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Analysis of Students' Anxiety Level in Facing the Final Biology Examination at SMA Negeri 1 Kota Sungai Penuh

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Abstract

Anxiety is a condition where there is excessive worry, resulting in difficulty in controlling the problems being faced. This study aims to analyze the level of student anxiety in facing the biology final exam for students at SMAN 1 Sungai Penuh in class XI for the 2023/2024 academic year. The method used in this research is quantitative with the research population consisting of class. The research sample was selected using simple random sampling technique consisting of 162 students. Data was collected using a student anxiety level questionnaire. The results showed that the average score for men was 47.679 and the average score for female was 47.679. The results of this analysis indicate that almost all students in class XI at this school feel anxious when taking the biology final exam. This illustrates how crucial the active involvement of teachers is in supporting students' emotional well-being. By being actively involved, teachers can be creating a learning environment that supports the development of all students.

INTRODUCTION

National education is important for the success of the nation. Learning outcome tests assess student learning progress and provide feedback for program improvement. The end-of-semester exam measures learning outcomes specifically. Education creates skilled and high-quality resources, which are the key to the development of the nation's progress (Afifa, 2020) . Education is an important component in the development of a country. The success of education as a process is demonstrated by learning outcomes obtained through evaluation (Azrai et al., 2016)

Evaluation during learning is important to measure student progress and improve the quality of learning. However, assessment through exams at school often causes anxiety in students. School Examinations (US) are one of the government's ways of improving the quality of Indonesian education for students (Sari et al, 2017) . Academic anxiety arises because of concerns that arise over learning failure in students (Banga, 2014; Önem, 2010) .

Anxiety is a natural response for every human being, as a response to feelings of insecurity and overwhelm, usually for no known reason, so anxiety is a reaction to fear (Tazkiyah & Silaen, 2020) . Several factors can influence anxiety, including internal and external factors. Internal factors include fear of failure and pessimism, while external factors include lack of social support (Rahmayanti et al., 2023) . Online games greatly influence student anxiety. The development of the internet has many benefits. This can provide data and bring convenience to life, but it also has negative effects (Ding et al., 2022) .

Vague and unpleasant fears and anxieties are known as anxiety. Students may feel anxious or worried when facing school challenges, such as during exams (Lestari et al., 2021) . Many types of classroom experiences can cause student anxiety. For example, evaluation anxiety can be caused by real or imagined social evaluation perspectives. These anxieties can include social anxiety, classroom communication anxiety, and test anxiety (England et al., 2017) . Anything related to the

school situation can cause academic anxiety, such as completing school assignments, presenting a project in class, or facing tests (Etiafani & Listiara, 2015) . More specifically, students can feel anxiety when facing exams (test anxiety) which prevents students from achieving their academic potential (Rana & Mahmood, 2010) .

Anxious people often experience symptoms such as excessive sweating, fast or loud heartbeat, cold sensation in the hands or feet, and digestive and urination problems. Other symptoms include a dry throat, pale appearance, and increased frequency of urination. In addition, they may also feel discomfort in the joints and muscles, tire easily, have difficulty relaxing, and often startle. This is also often accompanied by facial or limb movements that are excessive in intensity and frequency, such as sitting continuously, shaking legs, stretching neck, frowning (Wicaksono & Saufi, 2013) . As anxiety increases, students may try harder, but their comprehension may actually worsen, ultimately increasing their anxiety levels. When anxiety in students increases to a significant level, it can cause harm and impact their ability to think and solve problems (Hidayat et al., 2023) .

Biology is a science that explores the diversity of life from microscopic organisms to humans, and their relationship with the environment. In studying biology, we understand the structure, function and evolution of organisms as well as vital processes such as metabolism and growth. This helps us understand the importance of maintaining ecosystem balance, biodiversity, and the impact of environmental change on life. Biological knowledge can also be applied in fields such as medicine, agriculture, and conservation, making major contributions to human progress and the preservation of life on the planet.

Biology final exam is an important activity in evaluating learning in the field of biology. With careful evaluation methods and appropriate application of results, these exams not only provide insight into student understanding, but also encourage continued improvement in future biology learning. Therefore, the role of the biology final exam cannot be underestimated in order to improve the quality of education in the field of biology.

