Vol 9 No 1 2023 DOI : 10.24036/jppf.v10i1.126854 Page : 56-65
JURNAL PENELITIAN PEMBELAJARAN FISIKA (JPPF)
Journal of Physics Learning Research
ISSN 2252-3014 (Print) | ISSN 2746-8445 (Electronic)

Increasing Student Activity Through The Implementation Of Limited-Time Practice Questions In Physics Learning

Nurhumairah AS[1*], Putri Handayani[1], Hidayati[2]

[1] SMA Negeri 2 Pariaman, West Sumatera, Indonesia.
[2] Department of Physics, Universitas Negeri Padang, West Sumatera, Indonesia.

ARTICLE INFORMATION

Received : 2023-12-28
Revised : 2024-02-22
Accepted : 2024-03-22

Correspondence
Email : nurhumairah322@gmail.com
Phone :

KEYWORDS :

Student Activity, Practice, Limited Time, Physics

ABSTRACT

Physics is an exact subject that requires not only innovative learning methods but also practice problems. But in fact, in the application of the learning process, students are often seen who are less active in doing the practice questions given and contained in learning resources. For this reason, effective efforts are needed so that all students can play an active role during the learning process, one alternative is to implement a time limit in working on practice questions. This study aims to determine the effect of the implementation of time-limited questions in physics learning on increasing student activity. The research conducted was a class action research with the subject being class XI F 6 SMAN 2 Pariaman. Data analysis techniques use the formula of proportion techniques. Based on the study, it was found that there was an increase in student activity from 36.4% to 63.7%. So it can be concluded that the learning process with the implementation of limited-time practice questions can increase student activity in learning Physics.

This is an open access article distributed under the Creative Commons 4.0 Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. ©2023 by author and Universitas Negeri Padang.

INTRODUCTION

The teaching and learning process or learning is at the core of the formal education process in schools and involves interaction between different educational elements (Hanafy, 2014). These elements or components can be divided into three main categories: teachers, learning materials, and students. The interaction of the three main components includes facilities and infrastructure, methods, media, and learning environment design (Darman, n.d.). Therefore, educational problems cannot only be blamed on teachers. Teachers are not the only learning resources that increase student activity. The teacher is only a facilitator who creates an environment that can develop students' abilities and creativity and produce potential and independent students (Arfandi & Samsudin, 2021).

So far, the learning process in Class XI Phase F of SMA Negeri 2 Pariaman is still characterized by very low student participation or activity even though many strategies and methods have been applied. Various methods such as group discussions and questions and answers are used in every learning process, but students are less active in asking questions,

especially in class, because they realize that physics is a difficult subject for questioning and interacting with students. The learning outcomes of physics subjects are always below the minimum completeness standard of 78.

Physics is an exact subject that requires not only innovative learning methods but also practice problems. Considering physics is also a science whose application is real in everyday life with various different events or problems. So that as many practice questions as possible are needed to make students understand physics concepts. Every educated person should be able to actively develop their potential and study diligently. This is the basis for realizing quality education obtained by every individual, group or system (Ramadhani & Derlina, 2023).

But in fact, from the observations of researchers during the Educational Field Practice at SMAN 2 Pariaman, during the learning process it is often seen that students are less active in doing the practice questions given and contained in learning resources. This happened because of the teacher's lack of supervision of all students, and most of the students only waited for the results of some of their friends to complete the practice questions given.

For this reason, effective efforts are needed so that all students can play an active role during the learning process, one alternative is to implement a time limit in working on practice questions (Puryati, 2017). With the time limit given, there will grow in students a disciplined attitude and will be responsible for the tasks given by the teacher (Yasmin et al., 2016).

Learning is a change in behavior as a result of experience, and change in learning is continuous, functional, active, fixed, and occurs consciously and intentionally. The learning outcomes achieved are interactions between various influencing factors, both internal and external. Internal factors include physical factors and psychic factors (intelligence, interests, attitudes, motivation, etc.). External factors include environmental factors, social factors, cultural factors (customs, science, technology), as well as physical environmental factors (learning facilities, climate, spiritual or religious environmental factors) (Faizah, 2017).

