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Analysis of Student Learning Style Tendencies Reviewed from Learning Anxiety In Physics Learning

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ABSTRACT
The research aims to 1) describe student learning style profiles; 2) describe the profile of student learning anxiety in physics learning; 3) describe the tendencies of learning styles of SMPN student in Singkawang City in terms of learning anxiety in physics learning. This type of research is survey research using descriptive data analysis techniques where research data will be displayed using pie charts and tables. Respondents in this study were taken using a cluster sampling technique from the entire population, which is all state junior high school students in Singkawang City. The data collection technique used in this research uses a questionnaire, namely a questionnaire on student learning style tendencies and a questionnaire on learning anxienty in physics learning. The research results show that the combination of multimodal learning style (65%) dominates unimodal learning style (35%). Based on the type learning style, it shows that 1 in 3 respondents have the VARK learning style, which makes it the most dominant type. The distribution of learning anxienty data forms a bell curve indicating that the data distribution tends to be normal. Analysis of learning style data in terms of the learning anxienty category shows that there is a tendency for the VARK learning style type to be dominant in each category.

INTRODUCTION

Learning styles have an important role in the process of teaching and learning activities. A person's learning style is a combination of how they absorb, then organize and process information (DePorter & Hemacki, 2015). The organization and processing of information is the core of learning styles (Keefe, 2008, Ginnis, 2008). Learning style is also a way to use one's abilities (Stemberg, 2008). Everyone has different abilities and how to use these abilities is also different. Learning styles are key to developing performance at work, at school and in interpersonal situations. Knowing these different learning styles has helped teachers everywhere to approach almost all students by conveying information in different ways (DePorter, 2015). Therefore, it can be said that learning style is a mechanism that students use to process the information they obtain during the learning process.

Students who enjoy using movement, hearing, or sight in the learning process are known as Visual, Audiotory, and Kinesthetic (VAK) learning models (DePorter and Mike, 2015). Furthermore, the VAK model was developed into VARK (Visual, Audiotory, Read, and Kinesthetic) by Fleming (2018). Students with a visual learning style tend to learn through visual aids and pictures, students with an auditory learning style tend to learn through listening and speaking, students with a reading learning style tend to learn through reading and writing activities, and students with a kinesthetic learning style tend to learn through physical activity. and experience (Fleming, 2018).

At the junior high school level, information about learning styles will help students build learning awareness, improve individual abilities, explore opportunities during classroom learning, and increase student understanding. Students who are anxious about learning tend to have more difficulty adapting their learning style to their needs so that it is more difficult for them to identify the most suitable learning strategies for themselves. So, there is a significant influence between learning style and learning anxiety (Afiatman et al, 2019).

Feelings of fear, tension and lack of confidence in facing a problem are called anxiety. Anxiety itself is a person's mental condition which is full of worry and fear, with feelings of depression, unease and confused thinking about things that might happen (Apriliana, 2018). Kirklan (in Slameto, 2010) states that moderate levels of anxiety usually encourage learning, while high levels of anxiety interfere with learning. Each student has different learning anxiety, namely some have low learning anxiety, some have moderate learning anxiety, and some have high learning anxiety. There are several factors that cause learning anxiety to increase, including environmental, physical, emotional and social factors. Students find it difficult to overcome their learning anxiety, so teachers must play a very important role in overcoming students' learning anxiety during the learning process.

Research from Hia and Sulandari (2016) shows that almost all students think that physics is a difficult subject, they do not like it or are even useless for continuing their studies in the future. The results of this research show that physics is a subject that is perceived as difficult for students. This assumption indicates that there are still many students who experience learning anxiety when studying physics. There is an influence between learning styles on students' physics learning outcomes. and there are differences in physics learning outcomes for students who have a tendency towards visual, auditory, reading and kinesthetic learning styles (Abdul Halim, 2012).

The results of interviews with science teachers in Singkawang City show that teachers do not yet know the learning styles of each student. According to teachers, students' learning styles are very important to know. However, teachers have not been able to group students with the same learning style during the learning process because there has been no teacher follow-up to find out what type of learning style the students have. Furthermore, teachers do not yet know the factors of student learning styles that influence the learning process. Teachers do not yet know the level of student learning anxiety in the physics learning process. As well as student learning anxiety that needs to be overcome during the learning process. The description above encourages researchers to research " Analysis Of Students Learning Style Reviewed From Learning Axienty In Physics Learning".