Observations were carried out at SMA Negeri 1 Sungai Penuh because of this school's good reputation and its significant role in education in the area. With a diverse student body and a qualified teaching staff, this school environment is an ideal place to examine various aspects of educational activities, including curriculum, teaching methods, student participation in extracurricular activities, and school culture. Through observations at this school, it is hoped that a deep understanding of the dynamics of education can be obtained, and best practices that can be implemented or improved can be identified. Based on the explanation above, the aim of this research is to determine the level of student anxiety in facing the Final Semester Examination at SMAN 1 Sungai Penuh because if anxiety becomes excessive fear, then this will disturb the student's psychology and mental health. Based on the research results obtained, the anxiety level of students at SMAN 1 Sungai Penuh tends to be more female than male students.

RESEARCH METHODS

1. Time and Place of Research

Observations were carried out at SMA Negeri 1 Kota Sungai Penuh for one month, from January to February 2024. Research was carried out in various locations within the school, such as different classrooms. Observations were carried out on students of class XI Science at SMA Negeri 1 Sungai Penuh.

2. Types of research

This research is descriptive qualitative in nature, with the aim of observing and describing various aspects of educational activities at the school. The focus is to determine students' anxiety levels in facing the biology final exam and the comparison between the anxiety levels of female students and male students.

3. Research Methods

The method used is participatory observation, where the researcher is directly involved in daily activities at the school as an active observer. This allows researchers to gain in-depth insight into activities and interactions at school and the causes of feelings of anxiety that students face during the biology learning process and the biology final exam.

4. Population and Sample

The research population included all students in class XI Science at SMA Negeri 1 Sungai Penuh. The sample was chosen purposively, involving students from class XI Science using a simple random sampling technique, namely 162 students.

5. Research Procedure

The research procedure involved observing various educational activities in schools, such as the learning process in class, the implementation of the biology final exam. Researchers also recorded interactions between students and teachers, as well as classroom dynamics.

6. Data Collection

Data is collected through direct observation, interviews with teachers and students, as well as documentation such as lesson plans, learning materials, and exam results. Field notes were taken during observations to record important findings and contextual details.

7. Data Analysis

The data collected was analyzed qualitatively by identifying patterns, trends and findings that emerged from observations and interviews. This analysis helps understand the dynamics of education in schools and identifies best practices that can be implemented or improved to improve the quality of education.

The test results of students' anxiety levels are processed through quantitative analysis using JASP. JASP is open-source statistical software created to analyze statistical data easily and extensively. The analysis used uses descriptive methods. This research analyzes descriptive statistical data to assess the level of anxiety experienced by students by examining question answer data. The results are categorized based on the student's anxiety level by paying attention to each indicators contained in the instrument. The research instrument used in this research is an instrument that has been used and declared valid by previous researchers (Syafira, 2022) The points obtained are used to form different categories (Table 1).

Table 1. Category of Student Anxiety Level

No	Scale	Score
1.	Highly Unsuitable (STS)	1
2.	Not Compliant (TS)	2
3.	Compliant (S)	3
4.	Very Suitable (SS)	4

RESULTS AND DISCUSSION

The results of the research will show the anxiety patterns commonly experienced by students when facing Biology exams, as well as factors that can help reduce this anxiety. Implications of developing learning strategies that can help reduce students' anxiety and improve their performance on exams.

Figure 1. Implementation of research at SMAN 1 Kota Sungai Penuh

A. Students' Anxiety Levels in Facing Biology Final Semester Exams

In analyzing the overall data, the research results will provide a comprehensive picture of the level of anxiety experienced by students in general. The overall data will reveal patterns and trends that may exist in student anxiety, including the distribution of anxiety from low to high, as well as factors that influence the level of anxiety.