The most important element in learning is continuous practice. How important practice is in the learning process. During educational activities in the classroom, students need targeted guidance from their teachers. This guide is designed to help you achieve the best results depending on your situation and student potential. In practice should pay attention first to accuracy (truth), then to pay attention to speed, and finally to achieve both as one. To achieve this, techniques are used in practice that allow teachers to pay attention to the accuracy (correctness) and speed of students in solving practice problems (Bhakti, 2017).

Time is precious in human life. How important is time for humans? Time is natural and precious because all aspects of thought and action must be in sync to achieve the desired result (Lestari, 2015).

To get good and optimal results or grades (which are desired), it is better for students to use time as efficiently as possible. Where the most important thing is not how many questions are answered, but how many correct answers are generated with the time given. This requires appropriate practice techniques to not only increase student activity, but can increase discipline in the student.

The provision of time limits in working on practice questions can be adjusted by the teacher to the level of difficulty of the questions given. Where difficult questions will be

given only one to two questions, while for low-level questions can be given several questions in total or at the same time interval. In addition, giving grades to students or students is not only given to the fastest students, or collecting the most answers in the given time interval. But also consider the correctness of the answers obtained by the student, with incorrect answers not being graded. This will also make students more careful and careful about the answers they make (Puryati, 2017).

Learning is a systematic effort carried out by an educator in realizing learning activities to run effectively and efficiently where learning activities start from planning, implementation, and evaluation (Junaedi, 2019).

Physics is a science that studies the occurrence of a natural phenomenon that includes components of matter and their interactions. Physics is built from theoretical laws, concepts, and applications.

Physics is part of science (IPA), Physics is essentially a collection of knowledge, ways of thinking, and investigation, science as a collection of knowledge can be in the form of facts, concepts, principles, laws, theories, and models. Physics is seen as a process and at the same time a product, so in learning must consider effective and efficient learning strategies or methods, one of which is through practical activities. Physics is a fundamental science that is the backbone for the development of science and technology. Physics is the science that studies natural phenomena and the interaction of those natural phenomena. In physics, we study the phenomena of natural objects, both those that occur in observable objects (matter), and unobservable objects (micro) (Astuti, 2015).

So, physics learning is one of science learning so that learning activities must include processes, scientific attitudes, and products. One of the keys to learning physics is that learning activities must involve students actively to interact with concrete objects. The characteristic of learning physics is through the scientific method which is characteristic of a scientist when trying to achieve meanings and process relationships that emphasize products and attitudes (Erlinawati et al., 2019).

According to the Big Dictionary Indonesian, activity comes from the verb active academic (Big Dictionary Indonesian, 2007: 12). Another definition put forward by Wijaya is intellectual and emotional involvement of students in teaching and learning activities, assimilation (absorption) and cognitive adaptation in the acquisition of knowledge, behavior in the formation of attitudes and values and direct experience (Putro, 2012).

Effective learning involves utilizing all of the student's senses. The more senses involved, the more learning activities are accessible (Purnamasari, 2017). According to K. Yamamoto of the Styobo Cluster, there are two types of activeness that can be found in the learning process, namely teacher activeness and student activity. Student activity can occur both planned and spontaneously. Optimization of activeness from both parties, both teachers and students, can only be achieved through joint efforts (Gunawan, 2018).

Based on the above problems, the purpose of this study is to determine the effect of the implementation of limited-time practice questions on student learning activities.

METHODS

The research conducted is Classroom Action Research. The teaching material is adjusted to the curriculum adopted in schools, namely the Independent Curriculum in grades XI F 6 SMAN 2 Pariaman. The learning material is Momentum and Impulse.

Classroom action research is carried out in 2 weeks with topics taught during three meetings. Every time the learning process meeting is carried out by implementing limited-time practice questions after the presentation of the material. The data collection tool in this study is an observation sheet that has been filled in by observers during the learning process.

Data analysis techniques use the formula of proportion techniques (Sumargo, 2020), namely:

$$K = \left[\frac{A}{N}\right] x\ 100\% \qquad (1)$$

K = percentage of students active in each activity
A = average number of students doing the activity
N = total number of students

The results of data analysis are presented in the form of tables and graphs to make it easier to read the data and predict what the conclusions of the treatment given.