METHOD

This type of research is survey research. This research was conducted at SMPN Singkawang City. The research was carried out in the odd semester of the 2023/2024 academic year.

2.1 Partisipant

To determine the sample size in this study, the Krejcie and Morgan equation (1970) was used, which is astatistical formula for determining or calculating the minimum sample size from a population that takes into acount the level of error.

The Krejcie & Morgan equation (Krejcie, R.V., & Morgan, D.W., 1970) is formulated as follows:

$$n = \frac{X^2.N.P(1-P)}{e^2(N-1) + X^2.P(1-P)}$$

Where:

n = number of samples

N = total population

X^2= Chi Square Value

e = degree of accuracy expressed in proportion

P = population proportion

So the participants involved in this research were 382 junior high school students. Participants came from three state junior high schools in Singkawang City, where the selection of schools in this study wascarried out randomly.

2.2 Instrument

The data collection instrument in this research used a questionnaire. This research uses two questionnaires, namely a student learning style tendency questionnaire adopted from VARK Learn Limited (2023) and a student learning anxienty questionnaire in physics learning adopted from research (Hartoni, 2016). The scale used in making answer choices on this learning anxienty questionnaire is the Likert scale.

2.3 Data Analysis

The data analysis technique in this research is descriptive data analysis technique. Danuri dan Maisaroh, (2019) descriptive techniques are techniques used to analyze data by describing or illustrating the data that has been collected as it is without making general conclusions or generalizations. Analyzing descriptive data, only focuses on the existing data and explains what happened.

The initial stage in analyzing the data in this research was to correct the results of the answers to the student learning tendencies questionnaire and the learning anxienty questionnaire in physics learning. To correct the questionnaire for learning style tendencies, this is done by uploading the answers to the VARK Learn Limited web page, (2023). In processing and analyzing student learning independence questionnaire data, after calculating the total score from each questionnaire, the next step is to determine the average value (mean - M) and standard deviation (SD) of the data. The average value and standard deviation are used to determine the category of student learning independence by determining the score limits based on the references in Table 1 as follows:

Table 1
Category of Student Learning Anxienty

No	Category	Score

1	Low	$X < (M- 1SD)$
2	Currently	$(M- 1SD) \leq X < (M + 1SD)$
3	Tall	$X \geq (M + 1SD)$

(Nurrahmi, 2019)

The final stage in this research is to analyze data on learning style tendencies in terms of student learning anxiety by correcting the results of the second questionnaire. Furthermore, the results of the learning anxiety questionnaire will be analyzed in each category and grouped based on the same learning style tendencies. These three categories of levels of learning anxiety will be explained in the context of student learning style tendencies. To present the data obtained, the information will be presented in the form of a pie chart.

RESULTS AND DISCUSSIONS

1 Result

3.1.1 Student Learning Style

Based on the results of the analysis of questionnaire answers from 382 students, learning styles, the percentage of student learning styles based on a combination of unimodal, bimodal, trimodal and quadmodal can be seen in Figure 1 below:

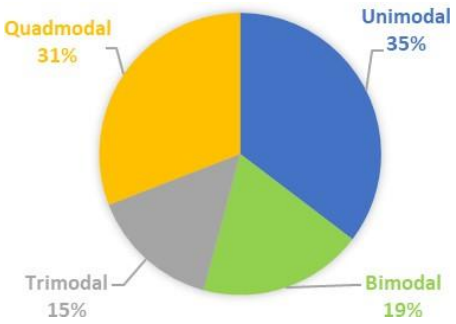

Figure 1
Combination of Student Learning Styles

Unimodal learning style reaches 35%. This means that the multimodal learning style is more dominant, namely 65%. The multimodal learning style consists of three combination patterns, namely bimodal at 19%, trimodal at 15%, and quadmodal at 31%.

