A LITERATURE REVIEW ON STUDENTS' LOW INTEREST IN LEARNING PHYSICS AND THEIR CHOICE OF PHYSICS AS A MAJOR

Rahmi Putri. Z[1], Febrina Rosa Winda[2], Fadillah Rahmayani[3], SuharliA.J[4]

[1,2,3,4]Universitas Jambi
E-mail : [1]rahmiputri.z@unja.ac.id, [2]febrinarosawinda@unja.ac.id,
[3]fadillahrahmayani@unja.ac.id

ABSTRACT

This study aims to examine the low interest in learning physics among high school students and its relation to the declining number of students enrolling in physics education programs. The research method is a Systematic Literatur Review (SLR) which involves analyzing various relevant sources, including journal articles and research reports from the last 10 years. After collecting the articles, that were categorized into four areas: (1) factors causing low interest in learning physics among high school students; (2) the impact of low interest in learning on study choices in higher education; (3) recommended strategic effort. The findings indicate that interest of students in learning physics is influenced by their perceptions and teacher's pedagogical professionalism. The impact of low interest in learning physics on the number of students enrolled in physics majors show a positive correlation. Therefore, this article highlight six strategies identified from previous research to increase students' interest in learning physics and two strategies to increase the number of students enrolling in physics majors at universities. In addition, the urgency of this issue in the context of today's education is also discussed.

Keywords : *Insterest, Physics Learning, Program Study*

INTRODUCTION

Physics has consistently been regarded as one of the most difficult and abstract branches of science for students. Yet, it is also a discipline that addresses many issues related to everyday life and serves as a key driver in the development of new technologies that simplify human activities. Cultivating a new generation with a strong passion for physics is therefore crucial, as sustainable technological advancement cannot rely solely on artificial intelligence without a solid foundation of human scientific knowledge. The low interest in learning physics is also reflected in students' lack of enthusiasm for pursuing a degree in physics education.

Consistently Persistent challenges in physics learning include difficulties in understanding concepts and unengaging teaching methods (Handayani et al., 2025). These factors can cause students to easily feel bored or discouraged when learning physics. A lack of interest in learning physics not only affects students' academic performance at school but also influences their choices of study at the university level. This is consistent with the statement made by Yudi (2025), Director of the Dissemination and Utilization of Science and Technology at the Ministry of Higher Education, Science and Technology (Kemendikti Saintek), who explained that interest in learning mathematics and natural sciences, particularly physics continues to decline because students perceive the subject as boring and rigid. This indicates a link between the low interest in learning physics at the school level and the decreasing number of high school graduates choosing to continue their studies in physics education

If this situation is allowed to continue, a new problem will arise in the world of education: a decline in the number of qualified prospective physics teachers. This has the potential to lead to a shortage of physics educators in the future, which could ultimately impact the quality of science teaching in secondary schools (Magano, 2014). The urgency of this issue has become even more apparent in the era of the Industrial Revolution 4.0 and Society 5.0. The need for human resources with high scientific literacy is becoming increasingly crucial in facing modern technological developments, such as renewable energy, advanced materials, and artificial intelligence (Rosser et al., 2021) particularly in physics. Learning physics should be prioritized over other science subjects because it is the fundamental language of engineering and technological development (Oon & Subramaniam, 2011).

Over the past 20 years, a great deal of research has been conducted to develop physics learning to make it more enjoyable, enabling students to understand the material better and increasing their interest in learning physics. However, many students still dislike learning physics, and teachers are not applying the research findings effectively. Therefore, an in-depth investigation of the low interest in learning physics among high school students and its relationship to the decline in the number of students enrolled in physics education programs is highly relevant.

This article discusses: (1) the factors contributing to low interest in learning physics among high school students; (2) the impact of this low interest on study choices in higher education; (3) strategic recommendations to improve student interest based on the analysis of previous research. In Addition the urgency of this issue in the context of today's education is also discussed.

METHOD

This study employs a Systematic Literature Review (SLR) method. The Systematic Literature Review (SLR) method was chosen because it enables researchers to identify, select, and synthesize previous research findings in a systematic, transparent, and replicable manner. (Harie et al., 2023) explained that the systematic literature review (SLR) method was used because it is proven to be objective and transparent, allowing for repeated analysis. Furthermore, this systematic literature review was used because of its low bias value and better ability to answer researchers' questions (Pati & Lorusso, 2018). The procedure consisted of several stages: collecting relevant articles aligned with the research focus from Google Scholar, limiting the selected articles to those published within the last 10 years; classifying the articles based on predetermined criteria; and synthesizing the findings through the creation of a synthesis table to facilitate analysis and interpretation.