Indicators of success in this class action research are two types of activities observed, namely positive activities and negative activities. The percentage of positive activity of students is determined with reference from Arikunto (Arikunto et al., 2021) as follows:

Table 1. The percentage of positive activity of students

Percentage of Positive Activity	Interpretation
76% - 100%	Very good activity (BS)
51% - 75%	Good activity (B)
26% - 50%	Moderate activity (S)
1% - 25%	Less activity (K)

While the percentage of negative student activity is determined with reference to Slameto (Slameto, 2015) as follows:

Table 2. The percentage of negative activity of students

Percentage of Negative Activity	Interpretation
0%	Good (B)
1 % - 10 %	Okay (CB)
11 % - 25 %	Sufficient (C)
26 % - 49 %	less (K)
50 % - 100 %	Less Once

RESULTS AND DISCUSSION

Results

1. Cycle 1 Research Results

Based on the observation data, the percentage of student activity in cycle I from the first to the third meeting can be seen in Table 3.

Table 3. Data on the Percentage of Student Activities Learning Physics and Average

Observed student learning activities	Meeting (%)			Average (%)
	1	2	3	
Positive activity				
• Read the textbook	52,5	60	50	54
• Actively discuss	25	25	40	26,7
• Ask the teacher	30	35	40	35
• Answer teacher questions	22,5	30	30	27,5
• Respond to a friend's opinion	17,5	20	22,5	20
• Record conclusions	52,5	60	52,5	55
Average				36,4
Negative activity				
• Indifferent	45	40	40	41,7
• Bullying friends	17,5	10	12,5	13,3
• Ask for frequent exit permits	7,5	7,5	10	8,3
Average				21,1

Table 3 above, shows that the positive activity of students learning physics has increased and some need to be improved. Student learning activities that have been high are: student activity reading textbook is good (54%), student activity records good conclusions (55%). Meanwhile, learning activities that need to be improved are student activity in moderate discussion (26.7%), student activity in responding to less peer opinions (20%), student activity in responding to less friend opinions (20%), moderate teacher asking activity (35%), medium teacher question answering activity (27.5%).

Thus, the average activity of students learning physics is still low, which is (36.4%). Meanwhile, negative activities that need to be lowered so that they become more effective are students who are indifferent (41.7%) and disturb friends (13.3%) and often ask for permission to leave (8.3%). This shows that there is still negative activity in the learning process by 21.1%

Reflection Cycle 1

Based on the results of observations from the implementation of learning, things like the following were found.

a. Explanation and teacher service with the limited-time practice method is a new item for students, so student readiness is still lacking.
b. Interest and motivation to learn increases even though here it still seems that teachers are struggling to manage students.
c. There are still some students who feel hesitant when working on practice questions.

2. Cycle 2 Research Results

Based on the observations, data on the percentage of student activity in learning Physics from the first to the third meeting were obtained after implementing the limited-time practice questions which can be seen in Table 4 below.

Table 4. on the Percentage of Student Activities Learning Physics and Average

Observed student learning activities	Meeting (%)			Average (%)
	1	2	3	
Positive activity				
• Read the textbook	75	80	90	81
• Actively discuss	45	55	60	53
• Ask the teacher	75	80	81	79
• Answer teacher questions	30	45	50	42
• Respond to a friend's opinion	55	60	60	58
• Record conclusions	90	90	95	92
Average				63,7
Negative activity				
• Indifferent	7,5	7,5	5	6,7
• Bullying friends	0	0	1	1,6
• Ask for frequent exit permits	0	1	0	0,7
Average				3

Table 4 above, shows that student activity in learning Physics has increased for all indicators, namely indicators of reading textbooks very well (81%), good discussion activities (53%), very good teacher asking activities (79%), medium teacher question answering activities (42%), activities responding to good friends' opinions (58%), and activities recording very good conclusions (92%).

Negative activity decreased meaning that students began to actively participate in learning by giving limited-time practice questions, this was seen in all indicators, namely indifferent was good enough (6.7%), disturbing very good friends (1.6%), and often asking for permission very well (0.7%).

