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Interest in Science and Scientific Habits of Mind of High School Students in West Kalimantan Province

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Abstract: This study investigates the interest in science and scientific habits of mind among high school students in West Kalimantan Province. It examines the relationship between these two factors and explores differences based on gender and school status. The study used a survey method, involving 38 schools from six districts selected through a two-stage cluster random sampling technique. Data were collected via questionnaires with 22 statements on interest in science and 32 on scientific habits of mind. Results indicated that both male and female students showed good levels of interest in science, with private school students displaying higher interest than public school students. Similarly, scientific habits of mind were higher among private school students. A moderate relationship between interest in science and scientific habits of mind was found. Male students showed a significantly higher interest in science, but no significant gender difference in scientific habits of mind, though males scored slightly higher on average. Significant differences were also found when comparing interest in science and scientific habits of mind simultaneously between genders and school statuses, with males and private school students outperforming their counterparts.

Keywords: gender, interest in science, school status, scientific habits of mind.

▪ INTRODUCTION

Science has been a pivotal force in shaping our world and our future. Its contributions to human health and well-being are evident throughout history (Kasuga, 2021). However, recent years have witnessed a surge in the dissemination of inaccurate information and pseudoscience, making it increasingly difficult for people to distinguish between valid and false claims (Hefferon & Miller, 2020). This has led to confusion and mistrust in the scientific community.

Science education plays a crucial role in fostering innovation, global competitiveness, and human advancement. Research has shown that students engaged in science education develop scientific thinking skills, including critical thinking, which are essential for success (Ibrahim et al., 2020). Science education provides opportunities for students to engage in inquiry-based learning, analyzing data, and drawing evidence-based conclusions (Chen et al., 2019; Choi, A. et al., 2021). By introducing students to the latest scientific discoveries and innovations, science education can spark curiosity and passion for science (Jaber, L. Z., & Hammer, D., 2016).

The Indonesian government has implemented various policies to improve the quality of science education, but the results remain concerning. The PISA 2018 assessment revealed that Indonesia ranked 74th out of 79 countries in science proficiency (OECD, 2018). Factors contributing to this situation include frequent curriculum changes, challenging, classroom environments (Effendi-Hasibuan et al., 2019), low-quality science teachers (Rosser & Fahmi, 2018), and limited access to resources in rural schools (Martin, 2019). These factors have led to a decline in students' interest in science and a shortage of science professionals.

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Interest in science is vital for improving the quality of science education in Indonesia, as it is closely linked to student achievement. Research has shown that students with a high interest in science tend to perform better in science tests (Abdullah et al., 2022; Ong et al., 2020), engage actively in scientific inquiry, develop scientific thinking skills, and possess higher science literacy (Chen et al., 2020; Vieira & Tenreiro-Vieira, 2016). Interest in science also encourages students to pursue careers in science-related fields (Kang et al., 2019; Kang & Keinonen, 2018). However, Indonesian students' interest in studying science and technology remains low, with only 32.1% choosing these fields compared to 67.9% opting for social sciences (Bappenas, 2021). Moreover, the OECD's PISA 2016 survey indicated that Indonesian children have a lower interest in science careers compared to their peers in other OECD countries.

