

## Original Research

# Comparative Study of Students' Motivation in Learning Biology between Private Schools in Urban and Rural Areas

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### ABSTRACT

This study compares students' motivation to study Biology between private schools in urban and rural areas. A quantitative approach with a comparative design was used in this study, involving 47 private high school students in Malang City as a representation of the urban areas and 37 private high school students in Malang Regency as a representation of rural areas. The research instrument was a closed questionnaire consisting of 31 statements reflecting the five dimensions of learning motivation: perseverance, tenacity, interest, achievement, and independence. Data were analyzed using descriptive statistics to see an overview of student motivation and the Mann-Whitney U test to test for significant differences between the two groups. The descriptive analysis results showed that students' mean motivation in urban areas was higher (4.56) than in rural areas (3.96). The standard deviation of urban students (0.57) was lower than that of rural students (0.65), indicating a smaller score variation. The Mann-Whitney U test showed a significant difference in motivation between the two groups. The results of this study confirm that students' learning motivation in urban private schools is higher compared to students in rural areas, which differences may influence educational facilities, access to learning resources, and environmental support. The findings are expected to serve as a basis for policymakers to design interventions to reduce the learning motivation gap between urban and rural areas.

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## 1. INTRODUCTION

Biology education has an important role in shaping students' understanding of the basic concepts of life and its relation to the environment and sustainability (Cartono, 2022; Hogan & O'Flaherty, 2021; Littleddyke, 2008; Weelie & Wals, 2002). As a branch of natural science, Biology focuses on theory and developing analytical and problem-solving skills through observation and practice. Biology has a very important role in developing technology, science, and various other fields. In technology, biology is the basis for the development of biotechnology, such as genetic engineering to produce pest-resistant crops, the production of medicines through recombinant DNA techniques, and the development of bioenergy from biological sources. In health, biology supports innovations such as gene therapy, vaccine creation, and molecular-based diagnostic techniques. In addition, biology also contributes to environmental conservation

through the study of ecosystems and the development of environmentally friendly technologies, such as bioplastics and microorganism-based waste management methods. Biology helps improve food productivity in agriculture through plant breeding methods and biopesticides. With a deeper understanding of life, biology continues to open up new opportunities to address global challenges, such as climate change, food crises, and emerging diseases. However, optimal achievement in learning biology requires strong motivation from students (Rahmi et al., 2021; Saka & Onanuga, 2022; Yong, 2009). Learning motivation, both intrinsic and extrinsic, is one of the main determinants of student success in understanding and applying the subject matter (Ryan & Deci, 2020).

Unfortunately, various studies show that student motivation in Indonesia is still at a low level, especially in subjects that are considered complex, such as Biology (Amin & Harahap, 2023; Fauzi et al., 2021; Hadiprayitno et al., 2019; Rachmatullah et al., 2018). Factors such as the learning environment, support facilities, and teaching methods are often blamed for this low motivation. In this context, private schools play a strategic role in accommodating education needs in Indonesia, especially in areas that may be difficult for public schools to reach. However, the quality of education in private schools is not uniform and is often influenced by geographical location, such as whether the school is in an urban or rural area.

This location difference could affect students' motivation to learn, given that urban schools usually have better access to educational resources than rural schools (Tayyaba, 2012). Identifying student motivation in private senior high schools in urban and rural areas is crucial to ensuring appropriate and effective educational approaches. Differences in the two regions' social, economic, and cultural contexts affect student motivation to learn. In urban areas, student motivation may be influenced by competitive career expectations and widespread access to technology and learning resources. In contrast, in rural areas, motivation may be influenced by limited educational facilities, family roles in household chores, or local community needs. Schools can design relevant learning programs and strategies through scholarships, specialized skills training, or career guidance by understanding the factors that encourage or inhibit students' passion for learning. This identification also helps create an inclusive learning environment and supports the optimal development of students' potential according to their backgrounds. Therefore, conducting a comparative study of students' motivation in learning Biology between private schools in urban and rural areas is important. This study is expected to provide insight into the factors that influence learning motivation in both environments and provide recommendations to improve the quality of biology education in private schools equally.

