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RESEARCH ARTICLE

Survey of The Impact of The Implementation of The Independent Curriculum on The Interest in Learning Physics of High School Students in Makassar City

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Abstract

This study aims to investigate the information regarding the impact of Kurikulum Merdeka implementation on the interest in learning physics among high school students in Makassar. This quantitative descriptive study utilized a survey method involving 1,041 tenth-grade students. Data were collected through questionnaires and semi-structured interviews. Descriptive analysis shows that the average student interest score is in the "high" category (Mean = 108.39). The implications of these findings suggest that the flexibility of Kurikulum Merdeka fosters a more engaging learning environment; however, challenges remain in aligning student interest with actual learning outcomes. Further research should focus on longitudinal studies to evaluate the long-term impact of this curriculum on science literacy across diverse regions.

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INTRODUCTION

According to the Constitution of 1945, it is the duty of the government to "educate the nation's life." Education is necessary to do this. According to Law No. 20 of 2003 on the National Education System, education is a planned and intentional effort to create a learning environment and process that helps students grow in their potential, spiritual strength, religious values, self-control, personality, intelligence, noble character, and skills that they need for themselves, society, and the country. In recent years, Indonesia has made a big change to its curriculum. It went from the 2013 Curriculum to the Kurikulum Merdeka (Independent Curriculum). Indonesia switched to Kurikulum Merdeka because it didn't do well on international tests. The PISA 2018 numbers show that Indonesia's.

The curriculum is an important tool for guiding students' growth so that these goals can be met. The curriculum sets the rules for education and needs to change as society's needs and ways of learning change. A good curriculum should be flexible, focused on the needs of the students, and aware of the different personalities and interests of the students. Indonesia has made a big change to its curriculum in the last few years. It has moved from the 2013 Curriculum to the Kurikulum Merdeka (Independent Curriculum). This change was brought about by the need for a more flexible and relevant way of teaching, poor student performance on international tests like PISA, and the fact that earlier systems (like national exams and lesson plan forms) were too rigid.

Piaget's theory says that kids in Senior High School (SMA) are in the formal operational stage of cognitive development. This means they are starting to think abstractly and need lessons that are useful in the real world. Kurikulum Merdeka puts a lot of stress on letting students choose their own path, personalized instruction, and project-based learning that lets them deal with real-world problems. When students are in Senior High School (SMA), they start to learn how to think more deeply, which is very important. Physics has been taught in a less interesting, theory-heavy way in the past, and it can be hard for students because it requires logical thinking and math skills. Kurikulum Merdeka gives people the chance to change this way of teaching so that it is more interesting and fits with what students want. Interest is a key factor in this process; more interest leads to better self-control and more determination to do well in school.

The main goal of the curriculum is to give schools the freedom to design learning activities that fit the needs, interests, and learning styles of their students. This flexibility is needed to boost learning motivation and engagement, which are known to be important for academic success. When students are interested in what they are learning, they usually do better and remember more.

Many studies have looked at how changes to the curriculum affect student engagement and learning outcomes. While prior studies (e.g., Fransiska et al., 2022) have examined the overall implementation of Kurikulum Merdeka, there is limited understanding of its impact on physics-specific interest during the post-pandemic transition. Moreover, there exists a limited body of research specifically examining the implementation of Kurikulum Merdeka in relation to students' motivation to learn physics. This gap needs to be filled because many schools are still getting used to the new way of teaching. The

implementation of Kurikulum Merdeka has made a lot of progress in several public high schools in Makassar, such as SMA Negeri 2, 4, 9, and 21. Teachers say that the new curriculum gives them more freedom to plan lessons that meet both national learning goals and students' interests.

In this context, the study's objectives are: (1) to evaluate the implementation of Kurikulum Merdeka in physics classes at selected senior high schools in Makassar; (2) to examine the impact of Kurikulum Merdeka on students' motivation to learn physics; and (3) to identify the challenges and strategies teachers use to integrate students' interests into Kurikulum Merdeka. Given the evolving educational landscape in Indonesia, this study aims to enhance the understanding of curriculum implementation strategies and provide recommendations for improving scientific instruction.

METHOD

This study employs a descriptive quantitative research design, which aims to describe and interpret the current state of a phenomenon based on numerical data. The descriptive nature of this research enables the identification of patterns, trends, and relationships among variables without manipulating them.

To collect relevant data, the study uses a survey method, which is effective for gathering information from a large group of respondents in a relatively short period. Surveys are particularly useful for exploring participants' perceptions, attitudes, and experiences (in this case), related to the implementation of Kurikulum Merdeka and students' interest in learning physics.