RESULTS AND DISCUSSIONS

The analysis yielded 24 articles that met the criteria related to the low interest in learning physics among high school students, and its relationship to the interest in studying physics in college as a study program choice. Table 1 displays the results of the article analysis as follows:

Table 1. Interest In Learning Physics And Students' Interest In Continuing To College

Source References	Methods	Findings
(Sari et al., 2016)	The method used in this research is a descriptive method, with a causal study relationship research form.	Based on the results of the study, it is explained that students' interest and motivation to learn influence students' learning achievement.
(Setyowati & Widana, 2016)	This research is a type of associative research with a path analysis form.	The results of the study explain that interest, self-confidence, and learning creativity influence students' mathematics learning outcomes.
(Nofitasari & Sihombing, 2017)	Quantitative descriptive method is used in the research	The study results explain that students' learning difficulties stem from both internal and external factors. Internal factors relate to a lack of student interest and motivation to learn, while external factors relate to a lack of variety in media and learning methods.
(Abbas & Hidayat, 2018)	The descriptive qualitative method used in the research	Research results show that learning difficulties are influenced by both internal and external factors. Interest in learning is one of the internal factors that causes students to have learning difficulties.

(Charli et al., 2019)	The research method used is correlation research.	The results of the study explain that interest in learning has a significant relationship with the learning achievements of high school students.
(Hamdi & Rahim, 2019)	Case study research with a qualitative approach	Based on the research results, it is known that 48.4% of Class XI students at SMAN 1 Sakti have an interest in physics.
(Korompot et al., 2020)	A quantitative descriptive approach was used in this study.	The results of the study show that physical aspects are the dominant factor influencing students' interest in learning.
(Yolviansyah et al., 2021)	This research uses quantitative research type.	The results of the study explain that there is a significant relationship between students' learning interests and physics learning outcomes.
(Kinasih & Mariana, 2021)	The ex post facto research method was used in this study.	The results of the study explain that there is a significant relationship between students' learning motivation and students' reading interest with students' physics learning outcomes.
(Amaliyah et al., 2021)	This research is a mixed methods research with a sequential explanatory strategy.	Based on the research, it is known that the level of student learning difficulties is high at 68%, moderate at 26.55%, and low at 5.45%.
(Miskiyyah et al., 2021)	The research method used is descriptive quantitative.	The results of this study show the importance of students' learning interests as a provision for receiving learning, especially in students' analytical abilities.
(Rivani et al., 2022)	This research uses quantitative methods.	The results of the study explain that there is a significant relationship between students' learning interests and student learning outcomes.
(Amalissholeha et al., 2023)	The type of ex post facto research, with a descriptive qualitative approach, was used in this research.	The results of the study explain that students' talents in learning physics are still low, intelligence factors are still lacking, interest in learning physics is still low, and motivation to learn physics is also still lacking.
(Razaq & Diyana, 2023)	Qualitative descriptive research method was used in this study.	Based on the results of the study, it is explained that the dominant aspect that influences interest in learning is the aspect of self-awareness, while the other

		aspects in order are the aspects of interest, concentration, and attention.
(Rahmi et al., 2024)	The method used is the participatory socialization method.	Based on the results of observations, students' interest in Physics lessons, especially in material that is considered difficult such as Fluid Dynamics and Electromagnetics, is still relatively low.
(Saful et al., 2025)	Quantitative research types are used in the research.	Based on the research results, it is known that there is a large correlation between students' interest in learning and physics learning outcomes.
(Fatimah, 2018)	This research is an associative quantitative research.	Based on the results of the study, it is explained that self-potential, academic achievement and parents' socio-economic status have a positive and significant influence on interest in continuing education to the Faculty of Economics at university.
(Saputri et al., 2019)	The research method used is the correlation method.	Based on the results of the study, it is explained that the high success rate of graduates and the socio-economic status of parents greatly influence students' interest in continuing their education to higher education.
(Oryza & Listiadi, 2021)	This research includes associative quantitative research.	The results of the analysis state that motivation has a significant influence on students' interest in higher education.
(Dewi Edmawati et al., 2021)	This research is a qualitative descriptive research.	Based on the results of the study, it is explained that the lack of interest in continuing education in a field of study is caused by several factors, including: lack of information about the field of study, the field of study is not a favorite study, no interest in becoming a teacher, not knowing future job prospects, the influence of family and the environment.
(Prianggita & Ghofur, 2021)	This research uses a qualitative approach	The results of the study explain that the socio-economic status of parents, self-confidence, motivation, and student learning outcomes greatly influence the interest in continuing their studies at university.

(Dalimunthe et al., 2024)	The method used in this activity is the peer education method.	Based on the results of the study, it is explained that intrinsic motivation in the form of a desire to develop oneself and intellectual curiosity, as well as extrinsic motivation in the form of career advancement and financial gain, influence interest in continuing studies at university.
(Fitri et al., 2024)	The method used in this activity is the peer education method.	The results show that education and motivation have proven effective in increasing students' awareness and motivation towards further education.
(Zahra et al., 2024)	This research uses a survey method through a questionnaire.	These findings indicate that new students choose physics education based on their interests, abilities, and job opportunities.

