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The Influence of Learning Style, Gender on Coqnitive Learning in Private Madrasah Aliyah

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Abstract

This study aims to explain how gender and learning style influence class XI students' cognitive physics learning outcomes at Madrasah-based Islamic boarding schools. This study included 459 students as participants. In order to obtain 96 students, samples were taken using random sampling methods. The information assortment instrument utilized a survey and documentation of PAS results (End of Semester Evaluation) as essential information, which was dissected subjectively and distinctly utilizing the Kruskal-Wallis test and Kendall's Tau relationship test. The consequences of this study show that the distinction in orientation learning styles isn't huge, with the predominant learning style possessed by understudies, in particular of the three existing learning styles, being specific visual, hear-able, and sensation. The connection between people's learning styles and mental learning results shows a powerless relationship.

Keywords: *Cognitive Outcomes, Gender, Learning Style, Physics*

INTRODUCTION

Training in the 21st century expects to make thriving and satisfaction for all individuals, live in uniformity, and be regarded among different countries (Garber et al., 2012). This instructive cycle, which is a long-lasting activity with the acknowledgment of self-arrangement overall, fosters the general potential to satisfy human responsibility as God's animals (Hsieh et al., 2012). This can be accomplished with will, confidence, and own capacity to be created through an instructive interaction followed by the person. One of the human potential capacities is the learning style (Ibrahim et al., 2016). A student's learning style is how they focus, process, and absorb information, as well as how they accommodate data that enters their brains (Smits et al., 2011), (Halvorsen & Ljunggren, 2020). Learning styles that are on top of the understudies are the way in to the outcome of understudies in learning (Wong et al., 2000), (Henderson & Burford, 2020). Understanding students' learning styles can make it simpler for them to participate in class activities (Taheri et al., 2019), (Abouzeid et al., 2021).

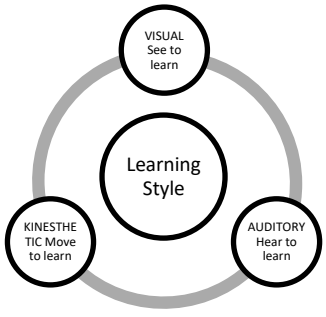

Figure 1. Learning Style

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There are three learning styles as shown in Figure 1. First, the visual learning style is divided into 2 parts, namely visual linguistic and visual-spatial (Chowdhury, 2015), (Holt et al., 2018). The visual etymological learning style is more straightforward to learn through composition, perusing, and composing (Golightly, 2019) . Students more easily remember something with what they read or wrote (Nuzhat et al., 2013). As for Visual Spatial, it is easier to read graphs, pictures, or maps (Sulistyanto et al., 2022), (Mountford et al., 2006).

Both Auditory learning styles are student learning styles that prefer to talk to themselves and hear something to make it easier to remember learning so that students can communicate well (Narimo et al., 2023).

Thirdly, students with the Kinesthetic learning style are more involved in the classroom learning process than those who simply sit and watch (Sugahara & Boland, 2010), (Boosman et al., 2013).

By understanding educators about student learning styles it makes it easier to achieve their learning goals (Green & Sammons, 2014). Learning outcomes with this cognitive domain are learning outcomes for students which include the ability to understand, know, memorize, interpret, translate, differentiate, and compile in making evaluations (Lee & Li, 2008).

Al Shdaifat's examination makes sense of that there is a positive and huge connection between learning styles and learning accomplishment in the field of math on shapes and blocks (Al-Shdaifat et al., 2023), (Surono et al., 2023) . Additionally, according to Marriot's research, many students continue to have learning outcomes below the minimum threshold value. This is due to students' lack of understanding of their learning style (Marriott, 2002), (Paver & Gammie, 2005) .

Learning styles can be utilized in the physical science growing experience which is firmly connected with understanding and information, both hypothesis, realities, and regulations in learning (Collins et al., 2019), (Hashem, 2022). Gender, which is a sociocultural and psychological distinction between men and women, has an impact on learning styles (Borun et al., 2010), (Orhun, 2007) .

Boys did slightly better than girls in grade 8 junior high school in a national study on achievement in natural science (Parashar et al., 2019), (Moore & Craciun, 2024). Lee and Smerdon in their examination additionally showed that young men scored higher than young ladies on the science test (Tembo & Lee, 2017), (Picciarelli et al., 1995). This creates controversy for researchers in the field of Gender (Courcier, 2007), (Jones et al., 2021). Hyde, one of the gender researchers, stated that men and women were the same in most of the psychological factors in mathematics, communication, and aggression, no differences were found or there were few differences (Danişman & Erginer, 2017)(Becerra-gonzález, 2015).