In addition to interest, developing scientific habits of mind is essential for success in science and technology. Scientific Habits of Mind (SHOM), refers to the ability to think like a scientist (Çalik & Coll, 2012; Gauld, 2005; Gauld, 1982; Wiyarsi & Çalik, 2019). SHOM is known by another term, scientific attitude (Gauld and Hukins, 1980) and habits of mind. SHOM involves the skills and attitudes necessary for conducting scientific inquiry, such as observation, analysis, critical thinking, curiosity, perseverance, and skepticism (National Research Council, 2012). Developing SHOM can enhance students' ability to think deeply about scientific ideas, understand the nature of science, and engage in disciplinary practices (Tekkumru-Kisa et al., 2015). Habits of mind in science learning helps students develop critical thinking skills, which in turn improve their problem-solving abilities (Yakob et al., 2021). Research by Çalik, M., Turan, B., & Coll, R. K. (2014) has shown that academic performance (as measured by students' grades) might correlate with scientific habits of mind which means that students with higher levels of scientific habits of mind also have higher academic achievement. To develop scientific habits of mind, several teaching approaches have been identified. For example, the use of Thinking Aloud Pair Problem Solving (TAPPS) Strategy (Sultan, A. A., & Alasif, H., 2021) and inquiry-based learning in the context of socio-scientific issues (Wiyarsi et al., 2021) has proven effective in enhancing scientific habits of mind. Laboratory activities also provide an effective means of understanding scientific concepts and developing scientific habits of mind (Sultan, A. A., & Alasif, H., 2021). However, there is still a lack of implementation laboratory activities in Indonesian classrooms (Tanang et al., 2014). Research also shows that most science teachers in Indonesia still use traditional teaching approaches such as lectures and rarely employ inquiry-based approaches in the classroom (Effendi-Hasibuan et al., 2019). This is due to a lack of support and facilities needed for inquiry-based activities (Hairida, 2016). As a result, students often do not have the opportunity to develop scientific habits of mind. Moreover, many Indonesian people lack scientific habits of mind. For example, during the COVID-19 pandemic, by January 2021, the Ministry of Communication and Information had identified approximately 2,154 pieces of misinformation spread across various media platforms, indicating that the level of open-mindedness among Indonesian people still needs improvement, as well as their objectivity, skepticism, and rationality in accepting information. These are important aspects of scientific habits of mind. Therefore, it is crucial to assess students' interest in science and their scientific habits of mind so that appropriate interventions can be implemented. Ultimately, students will become part of society.

Interest in science is often seen as a motivational drive that directs an individual's attention and encourages activities related to scientific concepts and phenomena (Steidtmann et al., 2023). On the other hand, scientific habits of mind refer to the characteristic ways of thinking and problem-solving that scientists employ (Çalik & Coll, 2012; Gauld, 2005; Gauld, 1982; Wiyarsi & Çalik, 2019). Logically, it can be assumed that there is a positive correlation between students' interest in science and their scientific habits of mind. Interest in science and scientific habits of mind mutually influence each other. Students who are interested in science tend to develop scientific habits of mind because they are motivated to learn and apply scientific concepts. Conversely, students who exhibit scientific thinking characteristics tend to generate innovative solutions to scientific problems, which in turn can increase their interest in science. As noted (Hanson et al., 2022), habits of mind serves as a strategy to make things easier for students to understand and appreciate, so that their interest in STEM fields can be increased. Additionally, research (Yakob et al., 2021) has shown that students' habits of mind with an average score of 0.71 which included into high category after being taught using STEM-based science learning to pique their interest so that they become accustomed to and develop these skills. This is also supported by research (Rakhmawati et al., 2020) which states that an increase in students' reading interest is accompanied by an increase in their Habits of Mind.

Studying the factors of interest in science and scientific habits of mind simultaneously provides a more accurate understanding for designing effective educational interventions. Efforts to improve the quality of learning in schools need to be supported by accurate information. It is crucial to understand whether the limited time in schools can truly increase students' interest in science and their scientific habits of mind. Information on the profile of students' interest in science and scientific habits of mind can help teachers and stakeholders improve the quality of education, and ensure that all students have access to quality science education without discrimination.

▪ METHOD

Participants

This research was conducted in several high schools in West Kalimantan Province in the odd semester of the 2022/2023 academic year. This research employed a survey design using a two-stage clustering random sampling technique. The population in this study consisted of both public and private senior high schools in West Kalimantan Province, totaling 126 schools. To determine the first-stage sample (sample schools), the researcher selected schools from 14 regencies and cities in West Kalimantan Province. This first stage used simple random sampling, meaning that schools were randomly selected from the population in each of the 14 regencies/cities. Through simple random sampling, six regencies were selected as samples for this study. The researcher decided to take a 30% sample of the population, with a total school population of 126, so the number of sample schools taken was 30% x 126 = 38 schools. After determining the school sample, the sample distribution was carried out based on clusters in the West Kalimantan region.

The second sample was selected based on the number of students in 71 schools, totaling 57,097 students, and its determination used a statistical method called the Slovin Formula. This formula is used to determine thesample size from a known population size.