Based on the results of the review analysis that has been carried out, further discussion is divided into three categories, as follows: Factors contributing to low interest in learning physics among high School Student, the impact of low interest in learning physics on study choices at Universitie, and recommended strategic efforts.

Factors Contributing to Low Interest in Learning Physics Among High School Students

A review of the literature reveals that the low interest in learning physics among high school students is a complex phenomenon influenced by multiple contributing factors. Based on the synthesis of the reviewed articles, the causes of low interest in learning physics can be categorized into two main groups:

1. Based on Students' Perceptions

Several studies have found that physics is often perceived by students as a difficult subject (Djudin, 2018)(Febri et al., 2020), confusing (Charli et al., 2019) and abstract subject (Oon & Subramaniam, 2011)(LIZA, 2021), that is full of complex formulas (Amaliyah et al., 2021). This perception often arises due to students' weak mathematical skills (Semela, 2010)(Amaliyah et al., 2021), which lead to anxiety when facing physics problems, low self-confidence, and decreased motivation to learn physics. These issues are further compounded by learning practices that still rely heavily on teacher-centered instruction rather than student-centered learning approaches (Angell et al., 2004). Moreover, monotonous learning characterized by a lack of variety in classroom activities reduces students' attention and engagement in physics lessons (Charli et al., 2019). This situation is exacerbated by the absence of instructional strategies that connect physics concepts to students' real-life experiences (Saleh, 2021).

2. From a Pedagogical Perspective

Lack of teacher qualifications and insufficient pedagogical knowledge (Semela, 2010), combined with learning methods that remain dominated by conventional approaches, contribute to students' low interest in learning physics. Teachers often rely on lectures and written assignments without engaging students in discussions, experiments, or project based problem solving. Limited laboratory facilities and the lack of hands-on practical activities (Ng & Van

Nguyen, 2006)(Iyamuremye et al., 2023) further reduce the attractiveness of learning physics. Consequently, students do not experience enjoyable and meaningful learning processes.

Considering the various factors that contribute to low student interest, motivation to learn physics tends to decline even further in high school. Many students develop a fear of failing physics classes, which discourages them from choosing physics-related majors in higher education. If this trend continues, it may lead to a further decrease in the number of students enrolling in physics programs at the university level (Bigozzi et al., 2018).

The Impact of Low Interest in Learning Physics on Study Choices at Universities

Students' interest in learning and their choice of study programs at universities are strongly influenced by their academic achievement. The academic performance positively affects students' interest in pursuing higher education (Prianggita & Ghofur, 2021). Student learning outcomes are also influenced by students' interest in learning. A lack of student interest in learning can be a cause of low interest in continuing learning in physics at university (Lyons, 2006). (In addition to achievement, students' personal potential is also an important factor when selecting a study program (Fatimah, 2018). When students perceive themselves as having potential in science, they naturally tend to choose science-related majors. This potential reflects their interests, talents, and intellectual abilities, which they believe can be developed to achieve optimal outcomes.

When students possess a strong interest in learning physics, they are more likely to focus on improving their skills in the subject (Djudin, 2018)(Yolviansyah et al., 2021). Conversely, students who demonstrate low interest in physics during high school are less inclined to continue their studies in physics-related fields. Based on Yudi (2025) Evidence from several universities in Indonesia indicates a significant decline in the number of new students enrolling in Physics Education programs in recent years. This decline is closely associated with students' low interest in physics at the school level. Logically, students who are reluctant to learn physics in high school are unlikely to choose it as a field of study in higher education.

This phenomenon has broader implications for the education system. A decline in the number of Physics Education students translates into fewer prospective physics teachers in the future. This shortage of qualified educators may lead to a decrease in the quality of science education at the secondary school level (Magano, 2014). If this issue remains unaddressed, it could create a vicious cycle: fewer qualified teachers, make less engaging physics learning, make declining student interest, fewer physics students.

Beyond education, a declining interest in physics also has potential implications for economic growth (Owen et al., 2008). Physics education plays a crucial role in advancing science and technology. A strong foundation in physics contributes to the development of human resources capable of driving scientific and technological innovation, ultimately improving everyday life (Rahmi et al., 2024).

The urgency of this issue is even greater in the era of the industrial revolution 4.0 and society 5.0. Both eras demand that young people not only be able to use technology but also understand the scientific principles underlying it. Physics plays a fundamental role in the development of modern technologies such as renewable energy, artificial intelligence, new materials, and transportation technology (Rosser et al., 2021). If interest in learning physics among high school students continues to decline and the number of physics education students decreases, Indonesia could potentially experience a human resource crisis in the sciences. This will impact the nation's competitiveness in facing global competition.