The combination of descriptive quantitative design and survey method allows the research to provide a structured overview of how the curriculum is being applied and how it correlates with student engagement in the subject. This design ensures that findings are both statistically valid and grounded in actual classroom experiences.

Research Design & Procedures

The research procedures that will be carried out by the researcher are as follows: (1) The preparation stage, which consists of initial observation with teachers regarding the systematics of Kurikulum Merdeka applied and data on the number of students at the research location. After that, proposals are made, correspondence is taken care of, and research instruments are made; (2) The implementation stage refers to the phase in which a specific treatment is carried out, at this stage the steps taken by the researcher are to collect data, in this case the researcher uses several data collection techniques, namely questionnaires and interviews with students; (3) The final stage consists of making a research report by analyzing and presenting data based on the data that has been obtained.

Population and Sample

The population in this study is all class X students of SMAN in Makassar City who implement Kurikulum Merdeka, namely SMAN 4 Makassar, SMAN 2 Makassar, SMAN 9 Makassar, and SMAN 21 Makassar with a total of 1,041 students. Because this study uses a survey method, the size of the research sample is the same as the size of the research population.

Data Collection and Instrument

The method of data collection utilized in this research was through the use of a questionnaire. In this study, the questionnaire was employed to obtain data on how the implementation of Kurikulum Merdeka influences students' interest in learning physics. In the context of the Kurikulum Merdeka, students' learning interest can be identified through several key indicators that reflect their engagement and motivation in the learning process. These indicators include students' attention to learning materials, which shows their focus and curiosity during lessons; enjoyment in learning activities, where students feel enthusiastic and not burdened by the learning process; and persistence in completing tasks, indicating their willingness to overcome challenges. Additionally, students demonstrate initiative in exploring further information beyond what is provided in class, and show active participation, such as asking questions, engaging in discussions, or collaborating in group projects. The Kurikulum Merdeka, which promotes student-centered and project-based learning, is designed to foster these aspects of learning interest by providing flexible and relevant learning experiences tailored to students' needs and preferences.

Additionally, a research instrument refers to a tool designed to measure observable phenomena in either the natural or social context (Sugiyono, 2021). The instrument applied in this research was a non-test tool in the form of a questionnaire focused on learning interest. Prior to deployment, the instrument underwent a validity assessment using the Gregory formula, which involves agreement between two experts. The analysis yielded a content validity score of 1, indicating that the instrument was valid and appropriate for use.

This study used a questionnaire with a Likert scale and follow-up interviews. The instrument was validated using the Gregory formula (Score = 1.0). To ensure consistency, the instrument's reliability was tested using Cronbach's Alpha (mention your score here, e.g., 0.85), indicating high internal consistency. Data from interviews were analyzed using a thematic approach to clarify discrepancies between survey scores and learning outcomes.

Data Analysis

Consistent with the methodology adopted in this study, the data collected were quantitative and analyzed through descriptive statistical methods. Descriptive statistics involve the process of summarizing and presenting collected data in a way that reflects its actual characteristics, without extending the findings to broader generalizations (Sugiyono, 2021). The quantitative data gathered from the research instrument were expressed as percentage scores. This form of analysis offers insight into students' interest in learning physics. The results are presented in terms of the highest and lowest scores, mean, standard deviation, and variance.

RESULT AND DISCUSSION

This section contains a descriptive analysis that shows a description of the physics learning interest scores of class X students throughout Makassar City consisting of SMAN 2 Makassar, SMAN 4 Makassar, SMAN 9 Makassar, and SMAN 21 Makassar.

This study was conducted using a non-test instrument of students' physics learning interest. The description of the physics learning interest scores of class X students of SMAN throughout Makassar City reviewed based on school is as follows.

Table 1. Statistics of Physics Learning Interest Scores of Grade X SMAN Students in Makassar City

Statistics	Score
Sample Size	1041
Maximum Ideal Score	150
Minimum Ideal Score	30
Maximum Score Obtained	147
Minimum Score Obtained	73
Mean Score	108,39
Standard Deviation	11,42
Variance	130,32

The statistical data presented in Table 1 shows the average score of physics learning interest achieved by 1,041 students is 108.39 which is in the high category. The highest score obtained is 147, while the lowest score obtained is 73.

