Increasing Student Motivation Through the Use of Alternative Assessments in Basic Physics Online Lectures

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ABSTRAK

This study aims to determine how to increase learning motivation that occurs after students majoring in math education at Taman Siswa University who are currently taking basic physics courses in the odd semester of the 2020/2021 school year. The sampling technique used was a random sampling technique so that class A was selected as the research sample. The research instrument used was a scale of learning motivation attitudes using a Likert scale in its assessment. The research method used in this study is a pre-experimental method with one group pretest-posttest design. The data analysis used is descriptive statistical analysis by calculating the average student motivation. Student learning motivation after the implementation of the alternative assessment has a value of 89.50 in the very good category. The increase in student learning motivation has increased significantly with a value of \(<\text{N-Gain}\> of 0.85. Various assessments that are not only concerned with knowledge competencies can increase student motivation in carrying out basic physics online lectures.

Keywords: motivation, alternative assessment, online lectures, physics

INTRODUCTION

The covid-19 pandemic period was a very difficult time for the community. Difficulties in the world of education are especially felt by students and educators. The covid-19 virus caused the government to issue an emergency status starting on February 29, 2020. The government implemented several steps in resolving this extraordinary case by socializing the Social Distancing movement (Buana, 2020). This pandemic has affected all aspects of community life, including an impact on education. This is in line with the opinion of Anderson (2020), Azzi \& Schmis (2020), DHEC (2019), Di Domenico et al (2020), Horn (2020) who explain that the Covid 19 pandemic affects almost all aspects of life, including education. Learning is one part of the educational process.

This pandemic has an impact on the learning process. Learning is carried out online in all regions in Indonesia. Universities are guided to be able to hold online or online learning (Firman \& Rahayu, 2020). Online learning is considered the most strategic choice in breaking the chain of the spread of the Covid-19 outbreak in higher education (Yudiawan, 2020). Online learning is learning that uses internet networks with accessibility, connectivity, flexibility, and the ability to generate various learning interactions (Moore, Dickson \& Galyen, 2011). Furthermore, online learning is learning that is able to bring together
lecturers and students to carry out learning interactions with the help of the internet (Kuntarto, 2017). This online learning is very much needed in WFH (Work from Home) activities (Darmalaksana, 2020). Online learning is also needed in the era of the industrial revolution 4.0 (Pangondian, Santosa & Nugroho, 2019). This online or online learning has its own strengths, challenges, and barriers for both students and educators (Jamaluddin et al, 2020). In online learning, students and educators can communicate through several applications in the form of classrooms, video conferencing, live chat, zoom or through the WhatsApp group (Dewi, 2020). Online learning using technology can affect the learning motivation of students.

Motivation is the provision of encouragement for purposeful action with directions used both physically and mentally so that activity is very important in motivation (Lee & Martin, 2017). Motivation in implementing learning can influence how we learn, how we learn, and when we choose to learn (Schunk & Usher, 2012). Rimbarizki (2017) explains that one of the causes of the success of a student in the learning process is learning motivation. This was further added by Abou et al (2014) who produced a study that a motivated student has a character in the form of often doing challenging activities, being actively involved, enjoying the learning process, experiencing an increase in learning outcomes, perseverance, and creativity. Motivation needs to be of concern to educators during the Covid-19 pandemic. Online learning carried out by educators during this pandemic requires motivation related to curiosity and self-regulation to be actively involved in the online learning process. Selvi (2010) explains that there is a need for great motivation for students in doing online learning because students are no longer faced with educators but are faced with inanimate objects in the form of technology. Technology itself can generate motivation from within students in the form of challenges, curiosity, novelty, and fantasy (Lepper et al, 2005; Lin et al, 2008).

