



THE RELATIONSHIP OF MULTIPLE INTELLIGENCE AND STUDENT'S LEARNING STYLES OF HIGHER SECONDARY STUDENTS

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RESEARCH ARTICLE



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DOI:

<https://doi.org/10.70096/tssr.260403016>

Abstract

The present study entitled “*The Relationship between Multiple Intelligence and Students’ Learning Styles of Higher Secondary Students*” aimed to examine the level of multiple intelligence and its relationship with learning styles among higher secondary students. The study was conducted among 150 students selected randomly from higher secondary schools in Cuddalore district using the survey method. Data were collected through the Multiple Intelligence Questionnaire and the VARK Learning Style Inventory. Statistical techniques such as Descriptive, Differential, Correlation, and Regression analysis were employed for data analysis. The findings revealed that higher secondary students possessed a moderate level of multiple intelligence. Intrapersonal and Interpersonal intelligences were more prominent, while Linguistic Intelligence was comparatively less developed. No demographic or educational variables significantly influenced multiple intelligence. The study also found a low but significant relationship between multiple intelligence and learning style ($r = 0.178$). Regression analysis showed that learning style weakly predicted multiple intelligence, explaining only 3.2% of the variance. Among the intelligence dimensions, Bodily-Kinesthetic and Intrapersonal intelligences emerged as the strongest predictors. Overall, the study concludes that understanding students’ multiple intelligences and learning styles can help teachers adopt effective learner-centered instructional strategies and promote holistic student development.

Keywords: *Higher Secondary Students, Multiple Intelligence, VARK Learning Style*

Introduction

Education plays an important role in developing students’ knowledge, skills, and personality. In modern education, emphasis is given not only to academic achievement but also to understanding students’ individual differences in intelligence and learning preferences. Every student learns differently and possesses unique intellectual abilities. The theory of Multiple Intelligences proposed by Howard Gardner explains that intelligence is not limited to linguistic and logical abilities alone, but includes different forms such as interpersonal, intrapersonal, spatial, musical, bodily-kinesthetic, and naturalistic intelligences. Similarly, the VARK model developed by Neil D. Fleming classifies learning styles into Visual, Auditory, Read/Write, and Kinesthetic types. Higher secondary education is an important stage in students’ academic and personal development. Understanding students’ multiple intelligences and learning styles can help teachers adopt suitable teaching methods and improve learning effectiveness. Hence, the present study attempts to examine the relationship between multiple intelligence and learning styles among higher secondary students.

Need for the Study

Students differ in their intellectual abilities and preferred ways of learning. Traditional teaching methods may not address these individual differences effectively. Therefore, understanding students’ multiple intelligences and learning styles is necessary for improving teaching and learning processes. Higher secondary students face academic pressure and career-related decisions. Identifying their strengths and learning preferences can help teachers provide learner-centered instruction and guide students effectively. Although many studies have been conducted on multiple intelligence and learning styles, limited studies have examined their relationship among higher secondary students in the local context. Hence, the present study was undertaken to understand the relationship between multiple intelligence and learning styles among higher secondary students.

Significance of the Study

The present study is significant as it helps in understanding the relationship between multiple intelligence and learning styles among higher secondary students. The findings may help teachers adopt suitable teaching strategies according to students' intellectual strengths and learning preferences. The study is useful for students in identifying their abilities and improving learning effectiveness. It may also help parents and educators provide better guidance and support for students' overall development. Further, the study may assist curriculum planners and educational administrators in designing learner-centered educational programmes. The findings may also serve as a reference for future research in the field of educational psychology and teaching-learning processes.

Statement of the Problem

The area of the study selected by the investigator is the relationship of multiple intelligence and Students' learning styles of higher secondary Students

Operational Definition

❖ Higher secondary school students in this research refers to individuals who are enrolled in the 11th grade and 12th grade. These students are between the ages of 15 to 18.

❖ Multiple Intelligence in this research refers to score obtained by the higher Secondary school students in the research tool Multiple Intelligence Scale (1999) constructed and standardized by Gardner.

