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Secondary school students' multiple intelligences and their relationship with academic engagement

Introduction

Within the field of educational research, Howard Gardner's idea of multiple intelligences has had a significant impact on our comprehension of how pupils learn. Gardner's theory suggests that intelligence is not a single, monolithic concept but rather a combination of multiple diverse modalities, such as musical, spatial, linguistic, bodily-kinesthetic, intrapersonal, interpersonal, and logical-mathematical intelligences. This multifaceted viewpoint acknowledges that every student possesses a distinct set of skills and strengths that can have a substantial impact on their performance and level of involvement in learning environments.

Academic engagement in secondary school is a crucial turning point in students' educational paths, since it both predicts and determines their future performance. Academic engagement includes students' commitment to learning as well as their cognitive, emotional, and behavioral involvement in classroom activities. Students that are actively involved in their education are more likely to do well academically, be more motivated, and show more tenacity when faced with difficulties. On the other hand, distracted students are more likely to experience negative effects including school dropout and academic underachievement.

Research on the correlation between multiple intelligences and academic engagement is particularly fruitful because it sheds light on how teachers might modify their lesson plans to better suit the varied demands of their pupils. Educators may design more inclusive and effective learning environments that support students' holistic development in addition to academic success by understanding how different intelligences influence students' participation.

This research paper aims to explore the connection between secondary school students' multiple intelligences and their academic engagement. Through a comprehensive analysis, this study seeks to identify patterns and correlations that can inform educational practices and policies. By examining how different types of intelligences contribute to students' engagement in various academic activities, this research will provide valuable evidence for developing pedagogical approaches that capitalize on students' inherent strengths and promote sustained academic involvement. Also, it has been found that there are no such studies done in India, especially in Assam.

Objectives

1. To study the level of multiple Intelligences of the secondary school students.
2. To find out the difference in the levels of multiple intelligences of secondary school students in relation to gender.
3. To study the level of academic engagement of the secondary school students.
4. To find out the difference in the levels of academic engagement of secondary school students in relation to gender.
5. To find out the relationship between different dimensions of multiple intelligence and academic engagement of secondary school students.

Materials and Methods

Study design and setting

Descriptive method has been used to conduct the research.

Study participants and sampling

The population of the study

The population of the present study includes all the class X students studying in the schools of Tinsukia district, Assam. The total number of class X students is 7398 (3098 boys and 4300 girls). There are a total of 127 schools in the Tinsukia district.

Sample and sampling technique

The current study used a total sample of 140 students (68 boys and 72 girls) drawn from a class of X students (7398) in the Tinsukia area of Assam. Data were collected using two standardized scales.

Delimitation of the study

1. In the present study, the Tinsukia district of Assam has been considered as the study area.

2. The study has been delimited to Govt. and provincialized secondary school students of Tinsukia district.

3. Only class X students from government and provincialized schools were examined in this study.

4. In the present study, Gender has been delimited to boys and girls.

5. The present study has been delimited to the following multiple intelligences only-

- Verbal- linguistic
- Logical- mathematical
- Bodily- kinesthetic

- Visual- Spatial
- Interpersonal
- Intrapersonal

Data collection tool and technique Tools used

The following tools were utilized in the study:

1) Academic engagement scale by Dr. Vijaylaxmi AHM, Ms. Lingeshwari Mysore and Dr. K. P. Suresh (2022).

2) Multiple intelligence scale by Dr. Suraksha Pal & Surbhi Agarwal (2016).

The technique of data collection

The investigator first obtained authorization from the school principal to begin data collecting. Students were approached after obtaining official authorization. Academic engagement scale, multiple intelligences scale, and a demographic information sheet were given to them.

The procedure of interpretation and analysis

Following the collecting of student responses, the analysis was carried out using SPSS. To study the levels of students on academic engagement and multiple intelligences, frequency, mean and percentage analyses has been done. To find out the gender difference in the levels of academic engagement and multiple intelligences of secondary school students has been done using t- test. To find out the relationship between academic engagement and multiple intelligences of the student's, Pearson correlation have been run in the SPSS.