The motivation to learn of students at one of the private universities in the city of Padang is not so good. This is reflected in the results of the scale of learning motivation attitudes that the researchers disseminate using Google Form to students taking basic physics courses. The indicators referred to by the researcher were obtained from Uno (2009) in the form of concentration, curiosity, enthusiasm, independence, readiness, enthusiasm or encouragement, never giving up, and self-confidence. Concentration indicators include aspects of attention to the delivery of competencies, understanding the instructions given by the lecturer, concentration on teaching materials and materials, listening well to each explanation, paying attention to lecturers' delivery and explanations, recording material delivered during learning, obeying the rules given during learning. Curiosity indicators include aspects of interest in the material and material presented and asking questions about the material being taught. Indicators of enthusiasm for learning have an aspect in the form of enthusiasm in conveying ideas and opinions during learning. Independence indicators include aspects of being able to answer or do well the assigned tasks. Readiness indicators include aspects of being enthusiastic and ready to answer or work on given tasks. Indicators of enthusiasm or encouragement include aspects of having the desire to get the best value from each task. The never-giving up indicator covers the aspect of being serious in doing the task. Self-confidence indicators include aspects of confidence in doing assignments and confidence in the score that I will get. The results of the early stage student learning motivation attitude scale analysis are shown in Table 1.
In the learning concentration indicator, an average score of 31 is obtained which is in the unfavorable category, this is because at the beginning of the lecture the lecturer who teaches the course has not explained what competency components are delivered along with the type of instrument used to measure the competence, commitment in at the beginning of the lecture on the description of competencies and types of assessment instruments for achieving these competencies. The curiosity indicator obtained an average score of 25 with a poor category, which illustrates that students are less interested in the materials and materials presented by the lecturers and students also rarely submit material to be discussed together. This is due to the embedded mindset of students that during the lecture process there is no real time and systematic assessment. After the zoom is closed, then that's when basic physics lectures are finished. Indicators of enthusiasm for learning obtained an average score of 7 with a very poor category which illustrates that students do not have enthusiasm in conveying ideas and opinions during the lecture process. If an opinion is conveyed it means that the lecture will last even longer and the opinion given will not be judged by the lecturer. Thinking like that which will make the enthusiasm to convey ideas less desirable.

The indicator of independence obtained an average value of 51 which is in the sufficient category which illustrates that there are students who are able to answer or do well the assigned tasks. This can be done by some students well because students can find completion of assignments through online literature searches through their respective androids. The indicator of learning readiness obtained an average score of 27 with a poor category which explains that students are less enthusiastic and ready to answer or do the assignments given. When there are questions from lecturers and students, many students are unable to answer questions correctly and quickly. This indicates that students' learning readiness is not optimal so that students are unable to answer questions correctly and quickly. In the indicator of enthusiasm or encouragement, an average value of 51 is obtained with the sufficient category. Some students have a desire to get the best score in every assignment they do. Furthermore, on the indicator of never giving up, an average score of 23 was obtained with a poor category which explains that students are not serious in doing their assignments. This lack of seriousness is the result of the absence of feedback to students in the form of clear assessments with clear categorization of achievement of student competencies. The self-confidence indicator obtained an average score of 28 with a poor category which illustrates that students lack confidence in doing assignments and lack confidence in the scores they will get.

The overall students' motivation to learn is in the poor category. This needs to be a concern in online learning that is currently taking place. These results illustrate that the current online learning process has not been able to motivate students to be more enthusiastic about attending lectures. The learning that has taken place so far has been carried out with presentation activities and accompanied by
question and answer activities without being accompanied by a clear component of the assessment system and not applying the principles of assessment correctly. The principle of assessment in question is that according to Rustaman (2004) the form of an assessment must be valid, educational, competency-oriented, fair and objective, open, sustainable, comprehensive, and meaningful.

Online learning needs to be equipped with an assessment that can increase student motivation. Riyani et al (2018) explained that the learning motivation of students had increased in social studies learning after using alternative product-based assessments. Assessment is a process of collecting data and or information (including processing and documenting) systematically about an attribute, person or object, both in the form of qualitative and quantitative data about the number, state, ability or progress of an attribute, object or person / individual. Which is assessed, without referring to the value judgment (Yusuf, 2017). An alternative assessment is a non-traditional assessment that assesses the acquisition, application of knowledge and skills that show the ability of students in processes and products (Herman, 1992; Marzano et al, 1993; Stiggins, 1994).