Base on the results of the analysis above, it can be concluded that the interest of high school students in continuing their studies in the physics education study program is influenced by the students' interest in studying physics at the high school level.

Recommended Strategic Efforts

Based on the results of the literature review, several efforts can be implemented to increase high school students' interest in learning physics, as follows:

1. Creating learning environments connected to everyday life

Developing a learning environment that is closely related to daily experiences and incorporates useful, contextual materials can increase students' interest in physics (Hadzigeorgiou & Schulz, 2017)(Korompot et al., 2020). One effective approach is integrating learning with local wisdom (Afrizon, 2018)(Hong & Lin-Siegler, 2012). Learning activities that utilize local cultural contexts can enhance students' motivation and scientific literacy, making lessons more meaningful and longer-lasting. Moreover, (Hong & Lin-Siegler, 2012) providing students with opportunities to construct their own knowledge through hands-on activities increases learning interest. Students are more motivated to study science when the learning context relates to real-life situations (Perkins et al., 2006)(Hadzigeorgiou & Schulz, 2017)(Djudin, 2018).

2. Utilizing technology-based and audiovisual learning media

There are now, learning activities can not split with technologies. The presence of technology that supports better education is highly anticipated, because by using technology, teachers can teach in a more varied way and students can access learning more quickly with the presence of technology (Siregar et al., 2024)**.** The use of audiovisual technology can facilitate understanding and improve the quality of learning ((Djudin, 2018). Research conducted by (Siregar et al., 2024) showed that learning media in the form of podcasts, animated videos and audio-visual media can increase participation and better understanding in learning. Today's students are characterized as proficient users of digital technology and the internet (Holubova, 2015). Therefore, when teachers integrate modern information technologies such as computers, the internet, and smartphones into the classroom, students tend to be more motivated to learn. Several examples of technology-based learning media include: 1) the "Pesona Fisika" (Physics Charm) learning media. Based on research (Supardi et al., 2015), it's known that students who learn using the "Pesona Fisika" learning media have a higher interest in learning than students who do not use learning media. 2) 3D animation learning media. Based on research, (LIZA, 2021), it's known that using this 3D animation learning media makes it easier for students to understand the learning concepts presented by the teacher. 3) Fluidy learning media. Based on research (Alfarouqy et al., 2024), it's known that Fluidy learning media is an educational game that can be used to increase interest in learning physics in the topic of static fluids. 4) interactive learning media based on Inspring Suite 9. Based on research (Dasmo et al., 2020), this media can create a joyful learning atmosphere so that students more easily understand the lesson being studied.

3. Designing practical and experimental learning.

Laboratory activities are a crucial component of physics education, as they stimulate students' curiosity and positively shape their attitudes toward physics (Oon & Subramaniam, 2011). (Owen et al., 2008) Also emphasize that experiments are constructive and valuable for the learning process. Hands-on experimental work helps make learning more enjoyable (Nugroho & Waslam, 2020), and enhances analytical skills and interest in physics (Miskiyyah et al., 2021).

Even schools with limited facilities can conduct practical activities by utilizing available local resources. The meaningful experiments can be designed from everyday life phenomena (Purwoko et al., 2021).

4. Linking physics learning with art and history.

According to Yudi (2025), Director of Dissemination and Utilization of Science and Technology at the Ministry of Higher Education, Science, and Technology (Kemendikti Saintek), physics learning can be made more engaging by integrating artistic elements and historical narratives about discoveries. Similarly, (Hong & Lin-Siegler, 2012) suggest that storytelling about scientists' struggles and discoveries can motivate students to learn science more deeply.

5. Implementing innovative learning methods and models

Applying varied and innovative teaching methods and models can enhance students' interest and motivation in learning physics. According to (Sofna et al., 2023), learning physics with innovative learning methods and models can help increase students' interest in learning. Some learning models that can be implemented based on the results of a literature review include: 1) The *Student Facilitator and Explainer* model, which has been shown to increase students' enthusiasm and engagement in physics learning (Aziz et al., 2015). 2) The *Contextual Teaching and Learning (CTL)* model, which connects learning materials to real-world contexts, positively influencing students' interest in physics (Ningsih, 2018).

