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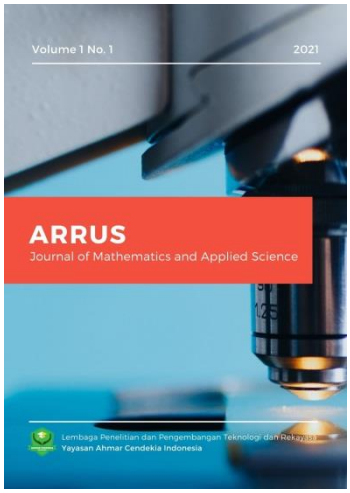

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RESEARCH ARTICLE

Analysis of Student Learning Styles in Science Subjects at SMPN 40 Makassar

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Abstract: Student learning style is one of the important information that a teacher needs to know before conducting learning activities, so that the teacher can determine the learning process that is suitable for the class. This descriptive quantitative research aims to analyze the characteristics of students' learning styles. The research subjects consisted of 23 students who were students of VIII.2, VII.4, and VIII.6 classes at SMP Negeri 40 Makassar. The learning style instrument is a multiple choice questionnaire, with a total of 50 questions, each question has five answer choices. The learning styles studied focus on Visual, Auditory, and Kinesthetic learning styles. The data were analyzed quantitatively by reducing data, presenting data, and making conclusions. The results of research on learning styles for classes VIII.2 and VIII.4 are auditory, while VIII.6 is a visual learning style and in general in class VIII at SMPN 40 Makassar are auditorial learning.

Keywords: Student Learning Style, Science Subject, Visual, Auitory, Kinesthetic

1. Introduction

At various levels of education, there are still many learning outcomes that have not been as expected. Learning styles that are not in accordance with student conditions have an impact on the level of understanding of low subjects (Sholihah, 2020). For some time now educational research exploring the issue of academic achievement or success has extended rightfully so beyond "simple" issues of intelligence and prior academic achievement. One concept in particular which has provided some valuable insights into learning in both academic and other settings is learning style. There is general acceptance that the manner in which individuals choose to or are inclined to approach a learning situation has an impact on performance and achievement of learning outcomes (Cassidy, 2004).

Learning styles refer to the unique ways individuals best receive and process information. In science education, incorporating different learning styles can enhance students' understanding and engagement with various scientific concepts. Research studies have found that utilizing multiple teaching approaches catering todiverse learning styles can improve academic performance and lead to better retention of information (Shaidullina, *et al*, 2023). The The concept of learning style is used to describe individual differences in learning because each individual does not use the same learning process. Student learning styles are important in all age groups because they are closely related to individual learning achievement (Magdalena, 2015). Learning style characteristics adapt to individuals closely related to personality and environment. Generalization with a variety of student learning styles is a problem that has not been resolved because of the difficulty of presenting student groupings based on learning styles with the available resources, and not many schools apply class groupings based on a diagnosis of student learning styles (Subagja, 2023).

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2. Literature Review

The role and significance of learning styles in science education at secondary school were emphasized by different researchers in the literature. Everyone has a learning style, but each person's is different - like our fingerprints which come from each person's five fingers and look similar in many ways". So, there are varieties and problems in learning style. All the students are not independent to apply their learning styles at the time of their study. The dedication for learning, collaborativeness, competitive attitude and participative eagerness of the students has been dividing according to gender and habitat. In school life the success is very often related to intelligence, aptitude, attitude, persistent efforts and skills (Dunn, 1992; Cassidy: 2004; Subagja, 2023).

Learning style characteristics adapt to individuals closely related to personality and environment (Magdalena, 2015; Shaidullina, *et al*, 2023). Generalization with a variety of student learning styles is a problem that has not been resolved because of the difficulty of presenting student groupings based on learning styles with the available resources, and not many schools apply class groupings based on a diagnosis of student learning styles. Learning styles is a field of research that has many useful implementations for both the learner and educator. Learning styles can be simply understood as the various techniques that students prefer to use to perceive and process information and interact with the learning environment. Identifying the various dimensions of learning styles provides educators with a greater awareness of the unique characteristics of learners. Educators can use this awareness to maximize student learning and support effective education by developing teaching methods that incorporate various learning styles.

One of the most common and widely-used categorizations of the various types of learning styles is Fleming's VARK model (sometimes VAK - an acronym for the Visual (V), Auditory (A), and the Kinaesthetic (K) sensory modalities) which provides the learners with a profile of their learning styles, based on the sensory modalities which are involved in taking in information. This model expanded upon earlier Neuro-linguistic programming (NLP) models. In NLP the senses are split into three groups (Visual, Auditory, and Kinesthetic) which are referred to as Representational Systems (rep systems) (SK, M. S., & Helena, 2017). This term relates to the fact the brain uses the senses to build our internal representation, or model of the world around us. Classification of learning style by DePorter (2010) can be seen in Table 1.