Alternative assessment is useful for assessing the dimensions of the process and learning outcomes of students that are not explored through commonly used tests. Alternative assessments can provide more meaningful feedback for the development of the potential of students as a whole in terms of knowledge, attitudes, and skills. Some examples of alternative assessments that can be used in the learning process, including essay writing, practical exams, paper assessments, project assessments, questionnaires, inventory, checklists, peer assessments, self-assessments, portfolios, performance observations, discussion assessments, and interviews (Wulan, 2007). In this online learning, researchers used alternative assessments in the form of paper assessments, portfolio assessments, knowledge assessments, and discussion assessments in the physics learning process.

The alternative assessment has advantages and disadvantages. The advantages of alternative assessment compared to ordinary tests are 1) students can demonstrate a process, 2) the demonstrated process can be directly observed, 3) provides a more complete and natural evaluation of several kinds of reasoning, oral abilities, and physical skills, 4) there is an agreement between educators and students about the assessment criteria and tasks to be carried out, 5) assessing learning criteria and complex skills, 6) providing great motivation for students, 7) encouraging learning applications in life situations real (Airasian, 1997; Stiggins, 1994; Popham, 1999; Zainul, 2001). Furthermore, behind the advantages possessed by alternative assessments, this assessment also has weaknesses, namely 1) it is very demanding of time and effort, 2) consideration and scoring are subjective, and 3) burdensome, and 4) has low reliability (Zainul, 2001). Alternative assessments can increase the learning motivation of students. The great motivation that will emerge from students is expected to be able to improve learning outcomes later.

Previous research relevant to this research is Riyani's (2018) research entitled "Implementation of Product-Based Alternative Assessment in the Form of Pop Up Books to Improve the Quality of Social Studies Learning at SMPN 3 Langsa". The type of alternative assessment used in this research is product assessment in an effort to increase student motivation in social studies learning. The similarity between this study and previous research is that it has similarities in measuring the research variable in the form of learning motivation. The difference between this study and this research is that the alternative assessment
types used in this study are paper assessment, portfolio assessment, knowledge assessment, and discussion assessment in basic physics courses, whereas this research only uses product assessment in increasing students' learning motivation. Furthermore, research relevant to this study is Fitriyani et al (2020) with the research title "Student Learning Motivation in Online Learning during the Covid-19 Pandemic". What this research has in common with this research is that it has similarities in measuring learning motivation during the Covid-19 pandemic. The difference between this study and this research is that the research does not only want to describe student learning motivation, but also wants to show the categories of increasing student learning motivation during learning, and in this study applying free variables in the form of alternative assessments in ongoing online learning.

This research was conducted with the intention of obtaining a description of the increase in student motivation in basic physics after applying alternative assessments in the form of paper assessments, portfolio assessments, knowledge assessments, and discussion assessments with a weight of 2 credits. The benefit to be obtained in this research is as a reference for the current implementation of learning whether it has motivated students in the lecture process or not, then more treatment will be given in order to increase the learning motivation of students to be even better.

RESEARCH METHOD

The approach used in solving this research problem is to use a quantitative approach. Creswell (2002) says that "quantitative research is a type of educational research in which the researcher decides what to study; ask specific, narrow questions, collects quantifiable data from participants; analysis these numbers using statistics; and conducts the inquiry in an unbiased, objective manner. Research using a quantitative approach is not just numbers and a discussion of numeric data. Research using a quantitative approach can make the researcher decide what he will research, formulate specific questions, limit questions, collect measurable data from participants, analyze data using statistics, carry out impartial investigations in objective ways. The results of research using this quantitative approach are generally valid. The method used in this study is a pre-experimental method with one group pretest posttest design. Fraenkel & Wallen (1993) which states that "In the one-group pretest-posttest design, a single group is measured or observed not only after being exposed to a treatment of some sort, but also before". The experimental group used was only one group which was later measured not only after the treatment was applied but also before the treatment. This research design allows the researcher to determine the increase that occurs in a variable after a treatment is given to the research sample. The research description is shown in Figure 1 below.