❖ Learning style in this research refers to the result obtained by the higher Secondary school students in the research tool VARK-questionnaire developed by Neil D. Fleming. (Adopted from VARK learn limited 2026)

Objectives

1. To find out the level of Multiple Intelligence among higher secondary students.
2. To identify the learning styles of higher secondary students.
3. To find out whether there is any significant relationship between Multiple Intelligence and Learning Styles.
4. To find out whether Multiple Intelligence differs with respect to gender, locality, medium, group of study, etc.

Hypothesis

1. The level of Multiple Intelligence among higher secondary students is high.
2. The learning styles of higher secondary students are same.
3. There is no significant relationship between Multiple Intelligence and Learning Styles of higher secondary students.
4. There is no significant relation between Multiple Intelligence of higher Secondary school students and their relationship with subsamples.

Methodology

Normative survey method is used in the present study. This method of research attempts to describe and interpret what exist at present in the form of conditions, practices, process, trends and effects. In brief it is an attempt to analyze, interpret and report the present level of Multiple Intelligence and its relationship with Learning style of higher Secondary school students. The research tool consists of three parts. The first part is related to the Personal Data Sheet, which collects the demographic details of the respondents. The second part contains the VARK Learning Style Inventory used to identify the learners' preferred learning styles such as Visual, Auditory, Read/Write, and Kinaesthetic. The third part consists of the Multiple Intelligence Inventory, which measures different types of intelligences among the respondents.

The VARK Learning Style Inventory, constructed and standardized by Neil D. Fleming in 1987 and adopted from VARK Learn Limited (2026), is used in this study. The tool consists of 16 items with shuffled response options related to the four learning styles: Visual, Auditory, Read/Write, and Kinesthetic (VARK). The responses are scored according to the coding sheet using the symbols V, A, R, and K, with one alphabet assigned to each response. The total scores for Visual (V), Auditory (A), Read/Write (R), and Kinesthetic (K) learning styles are calculated separately. The learning style with the highest score is considered as the respondent's predominant or preferred learning style.

The Multiple Intelligence Scale (1999) constructed and standardized by Gardner. This 16-item scale has eight dimensions: Linguistic Intelligence, Logical-Mathematical Intelligence, Musical Intelligence, Spatial Intelligence, Bodily-Kinesthetic Intelligence, Intrapersonal Intelligence, Interpersonal Intelligence and Naturalistic Intelligence. Each component has a 5-point rating system. (Appendix-1)

The population of the present study consists of pupils studying in higher secondary schools in Cuddalore district. There are nearly 20,000 students studying in about 100 higher secondary schools in the district. For the present study, 150 pupils were selected from various higher secondary schools in Cuddalore district using the random sampling technique. Among the selected samples, 72 were male students and 78 were female students. Statistical techniques such as Descriptive, Differential, Correlation, and Regression analysis were employed for data analysis with IBMSPPSS23.

Analysis of the Level of Multiple Intelligence score of Entire and Subsamples

Evaluating the degree of Higher Secondary School Students Multiple Intelligence for both the full sample and selected subsamples is one of the study's key goals. For both full and sub samples, the mean Standard deviation values have been computed. which comprise the students enrolled in Higher Secondary School Students were considered as the population and sample. Sub-samples were considered for Age, Gender, Academic Stream, School type, Medium, Locality, Family Type, Fathers Qualification, Mothers Qualification, Fathers Occupation, Mothers Occupation, Parental Income, No Of Family Members, Marks and Learning Style.

Variable	N	Mean	STD
MULTIPLE INTELLIGENCE	150	43.53	4.50

The above table 1 shows the mean score and standard deviation of Higher Secondary School Students Multiple Intelligence are found to be 43.53 and 4.50 respectively. It is concluded that the Higher Secondary School Students Multiple Intelligence are Moderate (33-48).

