Effect of Feedback on Learning Motivation of Primary Teacher Education Students in Primary School Physics Courses

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Abstract. Based on the results of the questionnaire distributed to Primary Teacher Education Students, 96% of students said that Physics is difficult to understand because the material is very complex, many formulas, especially the learning process is done online. This study aims to describe the influence of providing feedback on the motivation of Primary Teacher Education Students in primary school physics courses. The method used in this research is descriptive qualitative. Meanwhile, the instrument used was a questionnaire which was distributed to 115 elementary school education students. The result of the research shows that giving feedback consistently is able to motivate students. This can be seen from the results of the questionnaires distributed, each indicator is of very good value.

1. Introduction

The covid-19 pandemic is still sweeping countries around the world including Indonesia. The covid-19 pandemic affects many areas, including education. The learning process that was originally done face-to-face turned into online learning. This change overwhelmed teachers, parents, students, and students because they were not in a ready condition [1]. Online learning is a solution provided by the government to inhibit the spread of the Covid-19 virus. Online learning is applied at all levels of education at both school and college levels. This change is certainly a challenge for students, students, parents, especially educators. For the learning process to be effective even though it is done online, lecturers must be able to plan and design a learning process that can teach students. An effective online learning process results from careful planning, instructional design and is developed using a systematic model [2]. This instructional design is expected to be able to encourage students' interest and motivation to learn.

In the learning process, it is important for a lecturer to build student motivation, especially in online learning situations like today. Lack of motivation is one of the factors causing dropout in online learning [3]. In general, motivation is an impulse within a person to do something [4]. Learning motivation can arise from within a person and due to the influence of others [5]. Indicators of
motivation are classified into several parts, namely: 1) the desire and desire to succeed; 2) there is encouragement and need in learning; 3) there are hopes or aspirations for the future; 4) there is an appreciation in learning; 5) there are interesting activities in learning; 6) conducive learning environment [6]. There are several factors that affect the low motivation to learn in a person, one of which is the difficulty in understanding the subject matter. Someone who has difficulty in understanding the lesson, it will affect his learning behaviour [7].

Physics is a subject that is considered difficult to understand [8] [9]. One of the factors that causes Physics lessons to be considered difficult is because Physics material is very complex and abstract to understand [10]. The results of the questionnaire distributed to Elementary School Education (PGSD) students taking Elementary School Physics courses show that 94% percent of PGSD students consider Physics to be a difficult subject because it is very complex. In addition to complex physics material factors, online learning is also one of the factors that causes physics to be considered difficult. This perception of difficult physics can affect students' initial motivation in studying physics. To address this, one of the solutions that can be given by lecturers is to provide feedback in the learning process. Giving feedback is very important because it will affect students' learning motivation [11].

In the learning process feedback is interpreted as information conveyed to learners with the aim of changing behaviour and thinking to improve the teaching and learning process [12]. Providing feedback plays an important role for lecturers and students. By providing feedback to students, lecturers can know the extent to which students understand the materials that have been taught. As for students giving feedback this will provide information on the extent to which students master the materials studied, increase knowledge while motivating students [13]. Feedback can be done during synchronized and asynchronous learning. In synchronous learning, feedback can be done directly during discussion activities, Q&A or when the teacher feels it is necessary. In asynchronous classes, feedback can be done when correcting student assignments with the aim of sharpening student understanding. So, with feedback, it can help students ensure their understanding.

Based on the above explanation, this study aims to describe the influence of providing feedback on the motivation of Primary Teacher Education Students in primary school physics courses.

2. Method
The type of research used in this study is descriptive qualitative. The population sampled in this study was elementary school education students (PGSD) who took physics courses in elementary school. The instrument used to measure student motivation is a questionnaire consisting of 13 questions. This questionnaire was distributed at the end of the semester to 115 elementary school students. The type of questionnaire used is a closed questionnaire using a Likert scale [14].

| Table 1. Likert scale |
|-----------------------|
| **Statement**        | **Score** |
| Strongly agree       | 5         |
| Agree                | 4         |
| Undecided            | 3         |
| Disagree             | 2         |
| Strongly Disagree    | 1         |

Data obtained from research respondents were analyzed using qualitative descriptive analysis using the formula: [15]

\[ p = \frac{f}{n} \]

where:

- \( p \) = percentage of each score
- \( f \) = respondent's answer on each score
- \( n \) = number of maximum scores
After the data is presented, the mean score for each indicator of learning motivation will then be calculated using the formula:

$$\text{Mean} = \frac{\sum f.x}{N}$$

Based on the results of the calculation of the mean, the criteria for each aspect are determined by a range of values as follows:

| Score Mean(R) | Criteria    |
|--------------|-------------|
| $4 \leq R \leq 5$ | Excellent   |
| $3 \leq R < 4$ | Good        |
| $2 \leq R < 3$ | Fair        |
| $1 \leq R < 2$ | Poor        |
| $0 \leq R < 1$ | Very Poor   |

### 3. Result and Discussion

Primary Physics lectures conducted online using Microsoft application teams. Lectures are carried out synchronously and asynchronously, which are arranged in such a way on each meeting topic. Asynchronous lecture activities are explaining material using video recordings, doing physics exploration using physics classroom, exercises, and doing practicum. Synchronous sessions are held to discuss and provide feedback on student work in general. Feedback is also given personally to student accounts for assignments, quizzes, and practicum reports that have been collected. The feedback given is not only limited to corrections for what has been done by students but also encourages positive words.