6. Developing engaging teaching materials

Teaching materials should be carefully designed to minimize unnecessary content. Moreover, the learning materials need to be connected to students' everyday experiences to enhance relevance and engagement (Oon & Subramaniam, 2011). The developing digital physics modules based on Project-Based Learning (PjBL) can create interactive and dynamic learning environments that actively engage students in the learning process (Sulastri et al., 2024). In addition to increasing students' interest in physics, the number of students choosing to enroll in physics education programs can also be improved through the following efforts:

1. Teachers Teachers can provide motivation and encouragement to pursue physics education programs by employing approaches and teaching methods that highlight the relevance of science to everyday life, future advancements, and career opportunities (Lavonen et al., 2005).
2. Disseminating information about the study program through promotional activities aimed at the broader community, including details about career prospects for graduates of physics education programs. Promotion plays a crucial role in attracting prospective students and enhancing the program's accreditation status (Gunada et al., 2024). Moreover, such promotional efforts can serve as a means to communicate the program's achievements, thereby increasing public interest and trust (Zahra et al., 2024). The lack of information about the department is one of the factors contributing to the low number of students enrolling in certain study programs (Dewi Edmawati et al., 2021).

CONCLUSIONS

The results of this study indicate that low interest in learning physics and the declining number of students majoring in physics are closely related and have significant implications for education. Therefore, to address this issue, collaboration among teachers, schools, universities,

and the government is essential to foster learning environments that enhance students' interest in physics.

Teachers can apply various strategies to improve students' engagement with physics, such as implementing contextual learning approaches, integrating technological media, conducting experimental activities, incorporating scientific stories and historical perspectives into lessons, adopting innovative teaching methods and models, and developing engaging instructional materials. Schools and the government should provide adequate infrastructure and facilities, as well as continuous professional development programs for teachers. Meanwhile, universities are encouraged to actively promote their study programs to the public to increase awareness and build trust in physics education programs. Future researchers may conduct empirical studies to examine the relationship between students' low interest in learning physics and the decreasing number of physics education majors through direct field investigations.

REFERENCES

Abbas, & Hidayat, M. Y. (2018). Faktor-Faktor Kesulitan Belajar Fisika Pada Peserta Didik. *Jurnal Pendidikan Fisika*, *6*(1), 45–49. ournal.uin-alauddin.ac.id/index.php/PendidikanFisika/article/view/3273/4228

Afrizon, R. (2018). *Analisis Persepsi Mahasiswa Pendidikan Fisika terkait Pentingnya Pembelajaran Fisika Bermakna yang Menerapkan Unsur Kearifan Lokal Sumatera Barat*. *November*. https://osf.io/preprints/inarxiv/rzjqg/

Alfarouqy, A. H., Septianto, R. F., & Oktarisa, Y. (2024). Game Fisika Fluidy untuk Meningkatkan Minat Belajar Siswa pada Materi Fluida Statis. *Diffraction*, *6*(1), 39–45. https://doi.org/10.37058/diffraction.v6i1.10299

Amalissholeha, N., Rokhmat, J., & Gunada, I. W. (2023). *Empiricism+Journal+Publish,+Amalissholeha+et+al.* *4*(2), 356–364.

Amaliyah, M., Suardana, I. N., & Selamet, K. (2021). Analisis Kesulitan Belajar Dan Faktor-Faktor Penyebab Kesulitan Belajar Ipa Siswa Smp Negeri 4 Singaraja. *Jurnal Pendidikan Dan Pembelajaran Sains Indonesia (JPPSI)*, *4*(1), 90–101. https://doi.org/10.23887/jppsi.v4i1.33868

Angell, C., Guttersrud, Ø., Henriksen, E. K., & Isnes, A. (2004). Physics: Frightful, but fun - Pupils' and teachers' views of physics and physics teaching. *Science Education*, *88*(5), 683–706. https://doi.org/10.1002/sce.10141

Aziz, A., Ashari, & Maftukhin, A. (2015). Penerapan model pembelajaran student facilitator and explaining untuk meningkatkan minat dan motivasi belajar fisika siswa kelas x SMA Negeri 10 Purworejo tahun pelajaran 2013/2014. *Radiasi: Jurnal Berkala Pendidikan Fisika*, *6(1)*, 118–121. http://jurnal.umpwr.ac.id/index.php/radiasi/article/view/289

Bigozzi, L., Tarchi, C., Fiorentini, C., Falsini, P., & Stefanelli, F. (2018). The influence of teaching approach on students' conceptual learning in physics. *Frontiers in Psychology*, *9*(DEC), 1–14. https://doi.org/10.3389/fpsyg.2018.02474

Charli, L., Ariani, T., & Asmara, L. (2019). Hubungan Minat Belajar terhadap Prestasi Belajar Fisika. *Science and Physics Education Journal (SPEJ)*, *2*(2), 52–60. https://doi.org/10.31539/spej.v2i2.727

Dalimunthe, A. S., Sitepu, E., Yuriska, K., & Ichayu, V. (2024). *Analisis Faktor-Faktor yang Mempengaruhi Minat Mahasiswa Melanjutkan Pendidikan ke Perguruan Tinggi*. *18*(1).

Dasmo, Puji Lestari, A., & Alamsyah, M. (2020). Peningkatan Hasil Belajar Fisika Melalui Penerapan Media Pembelajaran InteraktifBerbasis Ispring Suite 9. *Prosiding Seminar Nasional Sains*, *1*(1), 99–102.