Table 1. Sample size

No	Regency /City	Total Population of School	Number of Sample Schools	Total Population of Students	Number of Sample Students
1	Singkawang	9	5	4039	55
2	Pontianak	25	13	9277	125
3	Kubu Raya	13	7	5741	77
4	Melawi	4	2	1008	14
5	Sambas	13	7	6410	86
6	Bengkayang	7	4	3012	41
Jumlah		71	38	29487	398

Instrument

This study used an instrument in the form of interest in science questionnaire containing 22 items and scientific habits of mind questionnaire containing 27 items. This research instrument went through a construct validation process by expert judgment consisting of 2 lecturers from Yogyakarta State University who stated that the instrument was ready to use. In addition, empirical validation was carried out with the results of statement items on the interest in science instrument of 0,394 and reliability of 0,806. While the scientific habits of mind instrument has an empirical validity of 0.487 and a reliability of 0.832.

The dimensions of interest in science in this study are a combination of Alrasheed (2021), Dierks et al. (2016), and PISA 2015 which can be seen more clearly in table 2. While scientific habits of mind in this study are divided into 7 aspects referring to Calick & Coll (2012) which can be seen more clearly in table 3.

Table 2. Interest in science

Sub scale	Key Feature	Number of Items	Example Statement
My Science Classes	Insights from students about their science classes, their inspirations for studying science in school, their confidence in their own abilities in science at school, what they gained from studying science and how they felt about the requirement to study science.	4	I like science more than any other subjects.
Social	Activities connected to informing, help, or training tasks	4	Teaching my friends about science is not fun.
Networking	Express interest in cooperative activities	3	It's fun for me to be involved in the science exhibition committee.
Use Technology	A scale that measures how adolescents approach and use new technology.	4	I feel confused when using technology in science learning.
My out-of-School Experiences	Incidents or actions encountered by students outside school that piqued their curiosity and increased their interest in science, including	4	In my spare time, I read magazines, articles, or books and follow science-related news

	significant events that encouraged studying science at educational institutions		through digital media (e.g., podcasts, online videos, blogs, ebooks, Twitter feeds).
Career Aspiration	A measure of the extent to which a students' motivation to learn science is extrinsically motivated by the opportunities science offers for employment.	3	I am not interested in a career in science.

Table 3. Scientific habits of mind

Sub-scales	Key features (Çalik and Coll, 2012, p. 1921-1922)	Number of Items	Example Statements
Mistrust of arguments from authority	Two different ideas in which experts have fallen into disagreement. A comparison or evaluation of their trustworthiness	5	Modern medicine often underestimates the effectiveness of traditional Indonesian medicine in treating diseases
Open-mindedness	Existence of a problem to stimulate are consideration. An issue or problem is not simply overlooked or dismissed. Being willing to consider the possibility that something is true. Changing his/her ideas in the light of the evidence.	4	If new evidence emerges that fluoride in toothpaste can damage tooth enamel, then we should consider switching to fluoride-free toothpaste.
Scepticism	A provisional approach to claims to clarify the extent to which it might be true (real). Involving critically questioning the claim thereby, the certainty though scientific or logical observation is aimed to acquire.	2	We need more scientific evidence before we can conclude that consuming secang/sepang water is safer for treating diseases than taking chemical drugs, which have more side effects.
Rationality	A need for good reasons and logical argument by which to link idea, evidence, and reasons together in an appropriate way	4	Reducing human produced carbon dioxide is probably a good way to prevent the potential effects of global warming, but there are so many factors to be considered, and we need morescientific studies before we consider changing our environmental or business practices.

Objectivity	*Evidence* (Where appropriate, the use of an experimentalist approach that controls for the influence of extraneous variables). *Bias* (A need to behave unbiased and become emotional neutrality). *Scrutiny* (Replication of one's findings). Peer scrutiny of data, methods, and interpretation	3	Credible research requires the use of scientific methods.
Suspension of belief	A procedure of holding in abeyance. If there is insufficient evidence to make decision, one should not rush in too quickly in support of some particular idea or theory.	4	We do not have enough evidence to confirm that chemicals (such as borax) in the food industry increase the risk of liver and colon cancer.
Curiosity	A desire to learn. A need to arouse inquisitiveness for exploration and discovery	5	It would be a waste of resources to conduct research on the Bukit Kelam Sintang monolith site in West Kalimantan.