## 2. METHOD

This study used a quantitative approach with a comparative design to compare student motivation in learning Biology in private schools located in urban and rural areas. The research locations included private schools in the Malang city area as an urban representation and private schools in rural areas in the Malang Regency. The research subjects comprised 47 private high school students in urban areas and 37 private high school students in rural areas who were purposively selected to represent each region.

The research instrument was a closed questionnaire consisting of 31 statements, which included positive and negative statements related to Biology learning motivation. The statement items were developed based on five dimensions: perseverance in learning, resilience in facing difficulties, interest and sharpness of attention in learning, achievement in learning, and independence in learning. Each statement uses a Likert scale with five score levels: strongly disagree (1) to strongly agree (5). Before use, the instrument was tested for validity and reliability to ensure that each item could measure learning motivation accurately and consistently.

Data was collected by distributing questionnaires to research subjects in each location. The data obtained were analyzed using descriptive statistics to describe the mean, standard deviation, and distribution of student motivation scores. Furthermore, a difference test was conducted using the Mann-Whitney U test to determine whether there was a statistically significant difference between student motivation in urban and rural areas.

The data analysis process was conducted using statistical software to ensure accurate and valid results. The study's results are expected to provide a clear picture of the differences in motivation to study Biology in the two regions and the factors that may affect motivation.

## 3. RESULTS AND DISCUSSION

### 3.1. Descriptive statistics of student motivation

This study involved a comparison of students' motivation in learning Biology between private schools in urban and rural areas, with a total of 31 statements reflecting various aspects of motivation. The results of the descriptive statistical analysis are shown in Table 1. The mean results show that students in urban private schools have higher motivation to learn than students in rural private schools, with mean total

scores of 4.56 and 3.96, respectively. The urban standard deviation of 0.57 indicates a lower variation in the data compared to rural areas, with a standard deviation of 0.65.

On individual statements, students in urban areas consistently obtained higher mean scores, for example, on the statements “I study outside of school hours regularly” (4.83 in urban areas vs. 3.95 in rural areas) and “I always do my assignments given by teachers” (4.81 in urban areas vs. 3.95 in rural areas). This shows that students in urban areas tend to have more disciplined and independent study habits compared to students in rural areas. In contrast, rural students had lower mean scores, especially on statements related to intrinsic motivation, such as “I feel sad when the teacher cannot come to class to teach” (4.03 in rural vs. 4.51 in urban) and “I have a high curiosity towards Biology materials” (3.89 in rural vs. 4.55 in urban). This suggests that the rural environment may provide additional challenges in motivating students to study Biology.

Statements reflecting negative aspects of learning motivation, such as “I am lazy to try to understand materials that I find difficult,” also showed that rural students tended to be more affected by negative attitudes, with an average score of 3.92 compared to urban students who achieved a score of 4.47.

