



Contribution of Academic Achievement on Divergent Thinking of Higher Secondary Students

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Abstract

The focus of the present study is to find out the academic achievement on divergent thinking of higher secondary students. For Academic Achievement, the Students' academic examination marks have been taken for this study and Divergent Thinking Skills (DTS) Constructed and Validated by R. Sathiyendrampillai & Dr. N.L.N. Jayanthi (2024), were used to collect the data from a sample of 620 Higher Secondary Students studying in Jaffna District of Sri Lanka. The Normative survey method has been followed and simple random sampling has been used in administration of the research tools. The results of the analysis reveals that the level of Academic Achievement and Divergent Thinking has been average. The findings also revealed that there is significant difference between male and female secondary students with respect to their Academic Achievement and Divergent Thinking and that there is significant difference between National and Provincial Higher Secondary Schools Students with respect to their Academic Achievement and Divergent Thinking. The study also reveals that there is significant and positive relationship between Academic Achievement and Divergent Thinking of Higher Secondary Students and 12.2% of the total variance in Academic Achievement is attributed by Divergent Thinking of Higher Secondary Students

Key Words: Academic Achievement, Divergent Thinking and Higher Secondary Students

1. Introduction

Sri Lanka's education system is divided into five levels: primary, junior secondary, senior secondary, collegiate, and tertiary. It's overseen by the Ministry of Education and the Ministry of Higher Education.

Academic achievement is the important end-product of academic endeavors at all levels of education. The academic Achievement of Senior Secondary Students includes their achievement in all subjects such as Languages, Science, Mathematics, Civics, etc. Research studies on academic achievement indicate the influence of students' socio-personal factors, family and parental characteristics, nature and type of school or educational institution, cognitive aspects, affective factors, learning style, personality characteristics, etc.

Lubart (2001) defined that "a capacity to produce many ideas (fluency), an ability to change one's mental set (flexibility), an ability to reorganize, an ability to deal with complexity, and an ability to evaluate." As a result, convergent and divergent thinking are part of the creative process. Guilford, (1967) have reported that "divergent thinking supposed to generate multiple different answers or to think out of the box." Along with this Cropley, (2006) defined that "task Convergent thinking is the ability to find the most coherent idea of several answers. This knowledge dependent evaluation of the novelty interacts with divergent thinking and is most effective in situations where a ready-made answer exists and need simply to be recalled from stored information".

2. Need and Significance of the Study

Divergent thinking as a part of creativity is most necessary aspect in every noble contribution of human life and adolescence is the stage where child mostly foster their creative ability but at present most of the institutions only giving importance on securing marks that's why there have been creating lack of opportunity to develop creative thinking. Further, there should make positive attitude of parents, teachers, educational institutions, government and non-government organizations in fostering creative ability or divergent thinking of children who can change the world positively. Keeping all the considerable reviews, the present study give emphasis on academic achievement contribution on divergent thinking among higher secondary students of both National and Provincial schools of Jaffna district of Srilanka.

3. Review of Literature

Namrata Swain, Grishma Nayak and Rajgopal Choudhury (2024) conducted a study on contribution of academic achievement on divergent thinking of higher secondary students. The sample for the present study comprised 150 teenager students (90 from government and 60 from private) of secondary schools. The study utilized a dual-questionnaire approach i.e. self-devised questionnaire to gather information about academic environment and standardized Divergent Production Ability Test Scale to assess divergent thinking ability of students. The result of the study revealed that the academic environment of both government and private secondary schools provides nearly equal facilities but failed to influence on divergent production abilities of students. As a result, these findings inform the development of interventions aimed at enhancing teenager student's creativity and innovations.

Swarnaprava Mallick, Jitendra Kumar Panda and Antima Das (2024) association between study involvement and academic achievement among secondary students. The findings offer valuable perspectives for educators, policymakers, and other stakeholders, informing evidence-based strategies to optimize learning experiences and enhance academic success for secondary students. This research contributes to the broader discourse on educational effectiveness by providing actionable recommendations grounded in a comprehensive understanding of the dynamics between study involvement and academic achievement in secondary education.

Nisar Ahmad Kumar (2023) conducted a study on Academic Achievement of Higher Secondary School Students in Relation to their Family Relationship. Academic achievement and family relationship of 140 Higher secondary school students (Male=70, Female=70) was studied. Family Relationship Inventory (FRI) developed by Sherry and Sinha (2011) was used to study the family relationship and marks scored in the previous class were used to assess the academic achievement. Demographic information was collected and Mean, S. D., t test and product moment correlation of Pearson were calculated. Significant difference was found among higher secondary school students having Poor and healthy family relationship. Significant positive relationship was found between academic achievement and family relationship among higher secondary school students.

