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Students' Learning Styles and Academic Performance

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***Abstract*—** Learning styles play a crucial role in shaping the educational experience of individuals. Understanding the relationship between students' learning preferences and academic achievement can help teachers and administrators create successful instructional strategies and interventions that are appropriate to the needs of every student. This study investigated the learning styles and academic performance of Junior High School students during the school year 2022-2023 at Misamis University. The research is grounded in the VAK Learning Styles Model and the Theory of Academic Performance (ToP). The study utilized a descriptive-correlational research design. A total of 166 respondents participated in the study who are selected through a stratified sampling. The data were collected through a researcher-made Learning Style Questionnaire and documentary analysis. Academic performance was measured using the general weighted average grades. The results revealed that there is no significant relationship between learning style and academic performance. The study aimed to contribute to the development of a student-centered educational system by recognizing and accommodating individual differences in learning styles. Researchers found that students have learning preferences in visual, auditory, or kinesthetic modalities, which may impact their academic performance. It is essential to recognize that people have different preferences for how they process and retain information.

***Keywords*—** academic performance, auditory, kinesthetic, learning styles, visual.

I. INTRODUCTION

Students learn in various learning styles; their academic performance is seemingly determined by learning styles or modes of learning. Learning styles in economics disciplines are influenced by learning desire. A learning style is an individual's natural or regular manner of obtaining and processing information in learning contexts. Various sorts of medical students employ various sensory modalities to absorb knowledge and information. Nowadays, the use of technological tools for teaching is prevalent, which might impact learning methods (Parashar et al., 2018).

Students who prefer visual, visual with kinesthetic, or auditory with kinesthetic learning styles all exhibit the same level of mathematical critical thinking. This discovery affects educators. Teachers must pay close attention to teaching methods that cater to kids who learn best through visual, aural, and kinesthetic means. Learning more about students will help (Setiawan et al., 2020).

Learning is a significant component of student life. Individuals who converge in a school as students come from different environments and hence have different learning experiences. Such different experiences make them exhibit different personality traits, including ways of assimilating learning materials (Baiden et al., 2020). When individuals become conscious of their learning style, and teachers become aware of the styles of their learners, learning motivation and effectiveness increase. (Naseer et. al. 2020).

Students have preferences regarding learning, processing information, memory retention, and recall (Fahim et al., 2022). A learning style is an individual's natural or regular manner of obtaining and processing information in learning contexts. Nowadays, the use of technological tools for teaching is prevalent, which might impact learning methods (Parashar et al., 2018).

Learning styles are a significant factor in determining how each person experiences school. The propensity for visual learning among these approaches has drawn much attention. Visual learners significantly prefer using visual cues and information to speed up their understanding of new ideas. Visual learners prefer visual representations because they find it more straightforward to comprehend complicated ideas when they are shown (Kolb & Kolb, 2019). This preference for visual learning is not only a matter of taste but also a cognitive strategy that aligns with how visual learners encode and process information.

Visual learners are better at remembering and recalling visual information, which can improve their performance. Participants in the discussion discussed the difficulties faced by the millennial generation of learners, including the necessity for faculty to adapt to the many diverse learning styles that may differ from the

preferred teaching style and students accustomed to working outside of scheduled class times (Mayer, 2019). PowerPoint, case study films, Socratic questioning, simulation, and a blend of learning methodologies were among the strategies employed to accommodate the preferred learning styles (Watkins, 2022).

Auditory learners prefer auditory cues and information to speed their learning and comprehension. Auditory learners have a significant advantage in retaining and recalling auditory information compared to other learning styles. Their ability to effectively process and store auditory stimuli contributes to their academic success (Yin, 2021). Auditory learners have a distinct advantage in attending to auditory cues and sounds. Auditory learners are inclined toward developing solid oral communication skills (Smalle & Scott, 2022). Their ability to process and understand verbal information aids in effectively expressing ideas and concepts (Derry, 2022).

