Optimization of Sociology Learning with an Ergonomic Approach in the Online Teaching and Learning Process

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Abstract. This study aims to analyze the application of the ergonomics approach in sociology learning to optimize the quality of learning to increase student motivation and achievement and reduce the symptoms of learning loss due to the impact of online learning. The research approach used is a research and development approach. With data collection techniques through questionnaires, interviews, observation, and documentation. The resulting data were then analyzed using a descriptive qualitative approach. The results of this study found a new learning model in learning whose name was later to be studied further. Where the results of this study indicate that the ergonomics approach can optimize the quality of the implementation of sociology learning. The implementation of learning using the ergonomics approach is to follow the ergonomics approach to produce the stages of implementing new learning in the classroom. Starting from the opening learning activities to closing activities in the teaching and learning process. This teaching and learning process can improve the quality of sociology learning. This is indicated by the increase in student motivation and increase in student achievement. So that 33 out of 35 students experienced a high increase in achievement in the midst of implementing online learning, to reduce the symptoms of learning loss.

Keywords. Sociology learning, Ergonomic approach, Online learning

1 Introduction

Efforts to improve education are one of the crucial things to be followed up by the government is preparing for the 2045 golden generation. This of course needs to be supported by various supporting factors, both from within (the school environment) and from outside (the government) and so on. This improvement cannot only carry out unilaterally but is a contribution from various integrity related to the world of education. Starting from the family environment, and school environment, to the system that regulates the course of education.

Teachers in the implementation of the teaching and learning process are often faced with various challenges, as was the case with what happened recently, namely the Covid-19 pandemic which resulted in all elements of social institutions being shaken by the presence of the pandemic. How not, every level of education is required to implement online learning as a form of preventing the spread of Covid. This challenge is certainly a problem for schools that are not ready to use technology to support successful online learning. Both the infrastructure and soft skills are possessed by the educators.

This is as reported by various news reports throughout the country, where there are still many schools that are hampered in implementing online learning due to the lack of teacher knowledge, and not infrequently learning is also constrained due to slow internet connections or even inadequate technological facilities in regions across the country. As if a tit for tat, this is made worse by the condition of every school that is not ready to face the implementation of online learning. For example, in terms of the use of online-based learning media which tends to be monotonous and does not attract student motivation, results in a setback in increasing knowledge for some students. This condition is found in several schools, where teachers only carry out WhatsApp group-based learning, this is certainly considered less than optimal in implementing complex learning as a manifestation of the nation's educational goals.

This condition causes some students to experience a condition called learning loss. Learning loss is the loss of students' knowledge and abilities, either specifically or in general, which is influenced by various factors. This condition is also often interpreted as an academic setback related to a prolonged gap or an educational process that is not going well. In the Guidelines for the Implementation of Learning in the Covid-19 Pandemic Period, learning loss is referred to as a form of decreasing learning achievement. During the pandemic, education is conducted online where there are gaps in
access and quality of learning. This is what causes the emergence of learning loss and decreased student learning achievement [1]. The Covid-19 pandemic has caused various other negative impacts that lead to learning loss. Students lose the opportunity to learn as they should, and in this case their right to learn cannot be fulfilled optimally. Starting from the ability of teachers to manage classes in a network that is not ready, the duration of lesson hours is cut, to the ability of students to participate in online learning which is still relatively low due to the economic limitations of their parents.

Not only that but various other complaints were also experienced by educators and students, namely the emergence of excessive fatigue in online learning due to always staring at smartphone or laptop screens, weakening students' motivation in learning, which has an impact on student learning achievement. According to data from the Indonesian Survey Institute in early September 2021, most students are considered to have started to get bored with distance learning, as seen by their enthusiasm for participating in learning. In fact, 23.8% of teachers assessed that students did not have the motivation to learn. This data is one proof of the decline in the quality of education, where students have no interest in learning, including participating in learning and understanding the material [2].

This is also what Ali Sadikin and Afreni Hamidah are worried about in their research [3], in order to anticipate the emergence of disturbances in online learning, then the teacher must be able to manage the class both the use of learning media, learning methods to the learning model used by the teacher, so that learning can take place interactively and actively. To answer this, many government programs are designed to ensure the continuity of the system and the quality of education in the country. One of them is through improvements to the curriculum, through the independent school program [4], and various other research results such as the application of Google docs media in the method of teaching discussions on during Covid-19 pandemic [5], to improve treatment in the approach used in the learning implementation process [6] and others. To support this, of course, must be balanced on the ability of teachers to manage the class. Both his ability in the field of pedagogy and his ability in the field of science in a professional manner.