Data Analysis

The research used a questionnaire instrument based on the Likert scale model. Data analysis in this study was divided into two parts: descriptive analysis and hypothesis testing. Descriptive analysis refers to Table 4.

Table 4. Ideal assessment category

No	Score Range	Category
1	$X > (\bar{X}_i + 1.5\ SBi)$	Excellent
2	$(\bar{X}_i + 0.5\ SBi) < X \leq (\bar{X}_i + 1.5\ SBi)$	Good
3	$(\bar{X}_i - 0.5\ SBi) < X \leq (\bar{X}_i + 0.5\ SBi)$	Sufficient
4	$(\bar{X}_i - 1.5\ SBi) < X \leq (\bar{X}_i - 0.50\ SBi)$	Poor
5	$X \leq (\bar{X}_i - 1.5\ SBi)$	Very Poor

Information:

SBi : $\frac{1}{6}$ x (maximun ideal score – minimum ideal score)

$\bar{X}$i : $\frac{1}{2}$ x (maximum ideal score + minimum ideal score)

X : average score of the assessment

Hypothesis testing was conducted in three stages: first, the nine MANOVA (Multivariate Analysis of Variance) assumptions were tested. 1) There are two or more dependent variables measured on an interval or ratio scale. In this study, the identified dependent variables were interest in science and scientific habits of mind. 2) The independent variable consists of two or more independent groups. The independent variables in this study were gender (male and female) and school status (private and public). 3) There is independence in observations, meaning there is no dependence between observations in each group or between groups themselves. Observations in each school were conducted independently, so there was no relationship between observations in different schools or between schools themselves. 4) The sample size is sufficient. The sample in this study consisted of 517 students. 5) There are no univariate outliers (no univariate outliers in each independent variable group for any of the dependent variables) or multivariate outliers. Univariate outliers were analyzed using boxplots and multivariate outliers were tested using Mahalanobis distance. 6) The data is normally distributed. The normality test aims to determine whether the data from each variable is normally distributed or not. This test was conducted using SPSS 18. The normality test used the one-sample Kolmogorov-Smirnov. This analysis has the assumption that if the Sig value > 0.05, then H0 is accepted, indicating that the data comes from a normally distributed multivariate population. The significance value of interest in science and scientific habits of mind > 0.05, which are 0.114 and 0.117 respectively. Thus, it can be concluded that both data are normally distributed. 7) There is a linear relationship found between each pair of dependent variables and independent variables. The linearity test used SPSS. The significance value of scientific habits of mind and interest in science is 0.061 > 0.05, which means there is a linear relationship between each pair of dependent variables. 8) The data has the same variance-covariance matrix (homogeneity). The homogeneity of the variance-covariance matrix was calculated using the Box's M test using SPSS 18. If the significance value of Box's M is greater than 0.05, then H0 is accepted, indicating that the variance-covariance matrix of the dependent variables is the same. 9) There is a moderate correlation (multicollinearity) between the dependent variables. The multicollinearity test is used to evaluate whether there is a deviation of multicollinearity, which refers to the existence of a linear relationship between independent variables in the regression model. Multicollinearity does not reduce the ability to predict simultaneously, but it affects the predictive value of each independent variable. A way to detect the presence of multicollinearity is to examine the correlation coefficient between the dependent variables. If the correlation coefficient is classified as strong, moderate, or weak, then there is no problem of multicollinearity. Multicollinearity can occur if the correlation coefficient is very strong or very weak. Thus, to meet the requirements of MANOVA, there should be no multicollinearity; if this requirement is not met (there is multicollinearity), then a one-way ANOVA test must be performed. In this study, the results showed that the correlation coefficient was 0.488 with a moderate category, indicating that there was no multicollinearity.

Subsequently, the MANOVA test was assisted by the SPSS program with a significance level of 5%, and the third, Tests of Between-Subject Effects (the influence of individual variables), is a test used to assess the influence of independent variables on each dependent variable separately.