Kinesthetic learners who actively engage in hands-on activities are likelier to remember knowledge and show a deeper understanding of the material. This is because kinesthetic learning stimulates neural connections through physical interaction and enhances memory formation (Elokla & Hamdy, 2020). Additionally, kinesthetic learning helps improve students' motor and spatial intelligence. Kinesthetic learners improve their spatial awareness, coordination, and agility through physical movement and interaction (Ayres, 2020).

OBJECTIVES OF THE STUDY

This study explores the learning styles and academic performance of Junior High School Students during the school year 2022-2023.

Specifically, this study seeks to:

1. What is the level of student's learning styles in terms of Visual, Auditory, and Kinesthetic?
2. What is the level of academic performance of the students?
3. Is there a significant relationship between the student's learning style and their academic performance?

II. METHODOLOGY

Design

This study utilized quantitative research using a descriptive-correlational research design. Descriptive-correlational analysis helps describe one phenomenon about another when the researcher does not have control over the independent variables that are thought to cause or influence the dependent or outcome variable (Lappe, 2018). Correlational research investigates the interrelationships between variables of interest without any active intervention on the part of the researcher (Polit & Hungler, 2018). This design was appropriate for determining the significant relationship between a junior high school student's teaching style, learning style, and academic performance.

Setting

The research was conducted at the Basic Education Department at Misamis University, located in Ozamiz City, Misamis Occidental. The Basic Education Department consists of Nursery, Kindergarten, Elementary, Junior High School and Senior High School. Founded in 1929 by Dr. Hilarion Feliciano and Dona Maria Mercado Feliciano, Misamis University is a private, non-sectarian institution. It is currently the only autonomous university in the region that has received ISO 9001:2015 Management System Certification. Additionally, it has been recognized by the Philippine Association of Colleges and Universities Commission on Accreditation for having the highest number of accredited programs in Region X. The university is committed to providing accessible education and maintaining a high-quality academic curriculum.

Participants

The researcher used Stratified Random Sampling. Hence, the participants of this study consisted of 284 students, 65 grade 7 students, 54 grade 8 students, 72 grade 9 students, and 93 grade 10 students. The participants were chosen based on the following standards: 1.) grade 7 to grade 10 students who are enrolled in the Junior High School at Misamis University for the academic year 2022-2023; 2.) willing to participate in the study.

Instrument

A. Learning Style Questionnaire. This was a researcher-made instrument composed of 43 items with three constructs: visual, auditory, and kinesthetic. It was pilot tested on the participants who were excluded from the study to ensure the validity and reliability of the test.

The pilot test yielded a Cronbach's Alpha of 0.9156. In interpreting the level of both teaching styles, the following scales were used:

Responses	Continuum	Interpretation
5 - Always	4.25 - 5.00	Very Good (VG)
4 - Often	3.50 - 4.24	Good (G)
3 - Sometimes	2.75 - 3.49	Fair (F)
2 - Rarely	1.75 - 2.74	Poor (P)
1 - Never	1.00 - 1.74	Very Poor (VP)

Academic Performance. The academic performance of the students was measured through the general weighted average grades from the first grading to second grading period of the school year 2022-2023.

The grades of the students were extracted from their respective advisers. The following scales were used in interpreting the level of students' performance:

Range	Interpretation
90-100	Outstanding
85-89	Very Satisfactory
80-84	Satisfactory
75-79	Fairly Satisfactory
74 and below	Did Not Meet Expectation1

Data Gathering

The gathering of data commenced after the approval and certification to conduct the study that was obtained from the Principal of Basic Education. The researcher sent a request letter to the Principal of Basic Education, Misamis University, Ozamiz City, to administer the survey questionnaires to the students. After the approval, the researcher asked permission from the Junior High School advisers to conduct the study and to explain further the intention of the study. Furthermore, the researcher also sought the students' assertiveness and consent as part of the study. After weeks, the data were retrieved, tallied, and tabulated for statistical analysis and interpretation.