Table 2. Data DescriptionStudents' Anxiety Levels in Facing Biology Final Semester Exam

		Valid	Missing	Mode	Median	Mean	Std. Deviation	Minimum	Maximum
Total score	Low	35	0	39.000	36.000	36.343	3.298	29.000	41.000
Total score	Moderate	118	0	54.000	52.000	51.754	5.187	42.000	61.000
Total score	High	9	0	62.000	62.000	63.000	1.500	62.000	66.000

Data in table 2. The total score is divided into three categories: low, medium and high. There is a total of 162 valid data that has been analyzed. The mode for the low category is 39, with the median and mean being 36,000 and 36,343, respectively. The standard deviation for this category is 3.298, indicating low variation in the data with a total score range between 29 to 41. Which means that the level of anxiety experienced by students can be said to be low for 35 students. For the medium total score category, there are 118 valid data with a mode of 54, a median of 52,000, and a mean of 51,754. The standard deviation is 5.187, indicating greater variation with total score values ranging from 42 to 61.

Of the 162 students studied, 35 showed low anxiety with a total score ranging from 29 to 41, with a mode of 39, a median of 36,000, a mean of 36,343, and a standard deviation of 3,298, reflecting low variation. Meanwhile, 118 students experienced moderate anxiety with a total score of 42 to 61, mode 54, median 52,000, mean 51,754, and standard deviation 5,187, indicating higher variation. Most students were in the moderate anxiety category with wider variations, indicating individual differences in anxiety levels.

Finally, the high total score category has 9 valid data with the mode, median and mean which are both 62. The standard deviation is relatively low, namely 1,500, indicating high consistency with a range of total score values from 62 to 66. Overall, there is Significant differences in total score distribution between the three categories were observed. The medium category has a wider range and greater variation, although all categories show consistency in the total score distribution with relatively low standard deviations.

Based on the data, out of 162 students, 35 experienced low anxiety with a score of 29-41 and a standard deviation of 3,298. A total of 118 students were in the moderate anxiety category with a score of 42-61 and a standard deviation of 5,187. High anxiety was experienced by 9 students with a score of 62-66, mode, median and mean 62, and standard deviation 1,500. Overall, the medium category shows a wider variation in scores, but all categories are consistent with relatively low standard deviations, reflecting a regular distribution of total scores.

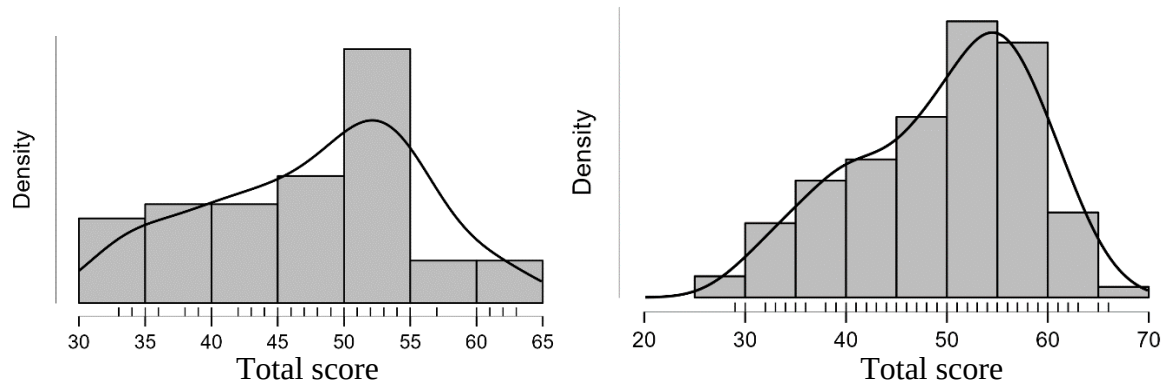
By paying attention to the highest and lowest values for each indicator, we can understand the distribution of the data and gain insight into the level of anxiety experienced by respondents regarding the various aspects measured. In accordance with a study conducted by (Nurjanah & Alyani, 2021) , the results of anxiety can be divided into three levels, namely low, medium and high anxiety. Wrong ways of thinking usually cause anxiety, such as judging so sharply that you don't dare to try something new. , remembering something scary continuously so that you feel threatened until the fear becomes bigger than yourself, and finally stop thinking that everything is a disaster (Sabati, 2010) . Anxiety that exists within oneself can become a barrier to the learning process, causing difficulty in focusing, remembering information, and solving problems (Khoirunnisa & Ulfah, 2021).

B. Students' Anxiety Levels in Facing the Biology Final Exam Based on Gender

In analyzing the data by gender, the results showed differences in anxiety levels between male and female students. The results of the study may indicate that female students tend to experience higher levels of anxiety compared to male students when facing Biology exams.

