



## Exploring Students' Attitudes and Interests in Learning Chemistry: A Survey of Junior High Schools in Bengkalis during Kurikulum Merdeka Implementation

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### Abstract

*Technological advances require education to continuously adapt, including through the implementation of the Kurikulum Merdeka, which emphasizes student-centered learning. This study aimed to describe the attitudes and interests in learning chemistry among junior high school students in Bengkalis Regency and to analyze gender-based differences during the Kurikulum Merdeka era. This quantitative research used a descriptive survey approach with a stratified random sampling technique involving seventh- and eighth-grade students from nine public junior high schools. A Likert-scale questionnaire measured four attitude indicators (perceived importance of chemistry, learning comfort, perceived difficulty, and usefulness of chemistry) and four interest indicators (attention, interest, enjoyment, and active involvement). The results showed that students' attitudes toward learning chemistry were positive (73.99%), with the highest mean score (4.19) on the usefulness of chemistry indicator. Interest in learning chemistry was also positive ( $M = 3.92$ ; 74.98%). A  $t$ -test indicated no significant gender differences in attitudes ( $p = 0.115 > 0.05$ ) or interest ( $p = 0.677 > 0.05$ ). These findings highlight the positive role of the Kurikulum Merdeka in fostering equitable learning experiences and support Sustainable Development Goal (SDG) 4: Quality Education by promoting inclusive, student-centered learning that enhances scientific literacy and lifelong learning skills.*

**Keywords:** Chemistry, Interest in learning, Kurikulum merdeka, Learning attitude.

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### INTRODUCTION

Technological advances have brought significant changes in various fields, including education. Education plays a crucial role in improving the quality of human resources to enable them to survive in the era of globalization (Wiwita & Hanadayani, 2023). According to Law Number 20 of 2003, Article 3, Paragraph 1, national education aims to develop skills, shape character, and enhance national civilization to create knowledgeable, creative, independent, noble individuals, and faithful to God Almighty.

In this context, the curriculum is a crucial instrument in achieving desired competencies (Lestari et al., 2023). The Kurikulum Merdeka was chosen to align with developments in science and technology. The main principle of the Kurikulum Merdeka is student-centered learning (Cholilah et al., 2023), which allows teachers the freedom to innovate (Mulyasa, 2023). Implementation of this curriculum has

been shown to improve students' critical thinking skills and creativity, thus better preparing them to face future challenges (Syahbana et al., 2024).

The implementation of Kurikulum Merdeka encourages interactive and contextual learning (Yunita et al., 2023). In this curriculum, teachers act as facilitators, while students are encouraged to actively explore knowledge through various real-life and inquiry-based learning experiences (Febriyana & Winarti, 2021). Learning models such as project-based learning, inquiry-based learning, and cooperative learning have been shown to effectively enhance students' interest in learning (Hanafi & Ajizah, 2025; Arrosyad et al., 2024). In line with this, Kurikulum Merdeka also fosters the development of students' Scientific Habits of Mind (SHOM), which encompass curiosity, objectivity, critical thinking, and open-mindedness core components closely related to positive attitudes and sustained interest in science learning. A study by Pratama et al.

(2024) found that students' SHOM during science learning was at a moderate level (66.74%), indicating that while the curriculum framework promotes scientific thinking, its actual implementation still requires strategic reinforcement to fully cultivate students' positive attitudes and enthusiasm in learning chemistry.

At the junior high school level, science subjects, including chemistry, play a crucial role in shaping the scientific attitudes and character profiles of Pancasila students. The Kurikulum Merdeka in science aims to develop the ability to critically analyze natural phenomena (Miah, 2024). However, interest in science is influenced by internal factors such as motivation, as well as external factors such as family and teacher environment (Rondoni et al., 2022). Interest in learning plays a significant role in learning success because it increases curiosity, enjoyment, and learning outcomes (Felani et al., 2018; Warsito, 2019; Adodo & Gbore, 2012; Santrock, 2007). Research also shows a positive correlation between interest in learning and learning outcomes (Setiawan et al., 2022).