The effect of feedback on student learning motivation is measured through questionnaires and student’s reflections. Questionnaire compiled based on indicators of motivation to learn and distributed to students to be filled out online. The questionnaire was filled out by 115 students from 122 students who took primary physics courses, while student reflection is done personally in the middle of the semester. The indicators used in this study are 1) the desire to succeed, 2) the encouragement and need for learning, 3) the appreciation for learning, and 4) the expectation or aspiration of the future.

The desire to succeed is the first indicator that shows students’ learning motivation. There are four statements in the questionnaire that measure this indicator. The results of the questionnaire for this indicator are shown in Figure 1. Based on the questionnaire results showed that 54.78% of the students Strongly Agree (SA) and 44.35% Agree (A) that the feedback given by lecturers encourages them to do their best in the learning process. Similar results were also found in the student reflection. From these results, it can be concluded that the feedback given by the lecturers encourages students to be enthusiastic about doing their best in the learning process. It is also confirmed by the second statement in which students feel encouraged to follow this course (25.22% SA and 68.7% A). Lecturer feedback also helps students to learn from the mistakes found (50.43% SA and 46.96% A), and were challenged to explore material that had not been mastered or felt difficult during learning (34.78% SA and 59.13% A). The mean calculation results on this indicator is 4.37, meaning that this indicator is included in the excellent category.
The questionnaire results in an indicator 1: The desire to succeed.

The second indicator used in this study is the existence of encouragement and need in learning. This indicator was identified through five statements in the questionnaire distributed to students. The results of the questionnaire for this indicator are presented in Figure 2. Based on Figure 2, it can be seen that lecturer feedback can help students to measure understanding of the learning material carried out. The same statement was also expressed by students in their reflections. Student responses to the administration of a compliment to the work duties are quite varied. Sixty percent of students want appreciation for the work they have done, but the rest don't want it. This indicator has a mean of 4.20, which means this indicator is in the category excellent.

The next indicator used in this research is the appreciation of learning. This indicator measures through three statements contained in the questionnaire, two of which are negative statements. The statements in this indicator further confirm other indicators. The survey results on this indicator show
that students feel more enthusiastic and appreciated when lecturers provide feedback on every task they do. The mean value of this indicator is 4.19. This indicator is also included in the excellent category. The results of the questionnaire for this indicator are presented in Figure 3.

![Figure 3. The questionnaire results in an indicator 3: The Appreciation in learning](image)

The fourth indicator used in this study is the expectation or aspiration of the future. This indicator is seen from the results of the survey and student reflection. Based on the results of the questionnaire, it is known that 88.7% of students (24.35% SA & 64.35% A) believe that they will get good grades in this course. Student reflection also gave the same result where most of the students believed that they were able to complete this course with good grades even though it was done online. The mean value for this category is 4.11 and is included in the excellent category. The results of the student survey on this point are shown in Figure 4.

![Figure 4. The questionnaire results in an indicator 4: The expectation or aspiration of the future](image)

The percentage of students for each indicator based on achievement category is shown in Figure 5. Based on these data, we can see that more than 74% of the students in the excellent category in learning motivation. These four indicators are interrelated with each other. The feedback given consistently in both synchronous and asynchronous sessions makes students have the desire to succeed in this course. It is clear from the attitude strive to do better during the lectures. Lecturer feedback lets students know the level of understanding that has been achieved and helps them learn from mistakes
that still exist. This encourages them to explore and study material that is difficult to understand. The appreciation of the lecturers in their feedback makes students excited and confident that they can take this course well. Students’ fears and worries at the beginning of the lecture turned into a passion for learning during the lecture. Some students in their reflection admitted that the lecturer's feedback made them more motivated to study physics and even started to like it. It is also confirmed from student achievement at the end of the semester in which all the students graduating from this course with 90% of them passed with good grades.

![The percentage of each indicator](image)

**Figure 5. The percentage of each indicator**

4. Conclusion
Lecturer feedback given consistently in primary physics lectures during online learning succeeded in making students learn to take lessons. Although most of the students have a fear of starting this course, all students successfully pass this course and 90% of them have good grades. Learning motivation measured using a questionnaire shows that all indicators used in the study are in the excellent category. Student reflections also show that some students have done their best in the learning process and have even started to like learning physics.

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