Table 3 . Data Description of Student Anxiety Levels Based on Gender

		Valid	Missing	Mode[a]	Median	Mean	Std. Deviation	Minimum	Maximum
Total score	Male	53	0	54.000	49.000	47.679	8.116	33.000	63.000
Total score	Female	109	0	56.000	51.000	49.716	8.729	29.000	66.000



(a) **(b)**

Figure 2. Histogram of Students' Anxiety Levels in Facing the Biology Final Exam Based on Gender. (a). Male, and (b). Female

The data shows the total individual score based on gender from 162 people divided into male and female groups; 53 data for male and 109 data for female were found. According to analysis, male's total score was 54, while female's score was 56. Male received a total score of 49, while female received 51. The average total score for male was 47.679 with a standard deviation of 8.116, and the average total score female is 49,716 with a standard deviation of 8,729. The lowest total score range for male is 33 and the lowest for female is 29. The highest range of scores is 63 for male and 66 for female. In general, male's total scores tended to be slightly lower than female's. However, the total scores differed greatly between the two groups, as indicated by the high standard deviations.

Therefore, based on gender, the data presented indicates that there are differences in total scores between the male and female groups. The average total score for male is 47.679 with a standard deviation of 8.116, while for female it is 49.716 with a standard deviation of 8.729. Although the mean scores for female were higher, the high standard deviations in both groups indicate significant variation in individual scores in each group. The range of total scores for male (33 to 63) and female (29 to 66) also shows that although female had higher average scores, there were some female who had very low scores and some male who had very high scores. . This indicates that the difference in scores between individuals in the male and female groups was quite variable, and although in general the female scores were higher, the variability in scores indicated that some individuals in both groups performed very differently from the average of their groups.

These findings provide a more complete picture of the distribution of total scores, as well as the differences between the two groups. As a researcher, this understanding can help you make decisions in the right context or encourage further research. Judging from gender, girls experience more anxiety than boys (Saputro & Fazrin, 2017) .

C. Students' Anxiety Levels in Facing Biology Final Exams Based on the Criteria for Each Indicator

In analyzing data based on indicators, research results may show that there are various indicators that influence students' anxiety levels. Indicator 1 covers the level of feelings of anxiety, Indicator 2 covers the level of Tension, Indicator 3 covers the level of Fear, Indicator 4 covers the level of Sleep Disorders, Indicator 5 covers the level of Intelligence disorders, Indicator 6 covers the level of Feelings of Depression, Indicator 7 covers the level of Somatic/muscular Symptoms, Indicator Indicator 8 covers the level of sensory symptoms, Indicator 9 covers the level of Cardiovascular Symptoms, Indicator 10 covers the level of Respiratory Symptoms, Indicator 11 covers the level of Digestive Symptoms, Indicator 12 covers the level of Urogenital Symptoms, Indicator 13 covers the level of Autonomic Symptoms. The results of the analysis will identify indicators that have a significant correlation with students' anxiety levels, and may also identify indicators that are less influential.

Table 4. Data Analysis Based on Indicator Data

Variable	Levels	Counts	Total	Proportion	p
Indicator 1	LOW	19	162	0.117	< .001
	VERY HIGH	22	162	0.136	< .001
	MODERATE	48	162	0.296	< .001
	HIGH	73	162	0.451	0.239
Indicator 2	LOW	1	162	0.006	< .001
	MODERATE	16	162	0.099	< .001
	HIGH	145	162	0.895	< .001
Indicator 3	LOW	43	162	0.265	< .001
	VERY HIGH	10	162	0.062	< .001
	MODERATE	64	162	0.395	0.009
	HIGH	45	162	0.278	< .001
Indicator 4	LOW	54	162	0.333	< .001
	VERY HIGH	1	162	0.006	< .001
	MODERATE	96	162	0.593	0.022
	HIGH	11	162	0.068	< .001
Indicator 5	LOW	24	162	0.148	< .001
	VERY HIGH	9	162	0.056	< .001
	MODERATE	61	162	0.377	0.002
	HIGH	68	162	0.420	0.049
Indicator 6	LOW	38	162	0.235	< .001
	VERY HIGH	6	162	0.037	< .001
	MODERATE	54	162	0.333	< .001
	HIGH	64	162	0.395	0.009
Indicator7	LOW	68	162	0.420	0.049
	VERY HIGH	3	162	0.019	< .001
	MODERATE	72	162	0.444	0.181
	HIGH	19	162	0.117	< .001
Indicator8	LOW	86	162	0.531	0.480
	VERY HIGH	1	162	0.006	< .001
	MODERATE	63	162	0.389	0.006
	HIGH	12	162	0.074	< .001
Indicator 9	LOW	22	162	0.136	< .001
	VERY HIGH	15	162	0.093	< .001
	MODERATE	52	162	0.321	< .001
	HIGH	73	162	0.451	0.239
Indicator10	LOW	36	162	0.222	< .001