The gathering of data commenced after the approval and certification to conduct the study were obtained from the Principal of the Basic Education Department. Then, the researcher sent an approval letter to the Junior High School advisers to administer the survey questionnaires to the students. After the approval, the researcher will meet with the intended respondents to explain the intention and protocol of the study. Further, the researcher sought the consent of the students as part of the study and secured their grades from the system. After the respondents confirmed their participation, the researcher scheduled the distribution of the survey questionnaires based on their preferred date and time; the expected duration of participation in this study is 45-60 minutes only. When the instruments were retrieved, the researcher reviewed the responses to ensure the completeness of the data. The data were then tallied and tabulated for statistical analysis and interpretation.

Ethical Considerations

Before the study was conducted, approval from proper authorities was secured. The purposes of the research were clearly explained to the respondents, and the researcher asked for consent from all respondents who agreed to participate.

The researcher ensured that no respondents were subjected to harm in any manner. Respect for the dignity of all respondents will be the prime priority of this research. The protection of the respondents' data privacy was emphasized. Any communication about the research was done with honesty and transparency, and any type of misleading information, as well as the representation of primary data findings in a biased way, was avoided.

Statistical Analysis of Data

This study used the following statistical tools to analyze the data gathered.

Mean and standard deviation was used to determine the levels of the learning style of the students.

Pearson Product – Moment Correlation Coefficient was used in determining the relationship between the students' learning styles, and their academic performance.

III. RESULTS AND DISCUSSION

Students' Learning Style

Based on the data collected, we have assessed various learning styles: visual, auditory, kinesthetic, and overall learning styles. The accompanying table displays each category's mean (M) and standard deviation (SD).

The visual learning style received a mean score of 3.62, with a standard deviation 0.58. It indicates that, on average, individuals rate their visual learning preference as "good." The relatively low standard deviation suggests minimal variation in the ratings, reflecting respondents' consensus on visual learning preferences.

In contrast, the auditory learning style achieved a mean score of 3.93 and a standard deviation of 0.55. This score implies that individuals rate their auditory learning style as "good," with an even lower standard deviation than the visual learning style. That points to a higher level of agreement among participants regarding their auditory preferences.

The kinesthetic learning style scored a mean of 3.63 and a standard deviation of 0.56. This score indicates that, like the visual and auditory styles, individuals also rate their kinesthetic learning preference as "good." The standard deviation suggests a similar consensus regarding kinesthetic learning preferences.

Tyas et al. (2017) recommends that the English department tailor academic activities to align with these learning styles in order to enhance educational outcomes and encourage students to take greater responsibility for their learning.

The mean rating for the Overall Learning Style is 3.73, with a standard deviation of 0.56. This suggests that, on average, individuals have rated their overall learning style as "Good." The standard deviation indicates a moderate level of variation in the ratings, like the individual learning styles, suggesting a moderate level of agreement among people regarding their overall learning preferences.

The study based on the provided ratings, individuals generally perceive their learning styles as "Good" across all constructs, including Visual, Auditory, Kinesthetic, and overall Learning Styles. The standard deviations indicate a moderate level of variation and agreement among people in their self-perceived learning preferences. According to the study of Cabual, R. A. (2021) learning is a never-ending process, and a process is an event that leads to a specific outcome. Understanding will not be accomplished if challenges will cause the learning process to be delayed or stopped. A successful learning plan will resolve these challenges, resulting in learning that is personalized to the learner's needs.

Table 1. *Student's Learning Style (n=166)*

Constructs	M	SD	Remarks
Visual	3.62	0.58	Good
Auditory	3.93	0.55	Good
Kinesthetic	3.63	0.56	Good
Overall Learning Style	3.73	0.56	Good

Note: Learning Style Scale 4.25–5.0: Very Good 3.50–4.24: Good 2.75–3.49: Fair 1.75–2.74: Poor 1.0–1.74: Very Poor

Students' Academic Performance

Based on the given data we have satisfaction level ratings for Overall Academic Performance, including Outstanding, Very Satisfactory, Satisfactory, and Fairly Satisfactory. The table also provides the frequency and percentage of students falling under each satisfaction level, along with the mean (M), standard deviation (SD), minimum, and maximum values for each satisfaction level.