Dewi Edmawati, M., Susanto, B., Maulana, M. A., & Kumalasari, R. (2021). JBKI UNDIKSHA Arah Minat Siswa Terhadap Pilihan Jurusan Bimbingan dan Konseling. *Jurnal Bimbingan Konseling Indonesia*, *6*(2), 224–233. https://doi.org/10.24036/XXXXXXXXXX-X

Djudin, T. (2018). How to Cultivate Students' Interests in Physics: A Challenge for Senior High School Teachers. *Jurnal Pendidikan Sains*, *6*(1), 16–22. http://journal.um.ac.id/index.php/jps/

Fatimah, S. (2018). Pengaruh Potensi Diri, Prestasi Belajar, dan Status Sosial Ekonomi Orang Tua terhadap Minat Melanjutkan Pendidikan ke Fakultas Ekonomi di Perguruan Tinggi. *Jurnal Pendidikan Ekonomi (JUPE)*, *6*(2), 28–36. https://ejournal.unesa.ac.id/index.php/jupe/article/view/24102

Febri, A. T., Maria, M. M., & Langgengyoga, W. (2020). Copyright © 2020 JSEP https://journal.unpak.ac.id/index.php/jsep. *Science Education And Practice*, *4*, 32–40.

Fitri, A. N., Zalianti, M., Pramudya Sa, A., Alapif, A., Kurnia, A., Fisika, J., & Matematika dan Ilmu Pengetahuan Alam, F. (2024). *MENINGKATKAN KESADARAN AKAN PENTINGNYA PENDIDIKAN LANJUT MELALUI EDUKASI DAN MOTIVASI BAGI SISWA SMAN 4 PRAYA*. *4*(3), 71–81.

Gunada, I. W., Nisrina, N., Verawati, N., & ... (2024). Membangun Generasi Cerdas: Sosialisasi Prodi Pendidikan Fisika FKIP Universitas Mataram di SMA Negeri 1 Terara Menuju Akreditasi Unggul. *... Magister Pendidikan ...*, *April 2019*. https://jppipa.unram.ac.id/index.php/jpmpi/article/view/9955

Hadzigeorgiou, Y., & Schulz, R. M. (2017). What really makes secondary school students "Want" to study physics? *Education Sciences*, *7*(4). https://doi.org/10.3390/educsci7040084

Hamdi, & Rahim, C. K. (2019). Analisis Minat Belajar Siswa Terhadap Mata Pelajaran Fisika di SMAN1 Bungo. *Integrated Science Education Journal*, *3*(2), 39–44. https://doi.org/10.37251/isej.v3i2.257

Handayani, A. I. S., Indriyani, A. R., Rosida, A. S. G., Astutik, S., & Meilina, I. L. (2025). Analisis Kesulitan Mahasiswa Program Studi Pendidikan Fisika Universitas Jember dalam Memahami Konsep Thermodinamika. *U-Teach: Journal Education of Young Physics Teacher*, *6*(1), 73–85. https://doi.org/10.30599/6ycw1266

Harie, Y., Gautam, B. P., & Wasaki, K. (2023). Computer Vision Techniques for Growth Prediction: A Prisma-Based Systematic Literature Review. *Applied Sciences (Switzerland)*, *13*(9). https://doi.org/10.3390/app13095335

Holubova, R. (2015). How to Motivate our Students to Study Physics? *Universal Journal of Educational Research*, *3*(10), 727–734. https://doi.org/10.13189/ujer.2015.031011

Hong, H. Y., & Lin-Siegler, X. (2012). How Learning About Scientists' Struggles Influences Students' Interest and Learning in Physics. *Journal of Educational Psychology*, *104*(2), 469–484. https://doi.org/10.1037/a0026224

Iyamuremye, A., Nsabayezu, E., Ngendabanga, C., & Hagenimana, F. (2023). the Creative Commons Attributions License [CC BY-NC-ND 4.0] Effectiveness of Hands-on Practical Activities in Teaching and Learning Chemistry: An Exploration of Students'

Engagement, Experience, and Academic Performance. *African Journal of Educational Studies in Mathematics and Sciences*, *19*(1), 97–107. http://creativecommons.org/licenses/by-nc-nd/4.0.DOI:https://dx.doi.org/10.4314/ajesms.v19i1.7

Kinasih, A., & Mariana, E. (2021). Hubungan Antara Motivasi Belajar dan Minat Baca Siswa Dengan Hasil Belajar Fisika Siswa. *Jurnal Pendidikan Fisika Undiksha*, *11*(1), 39–46.