S.NO	Factors	N	Mean	STD
1	Intrapersonal Intelligence	150	5.85	1.73
2	Interpersonal Intelligence	150	5.79	1.25
3	Logical-Mathematical Intelligence	150	5.59	1.25
4	Bodily-Kinesthetic Intelligence	150	5.49	1.76
5	Musical Intelligence	150	5.46	1.46
6	Spatial Intelligence	150	5.43	1.23
7	Naturalistic Intelligence	150	5.43	1.36
8	Linguistic Intelligence	150	4.58	1.51

Table 2 shows the mean and standard deviation scores of the dimensions of multiple intelligence among higher secondary students. Among the eight dimensions, Intrapersonal Intelligence obtained the highest mean score (M = 5.85, SD = 1.73), indicating that the students possess a comparatively higher level of self-awareness and self-understanding. This is followed by Interpersonal Intelligence (M = 5.79, SD = 1.25), which reflects students' ability to interact effectively with others. Logical-Mathematical Intelligence secured a mean score of 5.59 (SD = 1.25), while Bodily-Kinesthetic Intelligence recorded a mean score of 5.49 (SD = 1.76). Musical Intelligence obtained a mean score of 5.46 (SD = 1.46). Spatial Intelligence and Naturalistic Intelligence shared the same mean score of 5.43, with standard deviations of 1.23 and 1.36 respectively. Among all the dimensions, Linguistic Intelligence recorded the lowest mean score (M = 4.58, SD = 1.51), indicating that students comparatively possess a lower level of linguistic abilities than the other intelligence dimensions. Overall, the findings reveal that Intrapersonal and Interpersonal intelligences are more prominent among the students, whereas Linguistic Intelligence is comparatively less developed.

Multiple intelligence Score		N	%	Mean	STD	f	Result
Learning style	Visual	36	24	44.89	4.04	2.115	NS
	Auditory	26	17.3	43.15	4.01		
	Reading	41	27.3	43.78	4.79		
	Kinesthetic	47	31.3	42.47	4.67		

Regarding learning styles, students with Visual learning style obtained the highest mean score (M = 44.89, SD = 4.04), followed by students with Reading learning style (M = 43.78, SD = 4.79). Auditory learners recorded a mean score of 43.15 (SD = 4.01), whereas Kinesthetic learners obtained the lowest mean score (M = 42.47, SD = 4.67). The findings suggest that students with Visual learning style possess comparatively higher multiple intelligence scores than students with other learning styles.

TABLE: 4

T- TEST SHOWING RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND PERSONAL VARIABLE							
Variables		N	Mean	Std. Deviation	Std. Error	t	Result
Age	15-16	62	43.44	4.21	0.53	-208	NS
	17-18	88	43.59	4.72	0.50		
Gender	Male	72	43.47	5.16	0.60	-142	NS
	Female	78	43.58	3.83	0.43		
Medium	Tamil	49	43.16	4.12	0.59	-687	NS
	English	101	43.70	4.69	0.47		
Locality	Rural	38	43.26	3.75	0.61	-416	NS
	Urban	112	43.62	4.74	0.45		

Table 4 shows the relationship between multiple intelligence and selected personal variables such as age, gender, medium of instruction, and locality among higher secondary students. The mean scores, standard deviations, and t-values were calculated to identify whether significant differences exist between the groups. With regard to age, students belonging to the age group 15–16 years obtained a mean score of 43.44, while students in the age group 17–18 years obtained a mean score of 43.59. The obtained t-value was -0.208, which is not significant. Hence, there is no significant difference in multiple intelligence with respect to age. In terms of gender, male students obtained a mean score of 43.47 and female students obtained a mean score of 43.58. The obtained t-value was -0.142, which is not significant. Therefore, gender does not significantly influence the multiple intelligence of higher secondary students. Regarding medium of instruction, Tamil medium students secured a mean score of 43.16, whereas English medium students secured a mean score of 43.70. The obtained t-value was -0.687, which is not significant. This indicates that there is no significant difference in multiple intelligence based on the medium of instruction. With respect to locality, rural students obtained a mean score of 43.26 and urban students obtained a mean score of 43.62. The obtained t-value was -0.416, which is also not significant. Hence, locality does not have a significant influence on students' multiple intelligence. Overall, the findings reveal that personal variables such as age, gender, medium of instruction, and locality do not significantly affect the multiple intelligence of higher secondary students.