Besides interest, students' attitudes toward science learning are also a challenge. Attitudes can be positive or negative, influencing motivation and learning outcomes (Topcu & Sahin, 2019; Rijal & Bachtiar, 2015). Negative attitudes toward chemistry often arise from low interest and the perception that chemistry is difficult to learn (Salmi, 2003; Osborne et al., 2003). Moreover, a recent study by Abukasim et al. (2025) found that grit—a non-cognitive trait combining perseverance and passion—had a significant positive correlation with cognitive achievement in chemistry among secondary school students in Pekanbaru, with a correlation coefficient of 0.234 ( $p = 0.001$ ), albeit classified as low. This supports the idea that building non-cognitive traits, such as perseverance and resilience, contributes to students' academic performance in chemistry. Widiyantoro's (2025) study found that the Kurikulum Merdeka has the potential to shape creative, critical, and collaborative student character, but requires support from teachers, families, and the community.

Furthermore, a Classroom Action Research by Nurohman and Suharyanto (2009) demonstrated that applying inductive teaching strategies in science practicum significantly fostered scientific attitudes among university students. Indicators such as responsibility, curiosity, critical thinking, and open-mindedness

improved to 66% by the second cycle. Although conducted at the tertiary level, the inquiry-based structure of this approach—starting from hypothesis formulation, experimentation, observation, to data interpretation—reflects the student-centered and exploratory learning emphasized in the Kurikulum Merdeka. This suggests that similar inductive strategies could be adapted at the junior high school level to enhance students' attitudes and interests in learning chemistry.

Chemistry, as part of science learning in junior high schools, plays a role in building the foundation of scientific understanding, but challenges such as negative attitudes and low interest still arise (Kurniawan et al., 2019). The novelty of this study lies in the comprehensive mapping of chemistry learning attitudes and interests of junior high school students in Bengkalis Regency, which has implemented the Kurikulum Merdeka. To date, there has been little research specifically examining the relationship between chemistry learning interests and attitudes at the junior high school level and the perspective of the Kurikulum Merdeka implementation. Therefore, this study aims to describe the chemistry learning attitudes and interests of junior high school students in Bengkalis Regency during the Kurikulum Merdeka era and analyze differences in attitudes and interests based on gender. The results of this study are expected to provide an empirical basis for designing chemistry learning strategies that are more contextual, relevant, and based on the Pancasila Student Profile.

The study aims to investigate how the implementation of the Kurikulum Merdeka influences students' attitudes and interests in chemistry learning. As chemistry plays a pivotal role in fostering scientific literacy, critical thinking, and problem-solving skills, understanding students' perspectives is essential for creating engaging and effective learning strategies. However, chemistry, as part of science learning in junior high schools, still faces challenges such as negative attitudes and low interest (Kurniawan et al., 2019). Addressing these challenges aligns with Sustainable Development Goal (SDG) 4: Quality Education, which emphasizes inclusive, equitable, and relevant learning that fosters critical thinking, scientific literacy, and lifelong learning skills for all students (Pratama et al., 2025). The novelty of this study lies in its comprehensive mapping of chemistry learning attitudes and interests of

junior high school students in Bengkalis Regency, which has implemented the Kurikulum Merdeka. Unlike previous studies that generally examine science education as a whole, this research specifically focuses on the context of chemistry learning and analyzes gender-based differences in attitudes and interests during the implementation of this curriculum. The urgency of this research stems from the fact that understanding students' attitudes and interests in chemistry is essential to designing contextual and engaging learning strategies that not only support the Kurikulum Merdeka but also contribute to the realization of SDG 4. Therefore, this study aims to provide empirical evidence that can serve as a foundation for developing innovative chemistry learning approaches that are relevant, equitable, and aligned with the Pancasila Student Profile.

## METHOD

This study employed a quantitative approach with a descriptive survey method. This approach was chosen to provide an overview of junior high school students' chemistry learning attitudes and interests during the Kurikulum Merdeka era. Data were collected using a closed-ended questionnaire with a Likert scale, developed based on a review of relevant literature, ensuring that the instrument used had targeted and measurable indicators.

The research was conducted in public junior high schools across Bengkalis Regency during the 2024/2025 academic year, focusing on schools that had implemented the Kurikulum Merdeka. Data collection was conducted at the end of the even semester to ensure students had received sufficient learning experience with chemistry in science lessons.