Table 1. Classification of student learning styles

Visual	Auditory	Kinesthetics
Visual accesses visual images, which are created or remembered. Colors, spatial relationships, mental portraits and images are prominent in this modality.	Auditory accesses all types of sounds and words created and remembered. Music, tone, rhythm, rhyme, internal dialogue, and voice stand out here.	Kinesthetics accesses all types of movements and emotions created and remembered
Be organized, pay attention to everything, take care of your appearance	His attention is easily divided	Touching people and standing close together, moving around a lot
Remembers with pictures, prefers to read rather than be read to	Speak in a rhythmic pattern	Learn by doing, pointing to writing while reading, responding physically.
Needs an overall picture and purpose and captures details: remembers what is seen	Learn by listening, moving your lips/voicing when reading	Remembering while walking and looking.
Observant but may miss some of what is said. Remember better by seeing charts, diagrams, etc.	Dialogue internally and externally.	Movement, coordination, rhythm, emotional response, and physical comfort stand out here

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3. Research Method and Materials

This research method uses a qualitative descriptive research approach (Frankel, *et al.*, 2012) by describing students' learning styles in science subjects. The subjects of this research were all students in class VIII.2, VIII.4, VIII.6 of SMP Negeri 40 Makassar, who are currently in semester 2 of the 2024 academic year. The instrument used in this research is a questionnaire which will be filled in by the subject. The questionnaire contains a number of written questions which are used to obtain information from research subjects regarding several characteristics of their learning styles. Taking the sample in this study used non-probability sampling with Purposive sampling technique.

4. Results and Discussion

Learning style is a student's way of obtaining and processing information. This research aims to analyze the tendencies of each student's learning style when studying science. Everyone has a different learning style. However, in the learning process, learning styles can generally be categorized. into three, namely Visual, Auditory and Kinesthetic. Students who have a Visual learning style do not mean they do not have other learning styles, it's just that Visual students will more easily receive and process information when the teacher explains it through pictures. Auditory learning styles make it easier for students to understand by listening, while kinesthetic students can understand by doing or practicing directly (DePorter, 2010).

After completing the learning style questionnaire by 73 research subjects of SMP Negeri 40 Makassar, an analysis or calculation of the scores for each research subject was then carried out. There are two data on student learning styles, namely data on learning styles for each class and in general.

4.1. Learning style analysis of each class

Results of learning style analysis of students in VIII.2, VIII.4, and VIII.6 classes on 2024 academic year can be seen in the Table 2, 3, and 4.

Table 2. Trends of learning style of student class VIII.2

No	Learning styles	Frequency	Percentage (%)
1	Visual	8	30.8
2	Auditory	12	46.1
3	Kinesthetic	6	23.1
	Total	26	100

Based on the results of data processing, according to Table 2, it is known that learning styles in class science subjects VIII.2 at SMPN 40 Makassar in 2024 as many as 46.1% of respondents were auditory, as much as 30.8% visual, and kinesthetic as much as 23.1%. This shows that the auditory learning style is highest in science subjects for class VIII.2 students.

Table 3. Trends of learning style of student class VIII.4

No	Learning styles	Frequency	Percentage (%)
1	Visual	4	16.7
2	Auditory	18	75
3	Kinesthetic	2	8.3
	Total	24	100

Based on Table 3, it is known that the learning styles in science subjects in Class VIII.4 in SMPN 40 Makassar for the 2024 academic year, 75% of respondents were auditory, 16.7% were visual, and 8.3% were kinesthetic. This shows the same trend as class VIII.2, in Table 2, where auditory is the highest learning style in science subjects.

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Table 4. Trends of learning style of student class VIII.6

No	Learning styles	Frequency	Percentage (%)
1	Visual	9	39.2
2	Auditory	7	30.4
3	Kinesthetic	7	30.4
	Total	23	100

Trends of learning styles in science subject in class VIII.6 students are different, where visual is the highest learning style, followed by auditory and kinesthetic.

4.2. General learning style

Table 5 describes the Learning Styles in Class VIII Science Subjects at SMPN 40 Makassar.

Table 5. Trends of learning style of student class VIII

No	Learning styles	Frequency	Percentage (%)
1	Visual	21	28.8
2	Auditory	37	50.7
3	Kinesthetic	15	20.5
	Total	73	100

Based on the results of data processing according to Table 5, it is known that learning styles in the science subject Class VIII Science in SMPN 40 Makassar in 2024 academic year was 50,7% is auditory with a higher percentage of learning style, as much as 28,8% visuals and as much as 20.5% kinesthetic. According to Rose and Nichol (1997), strategy auditory decreases characteristic of auditory expressions such as reading information aloud in a dramatic way. By knowing the characteristics auditory students in the class will provide guidance to the teacher for choosing learning strategies that provide auditory variations.

The student's ability to understand the lesson already definitely different levels. There's something fast, moderate and some are very slow. Each individual does not just learn by different speeds but also process information in that way different. Therefore, they often have to take a different way to understand about the information or a lesson. How to process information obtained is known as learning style.

5. Conclusion

Based on the results of analysis and discussion regarding Analysis of Student Learning Styles Based on VAK Criteria (Visual, Auditory, and Kinesthetic) in Science Subjects at SMPN 40 Makassar, conclusions can be obtained as following:

a. Learning styles per class, for classes VIII.2 and VIII.4 are auditory learning style, while class VIII.6 is a visual learning style.

b. Learning style tendencies in Science subject in general in Class VIII at SMPN 40 Makassar are Auditorial.

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