As well as the results of research proposed by Nyoman Tri Anindia Putra et al, the low student learning outcomes are caused by the lack of learning media that can facilitate students in learning, thus making students difficult to understand the subject matter [7]. In this case, teachers are advised to use mobile-based interactive learning media (adjusted to the teaching materials being taught). Etha Salaza Tittiana et al also support the importance of technology in the implementation of the teaching and learning process, this is explained through teacher transformers, namely about teachers transforming in the use of technology-based learning media. According to him, technology-based learning media can equip children to face the era of the industrial revolution 4.0 [8]. Likewise, according to Ali Sadikin and Nasrul Hakim [9] that the responses of students and teachers to web-based interactive e-learning media products are included in good criteria according to the 4.0 industrial revolution. Based on the description above, this study tries to analyze and answer the anxiety of teachers in facing the challenges caused by the application of online learning, namely by optimizing the quality of learning outcomes in the network by applying a learning model using ergonomics approach. This research is expected to be useful for teachers in implementing classroom learning both in online learning and face-to-face learning. And at the same time, it can be useful for various education policymakers to disseminate the results of this research. Thus, the purpose of this research is to explore the results of applying the learning model with an ergonomic approach to optimizing learning outcomes.

2 Research Methods

This research was conducted using a research and development approach. The research and development approach used in this study refers to the Borg and Gall model [10] which has been adapted from 10 stages and modified into four stages, namely: 1) preliminary study; 2) conceptual model development; 3) focus group discussion process (FGD); and 4) prototype test and model revision. The location of the research in the preliminary study stage is a high school in Minahasa Regency with the research subjects being students, teachers, and principals. In the Focus group discussion, research participants consisted of 10 Sociology teachers and 2 academicians. In the prototype model test phase, the research participants consisted of 1 principal, 1 Sociology teacher, and 35 students.

The research location at the prototype test stage of the learning model was determined with several considerations used, namely (1) high willingness and motivation, especially school principals and sociology teachers to cooperate with researchers in developing learning models, (2) the condition of the diversity of students in the classroom, (3) the availability of school facilities that meet the minimum needs for the development of learning models. Based on these considerations, SMA Negeri 3 Tondano was designated as the research location to implement the sociology learning model with an ergonomic approach. The data collection techniques used are questionnaires, observations, interviews, document analysis, and assessment. Data analysis in this study used descriptive qualitative analysis. Data analysis activities in this study refer to the data obtained at each stage of research and development used.

3 Result and Discussion

The implementation of teaching and learning is a process that is characterized by a pattern of changes in students, be it changes in the level of knowledge, changes in skills, to changes in the level of attitude. Each implementation of learning must be prepared ahead of time, so that the learning objectives can be achieved optimally. Starting from planning learning objectives,
preparing the right material to achieve learning, preparation of effective and efficient strategies in supporting the successful delivery of teaching material messages to the evaluation preparation stage to find out whether the learning carried out has achieved the learning objectives or not, which is then made follow-up materials to respond to the results of the learning evaluation.

The teaching and learning process certainly require changes and improvements in every implementation, as well as the models, methods and media used to be updated and adapted to the times. The existence of the Covid-19 pandemic has resulted in the implementation of online learning as a whole, although most schools are still not ready to implement online learning, with the presence of the pandemic, every element must be ready to face these social changes.

Online learning is a teaching and learning process that is carried out by not meeting face to face, but rather by using a platform that can assist the teaching and learning process, meaning that online learning is learning by using application media to make it easier for students to carry out the learning process. The implementation of online learning, resulted in various impacts for all elements of the school community, starting from the school; teacher; learners; so that parents of students also take part in feeling the impact of implementing learning in this network.

The perceived impacts are quite diverse, ranging from the unpreparedness of schools in managing online learning both in terms of facilities and the ability of teachers to manage the implementation of online learning effectively and efficiently. Likewise, with the response of parents of students who do not have time to accompany their children during the implementation of online learning due to having to earn a living or because of other homework. This is similar to the findings of Sofyan Amu and Siti Fatimah regarding parents' perceptions of the implementation of online learning, where several challenges make online learning less effective and efficient [11]. Not only that, complaints for students of course have special attention for teachers to be used as evaluation material in the next improvement in the implementation of learning.

One of them is a complaint submitted by students during online learning for sociology subjects, where according to him his desire to take sociology lessons is not interesting and tends to make him sleepy during learning. This is of course caused by various factors, both internal and external factors. Students experience fatigue while studying due to staring at the monitor screen for too long. In addition, the condition of the body position that is not comfortable also causes discomfort in following lessons so that the motivation of students to take lessons decreases.