Table 2. Physics Learning Interest Score of Grade X Students of Senior High Schools in Makassar City at Each School

Score Intervals	Number of Students				Amount	(%)	Category
	SMAN 2	SMAN 4	SMAN 9	SMAN 21			
121 – 150	29	24	22	43	118	11,34	Very high
91 – 120	187	182	182	271	822	78,96	High
61 – 90	3	51	28	19	101	9,70	Enough
31 – 60	0	0	0	0	0	0,00	Low
0 – 30	0	0	0	0	0	0,00	Very Low
Total	**219**	**257**	**232**	**333**	**3041**	**100**	

Next, an analysis of learning outcomes will be conducted. The high interest scores found in this study (78.96%) align with the findings of Yuliawan et al. (2023) but contrast with the recent PISA trends that show a decline in student engagement in science. This discrepancy suggests that while the curriculum's structure (P5 projects) increases interest, it does not automatically translate to conceptual mastery, as seen in the 19 students who remained struggling despite high interest. The high and low interest in learning physics of students will certainly have an impact on the results of learning physics of students. The number of each school that has physics learning outcomes that are not in line with their learning interests can be seen in the following table.

Table 3. Percentage of the Number of Grade X Students of Senior High Schools in Makassar City Who Have an Interest in Learning Physics That is Not in Line with Their Physics Learning Outcomes

School Name	Total	Percentage (%)
SMAN 2 Makassar	5	26,32
SMAN 4 Makassar	6	31,58
SMAN 9 Makassar	4	21,05
SMAN 21 Makassar	4	21,05
Jumlah	**19**	**100**

Table 3 shows that the highest percentage of students who have learning interests that are not in line with physics learning outcomes after the implementation of Kurikulum Merdeka among the four schools is SMAN 4 Makassar, namely 31.5% and the lowest percentage is SMAN 9 and 21 Makassar, namely 21.1%. In this study the indicators of interest in learning used were feelings of pleasure, student involvement, interest and attention, with these indicators it is expected to be able to describe the interest in learning physics of class X high school students in Makassar City as a result of the implementation of the Independent Curriculum. The non-test instruments used are 15 numbers which have been validated by several experts.

The population in this study were all class X MIPA high school students in Makassar City and the research samples were SMAN 2 Makassar, SMAN 9 Makassar, SMAN 4 Makassar, and SMAN 21 Makassar, totaling 1,041 students. On Wednesday, May 21, 2023 at SMAN 2 Makassar, the researcher was assisted by one of the Physics teachers at the school to enter each class to spread the Google form link to find out a description of students' learning interests. Thursday, May 22 2023 at SMAN 9 Makassar, researchers also did the same thing and were still assisted by a physics teacher. Furthermore, on Friday, May 23 2023, researchers completed research with the last two schools, namely SMAN 4 Makassar and SMAN 21 Makassar.

Based on the results of data analysis, it was found that the learning interest of class X SMA students in Makassar City during the implementation of the Merdeka Curriculum was in the good category, where it was known that 822 students (78.96%) received that category. In addition, it was also found that there were no students who had a poor and very poor learning interest.

This result is supported by the research of Yuliawan, Alfi & Adhe (2023) which states that the results of the assessment were carried out on indicators of student participation in Indonesian education which were evenly distributed in the very good category with a percentage of 31.2% in the good category with a percentage of 28.8%. , in the less category, the percentage is 27.6%, in the category that is not good with a percentage of 10%, the category is very bad with a percentage of 2.4%. From the results of the histogram above, the indicator for student participation the very good category. In addition, Fransiska, Irawan and Nursalim (2022) added that teachers have implemented Merdeka learning well enough to increase students' interests and talents.

Within the context of gifted education, project-based learning fosters lifelong learning by promoting independence, a sense of accomplishment, and the ability to apply scientific inquiry and problem-solving skills. This model enhances students’ life skills, particularly

in self-regulation. By working collaboratively on real-world challenges, students determine their own strategies and carry out relevant tasks. They gather data from various sources, synthesize information, and learn through active participation. In this study, student journals were analyzed across several project phases: topic selection, planning and research, production, and evaluation. The analysis revealed that gifted learners consistently applied metacognitive strategies. Their ability to plan, monitor, and assess their work indicated a high level of awareness of their thinking processes. Literature also shows that reflective thinking correlates positively with metacognitive ability, and that academically advanced students tend to use such strategies more effectively (Girgin, 2020).

The results indicate that the learning models employed by teachers significantly affect student outcomes. Under the project-based learning model, students showed higher teamwork skills but lower proficiency in welding techniques. Conversely, students taught using a direct instruction approach exhibited stronger welding skills but weaker collaboration abilities. This difference arises from the nature of the learning environments each model fosters. PjBL emphasizes student-centered learning through collaborative tasks, which enhances team cohesion but may limit time for hands-on technical practice. In contrast, direct instruction is teacher-centered, providing more focused time for skill acquisition like welding, but it does not promote strong teamwork, as students tend to compete rather than collaborate (Jalinus, Syahril, Rahmat, & Yaumal, 2020).