Table 2 depicts the students' academic performance of 84.90 (Performance Scale = Very Satisfactory). Very Satisfactory obtained the highest performance scale with a total frequency of 56 (33.73%) acquired from the respondents' responses. Education is considered imperative for not only the progress of individuals but also for the development of the community and nation Kapur, R. (2018). The mean satisfaction level for this group is 87.10, with a standard deviation of 1.44. The minimum and maximum values are 85.00 and 89.67, respectively. This suggests that this group of students has performed well academically, with a relatively high average satisfaction level and low variation.

Meanwhile, Satisfactory obtained the second rank on the performance scale with a total frequency of 30.72% acquired from the respondents' responses, it implies that

students have been rated as "Satisfactory" in their academic performance. The mean satisfaction level for this group is 82.46, with a standard deviation of 1.33. The minimum and maximum values are 79.67 and 84.44, respectively. This indicates that this group of students has achieved a satisfactory level of academic performance, with a decent average satisfaction level and low variation.

The third performance category, which received a performance scale with a total frequency of 1.81% of students falls under the "Fairly Satisfactory" category in their academic performance. The mean satisfaction level for this group is 77.26, with a standard deviation of 1.11. The minimum and maximum values are 76.00 and 78.11, respectively. This suggests that only a small percentage of students are in this group, and they have achieved a satisfactory level of academic performance, with a moderate average satisfaction level and low variation. Most students have performed well academically, with around two-thirds of them rated as "Outstanding" or "Very Satisfactory." Only a smaller percentage falls under the "Satisfactory" and "Fairly Satisfactory" categories.

Table 2. *Student's Academic Performance (n=166)*

Satisfaction Level	Frequency	Percentage	M	SD	Min	Max
Outstanding	56	33.73%	92.77	2.12	89.56	98.00
Very Satisfactory	56	33.73%	87.10	1.44	85.00	89.67
Satisfactory	51	30.72%	82.46	1.33	79.67	84.44
Fairly Satisfactory	3	1.81%	77.26	1.11	76.00	78.11
Overall Academic Performance	**166**	**100%**	**84.90**			

Note: Performance Scale: 90–100 (Outstanding) 85–89 (Very Satisfactory) 80–84 (Satisfactory) 75–79 (Fairly Satisfactory) 74 and below (Failed)

Relationship between Students' Learning Styles and Academic Performance

Table 3 presents the results of a test of the relationship between students' learning styles (Visual, Auditory, and Kinesthetic) and their academic performance. The table includes the correlation coefficient (r-value) and the corresponding (p-value for each relationship.

Visual and Students' Academic Performance: The correlation coefficient (r-value) between Visual learning style and Students' Academic Performance is -0.06. The p-value associated with this correlation is 0.45. Since the p-value is greater than 0.05, the relationship between Visual learning style and Students' Academic Performance is considered "Not Significant." In other words, there is no statistically significant correlation between the Visual learning style and students' academic performance. The negative sign of the correlation coefficient (-0.06) suggests a very weak negative relationship, but it is not strong enough to be considered significant.

Auditory and Students' Academic Performance: The correlation coefficient (r-value) between Auditory learning style and Students' Academic Performance is -0.03. The p-value associated with this correlation is 0.71. As the p-value is greater than 0.05, the relationship between Auditory learning style and Students' Academic Performance is also considered "Not Significant." This means that there is no statistically significant correlation between the Auditory learning style and students' academic performance. The correlation coefficient is very close to zero, indicating an extremely weak and negligible relationship.

Kinesthetic and Students' Academic Performance: The correlation coefficient (r-value) between Kinesthetic learning style and Students' Academic Performance is -0.15. The p-value associated with this correlation is 0.06. With a p-value just slightly above 0.05, the relationship between Kinesthetic learning style and Students' Academic Performance is nearly significant but still falls under the "Not Significant" category. This suggests that there might be a weak negative relationship between the Kinesthetic learning style and students' academic performance, but it is not strong enough to be considered statistically significant at the conventional significance level.