Table 4. Data Analysis Based on Indicator Data

Variable	Levels	Counts	Total	Proportion	p
	VERY HIGH	4	162	0.025	< .001
	MODERATE	110	162	0.679	< .001
	HIGH	12	162	0.074	< .001
Indicator 11	LOW	92	162	0.568	0.099
	MODERATE	61	162	0.377	0.002
	HIGH	9	162	0.056	< .001
Indicator 12	LOW	60	162	0.370	0.001
	VERY HIGH	4	162	0.025	< .001
	MODERATE	73	162	0.451	0.239
	HIGH	25	162	0.154	< .001
Indicator 13	LOW	56	162	0.346	< .001
	VERY HIGH	5	162	0.031	< .001
	MODERATE	78	162	0.481	0.695
	HIGH	23	162	0.142	< .001

Note. Proportions testedagainstvalue: 0.5.

The data in Table 4 provides analysis based on 13 indicators with four levels each. The total number of individuals analyzed was 162. For example, in Indicator 1 Regarding the level of students' feelings of anxiety during the biology exam, the number of individuals with low scores was 19, very high 22, medium 48, and high 73. The analysis showed variations in the distribution of individuals in each indicator levels, with some levels showing statistically significant proportions compared to the reference value of 0.5. This information provides a comprehensive picture of the distribution of individuals within each indicator, which can be used as a basis for further understanding patterns or trends that may exist in the data. Each indicator has a different level of anxiety. According to (Imro'ah et al., 2019) , as quoted in research by Nolen-Hoeksema, Stice, Wade, and Bohon in 2007, there are four types of anxiety symptoms that can occur, namely somatic, emotional, cognitive and behavioral symptoms. in demand.

D. Students' Anxiety Levels in Facing Biology Final Exams Based on Indicators

In analyzing data based on anxiety levels, research results will likely show variations in the levels of anxiety experienced by students. These results can describe the distribution of anxiety from low to high among the sample of students studied. The discussion of these results will include factors that influence anxiety levels, such as levels of feelings of anxiety, tension, fear, sleep disorders, intelligence disorders, feelings of depression, somatic/muscular symptoms, sensory symptoms, cardiovascular symptoms, respiratory symptoms, digestive symptoms, symptoms. urogenital, Autonomic Symptoms.

Table 5. Data Analysis Based on Level of Anxiety

	Valid	Missing	Mode	Median	Mean	Std. Deviation	Minimum	Maximum
Indicator 1	162	0	50.000	63.000	60.951	17.192	25.000	100.000
Indicator 2	162	0	67.000	67.000	65.358	5.246	33.000	67.000
Indicator 3	162	0	50.000	50.000	53.241	22.315	0.000	100.000
Indicator 4	162	0	50.000	42.000	43.815	12.878	25.000	83.000
Indicator 5	162	0	50.000	50.000	57.438	15.822	25.000	100.000
Indicator 6	162	0	50.000	50.000	53.648	14.990	25.000	100.000
Indicator 7	162	0	50.000	50.000	44.414	15.104	25.000	100.000
Indicator 8	162	0	50.000	38.000	40.401	13.481	25.000	88.000
Indicator 9	162	0	75.000	75.000	62.500	21.083	25.000	100.000
Indicator 10	162	0	50.000	50.000	48.500	13.671	25.000	92.000
Indicator 11	162	0	25.000	38.000	38.673	13.202	25.000	75.000