Based on the data listed in Table 4 and observer observations, students are increasingly serious, diligent and orderly in following the learning process in individuals and groups to explore knowledge. Researchers also noted that students are increasingly orderly in discussing, asking teachers, answering teacher and friend questions, responding to friends' opinions, not so indifferent and not seen students disturbing friends let alone often asking for permission to leave.

Reflection Cycle 2

In general, the activities of students learning Physics at these three meetings seemed to increase their understanding of the material studied. The ability of students to develop material more broadly can be seen from the results of the resulting exercises. This shows that students already understand how to do the problem with limited time. Based on observations of student activities learning Physics, things like the following were found.

a. Students feel more free to interact so that the courage to express opinions has emerged well.
b. Students convey varied ideas and actively discuss with friends so that in working on practice questions there is no inequality.
c. Giving awards to students/groups who have the greatest activity fostering enthusiasm and encouraging mastery of the material.

The learning process that has been carried out, has led to an increase in student activity. Based on the results of observations at three meetings that have been held for this classroom action research, learning with the implementation of limited-time practice questions shows an increase in student activity learning Physics. Information that can be seen when learning activities that take place including the level of activity and student interaction during learning is very good, students become more creative and innovative to fulfill their curiosity.

Tabel 5. Data on the Percentage of Student Activities Learning Physics Before and After the Implementation of Time-Limited Practice Questions

Student Activities	Before Action (%)	After Action (%)
Positive activity		
• Read the textbook	54	81
• Actively discuss	26,7	53
• Ask the teacher	35	79
• Answer teacher questions	27,5	42
• Respond to a friend's opinion	20	58
• Record conclusions	55	92
Average	36,4	63,7
Negative activity		
• Indifferent	41,7	6,7
• Bullying friends	13,3	1,6
• Ask for frequent exit permits	8,3	0,7
Average	21,1	3

In Table 5 it can be seen that the activity of students learning Physics has increased significantly. In some indicators of student activity, it shows positive things, namely a significant increase from the first meeting to the third meeting. The increase in student activity seen in all these indicators shows that the implementation of limited-time practice questions has succeeded in bringing student interest in learning mathematics has grown and all activities have increased for all indicators of student activity, this shows the class in a lively atmosphere. It also fits the teaching module scenario which emphasizes cooperation to develop social skills. If you look further, the learning process that takes place as a whole, student activities show learning that implements process skills where students are actively involved in learning.

In Table 5, negative activity also decreased sharply from 21.1% to 3%, indicating that students' interest and enthusiasm for learning were maintained. The learning process has fostered positive student attitudes and perceptions towards the learning climate by emphasizing the internal aspects of students with a conducive mental atmosphere rather than external aspects. The internal aspect is clearly visible during the exercises, acceptance by teachers and friends in the form of eye contact, knowledge, humor, etc. accompanied by physical comfort in the classroom when discussing. This strongly supports a positive perception of tasks by providing an understanding of good grades, clarity of tasks, and clarity of sources.

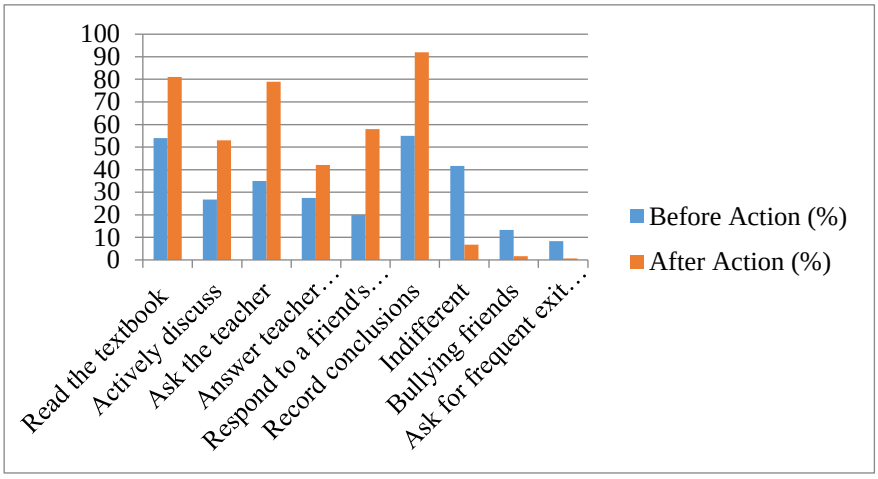

Figure 1. Graph of the Percentage of Student Activities Learning Physics Before and After the Implementation of Limited-Time Practice Questions

