning resources, synchronous online lectures, use discussion applications as a means of discussion forums, and use learning management systems during lectures. This finding shows that students still need the direct “touch” of the lecturer during lectures and the availability of ICT can facilitate the online lecture process. Furthermore, each item of the statement will be discussed based on the results of the student’s perspective.



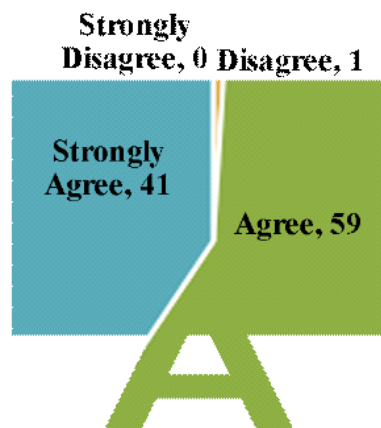
**Figure 1:** Recap of student perspective results on capita selecta of mathematics course.

Online lecture strategies is an important study. How is the process of lecturers or educators “delivering” knowledge to students? What kind of strategies do students expect? The findings stated that most students agreed that lectures were carried out in sync with the Virtual Face-to-face mode, the availability of discussion forums using social media applications and the use of the Learning Management System (LMS). These results can be seen in Fig. 2. which reveals that almost 99% of students agree that online lectures are carried out synchronously. The same result states that almost 99% of students agree to use LMS during online lectures (see Figure 4). Furthermore, almost

89% of students agree that online lectures are carried out in a Virtual Face-to-face (see Figure 3) and almost 95% of students agree to use social media applications as a means of discussion forums (see Figure 5). This combination is the best strategy in carrying out online lectures. Learning outcomes will develop and improve by paying attention to these strategies. Synchronous lectures themselves can provide direct opportunities for students to be able to discuss both with lecturers and between students face-to-face virtual or through agreed discussion forums. The use of social media can also facilitate communication so that discussions can take place anytime and anywhere. LMS itself will also make it easy for students to access lecture materials that have been prepared by the lecturer and access the assignments given by the teacher, as well as ensure that assignments have been collected and accepted by the lecturer.

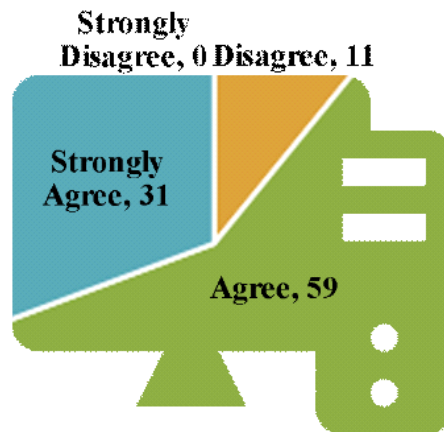


**Figure 2:** Representation of student perceptions about synchronous online lectures.

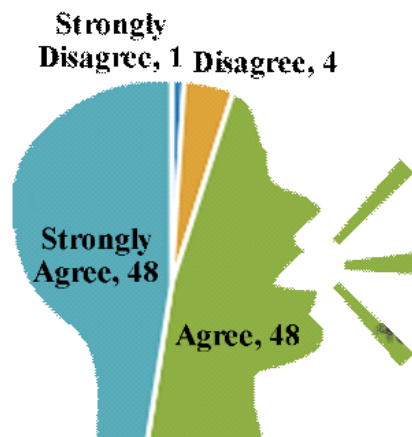


**Figure 3:** Representation of student perceptions about online lectures in virtual face-to-face.

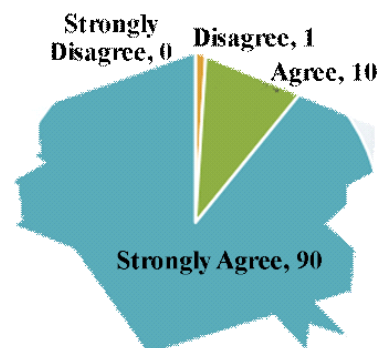
Another thing that is studied in the implementation of online lectures is the availability of learning resources. As mentioned in the previous findings (see Figure 1), the availability of learning resources places themselves in the first and third positions