Analysis and Interpretation

After collecting the data, the objective analysis and interpretation of the results were carried out as follows:

Objective 1: To study the level of multiple Intelligences of the secondary school students.

Table 1: showing levels of verbal- linguistic, logical- mathematical, bodily- kinesthetic, visual-spatial, Interpersonal and intrapersonal intelligences among secondary school students

levels	linguistic		logical		bodily		spatial		interpersonal		Intrapersonal	
	N	P	N	P	N	P	N	P	N	P	N	P
Extremely high	7	5%	5	3.6%	5	3.6%	6	4.3%	8	5.7%	5	3.6%
High	14	10%	15	10.7%	20	14.3%	13	9.3%	13	9.3%	19	13.6%
Above average	29	20.7%	36	25.7%	25	17.9%	25	17.9%	22	15.7%	29	20.7%

Average	42	30%	30	21.4%	44	31.4%	51	36.4%	30	21.4%	39	27.9%
Below average	25	17.9%	31	22.1%	18	12.9%	24	17.1%	50	35.7%	32	22.9%
Low	19	13.6%	13	9.3%	21	15%	16	11.4%	8	5.7%	9	6.4%
Extremely low	4	2.9%	10	7.1%	7	5%	5	3.6%	9	6.4%	7	5%

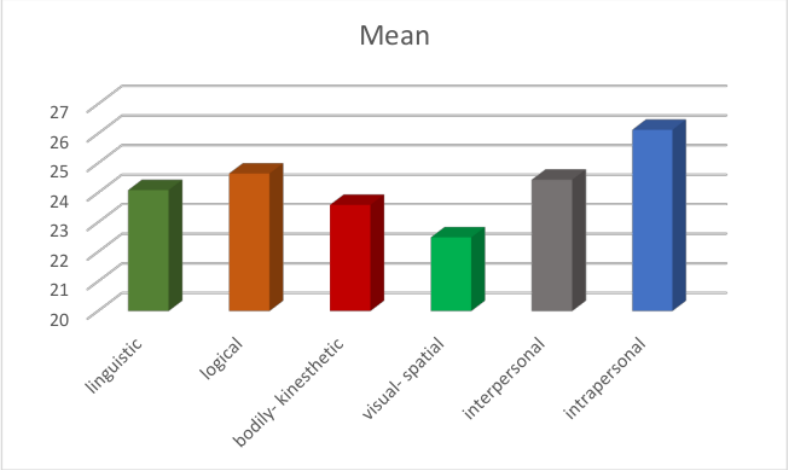

Figure 1: graphical representation showing the levels of multiple intelligences of students

The given table demonstrates that most of the secondary school students (30%) are having average level of linguistic intelligence, followed by 20.7% of students at above average level, 17.9% of students at below average level, 13.6% of students at low level, 10% of the students are at high level, 5% of the students are at extremely high level and only 2.9% of the students are extremely low in linguistic intelligence. Then, most of the secondary school students (25.7%) are having above average level of logical intelligence, followed by 22.1% of students at below average level, 21.4% of students at average level, 10.7% of students at high level, 9.3% of the students are at low level, 7.1% of the students are at extremely low level and only 3.6% of the students are extremely high in logical intelligence. The above table shows that most of the secondary school students (31.4%) are having average level of bodily- kinesthetic intelligence, followed by 17.9% of students at above average level, 15% of students at low level, 14.3% of students at high level, 12.9% of the students are at below average level, 5% of the students are at extremely low level and only 3.6% of the students are extremely high in bodily- kinesthetic intelligence. Also, most of the secondary school students (36.4%) are having average level of spatial intelligence, followed by 17.9% of students at above average level, 17.1% of students at below average level, 11.4% of students at low level, 9.3% of the

students are at high level, 4.3% of the students are at extremely high level and only 3.6% of the students are extremely low in spatial intelligence. Then, the table shows that most of the secondary school students (35.7%) are having below average level of interpersonal intelligence, followed by 21.4% of students at average level, 15.7% of students at above average level, 9.3% of students at high level, 6.4% of the students are at extremely low level, 5.7% of the students are at low level and extremely high in interpersonal intelligence. And, lastly most of the secondary school students (27.9%) are having average level of intrapersonal intelligence, followed by 22.9% of students at below average level, 20.7% of students at above average level, 13.6% of students at high level, 6.4% of the students are at low level, 5% of the students are at extremely low level and only 3.6% of the students are extremely high in intrapersonal intelligence.