In Figure 1 it appears that the increase in student activity learning Physics from before the action to after the action rose sharply. This increase in activity indicates that:

a. The positive attitude of students is more dominant than the negative attitude.
b. The attitude of students who are quite accomplished has succeeded in motivating their friends who are at the lower level to be more active in discussing and asking questions.
c. The interaction between students in discussions is getting better and better.

The activity of students learning Physics is more desirable than physical activity. Students often ask the teacher, actively discuss, respond to friends' opinions are signs of increasing students' mental activity, so that students do not feel afraid in the process of learning Physics, with the implementation of this limited-time practice question can be a way to increase student activity, both coming from the teacher himself and from his friends.

Figure 1 shows that the activity of students learning Physics after action is higher than the activity of students learning physics before being given action. Therefore, one of the efforts to improve physics learning activities is to implement the implementation of limited-time practice questions. Although there are other influencing factors, learning with the implementation of time-limited practice questions needs to be applied to achieve a meaningful and quality learning process at SMA Negeri 2 Pariaman.

Discussion

Learning by providing limited-time practice questions can allow students to be part of the learning process where students learn independently and will not affect the decline in student learning outcomes. This is in line with Idrisa & Ahmadb opinion's (2020) that time restrictions in solving uncertain questions negatively affect student achievement. The activity of students in learning causes student activity to increase, students are more excited and enthusiastic when participating in learning. As stated by Rahmadani & Anugraheni (2017) that this learning can increase student activity. Giving time limits to the work on practice questions also has an effective impact on the use of time during the learning process, because students are focused on carrying out their tasks. In accordance with the opinion of Robert W Olson (Olson & Simerson, 2015) who suggests that there is a time limit for achieving the expected results can put us on the right track and will concentrate the

energy needed to make the tasks at hand can be carried out on time. In addition, the provision of time limits for increasing student activity is proven by the results of this study that there is an increase in positive student activity and a decrease in negative student activity. Similar research has also been conducted by Enung Puryati (2017) with an increase in addition to student activities, also on student learning outcomes.

CONCLUSION

Based on the findings of the research results, the conclusion can be drawn from classroom action research that the implementation of time-limited practice questions has an effect on increasing student activity in studying Physics.

ACKNOWLEDGEMENTS

The author would like to thank Riva Elliora who agreed to be an observer in this research.

REFERENCES

Arfandi, A., & Samsudin, M. A. (2021). PERAN GURU PROFESIONAL SEBAGAI FASILITATOR DAN KOMUNIKATOR DALAM KEGIATAN BELAJAR MENGAJAR. *Edupedia : Jurnal Studi Pendidikan Dan Pedagogi Islam*, *5*(2), Article 2. https://doi.org/10.35316/edupedia.v5i2.1200

Arikunto, S., Supardi, & Suhardjono. (2021). *Penelitian Tindakan Kelas: Edisi Revisi*. Bumi Aksara.

Astuti, S. P. (2015). Pengaruh kemampuan awal dan minat belajar terhadap prestasi belajar fisika. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *5*(1).

Bhakti, Y. B. (2017). MENINGKATKAN HASIL BELAJAR FISIKA MENGGUNAKAN METODE PEMBERIAN TUGAS TERSTRUKTUR. *Jurnal Pendidikan Fisika*, *5*(2), Article 2. https://doi.org/10.24127/jpf.v5i2.922

Darman, R. A. (n.d.). *BELAJAR DAN PEMBELAJARAN*. Guepedia.

Erlinawati, C. E., Bektiarso, S., & Maryani, M. (2019). Model pembelajaran project based learning berbasis STEM pada pembelajaran fisika. *Fkip E-Proceeding*, *4*(1), 1–4.