Details of the overall types of student learning styles are contained in Table 2 as follows:

Table 2
Overall Students' Learning Styles

Combinations	Types of Learning Styles	Frequency	Percentage
Unimodal	V	4	1,05%
	A	56	14,66%
	R	26	6,81%
	K	49	12,82%
	Sum:	135	35%

Bimodal	VA	5	1,31%
	VR	3	0,78%
	VK	5	1,31%
	AR	21	5,50%
	AK	31	8,11%
	RK	7	1,83%
Sum:		72	19%
Trimodal	VAR	5	1,31%
	VAK	8	2,09%
	VRK	2	0,52%
	ARK	42	10,99%
Sum:		57	15%
Quadmodal	VARK	118	30,89%
Sum:		118	31%
Total		382	100%

The most dominant type of learning style here is the VARK type, where this type reaches 30.9%. This number is quite far compared to type A learning style which is in second place, namely 14.6%. The next order for the largest percentage includes K at 12.8%, ARK at 10.9%, AK at 8.1%, R at 6.8%, AR at 5.5%. Meanwhile, for other types of learning styles, namely V, VA, VR, VK, RK, VAR, VAK, and VRK the figure is no more than 3%.

3.1.2 Student Learning Anxiety

The percentage of students' learning anxiety in physics learning in each category can be seen in Figure 2 as follows:

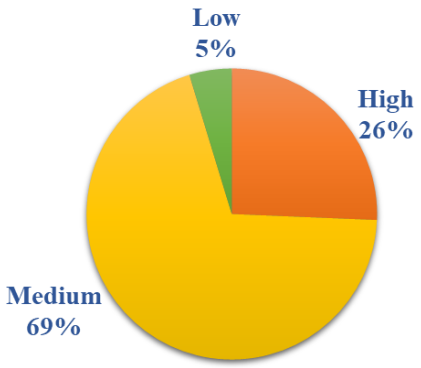

Figure 2
Percentage of Students' Learning Axienty Level

The majority of students have medium category learning anxiety, reaching 69%, while the number of students who have high category learning anxiety reaches 26% and the low category reaches 5%.

3.1.3 Student Learning Styles from Each Learning Axienty Category

3.1.3.1 Learning Style with Low Learning Anxiety

In the low learning anxiety category among 18 students, there were 3 students with a unimodal learning style. For multimodal learning styles, 11 students are quadmodal, while 4 students are trimodal and there

are no students who have a bimodal type of learning style. Details of the types of learning styles in each combination are contained in Table 3 as follows:

Table 3
Students' Learning Styles in the Low Learning Axienty Category

Combinations	Types of Learning Styles	Frequency	Percentage
Unimodal	V	0	0%
	A	1	5,56%
	R	0	0%
	K	2	11,11%
Sum:		3	17%
Bimodal	VA	0	0%
	VR	0	0%
	VK	0	0%
	AR	0	0%
	AK	0	0%
	RK	0	0%
Sum:		0	0%
Trimodal	VAR	0	0%
	VAK	3	16,66%
	VRK	0	0%
	ARK	1	5,56%
Sum:		4	22%
Quadmodal	VARK	11	61,11%
Sum:		11	61%
Total		18	100%

There are only two types of unimodal learning style in the low category of learning anxiety, namely type A which has a percentage of 5.56%, and type K has a percentage of 11.11%. Meanwhile, learning style types V and R do not exist at all. Then the learning style with a multimodal combination has the most dominant type of learning style, namely the VARK type, amounting to 61.11% of the total in this category. For multimodal combinations, the bimodal type does not exist at all in this category. And for the trimodal type, the VAK percentage is 16.66% and the ARK percentage is 5.56%. Meanwhile, other trimodal types are not in this category.

3.1.3.2 Learning Styles with Medium Learning Anxiety

The medium category of students' learning anxiety was the most common with a total of 266 students. In this category, the number of unimodal learning styles is quite large with 100 students, followed by a combination of quadmodal, bimodal and trimodal with 74, 57 and 35 students respectively. Details of the types of learning styles in each combination are contained in Table 4 as follows:

Table 4
Students' Learning Styles in the Medium Learning Axienty Category

Combinations	Types of Learning Styles	Frequency	Percentage
Unimodal	V	3	1,12%
	A	39	14,66%
	R	21	7,89%
	K	37	13,91%
	Sum:	100	38%
Bimodal	VA	4	1,51%
	VR	2	0,75%
	VK	2	0,75%
	AR	17	6,39%
	AK	27	10,15%
	RK	5	1,87%
	Sum:	57	21%
Trimodal	VAR	4	1,51%
	VAK	4	1,51%
	VRK	1	0,37%
	ARK	26	9,77%
	Sum:	35	13%
Quadmodal	VARK	74	27,82%
	Sum:	74	28%
Total:		266	100%

The medium category of learning anxiety has all types of learning styles with varying percentages. In the unimodal learning style, the largest percentage is 14.66%, namely type A. Then, respectively, the K, R, and V learning style types have a percentage of 13.91%, 7.89%, and 1.12%, respectively.