This is also felt by several teachers in the research location, namely according to the informants as the factors that hinder or less than optimal student learning outcomes are the lack of teacher ability in managing the class and varying the methods and learning models in the classroom. These findings are also reinforced by the results of research presented by I Wayan Muderawan [12] that the factors that cause learning difficulties in students are caused by various factors, among them are external factors, namely the weakness of the teacher's ability to convey messages (teaching materials), the weak ability of teachers to use learning media and others.

Based on the data obtained, the research team offers a solution in terms of using a learning model that emphasizes the application of aspects of the ergonomics approach in the implementation of learning. Where the learning model can be interpreted as a teaching plan that shows certain learning patterns. The learning pattern in question is the appearance of activities carried out by teachers, students, and as well as teaching materials that can create student learning, which is systematically arranged about a series of learning events (syntax), Winata Putra [13] defines the learning model as a conceptual framework that describes a systematic procedure for organizing learning experiences to achieve learning objectives and serves as a guide for learning designers and teachers in planning and implementing teaching and learning activities.

Joyce & Weil, 1986 [13] stated, that the learning model is a plan or pattern that can be used to design face-to-face in class or additional learning outside the classroom and to develop learning materials. Where each learning model requires a different management system and learning environment. For example, the cooperative learning model requires a flexible learning environment such as chairs and tables that are easy to move. In the discussion learning model, students sit on benches arranged in a circle or like a horseshoe. While the direct learning model students sit face to face with the teacher. The Learning Model has 4 special characteristics, namely: 1. Rational, theoretically compiled by the creator 2. Oriented to achieve learning objectives 3. Based on special methods so that the model is successfully implemented 4. Based on a conducive learning environment so that goal is achieved.

Meanwhile, Ergonomics is the science, technology, and art of harmonizing tools, working methods, and the environment to human abilities, abilities, and limitations so that healthy, safe, comfortable, and efficient working conditions and environments are obtained to achieve the highest productivity [14], [15]. Thus, this study offers the application of a learning model with an ergonomic approach to learning, especially in sociology.

In carrying out this research, the research team tried to apply the implementation of the sociology learning model using an ergonomics approach. Where this research takes place for 1 semester in class XI IPS, of course there are many challenges and responses to the application of this learning model, one of which is the limitation of teaching time, which originally counted 45 minutes for 1 hour of lessons now becomes 30 minutes for 1 hour of learning. This of course results in limited time for teachers in carrying out the stages of the ergonomics approach in online learning. However, these challenges are managed in such a way that the implementation of ergonomics methods can run smoothly without disturbing the quality of the implementation of the teaching and learning process and can even support and optimize the quality of the learning implementation.
The important stages in the application of the learning model with this ergonomics approach are to apply the 20:20:20 method, where the implementation of learning in 20 minutes (adjusted with the allocation of learning time), namely by resting the eyes every 20 minutes by shifting the eyes / looking at objects as far as 20 feet for 20 seconds. At this stage the teacher directs students for a moment (20 seconds) to stare at the object as far as 20 feet, whether it's looking back or even more maximally when looking at a natural nuance such as a beautiful yard. Seeing something 20 feet (6 meters) away doesn't need to be measured. The essence of implementing this 20-foot distance is to rest the eyes to focus on something far from where students carry out online learning.

For example, looking at a tree outside the window or seeing an object that is very far from its position. If the room is small, then you can try to go out for a while to a wider place so that the eye can see many objects that are far away in that place. This activity lasts for 20 seconds; thus the teacher is expected to maximize the time provided so that it can run effectively without disturbing the lesson hours and the nature of the learning objectives to be achieved. By applying the 20:20:20 method, it is hoped that students can prevent eye muscle fatigue and dryness due to staring at the monitor screen (smartphone or computer/laptop) for too long during the implementation of online learning.

The next stage is to include stretching activities in the implementation stage of learning. This activity can be done with a few simple movements, starting from standing straight with your hands on your hips, or balancing yourself while swinging one leg back and forth alternately. And swing 5-10 times, then switches to the other leg. This activity can be done 5-10 times. The purpose of this stretching activity is to relax stiff body muscles, improve posture, and so on as a result of sitting too long during the teaching and learning process.

And no less important than the application of the learning model with this ergonomic approach is the selection and design of interactive and efficient learning media in the implementation of the teaching and learning process. This is indicated by the existence of several criteria for the use of healthy learning media for students, including the teacher must pay attention to the size of the font used and the selection of colors in the use of the media. For example, avoid bright colors in writing such as red, yellow, green, and so on.

Of course, the teacher can vary or even elaborate this learning model in the classroom by using media and learning methods that are by the teaching materials and learning objectives to be achieved. By paying attention to the elements of this ergonomics approach in learning, the quality of the learning that takes place is felt to be maximal in the implementation stage of the learning. Thus, increasing student motivation and achievement. This condition also reduces the symptoms of the impact of online learning, namely learning loss for students.