In summary, based on the correlation analysis, there is no statistically significant relationship between students learning styles (Visual, Auditory, and Kinesthetic) and their academic performance. The correlations are generally weak and close to zero, indicating that there is little to no linear association between learning styles and academic performance in this study. Therefore, the study does not provide evidence to suggest that one's learning style significantly impacts their academic

performance in this context. According to the study by Cimermanová, I. (2018). increased interest in learner styles as one of the key factors influencing learning generally. During the last decade, we have also noticed rapid advances in the field of technology-enhanced learning and a growing trend toward its application in formal education.

Table 3: *Test of Relationship between the Students' Learning Style and Their Academic Performance*

Variables	r-value	p-value	Remarks
Visual and Students' Academic Performance	0.06	0.45	Not Significant
Auditory and Students' Academic Performance	0.03	0.71	Not Significant
Kinesthetic and Students' Academic Performance	0.15	0.06	Not Significant

Note: p < 0.01: Highly Significant p < 0.05: Significant p > 0.05: Not Significant

IV. SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary

This study was conducted to determine the student's learning styles and academic performance. The study uses a descriptive-correlational design. There were 287 junior high school students from grade 7 to grade 10. The respondents were selected through stratified random sampling. It utilized a research-made questionnaire in which the researcher conducted Pilot testing during the study. The sample size was then identified as 161 respondents. Data were analyzed using mean, standard deviation, frequency, percentage, and Product Moment Correlation Coefficient. Specifically, the study's objective was to: (1) Determine the student's learning style in terms of Visual, Auditory and Kinesthetic. (2) Determine the academic performance of the students (3) Determine the significant relationship between the student's learning style and their academic performance.

Findings

The following were the findings of the study:

1. In the level of learning style, the respondents show a good response on the overall learning style in terms of Visual, Auditory, and Kinesthetic.
2. Most respondents riposte their performance scale with very satisfactory remarks regarding the Student's Academic Performance.
3. The respondents' learning style is not significantly related to their academic performance.

Conclusion

This study examined the students' learning styles about academic performance among junior high school students. The result of the study revealed that:

The respondents' learning styles and their academic performance are under consideration. The findings indicate that the respondents generally perceive their learning styles positively, particularly in visual, auditory, and kinesthetic modalities. They currently rate their overall learning style as "good," indicating a favorable response toward their preferred learning styles.

Most respondents expressed high satisfaction with their academic performance and provided very satisfactory remarks. That indicates that most respondents are currently content with their academic achievements and perceive their performance as satisfactory.

The study does not find a significant relationship between the respondents' learning styles and their academic performance. The current analysis does not yield statistically significant results, indicating that the respondents' learning style preferences do not significantly impact their academic performance.

Finally, the respondents currently have a positive perception of their learning styles and express high satisfaction with their academic performance. However, no significant association has been found between the respondents' learning styles and their academic performance.

Recommendations

Educators shall continue to encourage diverse learning modalities in the classroom to accommodate varied learning styles. While the study did not reveal a significant association between learning styles and academic achievement, it is vital to recognize that people have different preferences for processing and retaining information.

Educators may create a more inclusive and engaging learning environment by integrating auditory, visual, and kinesthetic teaching modalities.

Students shall reflect on their learning styles and find the best ways for them. Their self-awareness can help them

optimize their study habits and seek out materials and strategies that match their learning preferences.

Learning styles may not be the only predictor of academic achievement. Future studies should examine other characteristics that may influence academic success, such as study habits, motivation, and external support systems.

School administrators shall embrace a comprehensive strategy to evaluate student success. While academic success is essential, it is also important to remember that it incorporates factors other than learning styles. Multiple indicators, such as critical thinking skills, creativity, problem-solving ability, and social-emotional development, should be included in assessments to provide a more thorough knowledge of student growth and potential.

Collaboration among educators, students, and parents/guardians is critical for academic success. By promoting open communication channels, stakeholders can collaborate to identify individual learning needs, adjust instructional tactics, and provide required support systems. Regular feedback and progress tracking help identify areas for improvement and allow for focused interventions for children who may need extra help.

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