The population of this study was all seventh and eighth grade students at public junior high schools in Bengkalis Regency. The sample was drawn from nine public junior high schools selected from a total of 61 public junior high schools using stratified random sampling. This technique was used to ensure representation across all levels of schools implementing the Kurikulum Merdeka. The minimum sample size was 100 students, consisting of seventh and eighth grade students who had participated in science lessons, specifically chemistry.

The research variables consist of learning attitudes (Y1) and learning interests (Y2) as dependent variables, and gender (X1) as independent variables. Learning attitudes are

measured through four aspects, namely perceptions of the importance of chemistry, comfort in learning chemistry, perceptions of the difficulty of learning chemistry, and perceptions of the usefulness of chemistry in life. Meanwhile, learning interests are measured through four aspects, namely attention to chemistry, interest in chemistry, enjoyment of learning chemistry, and active involvement when learning chemistry. Both variables are measured using a Likert scale of 1–5, while the gender variable is measured using a nominal scale (1 = male, 2 = female).

The research instrument consisted of a 20-item learning attitude questionnaire and a 25-item learning interest questionnaire, each containing positive and negative statements. The answer alternatives included five categories: strongly agree (SS), agree (S), somewhat agree (KS), disagree (TS), and strongly disagree (STS). The scoring of the answers followed the Likert scale (1–5), with reversal of scores for negative statements. Data collection was conducted online using Google Forms, ensuring that the questionnaire was completed voluntarily and anonymously.

The data analysis technique consists of two stages, namely descriptive analysis and inferential analysis. Descriptive analysis was conducted to describe the tendency of student attitudes and learning interests using percentages, averages (means), and standard deviations. The percentage was calculated using the formula  $P = (f/n) \times 100\%$ , and the interpretation of the results used percentage criteria (0–100%) and the mean score range (1.00–5.00). If  $P = 0\%$ , it means no student answered correctly. When  $0\% < P < 25\%$ , only some students answered correctly. A percentage of  $25\% < P < 50\%$  indicates that almost half of the students answered correctly, while  $P = 50\%$  means exactly half of the students answered correctly. If  $50\% < P < 75\%$ , it shows that most students answered correctly,  $75\% < P < 100\%$  indicates that almost all students answered correctly, and  $P = 100\%$  means all students answered correctly. Meanwhile, for the mean score range, a score of 4.21–5.00 is interpreted as very positive or very high, 3.41–4.20 as positive or high, 2.61–3.40 as fair or medium, 1.81–2.60 as low, and 1.00–1.80 as very low.

Before the hypothesis test was conducted, the data were tested using prerequisite tests including normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) and

homogeneity tests (Levene's test) with the help of SPSS 26 for Windows software. The final stage is hypothesis testing using an independent sample t-test with a significance level of 0.05 to examine differences in attitudes and learning interests based on gender. The decision-making criteria are:  $H_0$  is rejected if  $p < 0.05$ , indicating a significant difference, while  $H_0$  is accepted if  $p > 0.05$ , indicating no significant difference. The statistical hypothesis in this study is as follows:

First hypothesis

H1: There is a significant difference in the chemistry learning attitudes of junior high school students in Bengkalis Regency in the Kurikulum Merdeka era based on gender.

H0: There is no significant difference in the chemistry learning attitudes of junior high school students in Bengkalis Regency in the Kurikulum Merdeka era based on gender.

Second hypothesis

H1: There is a significant difference in the interest in learning chemistry of junior high school students in Bengkalis Regency in the Kurikulum Merdeka era based on gender.

H0: There is no significant difference in the interest in learning chemistry of junior high school students in Bengkalis Regency in the Kurikulum Merdeka era based on the type of

## RESULT AND DISCUSSION

### Students' Chemistry Learning Attitudes

Learning attitude is a person's tendency of feelings, knowledge, and behavior toward an object or subject (Kurniawan et al., 2019). In chemistry learning, student attitudes include perceptions of the importance of chemistry, comfort while learning, perceived level of difficulty, and understanding of the usefulness of chemistry in everyday life.