**Figure 4:** Representation of student perceptions about the use of Lms in online lectures.

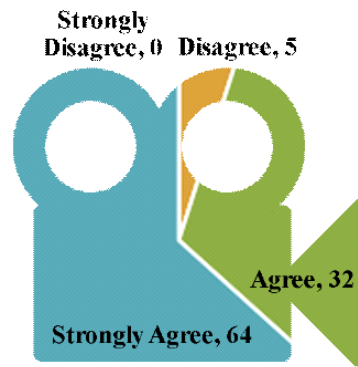


**Figure 5:** Representation of student perceptions about the availability of discussion forums.



**Figure 6:** Representation of student perceptions about the availability of modules.

(according to the student’s perspective) as a matter that needs to be considered in the implementation of online lectures. These findings were verified where almost 99% of students agreed that the module was a necessary learning resource during online lectures and almost 95% of students agreed that learning videos were a necessary



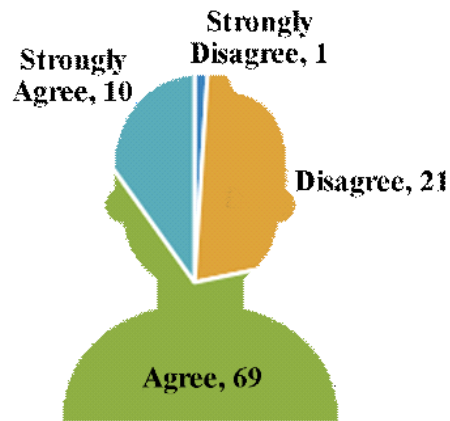
**Figure 7:** Representation of student perceptions about the availability of learning videos.

learning resource during online lectures (see Figure 6 and 7). The module provides an opportunity for students to be able to study independently considering the content of the module itself contains learning objectives and instructions for self-study [7, 8]. Video learning itself is an additional learning resource that is positively effective on student performance and can improve learning outcomes [9, 10].

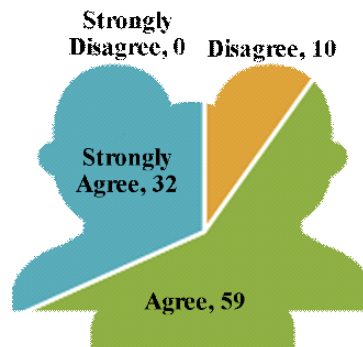
The last study is assignment. Assignment is a form of evaluation that can be applied by lecturers to ensure the achievement of graduate learning outcomes. Figures 8 and 9 show the different perspectives of students on the implementation of assignments individually and in groups. These results reveal that many students prefer group assignments to individual assignments. It can be seen that almost 22% of students do not agree that assignments are done individually and only 10% of students who do not agree that assignments are done in groups. Implementation of assignments in groups provides a significant difference in understanding of concepts for student teacher candidates [11]. Student responses also revealed the same thing. Furthermore, assignments in groups can increase student participation to be more active in discussing both in groups and in class, achieving learning objectives, and improving student learning outcomes [12].

Given that students are more likely to choose assignments in groups, it is also necessary to prepare the right form of assignment. Projects are a good alternative for students to complete in groups. The findings in Fig. 10 show that almost 88% of students agreed to complete the tasks in the project. Project assignments have a positive impact on student learning success. Students are more active, more motivated, more attractive, and understand more about the study of subjects [13, 14]. The project itself will provide opportunities for students to be able to carry out in-depth investigations related to memorizing broad knowledge [15].