Faizah, S. N. (2017). Hakikat Belajar Dan Pembelajaran. *At-Thullab : Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, *1*(2), Article 2. https://doi.org/10.30736/atl.v1i2.85

Gunawan, Y. I. P. (2018). Pengaruh Motivasi Belajar terhadap Keaktifan Siswa dalam Mewujudkan Prestasi Belajar Siswa. *Khazanah Akademia*, *2*(1), Article 1.

Hanafy, M. S. (2014). KONSEP BELAJAR DAN PEMBELAJARAN. *Lentera Pendidikan : Jurnal Ilmu Tarbiyah dan Keguruan*, *17*(1), Article 1. https://doi.org/10.24252/lp.2014v17n1a5

Idrisa, M., & Ahmadb, Y. A. (2020). *Students' Achievement in Mathematics: Investigating the Effects of Assessments Criteria, Instructional Model and Adversity Quotient*. https://www.ijicc.net/images/vol_13/Iss_2/Part_2/SC64_Idris_2020_E_R.pdf

Junaedi, I. (2019, Mei). *PROSES PEMBELAJARAN YANG EFEKTIF | JISAMAR (Journal of Information System, Applied, Management, Accounting and Research)*. http://journal.stmikjayakarta.ac.id/index.php/jisamar/article/view/86

Lestari, I. (2015). Pengaruh Waktu Belajar dan Minat Belajar terhadap Hasil Belajar Matematika. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *3*(2), Article 2. https://doi.org/10.30998/formatif.v3i2.118

Olson, A. K., & Simerson, B. K. (Eds.). (2015). *Leading with Strategic Thinking* (1st ed.). Wiley. https://doi.org/10.1002/9781119153818

Purnamasari, N. (2017). UPAYA PENINGKATAN KEAKTIFAN BELAJAR SISWA MELALUI PENERAPAN MODEL PEMBELAJARAN TIME TOKEN ARENDS KELAS XI IPS 2 SMAN 2 MOJOKERTO. *Jurnal Pendidikan Ekonomi (JUPE)*, *5*(3), Article 3. https://doi.org/10.26740/jupe.v5n3.p%p

Puryati, E. (2017). Meningkatkan hasil belajar siswa dengan menyelesaikan soal latihan matematika melalui pembatasan waktu pada setiap pertemuan. *Prisma*, *6*(2), 192–201.

Putro, P. R. dan S. P. (2012). MENINGKATKAN AKTIVITAS BELAJAR (active learning) SISWA BERKARAKTER CERDAS DENGAN PENDEKATAN SAINS TEKNOLOGI (STM). *Didaktika Dwija Indria*, *1*(2), Article 2. https://jurnal.fkip.uns.ac.id/index.php/pgsdsolo/article/view/82

Rahmadani, N., & Anugraheni, I. (2017). Peningkatan Aktivitas Belajar Matematika Melalui Pendekatan Problem Based Learning bagi Siswa Kelas 4 SD. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, *7*(3), Article 3. https://doi.org/10.24246/j.scholaria.2017.v7.i3.p241-250

Ramadhani, D., & Derlina, -. (2023). The Effectiveness of Application of the PBL Model Assisted by Powtoon Animation Media on HOTS Skills of High School Students on Momentum and Impulse Material. *Jurnal Penelitian Pembelajaran Fisika*, *9*(1), Article 1. https://doi.org/10.24036/jppf.v9i1.121316

Slameto, S. (2015). *PEMBELAJARAN BERBASIS RISET MEWUJUDKAN PEMBELAJARAN YANG INSPIRATIF | Satya Widya*. https://ejournal.uksw.edu/satyawidya/article/view/622

Sumargo, B. (2020). *TEKNIK SAMPLING*. UNJ PRESS.

Yasmin, F. L., Santoso, A., & Utaya, S. (2016). HUBUNGAN DISIPLIN DENGAN TANGGUNG JAWAB BELAJAR SISWA. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, *1*(4), Article 4. https://doi.org/10.17977/jp.v1i4.6226