Objective 2: To find out the difference in the levels of multiple intelligences of secondary school students in relation to gender.

Table 2: showing the mean, SD, t and p- values of the boys and girls on levels of Multiple intelligences

Multiple intelligence	gender	N	Mean	SD	t	p-value	0.5 level of significance
Linguistic	male	68	23.62	4.316	1.286	.201	Not significant
	female	72	24.54	4.176			
Logical	male	68	25.15	4.829	1.141	.253	Not significant
	female	72	24.18	5.108			
Bodily-kinesthetic	male	68	25.60	3.465	4.944	.001	significant
	female	72	21.69	5.581			
Spatial	male	68	22.04	4.437	1.090	.277	Not significant
	female	72	22.90	4.856			
Interpersonal	male	68	24.38	4.435	.154	.878	Not significant
	female	72	24.50	4.618			
Intrapersonal	male	68	25.06	4.561	2.969	.004	significant
	female	72	27.14	3.648			

The analysis of the data indicates that the p- value of bodily- kinesthetic intelligence is .001 and intrapersonal intelligence is .004, which is significant at .05 level. Thus, it leads to the

rejection of the null hypothesis. So, there is a significant difference between boys and girls in bodily- kinesthetic and intrapersonal intelligence.

P- value of linguistic intelligence is .201, the logical intelligence p- value is .253, spatial intelligence p- value is .277 and interpersonal intelligence p- value is .878, which is not significant at .05 level. Thus, it leads to the acceptance of the null hypothesis. So, there exists no significant difference between boys and girls in linguistic, logical, spatial and interpersonal intelligence.

Objective 3: To study the level of academic engagement of the secondary school students.

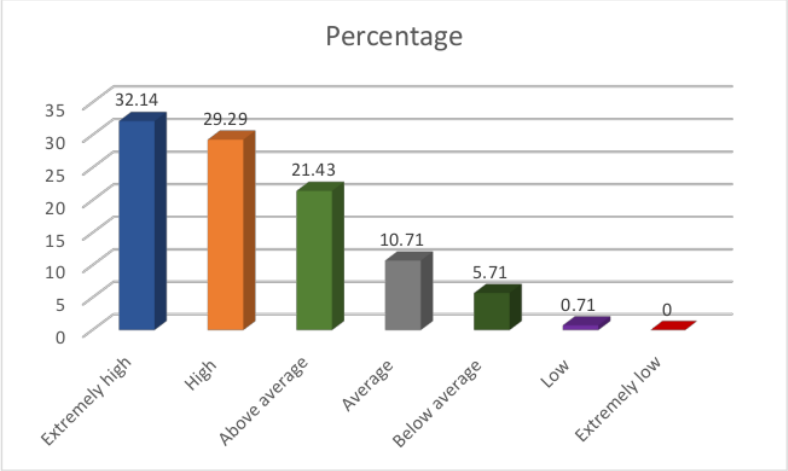

Figure 2: graphical representation showing the levels of academic engagement of students

Table 3: showing levels of AE among secondary school students

Academic engagement		
Level	Frequency(N)	Percentage
Extremely high	45	32.14
High	41	29.29
Above average	30	21.43
Average	15	10.71
Below average	8	5.71
Low	1	0.71

Extremely low	0	0

The above table shows that most of the secondary school students (32.14%) are having extremely high level of academic engagement, followed by 29.29% of students at high level, 21.43% of students at above average level, 10.71% of students at average level, 5.71% of the students are at below average level and only 0.71% of the students are at low level in academic engagement.

Objective 4: To find out the difference in the levels of academic engagement of secondary school students in relation to gender.