▪ RESULT AND DISSCUSSION

Average Interest in Science of High School Students by Gender and School Status

The categories of interest in science, viewed by gender based on total scores, can be seen in Tables 5.

Table 5. Categories of interest in science by gender

Gender	Average Total Score	Category
Female	61.326	Good
Male	61.352	Good

Based on Table 5, it can be seen that male students have a higher average score in science interest, at 61.352, compared to female students, who scored 61.326. The average score is also in line with the results of the between-subjects effects test, with a significance level of 0.000 < 0.05, indicate a significant difference interest in science based on gender. Male students showed a higher interest in science compared to female students. Research by Chatzi & Murphy (2022), Stoet & Geary (2018), and Lin & Tsai (2018) showed that male students have higher interest, self-efficacy, and enjoyment in science compared to female students. Research conducted by Cakiroglu et al. (2012) and Kazempour & Sadler (2015) showed that in the field of science, teachers often demonstrate low self-efficacy, especially female teachers (Lumpe et al., 2012), which impacts female students' perception that science is less suitable or interesting for them. Additionally, female students tend to have lower self-concept in science, which affects their interest. Jansen et al. (2014) revealed that low self-concept in female students can lead to low interest and career aspirations in the field of science.

The results of this study show that, out of six aspects of science interest, four of them have higher percentage scores for male students compared to female students. The first aspect is science classes, with a percentage score of 85.4% for males and 80.23% for females. Male students tend to be more enthusiastic in science lessons, especially during practical work, while female students prefer to record the results of practical work. This difference is related to the hormone testosterone in males, which drives them to seek challenges, while estrogen and progesterone in females tend to make them seek peace and relaxation (Amin, 2018). These learning preferences are also influenced by brain development and hormones, reflecting differences in interest and approaches to learning science between male and female students (Zakiyah et al., 2022).

The second aspect is career aspirations, with a percentage score of 78.21% for males and 76.07% for females. This is in line with Park et al. (2013) who stated that male students have a greater interest in science, technology, engineering, and mathematics. This difference may be due to the fact that jobs in the science field often require long working hours, which makes women less interested. According to Ceci et al. (2009), even highly educated women are more likely to prioritize family and home. This preference for a home-oriented lifestyle contributes to the lower interest of female students in science.

The third aspect is the utilization of technology, with a percentage score of 77.83% for males and 74.25% for females. The causes can be attributed to both biological and social factors. Biological factors are related to human hormones, as explained by Bramble et al. (2017), who stated that hormones play a role in shaping differences in brain structure and behavior between males and females. Testosterone is a hormone associated with masculine traits such as aggression and competitiveness, so males with testosterone tend to choose activities with masculine characteristics, such as technology. The emergence of activities or jobs with masculine or feminine characteristics is inseparable from the influence of stereotypes about those activities or jobs. There are two stereotypical factors:

first, the personality or qualities required in the job. Second, the number of males and females in the job (Adachi, 2013). There is a compatibility between gender roles and other roles, which results in women tending to choose jobs that are often associated with feminine traits, while men tend to choose jobs that are often considered masculine.

The categories of interest in science, viewed by school status based on total scores, can be seen in Tables 6.

Table 6. Categories of interest in science by school status

School Status	Average Total Score	Category
Private	64.381	Good
Public	56.599	Sufficient

Based on Table 6, science interest among students based on school status shows that students in private schools have a higher average score, at 64.381, compared to students in public schools, who scored 56.599. The average score is also in line with the results of the of the between-subjects effects test, with a significance level of 0.000 < 0.05, indicate a difference in science interest based on school status, where students in private schools have a higher interest in science compared to public schools. This is in line with the research of Bajaj & Devi (2021) which explains that students in private schools have a more positive attitude towards science compared to students in public schools, they enjoy science and are ready to pursue a career in science. Supported by Frenette et al. (2015); Olasehinde & Olatoye (2014); and Panneerselvam & Muthamizhselvan (2015), who stated that students in private schools have higher science grades compared to students in public schools, this indicates that students in private schools have a higher interest in science compared to students in public schools. The reasons may be due to facilities, teacher interest, teacher approach to students, and the socioeconomic background of students. Furthermore, Victoria (2022) explained that teachers working in private schools differ from teachers working in public schools in terms of their attitudes towards science teaching and the frequency of science activities provided in the classroom. Teachers working in private schools showed significant differences in science teaching methods in terms of the frequency of science activities. This means that private school teachers provide more science activities with various methods.