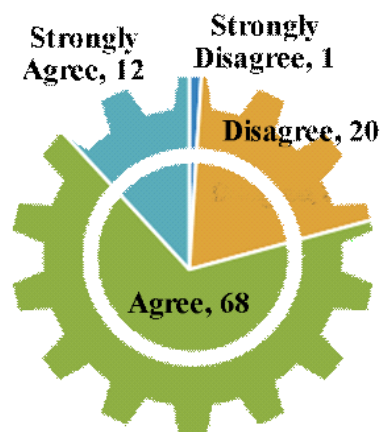
After completing the project, students need to present their work in class. Indirectly, these activities are part of a package of project assignments, but there needs to be



**Figure 8:** Representation of student perceptions about individual assignments.

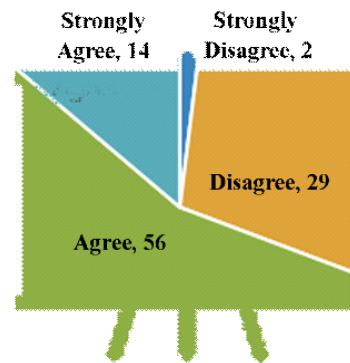


**Figure 9:** Representation of student perceptions about group assignments.



**Figure 10:** Representation of student perceptions about project assignments.

a review of their perspective on this matter. The findings revealed that almost 85% of students agreed to hold a project result seminar (presentation). These activities will develop their communication skills which are needed in this 21st century. Furthermore, from the results of the seminar, students will find out how successful their project is, their strengths and weaknesses and how to develop them.



**Figure 11:** Representation of student perceptions about product results seminar.

The term “complete package” starting from online lecture implementation strategies, learning resources, and assignments has been studied. Furthermore, it needs to be well prepared so that the learning outcomes of graduates can be achieved properly. The selection of learning models is a matter in order to prepare for this. It is necessary to find a learning model that covers all the needs of students to study online.

Team-based project (TBP) is an alternative solution to answer these problems. TBP provides free space for students to determine their collaborative learning and requires students to be able to offer various ideas in working on projects based on the knowledge that students have [16]. TBP is also a solution to maximize interaction between students during online lectures which have been socialized at several universities. Furthermore, TBP is a mandate from the government’s policy of Merdeka Belajar Kampus Merdeka Curriculum [17]. By integrating online lectures, students can not only develop several abilities such as the ability to work in teams, consisting of communication skills, leadership skills, collaboration skills, and relationships between students, but also a form of respect for current government policies [18, 19]. The following is the implementation of the Team-Based Project model in the Capita Selecta of Mathematics course show in Table 1.

## 4. CONCLUSION

The results of the study indicate that the availability of learning modules and videos as learning resources is the most important thing that must be prepared during lectures. Furthermore, several other things such as synchronous lectures, discussions using the WhatsApp Group, the use of the Learning Management System, group assignments, virtual face-to-face meetings, and project assignments need to be prepared during lectures. This finding is a new thing where in the learning process there are several



TABLE 1: Implementation of the team-based project model in selecta capita of mathematics course

Syntax	Statement
Reflection	Students are motivated to become Competent Educators. Students are directed to the context of problems related to Mathematics Tasks oriented to 4C Skills and STEM Context. Students get inspiration through several examples of 4C Skills and STEM Context-oriented Mathematics Tasks that have been developed
Research	Students obtain materials related to Mathematics Learning Instructional Design, Mathematical Thinking Ability, Trends in Mathematics Learning Research, and Mathematics Task Development Procedures. Students analyze the results of national and international studies to obtain Mathematics Tasks oriented to 4C Skills and STEM Context.
Discovery	Students develop Mathematics Tasks oriented to 4C Skills and STEM Context.
Application	Students test Mathematics Tasks oriented to 4C Skills and STEM Context.
Communication	Students present the Results of Mathematics Tasks oriented to 4C Skills and STEM Context.

things that need to be considered, namely (1) government policies, (2) achieving quality education through graduate learning outcomes, and (3) students’ perspectives. Thus, the implementation of online lectures can be carried out effectively. To achieve this effectiveness, it is necessary to choose the right learning model, namely the Team-Based Project. The ability to develop mathematical tasks is very important because every mathematics lesson allows students to solve a problem. With the training program (lectures) these abilities are expected to improve the quality of Indonesian education.

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