TABLE: 5f- TEST SHOWING RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCE AND PERSONAL VARIABLE						
		Sum of Squares	df	Mean Square	F	Result
Academic stream	Between Groups	56.546	3	18.849	.929	NS
	Within Groups	2962.848	146	20.293		
	Total	3019.393	149			
School type	Between Groups	19.594	2	9.797	.480	NS
	Within Groups	2999.800	147	20.407		
	Total	3019.393	149			
Family type	Between Groups	2.846	2	1.423	.069	NS
	Within Groups	3016.547	147	20.521		
	Total	3019.393	149			
Fathers Qualification	Between Groups	91.230	3	30.410	1.516	NS
	Within Groups	2928.163	146	20.056		
	Total	3019.393	149			
Fathers Occupation	Between Groups	50.198	4	12.550	.613	NS
	Within Groups	2969.195	145	20.477		
	Total	3019.393	149			
Income	Between Groups	48.618	2	24.309	1.203	NS
	Within Groups	2970.775	147	20.209		
	Total	3019.393	149			
Marks	Between Groups	18.331	2	9.165	.449	NS
	Within Groups	3001.062	147	20.415		
	Total	3019.393	149			

Table 5 presents the results of the F-test showing the relationship between multiple intelligence and various personal variables of higher secondary students. The analysis was carried out to determine whether significant differences exist among the groups with respect to multiple intelligence. With regard to academic stream, the obtained F-value was 0.929, which is not significant. Hence, there is no significant difference in multiple intelligence among students belonging to different academic streams. In the case of school type, the obtained F-value was 0.480, which is not significant. This indicates that students studying in different types of schools do not differ significantly in their multiple intelligence. Regarding family type, the obtained F-value was 0.069,

which is not significant. Therefore, family type does not significantly influence the multiple intelligence of higher secondary students. With respect to fathers' qualification, the obtained F-value was 1.516, which is not significant. This shows that the educational qualification of fathers has no significant effect on students' multiple intelligence. In terms of fathers' occupation, the obtained F-value was 0.613, which is not significant. Hence, there is no significant difference in multiple intelligence based on fathers' occupation. Regarding family income, the obtained F-value was 1.203, which is not significant. This indicates that family income does not significantly influence students' multiple intelligence. Similarly, for marks obtained by students, the obtained F-value was 0.449, which is not significant. Therefore, there is no significant difference in multiple intelligence with respect to students' academic achievement. Overall, the findings reveal that variables such as academic stream, school type, family type, fathers' qualification, fathers' occupation, family income, and marks do not significantly influence the multiple intelligence of higher secondary students.

Table 6
CORRELATION BETWEEN MULTIPLE INTELLIGENCE AND LEARNING STYLE

	Dimensions of Multiple intelligence	Learning style r
1.	Logical-Mathematical Intelligence	-.056
2.	Spatial Intelligence	-.015
3.	Linguistic Intelligence	-.028
4.	Musical Intelligence	-.014
5.	Interpersonal Intelligence	-.101
6.	Intrapersonal Intelligence	-.080
7.	Bodily-Kinesthetic Intelligence	-.109
8.	Naturalistic Intelligence	-.061
9.	Total Multiple intelligence	.178*

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 6 shows the correlation between dimensions of multiple intelligence and learning style among higher secondary students. The Pearson's correlation coefficient was calculated to identify the relationship between the variables. The findings reveal that Logical-Mathematical Intelligence ($r = -0.056$), Spatial Intelligence ($r = -0.015$), Linguistic Intelligence ($r = -0.028$), Musical Intelligence ($r = -0.014$), Interpersonal Intelligence ($r = -0.101$), Intrapersonal Intelligence ($r = -0.080$), Bodily-Kinesthetic Intelligence ($r = -0.109$), and Naturalistic Intelligence ($r = -0.061$) have negative and negligible correlations with learning style. These correlations are not statistically significant. However, the correlation between Total Multiple Intelligence and Learning Style was found to be $r = 0.178$, which is significant at the 0.05 level. This indicates a low positive relationship between total multiple intelligence and learning style among higher secondary students. Therefore, the study concludes that although individual dimensions of multiple intelligence do not show significant relationships with learning style, the overall multiple intelligence of students has a significant positive relationship with their learning styles.