| Experiment Class: T1 X (exp) T2 |

Figure 1. Research Design

In the experimental group, a learning motivation attitude scale was distributed via google form before implementing alternative assessments in the basic physics lecture process, then after the assessment was applied in the form of paper assessments, portfolio assessments, knowledge assessments, and discussion assessments, the learning motivation attitude scale was redistributed to find out whether students experiencing increased motivation or not. The population in this study were students of the odd semester of the 2020/2021 academic year consisting of two classes A and B. The sampling in this study used a cluster random sampling
The data analysis technique in the study used the average calculation of the results obtained in the form

\[ \text{Average Score} = \frac{\text{Total value}}{\text{Lots of Data}} \]

The number of values for each indicator of learning motivation will be divided by the amount of data collected. The average value of the students' learning motivation attitude scale before and after the treatment will be calculated using this equation. The results of the average value that have been obtained are then interpreted according to Table 3 below.

| Table 3. Criteria for Average Score Interpretation |
|---------------------------------------------------|
| Average Score | Interpretation       |
| 0 – 19.99     | Not very good       |
| 20 – 39.99    | Not good            |
| 40 – 59.99    | Enough              |
| 60 – 79.99    | Good                |
| 80 - 100      | Very Good           |

The average value obtained before and after treatment will be calculated for the \(<N-Gain>\) value to determine the category of improvement. The \(<N-Gain>\) equation referred to in this study is as follows.

\[ <N-Gain> = \frac{\text{postest} - \text{pretest}}{\text{S}_{\text{maks.ideal}} - \text{pretest}} \]

Table 4. <N-Gain> Category

| No. | <N-Gain> Interval | Category | Average Increase |
|-----|------------------|----------|------------------|
| 1   | \(<N-Gain> \geq 0.7\) | High     |                  |
| 2   | \(0.3 < <N-Gain> < 0.7\) | Medium  |                  |
| 3   | \(<N-Gain> < 0.3\) | Low      |                  |

Results and Discussion

The study was conducted in one experimental group with a total of 14 students in class A. Learning motivation after an alternative assessment was applied in the process of basic physics lectures at one of the private universities in Padang City is shown in Table 5 below.

Table 5. The results of the final stage student learning motivation attitude scale analysis

| Indicators                  | Average Score | Criteria   |
|----------------------------|---------------|------------|
| Concentration              | 88            | Very good  |
| Curiosity                  | 84            | Very good  |
| Spirit                     | 93            | Very good  |
| Independence               | 88            | Very good  |
| Readiness                  | 90            | Very good  |
| Enthusiasm or encouragement| 94            | Very good  |
| Never give up              | 91            | Very good  |
| Confidence                 | 88            | Very good  |
| Overall Average            | 89.50         | Very good  |

The learning concentration indicator obtained after the implementation of the alternative assessment in the lecture process was 88 with a very good category. Students pay attention again to the delivery of competencies to be achieved, understand the instructions given by the lecturer, concentrate on teaching materials and materials, listen well to each explanation of the material presented, pay attention to the delivery and explanation of the lecturers, note the material delivered during learning, comply with the rules given in when learning takes place.
Students are instructed at the beginning of the lecture to provide books and writing instruments to record important points during the lecture process, with the explanation that after each lecture a knowledge assessment will be given in the form of questions to test knowledge competence, so students concentrate more in following basic physics courses. Students also hear the material well because they are motivated by the assessment of discussion during the discussion process. Juita (2020) explains that the higher the concentration of teachers and students, the more effective the learning activity is, but on the other hand, if the student's concentration is low, the results will not be optimal. If learning is effective, this can indicate that student learning motivation is also good so as to produce effective learning (Afandi, 2020).