Average Scientific Thinking Habits of High School Students by Gender and School Status

The categories of scientific habits of mind, viewed by gender based on total scores, can be seen in Tables 7.

Table 7. Categories of scientific thinking habits by gender

Gender	Average Total Score	Category
Female	77.559	Good
Male	78.057	Good

The results of the between-subjects effects test, with a significance level of 0.06 > 0.05, indicate that there is no significant difference in scientific habits of mind based on gender. However, based on Table 7 the average scores of 78.057 for males and 77,559 for females, it shows that male students have slightly higher scientific habits of mind compared to female students. This implies that when male and female students are given the same set of activities involving scientific reasoning, male students will perform slightly better than female students, but the difference will not be significant. The results of this study show that, out of 7 aspects of scientific habits of mind, 4 of them have higher percentage scores for male students compared to female students. The first aspect is rationality, with a percentage score of 73.51% for males and 72.11% for females. This can be influenced by differences in brain structure between males and females. Differences in brain structure between males and females affect their thinking styles. Suyadi (2018) mentioned that there are significant differences in the Broca-Wernicke area and corpus callosum. Males have thinner corpus callosum nerve fibers, making them more rational in decision-making (Cyprien et al., 2014). The second aspect is objectivity, with a percentage score of 75.4% for males and 73.4% for females. The third aspect is curiosity, with a percentage score of 68.17% for males and 67.32% for females. In line with the research of Alfiana & Wiyarsi (2023), which states that students' scientific thinking habits in terms of objectivity and curiosity are better in male students than female students because males are more rational than female students (Çalik & Karataş, 2019). Furthermore, Wood (2008) mentioned that in males, brain development mostly occurs in the left hemisphere, resulting in their ability to think logically, objectively, abstractly, and analytically. On the other hand, in females, brain development tends to be more in the right hemisphere, which tends to promote more artistic, holistic, imaginative, intuitive thinking, and a number of visual abilities. The fourth aspect is open-mindedness, with males scoring higher (63.43%) than females (60.24%). Yuwono et al. (2019) mentioned that male students are able to consider two more efficient alternative strategies, while female students tend to have only one alternative solution. Male students show a more open and abstract way of thinking, while female students tend to think in a concrete framework according to existing formulas. According to Suyadi (2018), this difference is related to how the brain processes information, where males rely more on the left brain which is rational and linear (Amin, 2018). Al-Ghoweri & Al-Zboun (2021) stated that male students excel in thinking due to their high ambitions. In addition, Amoah & Eshun (2018) and Luo et al. (2014) emphasized that males are better at scientific reasoning, analysis, and evidence-based decision-making (Janoušková et al., 2021).

The categories of scientific habits of mind, viewed by school status based on total scores, can be seen in Tables 8.

Table 8. Categories of scientific thinking habits by school status

School Status	Average total score	Category
Private	81.076	Good
Public	72.767	Sufficient

Based on Table 8, scientific habits of mind based on school status show that students in private schools have a higher average score, at 81.076, compared to students in public schools, who scored 72,767. The average score is also in line with the results of the between-subjects effects test, with a significance level of 0.000 < 0.05, indicate that the scientific habits of mind of students in private schools are higher compared to those in public schools, consistent with previous research suggesting that the scientific reasoning abilities of students in private schools are better (Ahmad et al., 2020; Amoah et al., 2018; Anwar, 2015). Private schools have better learning conditions, such as a broader curriculum and smaller class sizes (Cakranegara, 2021), enabling student-centered learning (Şavlı & Doğru, 2022). Access to science equipment and hands-on science learning helps private school students develop scientific reasoning skills (Saido et al., 2015).