Table 5. Data Analysis Based on Level of Anxiety

	Valid	Missing	Mode	Median	Mean	Std. Deviation	Minimum	Maximum
Indicator 12	162	0	50.000	50.000	45.833	19.355	25.000	100.000
Indicator 13	162	0	50.000	50.000	46.605	19.802	25.000	125.000

Each indicator has a different level of anxiety experienced. Indicator 1 explains feelings of anxiety and bad feelings when facing a biology exam, where the average score is 60.951. Indicator 2 explains students' feelings of anxiety and trembling when facing a biology exam. Indicator 3 explains the feelings of students who are afraid of being left alone by their friends who have finished taking the biology exam. Indicator 4 describes students who experience sleep disturbances and nightmares. Indicator 5 explains the situation of students who have difficulty concentrating and have difficulty remembering during biology exams. Indicator 6 explains that students often feel that their interest in learning changes. Indicator 7 explains students who experience somatic/muscular symptoms during the biology exam. Indicator 8 explains students who experience sensory symptoms, where their vision is blurred and their face is pale. Indicator 9 explains that students are often nervous when facing biology exams. Indicator 10 describes students who experience respiratory symptoms during the biology exam. Indicator 11 describes students who experience digestive symptoms during the biology exam. Indicator 12 describes students who experience urogenital symptoms, namely frequent urination during biology exams. And Indicator 13 explains about students who experience autonomic symptoms, namely sweating easily when facing biology exams.

Data analysis based on anxiety level through the thirteen indicators above. Each indicator has a different mode, with a median of around 50, except Indicator 2, which has a mode and median of 67. The average indicator scores vary between 38 and 75. Indicator 3 has the highest standard deviation of 22,315, while Indicator 8 has the lowest standard deviation. of 13,481, giving an idea of the distribution of data around the mean. Each indicator has a minimum value of 0-33 and a maximum value of 67-125. The data showed significant variation in anxiety levels; some indicators showed higher scores, indicating different anxiety variability. This analysis provides insight into the level of anxiety that study participants may be experiencing, which can be used for intervention or further understanding of the factors that influence anxiety.

Based on an analysis of thirteen indicators of anxiety, I concluded that there is significant variation among students when it comes to biology exams. Indicator 2, with a median of 67, stands out indicating high levels of restlessness and tremor. Variations in standard deviation, such as in Indicator 3 (22,315) and Indicator 8 (13,481), reflect differences in data distribution. A wide range of minimum and maximum values indicates the presence of students with very low to very high anxiety. I believe that these findings highlight the importance of specific interventions to help students manage anxiety, especially those experiencing severe symptoms, to improve their learning experience and test performance.

According to research conducted by Ikhsan, 2019 , it was found that anxiety has an impact on the achievement of secondary level students' learning outcomes. Students still feel that Biology lessons are considered boring, require too much memorization, and are considered irrelevant to their lives (Nugraini, 2015) . Anxiety is a non-intellectual psychological factor that influences learning achievement (Suratmi et al., 2017) . The amount of material that needs to be remembered and teaching that is less interesting can make students feel stressed and experience increased anxiety, especially when facing exams (Lestari et al., 2021) . And according to a study conducted by (Handayani, 2019) , it was revealed that anxiety can affect intermediate level students in understanding a concept. Students who can manage their anxiety will tend to be more motivated and persistent in the learning process because they are worried about unsatisfactory results and can have a positive effect (Saragih et al., 2022).

CONCLUSION

The results of the study showed that the majority of grade XI students at SMAN 1 Kota Sungai Penuh experienced significant levels of anxiety in facing the final biology exam. This research found that female students tend to have higher levels of anxiety than male students. This highlights the importance of paying attention to students' emotional well-being in educational settings. Teachers' active involvement in supporting students emotionally is considered crucial to creating a learning environment that supports students' holistic development.

Analysis based on the criteria for each indicator shows that there are variations in the influence of each indicator on students' anxiety levels. Several indicators show a significant proportion of anxiety levels, such as feelings of anxiety, tension, fear, and sleep disturbances. However, there are also indicators that are less influential in causing anxiety, such as sensory symptoms and cardiovascular symptoms. This analysis provides a more in-depth picture of the factors that influence student anxiety and can be used as a basis for the development of more specific interventions.

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