In multimodal learning styles, the most dominant combination is quadmodal with the VARK learning style type at 27.82%. Then the AK and ARK types are quite large, respectively, the percentages are 10.15% and 9.77%. Followed by the AR type at 6.39%. Apart from that, the percentage of other types of learning styles is no more than 2%.

3.1.3.3 Learning Styles with High Learning Axienty Category

There were a total of 98 students who were classified as having learning anxiety in the high category of physics learning. Based on the combination of unimodal, bimodal, trimodal, and multimodal learning styles respectively, there were 32, 15, 18, and 33 students respectively. Details of the types of learning styles in each combination are contained in Table 5 as follows:

Table 5
Students' Learning Styles in the High Learning Axienty Category

Combinations	Types of Learning Styles	Frequency	Percentage
Unimodal	V	1	1,02%
	A	16	16,32%
	R	5	5,11%

	K	10	10,21%
	Sum:	32	33%
Bimodal	VA	1	1,02%
	VR	1	1,02%
	VK	3	3,06%
	AR	4	4,08%
	AK	4	4,08%
	RK	2	2,04%
	Sum:	15	15%
Trimodal	VAR	1	1,02%
	VAK	1	1,02%
	VRK	1	1,02%
	ARK	15	15,31%
	Sum:	18	18%
Quadmodal	VARK	33	33,67%
	Sum:	33	34%
Total:		98	100%

The unimodal learning style in the high category of learning anxiety is dominated by type A at 16.32%. Type K is 10.21% and type R is only 5.11%, while learning style type V has the smallest percentage, namely 1.02%.

In the multimodal combination, the same as the previous two categories, in the high category the VARK type dominates with a percentage of 33.67%. Next, the largest multimodal learning style in this category includes ARK with a percentage of 15.31%. Apart from that, the percentage of other types of learning styles is no more than 5% in this category.

3.2 Discussions

3.2.1 Student Learning Styles

Overall, the majority of students show a tendency towards a multimodal learning style, with multimodal combination patterns (bimodal, trimodal and quadmodal) reaching a percentage of 65%. This figure is almost double the number of students who tend to have a unimodal learning style, which is only 35%.

Based on the data description of student learning style tendencies as a whole, the most dominant learning style is the VARK type with a percentage of 30.89%. These findings show that almost one in three students studied has a tendency to use the four main modalities in learning styles, namely visual, auditory, reading, and kinesthetic.

Apart from the VARK type, there are also other multimodal learning styles whose percentages are quite high, including ARK (10.99%), AK (8.11%), and AR (5.50%). Interestingly, these three categories do not involve any visual modality at all. Of all the data collected, the visual modality is the least popular among the other modalities. Even in the unimodal learning style classification, type V shows the smallest proportion, only 1.05% of the total. This indicates that the majority of junior high school students who were respondents had little preference for diagrams, graphs, maps and visual symbols which are used in many situations.

3.2.2 Student Learning Anxiety in Physics Learning

The distribution of data on students' learning anxiety levels shows that the number in the medium category is the majority, while the low and high categories are the minority. If the student learning anxiety data is loaded into a curve, the shape can be seen in Figure 3 as follows:

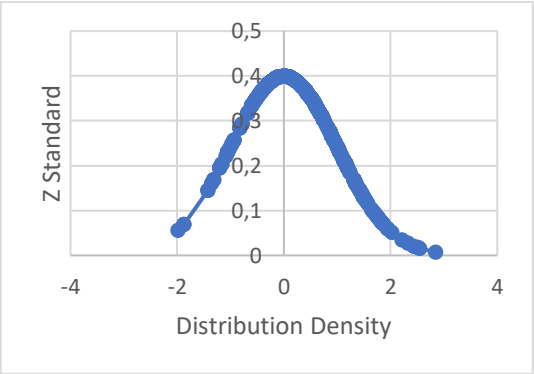

Figure 3
Curve of Learning Anxiety Data

The overall student learning anxiety data curve in Figure 3.6 forms a bell curve indicating that the data distribution tends to be normal. From the curve in Figure 3.6, it can be concluded that this phenomenon depicts a normal curve, that the majority of students with medium learning anxiety tend to be in the middle, while the only minority students who are left behind are those with low and high learning anxiety.