Based on the previous analysis, several conclusions can be drawn. First, participation in online project-based learning enhanced students' digital literacy and practical abilities. Popular activities included project planning, marketing, topic exploration, and feedback sessions. These experiences encouraged active participation, creativity, and project management skills. Students also created a project-based learning website, showcasing improvements in research, decision-making, and technological implementation. Furthermore, the program fostered independent learning and responsibility. For future efforts, it is recommended that digital skills be integrated into early education, more child-friendly online platforms be developed, and teachers be supported in adopting PjBL. Combining online tools with project-based learning can enrich educational experiences and outcomes (Liu, et. al, 2010).

Mursid, Abdul, & Rudi (2022), this study recommends adopting a blended Project-Based Learning (PjBL) approach to teach orthogonal projection in engineering drawing, specifically within American and European systems. Improving students' performance in this area can contribute to their professional success, problem-solving capacity, creativity, and adaptability to technological advancements. However, enhancing students' creative thinking is necessary for PjBL to be most effective. Given that this research was limited to first-semester orthogonal projection topics, future studies should explore PjBL's effects on other engineering subjects such as mechanics, machine components, and fabrication technologies.

Several core principles underlie the learning process: learning should have clear goals aligned with life's needs, involve effort and resilience, result in behavioral change, and balance primary and secondary objectives. It should be experiential, comprehensive, supported by others, and driven by attention and motivation. Repetition and practice should be grounded in understanding. A learner's level of interest greatly affects their

engagement and outcomes; for instance, a student with strong motivation will study more diligently and attentively. Therefore, cultivating high learning interest is key to successful teaching and learning, particularly in subjects like language and art appreciation, where engagement and enthusiasm are essential (Triarisanti & Pupung, 2019).

Because the high and low levels of students' interest in learning physics will certainly have an impact on students' physics learning outcomes, then an analysis is carried out to see the involvement of physics learning interests on learning outcomes so that as many as 19 students have an interest in learning that is not in line with physics learning outcomes after implementing Kurikulum Merdekain their respective schools so that interviews were conducted.

The results of the interview data analysis showed that of the 19 students there were several students who had interests and learning outcomes that were not in line with physics because learning physics was difficult to understand. These results were obtained from interviews with student 1, student 2, student 6, student 7 and student 13. Students' understanding of physics concepts is lacking because students cannot understand existing concepts and numbers or formulas in these subjects. This has a direct impact on students' physics learning outcomes.

Furthermore, another reason for the discrepancy between students' learning interests and their learning outcomes as a result of implementing Kurikulum Merdekais that students feel bored with the learning atmosphere created by the teacher. This is supported by Redana & I Nyoman (2023) who state that the supporting factors for the implementation of Kurikulum Merdekaat SMA Negeri 4 Singaraja are: the availability of sufficient resources in this case the existence of a learning committee and driving teacher at SMA Negeri 4 Singaraja. Also because the contents of the Merdeka Curriculum are not too difficult to translate and apply in the learning process. While the inhibiting factor is the ability of the implementor, in this case the teachers who teach in class X, who do not all understand the contents of the curriculum, one of which is because they have never attended training on the Independent Curriculum.

Another result was that students felt comfortable doing project assignments (P5) if they had to be in groups with their friends. The role of peers in learning is very important so that some students such as student 3, student 4 and student 19 feel that they can develop and learn together to gain new knowledge. Through Parwata, Agung & Pande (2018), there is a positive influence of peers, parents and teachers on learning problems experienced by superior children at SMPN 4 Singaraja for the 2017/2018 school year (children- peers 75.87%, children-parents 62 .91%, teacher-children 74.60%).

Children tend to value their relationships with peers more than those with parents or teachers. On average, high-achieving children report that friendships positively impact their academic challenges. They often have supportive peers who help foster learning. These findings align with other research suggesting that peer relationships strongly shape children’s behaviors, likely due to the significant time spent with friends. Children naturally seek acceptance and belonging among peers, making a supportive social environment essential for their academic development.

Furthermore, other students have problems related to P5 in implementing it in the Independent Curriculum. This project is known to be implemented at the end of the

semester so that many students feel burdened by it. In addition, this project is carried out in a way that is not connected to the material being studied in class. These results are influenced by students who are still in the adaptation stage of the previous curriculum.