This clarification made the analyst keen on leading exploration with the title "The Influence of Gender, Learning Styles on Physics Cognitive Learning Outcomes at Senior High School".

RESEARCH METHODS

This exploration was done in the scope of July 2022 to December 2022 at Madrasah Aliyah in view of Islamic life experience schools comparable senior secondary school. The population is 496 students with a sample of class XI majoring in Science as many as 96 students using purposive sampling. This study employs a descriptive model. Quantitative information was gotten from a survey on gaining styles and mental scores from the finish of-semester evaluation. The final assessment of this semester is formulated

$S = n/N \times 100$

Where,

S = Value of physics cognitive learning outcomes;

n = number of items answered correctly;

N = Maximum score of the test.

Cognitive physics learning outcomes can be interpreted in terms of criteria such as table 1.

Table 1. Results Assessment Criteria

Interval value	Category
81 – 100	Very High
61 – 80	Tall
41 – 60	Enough
21 – 40	Low
0 – 20	Very low

The learning style survey utilized comprised of 36 Likert scale questions which were isolated into 3 (three) learning style bunches specifically visual, hear-able, and sensation. The results of the distribution of student answers are used as the basis for determining their learning style utilizing the highest score for each group.

The Kendall's Tau correlation test then establishes a correlation between the cognitive physics learning outcomes and the results of learning style calculations. The significance value of Kendall's correlation test is the basis for this test's criteria. If the significance value is 0.05, there is a relationship between the variables, and if it is greater than 0.05, there is no relationship. Kendall's Tau correlation test also produces a correlation coefficient that describes the degree of closeness of the correlation of the three variables. The correlation coefficient is interpreted in Table 2.

Table 2. Interpretation of the correlation coefficient

Interval Coef	Correlation
0,00 – 0,199	Very low
0,20 – 0,399	Low
0,40 – 0,599	Enough
0,60 – 0,799	High
0,80 – 1,000	Very High

RESULTS AND DISCUSSIONS

Student learning styles. The results of data analysis at Madrasah Aliyah based on Islamic Boarding Schools class XI majoring in Science were obtained as in Table 3.

Table 3. The Number of Learning Styles by Gender

	Male	Female
Visual	16	23
Auditory	11	12
Kinesthetic	21	13
Total	48	48

Table 3 shows that every orientation has an alternate number of visual, hear-able, and sensation learning styles. Contrasts in understudy learning styles between sexual orientations. The Kruskal-Walis test revealed differences in male and female learners' learning styles.

Table 4. The results of the Kruskal Wallis test for the Variable Style Learning Group

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Table 4. The results of the Kruskal Wallis test for the Variable Style Learning Grou

	Cognitive Learning Outcomes	Gender
Chi-Square	2,273	3,149
Asymp.Sig	0,321	0,207
a. Kruskal Wallis Test		
b. Grouping Variable : Learning Style		

Table 4 shows the importance benefit of learning styles for orientation at 0.207. Since this significance value is greater than 0.05 (0.207>0.05), H0 is accepted (student gender does not differ in learning styles).

Table 5. Results of the Kruskal Wallis Test for The Variable of Group Gender

	Cognitive Learning Outcomes	Learning Style
Chi-Square	2,273	3,149
Asymp.Sig	0,321	0,081

a. Kruskal Wallis Test

b. Grouping Variable: Gender

The significance value of 0.081 for gender on the learning style is also shown in Table 5. H0 is accepted because there are no gender differences in student learning styles and this significance value is greater than 0.05 (0.081> 0.05).

Table 6. Output Kruskal Wallis Test

	Style learning	N	Mean Rank
Cognitive Learning Outcomes	Visual Style	39	47,62
	Auditory Style	23	42,48
	Kinesthetic Style	34	53,59
	Total	96	
Gender	Visual Style	39	52,81
	Auditory Style	23	49,54
	Kinesthetic Style	34	42,85
	Total	96	

According to table 6, the visual learning style's learning style to gender has the highest mean rank, while the kinesthetic learning style's learning style to cognitive learning outcomes has the highest mean rank.

Orientation relations in light of learning styles with mental learning results. The Kendall's Tau test was used to examine the relationship between cognitive learning outcomes and gender-based learning styles, and the findings are presented in Table 7.