3.2.3 Student Learning Styles in Each Category of Learning Anxiety

The categories of student learning anxiety are divided into three categories, namely low, medium and high categories. If viewed based on the category of student learning anxiety, the VARK type dominates in each category of learning anxiety where the percentage in each category is not less than 27%. This shows that the VARK learning style types are evenly distributed across the three categories of student learning anxiety. For this reason, in analyzing learning styles based on these three categories, the VARK type is an exception.

3.2.3.1 Learning Style with Low Learning Anxiety

All types of bimodal learning styles in this category were not found to experience learning anxiety at all in physics learning. One of the interesting findings here is that the bimodal learning style type does not experience learning anxiety in the low category. This is interesting because overall, the bimodal learning style type only accounts for around 19%. This finding can explain that students who tend to use a bimodal learning style are less likely to experience learning anxiety in the context of physics learning. Related to this, teachers' teaching methods are still dominated by a combined approach, such as watching learning videos and taking notes on the material.

3.2.3.2 Learning Style with Medium Learning Anxiety

In the moderate level student learning anxiety category, the data distribution reflects the overall pattern, where the percentage of each type of learning style is identical to the overall data. The order of the top two most learning style data in this category is also exactly the same as the top two overall learning styles. As for the unimodal type of learning style, it is found in the medium category. This is relatively normal because this type of learning style makes up a very large percentage of the total data and this medium category is the majority.

3.2.3.3 Learning Styles with High Learning Anxiety

If we look at the data in the high category, it is found that learning style types that involve visuals tend not to experience high learning anxiety in physics learning. This indicates that the learning method in the classroom has fully accommodated learning styles that involve visual learning methods.

The type of unimodal learning style that is most often found in the high learning anxiety category is type A. This indicates that students who have an auditory/listening tendency are more susceptible to experiencing learning anxiety in physics learning. It can be concluded that learning methods in the classroom still do not fully meet the needs of students who tend to learn through auditory/listening.

Based on the results of data analysis on student learning style tendencies in terms of each category of learning anxiety in physics learning, there are several patterns in the distribution of the data. Although these patterns are visible, they are not striking. And there were no specific learning style preferences that were clearly collected in the learning anxiety category. This shows that learning style tendencies influence students' levels of learning anxiety.

CONCLUSION AND SUGGESTION

The conclusion of this study can be outlined in several points, including:

1. The profile of students' learning styles, in combination, is dominated by multimodal learning styles (65%), consisting of bimodal (19%), trimodal (15%), and quadmodal (31%). Meanwhile, unimodal learning styles (35%) have a relatively high percentage. Overall, the most dominant learning style is the VARK type (30.8%), indicating that almost 1 in 3 students has this preference. Other notable learning styles include type A (14.66%), type K (12.82%), type ARK (10.99%), type AK (8.11%), type R (6.81%), and type AR (5.50%).
2. The profile of students' learning anxiety in physics learning is dominated by the medium category (69.63%), while for the other two categories the numbers are high (25.66%) and low (4.71%).
3. There are several interesting things when viewed from the three categories of learning anxiety when viewed from the three categories of learning anxiety. In the low category, one type of learning style with a quite large percentage is type K, reaching 11.11%. Apart from type K, type A also has a fairly large percentage in the low category, but the AK combination turns out to be more numerous in the high category. One more interesting thing here is that in the high category, the percentage of type A learning style reaches 16.32%. These findings indicate that students who have an auditory/listening tendency are more susceptible to experiencing learning anxiety when learning physics. Even though there is a pattern of data distribution, this pattern is not very meaningful in the sense that students with certain learning styles do not directly indicate whether they experience or not experience learning anxiety.

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