**Table 1.** Results of Descriptive Analysis of Motivation Among Private High School Students in Urban and Rural Areas

No	Statements	Average		St. deviation	
		Urban	Rural	Urban	Rural
1	I study outside of school hours regularly.	4.83	3.95	0.38	0.40
2	If the teacher is first in class, then I tend to skip class.	4.55	4.03	0.58	0.54
3	I attend school lessons until the end of class.	4.47	3.81	0.65	0.73
4	I stay in class no matter who the teacher is.	4.40	4.00	0.70	0.66
5	I arrive at school before the entrance bell rings.	4.53	4.05	0.58	0.52
6	I am embarrassed to ask the teacher when I have difficulty understanding the biology material being taught.	4.49	4.00	0.65	0.84
7	I don't attend lessons if I don't like them.	4.79	3.97	0.41	0.59
8	If my grades are poor, increasing my study is the best way to improve my grades.	4.49	4.05	0.58	0.66
9	I study outside of school hours only if there are assignments and tests.	4.49	3.89	0.65	0.80
10	I rarely read the material that will be taught before the lesson.	4.51	4.22	0.65	0.58
11	If I'm lazy, I don't go to school.	4.83	3.95	0.38	0.40
12	I always try repeatedly in doing difficult biology problems.	4.55	4.03	0.58	0.54
13	I always listen to the teacher's explanation well.	4.49	3.81	0.65	0.73
14	If the biology subject matter is difficult, then I will ignore the lesson.	4.38	4.00	0.70	0.66
15	If I encounter a difficult problem, I will try to work on it until I find the answer.	4.53	4.05	0.58	0.52
16	If my grades are bad, I don't want to study.	4.43	3.62	0.64	1.07
17	I like to spend time studying outside of school hours.	4.79	3.92	0.46	0.54
18	I prefer to talk to my friends and not listen when the teacher explains.	4.49	4.00	0.54	0.81
19	I am lazy to try to understand material that I find difficult.	4.47	3.92	0.65	0.82
20	I often feel sleepy when the teacher explains the material in front of the class.	4.49	3.95	0.61	0.66
21	I always ask the teacher about material that I don't understand.	4.53	4.05	0.58	0.52
22	I am always dissatisfied and always want to get better results.	4.49	4.00	0.65	0.84
23	I am lazy to achieve when my friends achieve higher achievements.	4.79	3.97	0.41	0.59
24	I feel normal when I get unsatisfactory grades.	4.49	4.05	0.58	0.66
25	I get high achievement in learning with my own hard work.	4.51	3.89	0.61	0.80
26	I accept poor learning achievement happily without trying harder.	4.53	4.22	0.65	0.58
27	I always do my own assignments given by the teacher.	4.81	3.95	0.39	0.46
28	I cheat on my friends' assignments because I am lazy to think about completing the assignment.	4.57	3.95	0.54	0.61
29	I prefer to chat in the cafeteria during free class hours.	4.49	3.65	0.61	0.67
30	I have a high curiosity about biology materials.	4.55	3.89	0.58	0.76
31	I feel sad when the teacher cannot come to class to teach.	4.51	4.03	0.58	0.54
	Total	4.56	3.96	0.57	0.65

### 3.2. Differences in the motivation of private high school students in urban and rural areas

The results of the analysis using non-parametric tests showed a significant difference between the learning motivation of students in urban and rural private schools (Table 2). Based on the mean rank value, students in urban private schools have a mean rank of 55.98, which is significantly higher than students in rural private schools, who have a mean rank of 25.38. The sum of ranks also shows a striking difference, with 2631.00 for urban students compared to 939.00 for rural students.

This data indicates that students' learning motivation in urban areas tends to be higher than that of students in rural areas. Various factors, such as access to educational facilities, learning environment, and support from school and family, can cause this difference. The total number of research subjects analyzed

was 84 students, consisting of 47 students from private schools in urban areas and 37 students from private schools in rural areas.

**Table 2.** Rank analysis of the Mann-Whitney U test

	Areas	N	Mean Rank	Sum of Ranks
Motivation	Urban	47	55.98	2631.00
	Rural	37	25.38	939.00
	Total	84		

The Mann-Whitney U test was used to test the difference in student learning motivation between private schools in urban and rural areas (Table 3). The Mann-Whitney U statistical value was 236,000, with a Wilcoxon W value of 939,000. The resulting Z value was -5.716, indicating a significant difference between the two groups. The asymptotic (2-tailed) significance of 0.000 is below the 0.05 significance level, indicating that the difference in motivation between urban and rural students is highly statistically significant.

This result supports the finding that school location (urban or rural) significantly influences students' learning motivation. In other words, students in urban private schools show higher levels of learning motivation than those in rural private schools. This difference may reflect differences in the quality of educational facilities, access to resources, and supportive learning environments between the two locations. These results are important for education policymakers to consider when designing interventions to reduce the learning motivation gap between urban and rural students.