Based on the analysis results, the chemistry learning attitudes of junior high school students in Bengkalis Regency in the Kurikulum Merdeka era are in the positive category with an average percentage of 73.99% and a mean value of 3.80. The indicator that obtained the highest score was the perception of the usefulness of chemistry in life, with a percentage of 81.69% and a mean of 4.19, which indicates that the majority of students understand the relevance of chemistry in everyday life. Meanwhile, the indicator of perception of difficulty in learning chemistry had the lowest percentage, namely 60.87% with a mean of 3.12, indicating that some students still find chemical concepts quite difficult to understand. A mean value above 3.40 for most indicators indicates that students' attitudes towards learning chemistry are already in the positive/high category (Figure 1 and 2).

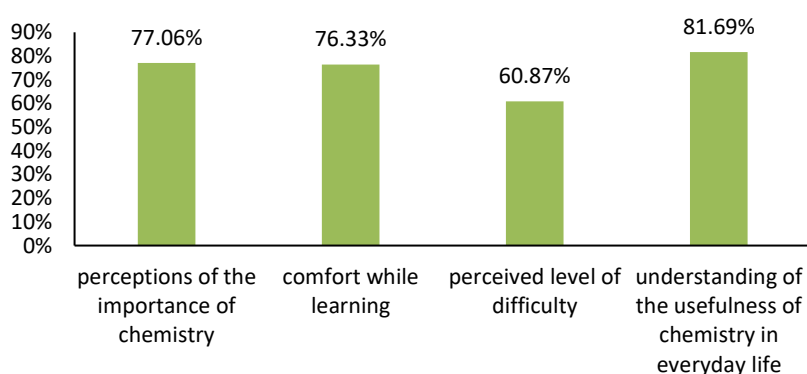


Figure1. Percentage of students' chemistry learning attitude scale

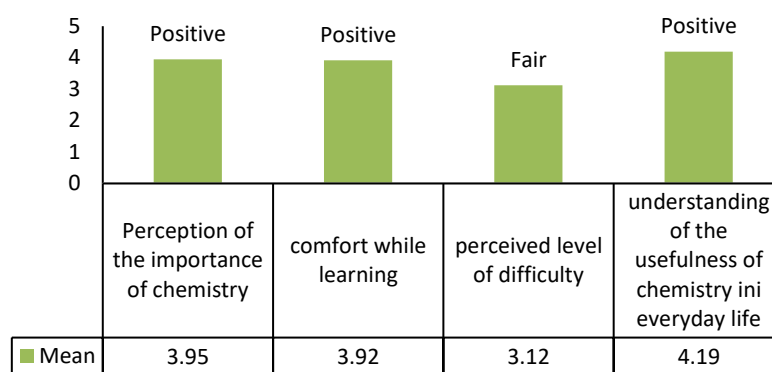


Figure 2. Average criteria for each learning attitude indicator

Figure 1 and 2 shows that the majority of students understand the benefits of chemistry, but still find it difficult to master some abstract concepts. This increase in positive attitudes can be attributed to several factors: 1) the implementation of a more flexible Kurikulum Merdeka, encouraging students to be more active, creative, and directly involved in learning (Syahbana et al., 2024); 2) the use of contextual learning methods that connect chemical concepts with everyday phenomena, enabling students to see the relevance and benefits of chemistry in life (Miah, 2024); and 3) teacher support as facilitators who encourage collaboration and independent exploration, making students feel more comfortable learning (Febriyana & Winarti, 2021).

These findings support the findings of Putri et al. (2019), who stated that positive perceptions of the usefulness of chemistry can increase enthusiasm for learning. Therefore, experimental-based learning strategies or contextual approaches are needed to reduce students' perceptions of difficulty in chemistry. However, perceptions of difficulty remain

relatively high because some chemistry material is abstract and requires a visual approach or practical work to facilitate understanding (Simanjuntak, 2019).