Table 4: showing mean, SD, t and p- value of the boys and girls on levels of Academic Engagement

Gender	N	Mean	SD	t	p-value	.05 level of significance
Male	68	122.05	10.82	2.849	.005	significant
Female	72	127.44	11.54			

The result found that the mean scores of boys and girls are 122.05 and 127.44 respectively. The p- value is .005 which is significant at 0.05 level of significance. It leads to the rejection of null hypothesis. Thus, there exists a significant difference between boys and girls on levels of academic engagement.

Objective 5: To find out the relationship between different dimensions of multiple intelligence and academic engagement of secondary school students.

Table 5: showing the relationship between different dimension of multiple intelligence and academic engagement

Variables	N	Pearson correlation	p- value
Verbal- linguistic	140	.584	.001
Academic engagement			
Logical- mathematical	140	.265	.002
Academic engagement			
Bodily- kinesthetic	140	.123	.148

Academic engagement			
Visual- Spatial	140	.304	.001
Academic engagement			
Interpersonal	140	.321	.001
Academic engagement			
Intrapersonal	140	.488	.001
Academic engagement			

The coefficient correlation of linguistic, logical- mathematical, visual- spatial, interpersonal, and intrapersonal intelligences with academic engagement shows a positive and significant correlation between the them which means that there exists a significant relationship between these five dimensions of multiple intelligences and academic engagement.

The coefficient correlation of bodily- kinesthetic intelligence and academic engagement shows a very weak and not significant relationship between the two which means that there exists no significant relationship between bodily- kinesthetic intelligence and academic engagement.

Discussion

The present work focused to explore the association between secondary school students' multiple intelligences and their academic engagement. The findings of this research provide valuable insights into how different types of intelligence influence students' involvement in their academic activities.

Firstly, the results showed that linguistic intelligence and intrapersonal intelligence had a moderate correlation with academic engagement. This suggests that students who excel in verbal reasoning are more likely to be actively engaged in their learning processes. Also, that students who are aware of their own strengths, weaknesses, and learning styles tend to set realistic goals and employ effective strategies for learning, thereby maintaining higher engagement levels. These students often exhibit higher levels of participation, persistence, and enthusiasm in academic tasks.

Secondly, interpersonal and spatial intelligence also showed a significant positive relationship with academic engagement. This finding highlights the importance of social skills and the ability to understand and interact effectively with others in fostering a supportive and collaborative learning environment. Students with high interpersonal intelligence often engage more in group activities, discussions, and peer learning, which enhances their overall engagement.

On the other hand, logical- mathematical and bodily-kinesthetic intelligences were less correlated with academic engagement. However, it is important to recognize that students with strengths in these areas might engage more deeply in activities related to science, sports, and practical applications of knowledge, which are not always captured by conventional measures of academic engagement.

Overall, these findings suggest that a more inclusive approach to education, which recognizes and nurtures all types of intelligences, could enhance academic engagement among students. Educators should consider incorporating diverse teaching strategies that cater to multiple intelligences, thereby creating a more engaging and effective learning environment. For instance, integrating physical activities, and visual aids into lessons could help engage students with different intelligences.

In conclusion, while linguistic and intrapersonal intelligences are strongly linked to academic engagement, other intelligences also play a significant role. A balanced educational approach that values and utilizes all types of intelligences can foster greater engagement and, ultimately, academic success. Future research should explore intervention strategies aimed at enhancing multiple intelligences and their impact on academic engagement across different educational contexts. Also, future research can be done on all the nine dimensions of multiple intelligence by Gardner.

Conclusion

This work explored the relationship between secondary school students' multiple intelligences and their academic engagement. The findings suggest that students' strengths in various intelligences significantly influence their levels of engagement in academic activities. Specifically, linguistic and intrapersonal intelligences were found to be moderately correlated with higher academic engagement, indicating that students who excel in these areas tend to

participate more actively and perform better academically. Conversely, students with dominant intelligences in bodily-kinesthetic, or logical- mathematical domains exhibited different patterns of engagement, highlighting the need for diverse teaching strategies that cater to multiple intelligences. These results underscore the importance of recognizing and nurturing multiple intelligences in educational settings to foster holistic student development and optimize academic engagement.

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