The Relationship Between Interest in Science and Scientific Thinking Habits of High School Students in West Kalimantan Province

The relationship between interest in science and scientific habits of mind among high school students in West Kalimantan Province was analyzed using Pearson correlation using SPSS 18. The results showed a correlation coefficient of 0.488 between interest in science and scientific habits of mind, indicating a moderate relationship. This suggests that students' interest in science influences their thinking habits. Emawati's research (2021) showed an increase in students' Habits of Mind with an n-gain of 0.51 after learning that stimulated students' interest with smart cards. Rakhmawati et al. (2020) also found that increased reading interest is in line with the increase in Habits of Mind. Students with a high interest in learning will have high creative thinking abilities, which is one of the factors in thinking habits that makes it easier to achieve learning goals (Paramita, 2021).

Differences in Interest in Science and Scientific Thinking Habits of High School Students in West Kalimantan Province in Terms of Gender

This study examined the differences in science interest and scientific habits of mind among high school students in West Kalimantan Province based on gender. Data was collected from student responses to a questionnaire consisting of 22 statements about interest in science and 27 statements about scientific habits of mind.

The results of the multivariate analysis of variance (MANOVA) Wilks' Lambda test, with a significance level of $0.000 < 0.05$ (null hypothesis rejected), indicate that there is a significant difference in both science interest and scientific habits of mind among high school students in West Kalimantan Province based on gender. Gender disparities in science education are influenced by parental support, gender stereotypes, and representation in the field of science. Girls tend to receive more emotional support than science-related support, which impacts their self-efficacy and intrinsic motivation in science (Foeken, 2018; Wang & Degol, 2017). Gender stereotypes also influence attitudes towards science, where mathematics and science are often seen as male domains (Makarova et al., 2019). These stereotypes create an image of women as being less interested and less capable in science, while being more interested in the liberal arts (Drake et al., 2018; Infante-Perea et al., 2019). As a result, female students have limited opportunities to develop scientific habits of because they feel that science is not for them.

Differences in Interest in Science and Scientific Thinking Habits of High School Students in West Kalimantan Province in Terms Of School Status

In the research on differences in science interest and scientific habits of mind among high school students in West Kalimantan Province based on school status, data was obtained from student responses to a questionnaire consisting of 22 statements about science interest and 27 statements about scientific habits of mind.

The results of the multivariate analysis of variance (MANOVA) Wilks' Lambda test, with a significance level of 0.000 < 0.05 (null hypothesis rejected), suggest that there are differences in both science interest and scientific habits of mind among high school students in West Kalimantan Province based on school status. Students in private schools tend to have higher interest and better scientific habits of mind compared to those in public schools. Contributing factors include resources, facilities, parental involvement, teacher qualifications, and more flexible curricula. Togatorop's research (2017) shows that educational costs influence the quality of private schools. Private schools have autonomy in designing curricula, allowing them to create specialized science programs and innovative teaching approaches (Shakera & Saleh, 2021). They can also offer advanced science programs, research opportunities, and partnerships with local science institutions (Olarewaju et al., 2020). Additionally, private schools are more active in involving parents in education, which enhances communication between families and schools, and influences students' interest and confidence in science (García-Pérez et al., 2020; Jaleel & Noor, 2022).

▪ CONCLUSION

Based on the results of the study it can be concluded that interest in science of high school students in West Kalimantan Province based on gender is in the good category for both male and female students, while based on school status is in the good category for private schools and the moderate category for public schools. Students' scientific habits of mind based on gender is in the good category for both male and female students, while based on school status, they are in the good category for private schools and the fair category for public schools. There is a moderate relationship between interest in science and students' scientific habits of mind. There is a significant difference in students' interest in science in terms of gender, namely male students have a higher interest than female students. There is no significant difference in students' scientific habits of mind in terms of gender but when viewed from the average score, male students have more scores. There is a significant difference in interest in science in terms of school status, namely private school students have a higher interest. There is a significant difference in students' scientific habits of mind in terms of school status, namely private school students have higher scientific habits of mind. There are significant differences in interest in science and scientific habits of mind of students in terms of gender simultaneously, namely male students have a higher interest in science and scientific habits of mind. There are significant differences in interest in science and scientific habits of mind of students in terms of school status simultaneously, namely private schools have a higher interest in science and scientif habits of mind.

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