### Students' Interest in Learning Chemistry

The results of the learning interest analysis show that junior high school students in Bengkalis Regency have a positive interest in learning chemistry, with an average percentage of 74.98% and a mean value of 3.85. The highest indicator is found in the enjoyment of learning chemistry with a percentage of 76.35% and a mean of 3.92, indicating that students generally enjoy the chemistry learning process. Conversely, the active involvement indicator has the lowest value, namely 71.81% with a mean of 3.69, which indicates the need for more participatory learning strategies to encourage student activeness. Overall, the mean value above 3.40 for all indicators confirms that students' interest in learning chemistry is already categorized as positive/high in the Kurikulum Merdeka era (Figure 3 and 4).

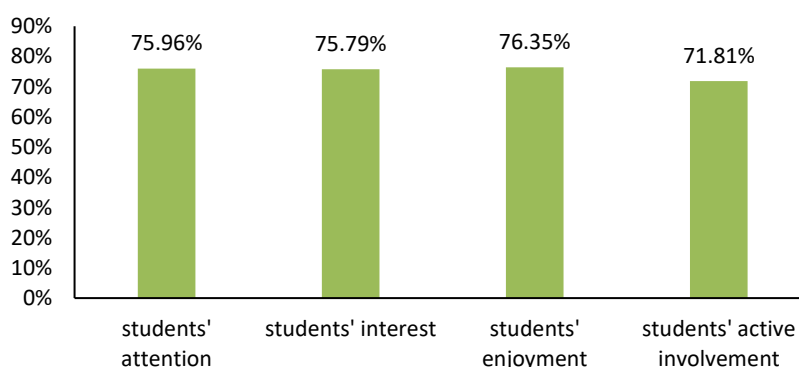


Figure 3. Percentage of students' chemistry learning interest scale

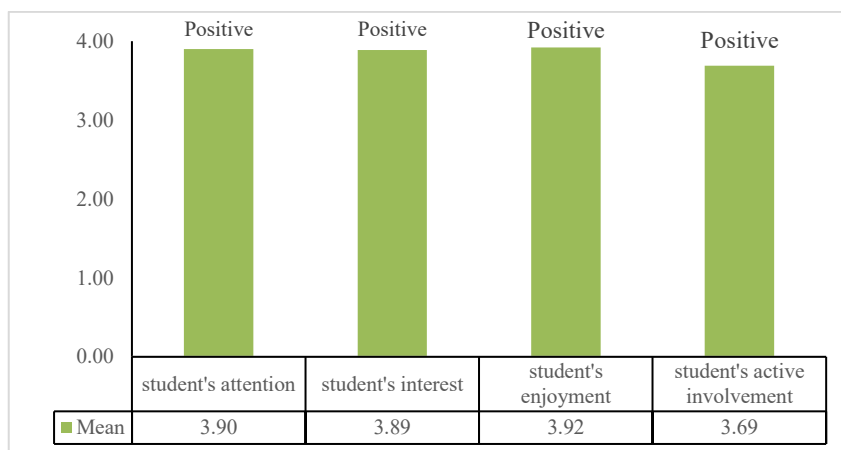


Figure 4. Average criteria for each learning interest indicator

This increase in learning interest may be due to project-based and inquiry-based learning approaches that make students more involved in discovering chemical concepts (Hanafi & Ajizah, 2025); more interactive and technology-based learning, such as the use of learning videos or chemistry simulations, increases student attention (Yunita et al., 2023); and a collaborative and supportive classroom atmosphere, so students feel comfortable discussing and engaging in the learning process (Arrosyad et al., 2024). High indicators of enjoyment indicate that students enjoy learning chemistry, but low levels of active engagement indicate the need for learning strategies that involve direct participation, such as

experimental projects or problem-based learning (Sriponi, 2021).

#### Results of the Test of Differences in Students' Attitudes and Interests in Learning Chemistry Based on Gender

Before the hypothesis test was conducted, the data were tested for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The test results showed a sig value  $> 0.05$ , indicating a normal distribution (Table 1). Furthermore, a homogeneity test was conducted, with a sig value of 0.403 for attitudes and 0.946 for interests, indicating homogeneous data (Table 2).