**Table 3.** The Mann-Whitney U test

	Motivation
Mann-Whitney U	236.000
Wilcoxon W	939.000
Z	-5.716
Asymp. Sig. (2-tailed)	.000

Basically, various factors affect student motivation, such as home and family circumstances, relationships with peers, teachers, and administrative staff, coupled with the environment and culture created at school and in the classroom (Hardre & Sullivan, 2008). Different motivation levels of private senior high school students in urban and rural areas can be influenced by various interrelated factors. First, access to educational facilities. Students generally have better access to educational facilities in urban areas, such as laboratories, libraries, the Internet, and learning technology (Juneja, 2021; Tayyaba, 2012; Zhou, 2003). In contrast, in rural areas, limited infrastructure may hinder students' access to adequate learning resources, thus affecting their interest and enthusiasm for learning. Second, the social and cultural environment. Urban environments tend to be more competitive, with pressure to achieve high academic performance as a pathway to career opportunities (Chen & Tian, 2021; Kumah-Abiwu, 2019; Zhao, 2022; Sun et al., 2025). In rural areas, a more relaxed community culture or prioritization of non-academic activities, such as helping the family, can affect students' learning orientation. Third, the availability of qualified teachers. Urban schools find it easier to attract highly qualified teachers due to better facilities, incentives, and career development opportunities (Blackmore et al., 2024; Burke & Buchanan, 2022; Evans & Acosta, 2023; Elacqua et al., 2022). In rural areas, a shortage of qualified teachers can impact the learning process and student motivation. Fourth, parental support. Parents in urban areas generally have higher levels of education and a better understanding of the importance of education, so they tend to encourage their children more strongly. Meanwhile, in rural areas, parents' economic and educational limitations may affect their ability to motivate their children optimally. Fifth, career opportunities and inspiration. Students in urban areas are more often exposed to role models and diverse career opportunities (Salim et al., 2023; Zhang et al., 2023), which can increase their ambition to achieve. In rural areas, a lack of access to modern career inspiration can make students feel less motivated (Gao et al., 2022; Starrett et al., 2022). Sixth, economic factors. The difference in economic conditions in the two regions is also influential. Students in urban areas tend to have access to additional learning tools such as tutoring, books and electronic devices. In contrast, students in rural areas may be limited to the resources available at school. Seventh, government support and school programs. Schools in urban areas may receive more frequent attention from the government or other educational institutions for student development programs, such as technology training, seminars, or scholarships. In contrast, similar programs may be less common in rural areas. Various parties must make concerted efforts to improve student motivation in rural areas. Measures such as facility upgrades, teacher training, provision of scholarships, and community-based development programs can help bridge the motivation gap between urban and rural students.

### 3.3. Research limitation

Despite the valuable insights provided by this study, several limitations need to be considered. Firstly, the research only involved a relatively small sample size, with 47 students from urban areas and 37 students from rural areas, which may not fully represent the broader population of private senior high school students across Indonesia. Additionally, the study was limited to a single region, Malang, which may not account for the diverse educational contexts found in other urban and rural settings across the country. Another limitation is the reliance on self-reported data, which may introduce response biases, as students may be inclined to present themselves in a more favorable light. Furthermore, the study focused solely on student motivation in the context of Biology learning, without considering other subject areas or broader factors that could influence motivation, such as overall academic pressure or socio-cultural factors beyond the school environment. Finally, the cross-sectional nature of the study means that it cannot capture the dynamic changes in student motivation over time or provide causal insights into the factors that influence motivation. Future research could address these limitations by incorporating a larger and more diverse sample, longitudinal data collection, and a broader focus on different academic subjects and external motivational influences.

## 4. CONCLUSION

The research shows that students in urban areas have higher learning motivation than those in rural areas, as reflected in their study habits, attitude toward learning, and intrinsic motivation. Statistical analysis supports this finding, showing significant differences between the two groups. Environmental factors, access to facilities, and school and family support are possible causes of this difference. These findings highlight the importance of designing more inclusive education policies to reduce the gap in learning motivation, especially for students in rural areas. Thus, efforts to improve educational facilities and strengthen the learning environment support can be a strategic step in addressing this disparity.

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There is no conflict of interest in this study.

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## ETHICAL STATEMENT

All students agreed to be respondents without coercion. All student information and identities were kept confidential in the research report.

## AI USE STATEMENT

The author uses Grammarly to check for grammatical errors.

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