Korompot, S., Rahim, M., & Pakaya, R. (2020). Persepsi Siswa Tentang Faktor yang Mempengaruhi Minat Belajar. *JAMBURA Guidance and Counseling Journal*, *1*(1), 40–48. https://doi.org/10.37411/jgcj.v1i1.136

Lavonen, J., Byman, R., Juuti, K., Meisalo, V., & Uitto, A. (2005). Pupil interest in physics: A survey in Finland. *Nordic Studies in Science Education*, *1*(2), 72–85. https://doi.org/10.5617/nordina.486

LIZA, S. (2021). Upaya Peningkatan Minat Dan Hasil Belajar Fisika Siswa Kelas Xii.Ipa.3 Sman 3 Muaro Jambi Melalui Media Pembelajaran Animasi 3 Dimensi Tahun Pelajaran 2018/2019. *SCIENCE : Jurnal Inovasi Pendidikan Matematika Dan IPA*, *1*(2), 170–176. https://doi.org/10.51878/science.v1i2.522

Lyons, T. (2006). The puzzle of falling enrolments in physics and chemistry courses: Putting some pieces together. *Research in Science Education*, *36*(3), 285–311. https://doi.org/10.1007/s11165-005-9008-z

Magano, F. L. (2014). A review of strategies to address the shortage of science and mathematics educators in grades 10-12. *University of Pretoria*, *July*.

Miskiyyah, Z., Liliawati, W., & Rusdiana, D. (2021). Identifikasi Korelasi Minat Terhadap Kemampuan Analisis Siswa pada Konsep Usaha dan Energi. *Physics Education Research Journal*, *3*(1), 29–40. https://doi.org/10.21580/perj.2021.3.1.6648

Ng, W., & Van Nguyen, T. (2006). Investigating the integration of everyday phenomena and practical work in physics teaching in Vietnamese high schools. *International Education Journal*, *7*(1), 36–50.

Ningsih, W. (2018). Pengaruh Pembelajaran Fisika Menggunakan Model Pembelajaran Contextual Teaching and Learning (Ctl) Dan Paikem Terhadap Minat Belajar Siswa Di Smp Negeri 33 Semarang. *Jurnal Penelitian Pembelajaran Fisika*, *5*(1), 1. https://doi.org/10.26877/jp2f.v5i1.2355

Nofitasari, I., & Sihombing, Y. (2017). Description of students' learning difficulties and the causative factors in understanding dynamic electricity materials in grade 6. *Jurnal Penelitian Fisika Dan Aplikasinya (JPFA)*, *7*(1), 44.

Nugroho, S. E., & Waslam. (2020). Physics experiment activities to stimulate interest in learning physics and reasoning in high school students. *Journal of Physics: Conference Series*, *1567*(2). https://doi.org/10.1088/1742-6596/1567/2/022069

Oon, P. T., & Subramaniam, R. (2011). On the declining interest in physics among students-from the perspective of teachers. *International Journal of Science Education*, *33*(5), 727–746. https://doi.org/10.1080/09500693.2010.500338

Oryza, S. B., & Listiadi, A. (2021). Pengaruh Motivasi Belajar dan Status Sosial Ekonomi Orangtua Terhadap Minat Melanjutkan ke Perguruan Tinggi dengan Prestasi Belajar Sebagai Variabel Mediasi. *JPEKA: Jurnal Pendidikan Ekonomi, Manajemen Dan Keuangan*, *5*(1), 23–36. https://doi.org/10.26740/jpeka.v5n1.p23-36

Owen, S., Dickson, D., Stanisstreet, M., & Boyes, E. (2008). Teaching physics: Students'

attitudes towards different learning activities. *Research in Science and Technological Education*, *26*(2), 113–128. https://doi.org/10.1080/02635140802036734

Pati, D., & Lorusso, L. N. (2018). How to Write a Systematic Review of the Literature. *Health Environments Research and Design Journal*, *11*(1), 15–30. https://doi.org/10.1177/1937586717747384

Perkins, K. K., Gratny, M. M., Adams, W. K., Finkelstein, N. D., & Wieman, C. E. (2006). Towards characterizing the relationship between students' interest in and their beliefs about physics. *AIP Conference Proceedings*, *818*, 137–140. https://doi.org/10.1063/1.2177042

Prianggita, M., & Ghofur, M. A. (2021). Analisis Variabel-Variabel Yang Mempengaruhi Minat Siswa Sma Melanjutkan Pendidikan Ke Perguruan Tinggi. *Edunomic Jurnal Pendidikan Ekonomi*, *9*(1), 26. https://doi.org/10.33603/ejpe.v9i1.3519

Purwoko, A. A., Andayani, Y., Hadisaputra, S., Yulianti, L., Nudia Fitri, Z., Pariza, D., & Burhanuddin. (2021). Validitas Instrumen Dalam Rangka Pengembangan Metode Pembelajaran Inovatif Untuk Meningkatkan Minat Belajar Siswa. *LPPM University of Mataram*, *3*(0), 94–102. http://jurnal.lppm.unram.ac.id/index.php/prosidingsaintek/article/view/271

Rahmi, M., Azmi, U., Saiful, M., & Riski, S. (2024). Upaya Peningkatan Minat Belajar Siswa pada Pelajaran Fisika di SMPN 3 Sakti Efforts to Increase Students' Learning Interest in Physics Lessons at SMPN 3 Sakti. *Jurnal Pengabdian Masyarakat*, *3*(2), 23–26.