Table 1 Normality test results

| Gender   |       | Kolmogorov-Smirnov <sup>a</sup><br>Sig. | Shapiro-Wilk<br>Sig. |
|----------|-------|---|----------------------|
| Attitude | Man   | 0.200 *                                 | 0.409                |
|          | Woman | 0.200 *                                 | 0.670                |
| Interest | Man   | 0.057                                   | 0.053                |
|          | Woman | 0.200 *                                 | 0.607                |

Table 2. Results of homogeneity test

|          | Levene Statistics | df1 | df2 | Sig. |
|----------|-------------------|-----|-----|------|
| Attitude | 0.703             | 1   | 223 | .403 |
| Interest | .005              | 1   | 223 | .946 |

The results of the independent sample t-test showed no significant differences in attitudes ( $p = 0.115$ ) or interest in learning chemistry ( $p = 0.677$ ) based on gender. Female students' average attitudes and interests were slightly higher, but

the differences were not significant (Table 3). This indicates that the implementation of the Kurikulum Merdeka has had a positive impact equally on both male and female students, as confirmed by Sinaga (2024).

Table 3. Hypothesis test results

| Variables                      | Sig. ( 2-tailed ) | Hypothesis        | Information                        |
|--------------------------------|-------------------|-------------------|------------------------------------|
| Chemistry Learning Attitude    | 0.115             | $H_0$ is accepted | There is no significant difference |
| Interest in Learning Chemistry | 0.677             | $H_0$ is accepted | There is no significant difference |

Overall, the attitudes and interest in learning chemistry among junior high school students in Bengkalis Regency are positive. This improvement is driven by more contextual, interactive learning, and an emphasis on student engagement. However, additional strategies are needed to reduce perceived difficulty and increase active engagement. Teachers can utilize Problem-Based Learning (PBL) methods, practical work, and digital media integration to create more enjoyable and meaningful learning experiences (Hanafi & Ajizah, 2025; Sriponi, 2021).

The results of this study align with previous findings regarding student attitudes and learning interests. Previous research generally linked attitudes and learning interests to learning outcomes (Arvi, 2015; Riwayudin, 2015; Trisnowali, 2017). Meanwhile, analysis of the implementation of the Kurikulum Merdeka in previous studies focused more on the development of student attitudes and values (Widiyantoro, 2025). Sinaga's (2024) research showed that the implementation of the Kurikulum Merdeka increased learning interest by up to 70%. However, a small proportion of respondents reported that the change in learning interest was insignificant, and there was even a decrease in certain aspects related to differences in student gender.

The Kurikulum Merdeka has been proven to have a positive impact on increasing students' curiosity, creativity, responsibility, critical thinking, and collaboration skills (Widiyantoro, 2025). This curriculum also has great potential to shape strong student character that is relevant to global demands, but its success requires support from teachers, families, and the community. Furthermore, student-centered learning based on the Kurikulum Merdeka is considered effective in increasing learning interest, with a significant positive impact on student motivation and engagement (Hanafi & Ajizah, 2025; Arrosyad et al., 2024). This aligns with Sustainable Development Goal (SDG) 4: Quality Education, as it promotes inclusive and equitable education by encouraging active

student participation, reducing learning disparities, and strengthening scientific attitudes that support the development of the Pancasila student profile and prepare students for lifelong learning (Miah, 2024).

## CONCLUSIONS

Based on the results of a survey on the attitudes and interests in learning chemistry among junior high school students in Bengkalis Regency during the Kurikulum Merdeka era, it can be concluded that students' attitudes and interests in learning chemistry are in the positive category. The average indicator of attitudes in learning chemistry obtained a percentage of 73.99%, with the indicator of perception of the usefulness of chemistry in life being the highest (mean 4.19). Meanwhile, interest in learning chemistry showed a percentage of 74.98%, with the indicator of enjoyment of learning chemistry occupying the highest position (mean 3.92). The results of the difference test showed that there were no significant differences in attitudes ( $p = 0.115 > 0.05$ ) or interest in learning chemistry ( $p = 0.677 > 0.05$ ) between male and female students. These findings confirm that the Kurikulum Merdeka has a positive impact on attitudes and interests in learning chemistry equally among seventh and eighth grade students in Bengkalis Regency. Furthermore, these results are in line with Sustainable Development Goal (SDG) 4: Quality Education, as they highlight the role of inclusive and student-centered learning in fostering equitable educational outcomes, enhancing scientific literacy, and preparing all students with the skills necessary for lifelong learning.

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