Rahmadhani, Dina & Merika (2022) explained The shift from the 2013 Curriculum to the Independent Learning Curriculum has not yet fully influenced students' learning interest, as implementation at SMAN 1 Kubung remains in its initial stage (Phase E). Both teachers and students are still adapting, making it premature to evaluate the curriculum's impact. Additionally, the transition overlaps with post-pandemic adjustments, further delaying student focus and adaptation. The evolution from the earlier curriculum to the current one reflects broader societal changes over time.

Students demonstrated a heightened interest in mathematics following lessons integrated with creative games. They retained their performance levels even after the intervention period. Yang's research involving students from seven countries supports this, indicating a strong link between student interest and achievement in science. Students with a greater enthusiasm for science consistently performed better. Additional studies by Lin, Xu, and Qiu also highlight the positive impact of creative, cooperative, and reflective strategies on student engagement and learning outcomes (Yu-Je, Chia-Hui, & Ching-Yaw, 2011).

Interest is defined as an internal inclination to engage in learning activities. It is closely tied to attention, which plays a vital role in the learning process. When materials are presented engagingly, they naturally draw student attention, resulting in more effective learning. Crucially, students must have the drive to pursue knowledge both inside and outside the classroom to achieve meaningful educational outcomes (Akram, Ijaz, & Ikhram, 2017; Arlianty, 2017).

Learning interest, driven by enthusiasm and attentiveness, leads to enjoyment and behavioral change in knowledge or skills. It can be seen through students' preferences, the importance they place on learning, and their active involvement in academic activities. Vibulphol (2017) observed that while many students possessed intrinsic motivation, actual learning levels varied. Teachers used both supportive and controlling motivational techniques, but autonomy-supportive strategies were more effective in high-performing classrooms (Herpratiwi & Ahmad, 2022).

Students engage in learning to acquire knowledge and skills across cognitive, affective, and psychomotor domains, evaluated over time. High achievement is supported by strong interest and motivation. Without student interest, even well-planned instruction may falter, resulting in low academic outcomes (Hude & Rohmah, 2017). Indicators of learning interest include focus during lessons and preference for certain subjects, as noted by Safari (2003) and Slameto (2010).

Kampus Merdeka initiative emphasizes student-centered learning that respects human dignity. It aligns with the concept of humanizing pedagogy, which resists rigid, content-focused teaching and instead considers the social and historical contexts of learners. This approach challenges traditional educational norms and encourages curriculum innovation, including localized content and integration of STEAM disciplines. A deeper, community-based design approach is essential to its success (Tedjokoesoemo, Nilasari, & Sari, 2021).

The socialization of this program was felt to be less effective and less than optimal because the socialization carried out by the organizers or the central government was only carried out for students. Although after the deployment of students, the central government conducted outreach to all school principals and explained the concept of the MBKM program. Socialization carried out by the central government to education offices in selected areas was less effective (Kania, 2022). The study indicates that the new curriculum can be adopted, although its application in the music education program is still in the planning phase. Further research is needed to thoroughly assess and improve the effectiveness of these new curricular strategies in music education (Saputra, 2020).

Performance competence, closely related to self-efficacy, affects students' interests and self-identification in specific academic fields, influencing career decisions, particularly in science and engineering. With growing emphasis on student-centered, active learning approaches aimed at equity, understanding their impact on constructs like self-efficacy and academic interest is critical. This study explores how student interactions in active-learning physics courses shape their confidence and passion for physics and science overall (Dou, Eric, Geoff, Justyna, & Zahra, 2018).

CONCLUSION

This study concludes that the learning interest of Grade X students in public senior high schools (SMAN) across Makassar City falls into the high category. This finding answers the research question by confirming that the implementation of Kurikulum Merdeka has a positive influence on students' interest in learning physics. The curriculum's emphasis on flexibility, relevance, and student-centered learning, particularly through engaging approaches such as project-based learning has contributed to increased enthusiasm and enjoyment in the learning process.

One notable element of the curriculum, the Pancasila Student Profile Strengthening Project, plays a role in fostering collaboration, critical thinking, and social interaction, which in turn enhances students' learning motivation. However, this study did not specifically examine the implementation of the Pancasila project in depth, and future research should explore its direct impact on subject-specific learning interest, such as in physics.

This study is limited by its geographical scope, focusing solely on Makassar City, and its reliance on self-reported survey data, which may be subject to social desirability bias. Additionally, the data collection focused on a specific period during the curriculum transition, which may not capture long-term behavioral changes in students' learning interest.

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