Table 7. Kendall's Tau test results on the correlation coefficient

Kendall's tau_b		Cognitive Learning Outcomes	Learning Style	Gender
Cognitive Learning Outcomes	Correlatic	1	0,07	-0,27
	Sig. (2-tailed)		0,396	0,754
	N	96	96	96
Learning Style	Correlatic	0,07	1	-0,169
	Sig. (2-tai	0,396		0,81
	N	96	96	96
Gender	Correlatic	-0,27	-0,169	1
	Sig. (2-tai	0,754	0,81	
	N	96	96	96

According to Table 7, the gender significance value for learning styles for the correlation test with Kendall's Tau was 0.081 > 0.05, indicating that there is no correlation between gender and learning styles. Meanwhile, gender has a significance value of 0.754 or greater in cognitive learning outcomes. This additionally makes sense of that there is no connection among orientation and mental learning results (Taylor et al., 2016), (Edwards et al., 2016).

The connection between learning styles in view of orientation and mental learning results. In light of Table 7, the importance benefit of learning styles for orientation is additionally 0.81. While the connection between learning styles and mental learning results has an importance worth of 0.396> 0.05, this shows that there is no connection between learning styles and mental learning results.

Still with table 7 likewise shows the closeness connection between factors, this shows the connection coefficient among orientation and learning style is - 0.169, implying that the connection between orientation closeness and learning style is 16.9% which can be supposed to be extremely low as per Table 2, while a negative worth implies that the course of the relationship test is contrarily corresponding, the heading of the learning style test for orientation is more prevailing (Le Mat, 2016), (Zyngier, 2009).

For gender on cognitive learning outcomes, the correlation coefficient is -0.027, meaning that the relationship between gender and cognitive learning outcomes is 2.7% which is also said to be very low and negative, meaning that the direction of the cognitive learning outcomes test for gender is more dominant (Rice et al., 2018), (Spitzer-Hanks, 2016).

Last but not least, Table 2 indicates that the correlation coefficient for the relationship between learning styles and cognitive learning outcomes is 0.396, which indicates that the relationship is low at 3.96 percent. Senior high school at Islamic boarding school-based madrasah aliyah students generally have learning styles that vary in visual, auditory, and kinesthetic learning styles (Terms, 2018), (Hughes & Lury, 2013). Every individual's learning style changes, there is a hear-able learning style, in particular advancing by listening is more predominant, a visual learning style is a learning style by seeing is more prevailing, and a sensation learning style, where learning models move more (Günther-Hanssen et al., 2020), (Manion & Shah, 2019), (Horton, 2019). Even though they go to the same school and sit on the same bench, their learning styles can be different so their ability to absorb and understand lessons is of course also different (Lindgren, 2019), (Epstein & Moreau, 2017). Every individual has all three learning styles, but one must also know which learning style is dominant in him (Vincent, 2017)(Hughes & Lury, 2013)(Hughes & Lury, 2013).

Table 8. Domination of learning styles over gender

Dependent Variable: Cognitive Learning Outcomes		
Learning Style	**Gender**	**Mean**
Visual Style	**Male Students**	84,125
	Female Students	83
Auditory Style	**Male Students**	82,273

	Female Students	83,5
Kinesthetic Style	**Male Students**	85,048
	Female Students	83,385

In view of the examination of the predominance of learning styles in Table 8, it shows that the male visual learning style rules contrasted with the female visual learning style. The consequences of the review, men depend more overwhelmingly on their vision than ladies (Khanal et al., 2019).
The predominance of ladies in the hear-able learning style contrasted with the male hear-able learning style is on the grounds that ladies are more prevailing in involving their hear-able faculties in learning exercises in class. The sensation learning style is overwhelmed by male understudies contrasted with female understudies. In the examination of the cozy connection between learning styles and orientation, the outcomes are exceptionally powerless, as displayed in Table 7. Additionally, gender and learning styles do not significantly differ (Al-Roomy, 2023). The aftereffects of this study follow the idea authored by Grinder in De Porter and Hernakei which expresses that out of each and every 30 understudies, 22 of them can advance successfully as long as the educator presents learning exercises that consolidate visual, hear-able, and sensation, so that learning should be multisensory and brimming with assortment. (Lange & Mavondo, 2004), (Hadjar & Backes, 2023).

According to Siswanto's research, which states that the learning media used by teachers is one of the factors that influence student learning outcomes, the relationship between cognitive learning outcomes and learning styles is also weak in this study. record over a long period of time, whereas if students maximize all of their senses, they record over a longer period of time. This exploration is additionally by Gardner who expresses that the learning results delivered by understudies don't rely upon the learning style of these understudies.

CONCLUSION

The after effects of the exploration and conversation presumed that every person, both male and female, has three clear line of sight, hear-able, and sensation learning styles. Based on Islamic boarding schools, Madrasah Aliyah does not significantly differ between men and women in terms of learning styles, cognitive learning outcomes, or gender.

Suggestion

In order to improve student learning outcomes, researchers advise educators to implement multisensory learning and to vary in anticipation of various learning styles.

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