Razaq, F. F. A. R., & Diyana, T. N. (2023). ANALISIS MINAT BELAJAR SISWA PADA MATA PELAJARAN FISIKA DI SMA N 1 GODEAN DALAM UPAYA PENINGKATAN KUALITAS SUMBER DAYA MANUSIA. *Jurnal Inovasi Penelitian Dan Pembelajaran Fisika*, *4*(2). https://doi.org/10.26418/jippf.

Rivani, P. A., Kurniawan, D. A., & Yohafrinal. (2022). *Revised: February 15*. *5*, 143–150.

Rosser, A., King, P., & Widoyoko, D. (2021). The Political Economy of the Learning Crisis in Indonesia. *RISE Annual Conference, University of Oxford, July*, 1–110.

Saful, M., Hamdi, & Azmi, U. (2025). *Muslim Jafar 1 , Devy Aisyah 2 , Amrina 3*. *9*(1), 188–197.

Saleh, S. (2021). Malaysian students' motivation towards Physics learning. *European Journal of Science and Mathematics Education*, *2*(4), 223–232. https://doi.org/10.30935/scimath/9414

Saputri, D., Ahmad, S., & Lestari, N. D. (2019). HUBUNGAN MOTIVASI BELAJAR SISWA DAN PENDAPATAN ORANG TUA TERHADAP MINAT MELANJUTKAN STUDI KE PERGURUAN TINGGI SMK NEGERI 1 PALEMBANG TAHUN PELAJARAN 2018/2019. *Jurnal Pendidikan Ekonomi UMMetro Studi*, *7*(2), 34–44.

Sari, I. N., Saputri, D. F., & Sasmita. (2016). Prestasi Belajar Fisika Pada Siswa Kelas Xi Ipa Sma Negeri 1 Galing Kabupaten Sambas. *Jurnal Edukasi Matematika Dan Sains*, *4*(2), 108–114.

Semela, T. (2010). Who is joining physics and why? factors influencing the choice of physics among Ethiopian university students. *International Journal of Environmental and Science Education*, *5*(3), 319–340.

Setyowati, D., & Widana, I. W. (2016). Pengaruh minat, kepercayaan diri, dan kreativitas belajar terhadap hasil belajar matematika. *Jurnal Emasains*, *V No. 1*, 66–72.

Siregar, S. W., Sunendar, D., Nanola, N., & Burhanudin, B. (2024). Analysis of the Utilization

of Technology-Based Learning Media in Elementary School Students' Listening Skills: A Systematic Literature Review. *Mimbar Sekolah Dasar*, *11*(4), 788–806. https://doi.org/10.53400/mimbar-sd.v11i4.78885

Sofna, A., Sakinah, Y., Misbah, M., & Pentang, J. T. (2023). Analysis of Student Learning Interest In Physics In Subject Force Material. *International Journal of Education and Teaching Zone*, *2*(1), 25–39. https://doi.org/10.57092/ijetz.v2i1.58

Sulastri, H. P., Irvani, A. I., & Warliani, R. (2024). PENGEMBANGAN MODUL DIGITAL FISIKA BERBASIS PROJECT BASED LEARNING (PjBL) DALAM MENINGKATKAN MINAT BELAJAR PESERTA DIDIK. *OPTIKA: Jurnal Pendidikan Fisika*, *8*(1), 97–111. https://doi.org/10.37478/optika.v8i1.3696

Supardi, S. U. S., Leonard, L., Suhendri, H., & Rismurdiyati, R. (2015). The Effect of Learning Media and Learning Interest on Physics Learning Outcomes. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *2*(1), 71–81.

Yolviansyah, F., Suryanti, Rini, E. F. S., Wahyuni, S., & Matondang, M. M. (2021). Revised: December 14. *Tunjuk Ajar: Jurnal Penelitian Ilmu Pendidikan*, *4*(1), 16–25. https://jta.ejournal.unri.ac.id/index.php/JTA/article/view/7883/pdf

Zahra, A. P., Ambomasse, N. M., & Erfin. (2024). Analisis Motivasi Mahasiswa Baru dalam Menempuh Pendidikan di Program Studi Pendidikan Fisika FKIP Universitas Mulawarman . *Jurnal Literasi Pendidikan Fisika*, *5*(2), 163–169.