The curiosity indicator obtained an average value of 84 in the very good category. Students are interested in the material and material presented and students wish to ask questions about the material being taught. Curiosity is a way of thinking, attitudes and behavior that reflect curiosity and curiosity about everything that is seen, heard, and studied in more depth (Kementerian Pendidikan Nasional, 2010). Curiosity is the main basis for motivation that is needed in every lesson (Rohmawati, 2018). If the students already have curiosity, the student's learning motivation will emerge by itself. Students want to know more about the material being discussed accompanied by in-depth questions related to the material being discussed.

The indicator of enthusiasm for learning obtained an average score of 93 with a very good category which illustrates that students are enthusiastic in conveying ideas and opinions during learning. This is related to the high curiosity earlier so that students are enthusiastic in conveying ideas. The discussion assessment used in the lecture process does not only assess the percentage of students but also other students who are members of the discussion. Indicators of learning independence obtained an average score of 88 with a very good category which illustrates that students are able to answer or do well the given assignments. Students realize that lecturers will also assess student portfolios and assess papers that will be assessed each week. This value will also later be displayed in the WhatsApp group of the course as a form of application of assessments that are carried out openly and objectively. With this alternative assessment, students will be more able to work on assignments for the better.

The indicator of learning readiness obtained an average score of 90 with a very good category which illustrates that students are enthusiastic and ready to answer or do the assignments given. Students read the lecture material before lectures begin so that students can answer the assignments given. Learning readiness is the initial condition of a learning activity that makes it ready to respond / answer students to achieve certain teaching goals (Sirait, 2018). Work on assignments is included in an alternative assessment component (Wulan, 2007). The indicator of enthusiasm or encouragement obtained an average score of 94 which indicates that students have the desire to get the best score from each assignment. The assessment described and the scoring system described are able to create a desire in students to get the best score in each type of assessment. Paper assessments, portfolio assessments, knowledge assessments in the form of quizzes at the end of each meeting, and discussion assessments can encourage students to get their best.

The never give up indicator gets an average score of 91 with a very good category, which indicates that students are serious about doing their assignments. This is related to the previous indicator, namely
enthusiasm or encouragement which has been very good value for students. This encouragement creates an unyielding attitude in students as evidenced by their seriousness in carrying out their duties. The confidence indicator gets an average score of 88 in the very good category which shows that students are confident in doing their assignments and students are confident about the scores they will get. Asiyah et al. (2019) explain that self-confidence means convincing in one's ability and self-assessment in performing tasks and choosing an approach that is quite effective. The self-confidence possessed by students illustrates that students are motivated in the lecture process.

The overall average value after using alternative assessments in the basic physics lecture process was 89.50 which resulted in a study that through the use of alternative assessments in the lecture process it was able to motivate students in learning to be very good. Finally, the average value of the N-Gain can be calculated, which results are shown in Table 6 below.

| Category | Value |
|----------|-------|
| High     | 0.85  |

Table 6. Accumulated <N-Gain> Values

The increase in student learning motivation has increased in the high category after the implementation of alternative assessments in the basic physics lecture process. This is in line with Riyani's (2018) research which explains that alternative assessment can improve the quality of learning, one of which can be viewed from the increase in student learning motivation. This study also supports Wulan's (2007) research which explains that the advantages of alternative assessment are that it can provide a more complete assessment of students, can assess complex competencies, and can motivate students in the learning process. This alternative assessment is suitable to be carried out in the online learning process where learning is identical to the lack of seriousness of students in the lecture process. Through the presence of this assessment, students can take the lecture process more seriously, which is not just showing faces through the application via the zoom application.

CONCLUSION

The alternative assessment can assess all aspects desired by the educator. In this study, the alternative assessment referred to is paper assessment, portfolio assessment, knowledge assessment, and discussion assessment. The use of this alternative assessment can increase learning motivation in the high category. Students' learning motivation that was initially poor became very good after using this alternative assessment in the online lecture process.

The results of this study are expected to be a solution for other online lectures that are still constrained by students' low learning motivation. It is also hoped that this research can be further developed to deal with times that are more difficult than during the current pandemic. Preparations that must be done by teachers and lecturers are preparing teaching materials, lecture commitments, easily measurable assessment tools, and adequate network access.

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