TABLE 7
STEPWISE REGRESSION OF TOTAL MULTIPLE INTELLIGENCE AND LEARNING STYLE

Model		Unstandardized Coefficients		Standardized Coefficients	Pearson r	Sr ²	Structure Coefficient
		B	Std. Error	Beta			
1	(Constant)	45.367	.912				0.969
	Learning style	-.692	.315	.178	.178	.031	

a. Dependent Variable: Multiple IntelligenceScore. $f(1,148)=4.838$. R Square=0.032, Adjusted R Square=0.025

Table 7 presents the stepwise regression analysis of total multiple intelligence and learning style among higher secondary students. The regression model was found to be significant with an F-value of 4.838. The R Square value of 0.032 indicates that learning style explains 3.2% of the variance in multiple intelligence. The regression coefficient ($B = -0.692$) shows that learning style has an influence on multiple intelligence, while the standardized beta value ($\beta = 0.178$) indicates a low positive contribution. The Pearson correlation value ($r = 0.178$) reveals a low positive relationship between learning style and multiple intelligence. The Sr^2 value of 0.031 indicates that learning style uniquely contributes 3.1% to the prediction of multiple intelligence. Overall, the findings show that learning style has a significant but low influence on total multiple intelligence among higher secondary students.

TABLE 8
STEPWISE REGRESSION OF TOTAL MULTIPLE INTELLIGENCE AND ITS DIMENSIONS

Model	Unstandardized Coefficients		Standardized Coefficients	Pearson r	Sr ²	Structure Coefficient
	B	Std. Error	Beta			
(Constant)	.908	.622				
Bodily-Kinesthetic Intelligence	.987	.036	.387	.917	0.840	0.864
Intrapersonal Intelligence	.996	.037	.383	.914	0.836	0.859
Interpersonal Intelligence	.990	.051	.275	.853	0.727	0.748
Musical Intelligence	.931	.043	.303	.877	0.770	0.791
Linguistic Intelligence	.941	.042	.316	.885	0.784	0.806
Naturalistic Intelligence	.961	.047	.291	.866	0.750	0.771
Spatial Intelligence	1.034	.051	.283	.861	0.742	0.762
Logical-Mathematical Intelligence	.972	.051	.271	.847	0.718	0.738
a. Dependent Variable: Multiple Intelligence Score. $f(8,141)=646.371$. R Square=0.973, Adjusted R Square=0.972						

Table 8 presents the results of the stepwise regression analysis conducted to determine the contribution of various dimensions of multiple intelligence towards the prediction of total multiple intelligence score among higher secondary students. The overall regression model is found to be highly significant with an F value of 646.371. The obtained R Square value of 0.973 indicates that the eight dimensions together explain 97.3% of the variance in total multiple intelligence score. The Adjusted R Square value of 0.972 further confirms the excellent fit and predictive strength of the regression model. Among the dimensions, Bodily-Kinesthetic Intelligence shows the highest standardized beta coefficient (Beta = 0.387), indicating that it is the strongest predictor of total multiple intelligence. It also has a very high Pearson correlation ($r = 0.917$) and a high structure coefficient (0.864), revealing a strong positive relationship with total multiple intelligence. Similarly, Intrapersonal Intelligence significantly contributes to total multiple intelligence with a standardized beta value of 0.383, Pearson correlation of 0.914, and structure coefficient of 0.859. This indicates a strong positive predictive influence. Linguistic Intelligence (Beta = 0.316), Musical Intelligence (Beta = 0.303), Naturalistic Intelligence (Beta = 0.291), Spatial Intelligence (Beta = 0.283), Interpersonal Intelligence (Beta = 0.275), and Logical-Mathematical Intelligence (Beta = 0.271) also show substantial positive contributions towards the prediction of total multiple intelligence. The squared semi-partial correlation values (Sr²) reveal the unique contribution of each intelligence dimension to the regression model. Bodily-Kinesthetic Intelligence contributes the highest unique variance (84.0%), followed by Intrapersonal Intelligence (83.6%), Linguistic Intelligence (78.4%), Musical Intelligence (77.0%), Naturalistic Intelligence (75.0%), Spatial Intelligence (74.2%), Interpersonal Intelligence (72.7%), and Logical-Mathematical Intelligence (71.8%). Further, the structure coefficients for all dimensions are high and positive, ranging from 0.738 to 0.864, indicating that all the intelligence dimensions are strongly associated with the overall regression function. Hence, it can be concluded that all dimensions of multiple intelligence significantly and positively predict the total multiple intelligence score among higher secondary students, with Bodily-Kinesthetic and Intrapersonal Intelligence emerging as the strongest predictors.