As previously explained, learning loss is a symptom of learning which is characterized by a decrease in students' knowledge during the implementation of learning, starting from the decline in learning abilities, and motivation, and resulting in a decrease in student learning outcomes themselves. This is as reported by kompasiana.com news that learning loss is a decrease in student learning abilities. Factors causing this learning loss include: The transition of PJJ learning (Distance Learning / Online) to PTMT (Limited Face-to-face Learning / Offline) without proper transitional treatment; inadequate infrastructure and facilities in PJJ or PTMT learning; Student motivation tends to decrease due to too long PJJ; The duration of PTM which is relatively short/limited has not been fully optimized in class; Lack of teacher knowledge in applying the latest learning models to deal with PJJ or PTMT (especially blended learning models) [16].

The same thing was felt by students at the research location, which was found in the implementation of learning that only 10-15 students took part in online learning out of 35 students. Based on the information obtained, students are less motivated to participate in online learning because later they can be re-studied in their spare time by reading the material independently. This condition certainly worsens the condition of the quality of graduate students at the school, how not with the limited time and the emergence of boredom of students in participating in online learning resulting in the learning outcomes obtained are less than optimal and are only at the mercy of the teacher or even just as a form of responsibility to be a teacher in giving grades. Regarding understanding and achieving learning objectives from the aspect of knowledge, skills, and attitudes, this is a priority during this online learning.

In addition to weak learning motivation in participating in online learning, other factors that cause learning loss based on the results of this study are 1) unstable internet network to limited ability to purchase internet quota; 2) because teachers only rely on improvised media and learning models, thus making online learning boring; 3) students find it difficult to concentrate or focus; 4) due to the limitations of the teacher's space and time, making it difficult for students to understand the material presented; 5) teachers are not enthusiastic and; 6) postpone doing and submitting assignments; 7) learning loss occurs not only because of the cause of the implementation of online learning, learning loss can occur because students have not been in school for a long time, it can be due to semester breaks or class promotion holidays and the learning process from home; 8) The competence of teachers is still low so that learning activities do not run effectively and optimally. This causes boredom and boredom in students, so that their learning motivation decreases; 9) Inappropriate teaching methods and not according to student competence so that they are difficult to accept the subject matter.

This condition is different when implementing the application of the sociology learning model with an ergonomic approach, students feel enthusiastic when learning takes place and not a few are interested in providing feedback or questions during learning. This certainly makes the quality of learning interactive and effective to increase student motivation and achievement, and thus the symptoms of learning loss can also be minimized during online learning.
Based on the facts above, applying a learning model using an ergonomics approach in online learning can optimize the quality of learning. And besides that, of course, teachers also need to pay attention to and associate material with student needs so that it is relevant and interesting to pay attention to, invites students to be directly involved in learning both theory and practice, and involves students to determine the method of learning they want. In the individual-student aspect, what we can do is increase self-regulated learning.

Thus, in short, to avoid the occurrence of learning loss is to improve the ability of teachers in managing classes, and renew the use of learning models and methods. One of them is by applying learning with an ergonomic approach in a learning model that has been adapted to the objectives and conditions of the class to be taught. For this reason, this research implies that it is recommended for teachers to be able to use learning models using an ergonomic approach so that learning motivation and learning achievement of students can increase and reduce the impact of learning loss due to online learning. With the application of learning models with an ergonomics approach, in addition to paying attention to the quality elements of the delivery of teaching materials, the quality of the health of teachers and students is also prioritized so that the quality of learning that is formed can be felt more optimally with a healthy, fit and spirited body condition.

4 Conclusion

Based on the research, it can be concluded that the learning model with an ergonomic approach can optimize learning outcomes. This learning model with an ergonomics approach emphasizes the adoption of aspects of the ergonomics approach into learning, while the aspects that are applied in this case are the 20:20:20 method, the use of stretching, and the design of the use of appropriate and interactive media and so on. The use of this ergonomic approach is designed in such a way starting from the preliminary steps in the teaching and learning process activities to the closing activities. Based on research conducted, students are motivated to follow lessons until the end of learning, this is evidenced by the enthusiasm of students during the learning process that begins, which is indicated by the number of responses in the form of questions and responses to the teaching material presented. Likewise with learning outcomes, from 35 students 33 with very satisfactory results. In addition, the symptoms of learning loss at SMA Negeri 3 Tondano can be minimized in the implementation of online learning, this is marked by increasing student achievement and motivation to participate in optimal learning, which is marked by the variety of responses and questions expressed by each student. Thus, sociology learning with an ergonomic approach can run optimally to reduce the symptoms of learning loss within the limitations of the implementation of learning in the network.

References

Kecamatan Pinolosian Kabupaten Bolaang ..,”