Discussion of Findings

The present study examined the relationship between multiple intelligence and learning styles among higher secondary students. The findings revealed that the overall level of multiple intelligence among students was moderate, indicating balanced intellectual abilities across different domains. This finding supports the views of Howard Gardner, who stated that intelligence exists in various forms and develops differently among individuals. Among the dimensions of multiple intelligence, Intrapersonal and Interpersonal intelligences were found to be higher, while Linguistic Intelligence was comparatively lower. This suggests that students are better at understanding themselves and interacting with others than in language-related abilities.

The study showed no significant differences in multiple intelligence with respect to age, gender, medium of instruction, locality, academic stream, school type, family type, parental qualification, parental occupation, income, and academic achievement. Although slight variations were observed among groups, these variables did not significantly influence students' multiple intelligence. Students with visual learning style obtained comparatively higher multiple intelligence scores than students with other learning styles. This indicates that visual methods may support better understanding, observation, and retention of learning experiences. The correlation analysis revealed a low positive and significant relationship between total multiple intelligence and learning style ($r = 0.178$). This shows that students with higher multiple intelligence tend to possess better learning style preferences, though the relationship is weak.

The regression analysis further indicated that learning style significantly predicted total multiple intelligence, but the contribution was low. Learning style explained only 3.2% of the variance in multiple intelligence scores, suggesting that multiple intelligence is influenced by several other personal, educational, and environmental factors.

Overall, the findings support the theory of multiple intelligences and emphasize the importance of adopting learner-centered and diversified teaching methods to address different intelligences and learning styles among higher secondary students.

Conclusion

The present study examined the relationship between multiple intelligence and learning styles among higher secondary school students. The findings revealed that the students possessed a moderate level of multiple intelligence, with interpersonal and intrapersonal intelligences being more prominent. Although slight variations were observed based on demographic and educational variables, most variables such as gender, age, locality, parental qualification, occupation, family type, and income did not significantly influence multiple intelligence. The study further revealed a low negative but statistically significant relationship between multiple intelligence and learning style. Learning style emerged as a weak predictor of total multiple intelligence. At the same time, all dimensions of multiple intelligence significantly contributed to the prediction of overall multiple intelligence, with bodily-kinesthetic and intrapersonal intelligences emerging as the strongest predictors. The findings highlight that students differ in their intellectual strengths and learning preferences. Therefore, effective teaching should not rely on a single instructional approach. Instead, teachers should adopt flexible, learner-centered, and activity-oriented methods that address diverse intelligences and learning styles. The study supports the educational significance of Multiple Intelligence Theory and emphasizes the need to create inclusive learning environments that nurture the full potential of every learner.

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Acknowledgment: No

Author's Contribution: Dr. D. Ponomzhi: Methodology, Analysis; Suvetha. S.: Data Collection, Literature Review, Drafting, Referencing

Funding: No

Declaration: The authors have given consent for the publication.

Competing Interest: No

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