4. Operational Definitions of the Study

Academic Achievement

“Academic achievement is one of the major criteria applied to judge proficiency and skill of a learner in a given area at a particular time. It is the indication of performance or achievement in a test performed to measure one's achievement”.

Divergent Thinking

Divergent thinking is a problem-solving and creative process where a person or group generates a wide range of unique ideas, solutions, or possibilities in a spontaneous, free-flowing, and non-linear manner.

5. Objectives of the Study

1. To find out the level of Academic Achievement of Higher Secondary Students.
2. To find out the level of Divergent Thinking of Higher Secondary Students.
3. To find out whether there is any significant difference in the Academic Achievement of Higher Secondary Students with regard to gender.
4. To find out whether there is any significant difference in the Academic Achievement of Higher Secondary Students with regard to type of school.
5. To find out whether there is any significant difference in the Divergent Thinking of Higher Secondary Students with regard to gender.
6. To find out whether there is any significant difference in the Divergent Thinking of Higher Secondary Students with regard to type of school.
7. To find out whether there is any significant relationship between Academic Achievement and Divergent Thinking of Higher Secondary Students.
8. To find out the contribution of the Divergent Thinking on Academic Achievement of Higher Secondary Students.

6. Hypotheses of the Study

1. The level of Academic Achievement of Higher Secondary Students is low.
2. The level of Divergent Thinking of Higher Secondary Students is low.
3. There is no significant difference in the Academic Achievement of Higher Secondary Students with regard to gender.
4. There is no significant difference in the Academic Achievement of Higher Secondary Students with regard to type of school.
5. There is no significant difference in the Divergent Thinking of Higher Secondary Students with regard to gender.
6. There is no significant difference in the Divergent Thinking of Higher Secondary Students with regard to type of school.
7. There is no significant relationship between Academic Achievement and Divergent Thinking of Higher Secondary Students.
8. There is no contribution of the Divergent Thinking on Academic Achievement of Higher Secondary Students.

7. Method of the Study and Sample Used

The normative survey method was adopted in the present study. In order to collect the required data, the Academic Achievement, the Students' academic examination marks have been taken for this study and Divergent Thinking Skills (DTS) Constructed and Validated by R. Sathiyendrapillai & Dr. N.L.N. Jayanthi (2024). Simple random sampling technique has been employed to collect the data from 620 higher secondary students studying in Jaffna District of Sri Lanka.

8. Analysis of Data and Interpretation

The data collected were descriptively analyzed by employing the following statistical techniques:

1. Descriptive Analyses (Mean and Standard Deviation)
2. Differential Analyses ('t' test and 'F' test)
3. Correlation Analyses ('r' value) and
4. Regression Analysis

Descriptive Analysis

Result of Hypothesis 1

The level of Academic Achievement of Higher Secondary Students is low.

Table – 1: Showing the Mean and Standard Deviation Scores of Academic Achievement

Variable	N	Mean	SD
Academic Achievement	620	54.90	11.39

From the table-1, the mean and standard deviation of the entire sample are found to be 54.90 and 11.39 respectively. The mean score falls in between the average range value (50-59), so the framed hypothesis (1) is rejected and it is concluded that the level of Academic Achievement of Higher Secondary Students is average.

Result of Hypothesis 2

The level of Divergent Thinking of Higher Secondary Students is low.

Table – 2: Showing the Mean and Standard Deviation Scores of Divergent Thinking

Variable	N	Mean	SD
Divergent Thinking	620	65.26	9.29

From the table-2, the mean and standard deviation of the entire sample are found to be 65.26 and 9.29 respectively. The mean score falls in between the average range value (55-75), so the framed hypothesis (2) is rejected and it is concluded that the level of Divergent Thinking of Higher Secondary Students is average.

Differential Analysis

Result of Hypothesis 3

There is no significant difference in the Academic Achievement of Higher Secondary Students with regard to gender.

Table-3

Significance of Difference between the mean score of Academic Achievement of higher secondary students with respect to their Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Academic Achievement	Male	331	52.07	10.00	3.65	Significant
	Female	289	57.59	12.65		

It is found from the table-3 that the calculated 't' value is 3.65 which is higher than the table value 1.96 at 0.05 level of significance. Hence the above stated null hypothesis is rejected and it is concluded that male and female

Higher Secondary Students differ significantly in their Academic Achievement. It is also inferred that female students have high Academic Achievement than the male students.

Result of Hypothesis 4

There is no significant difference in the Academic Achievement of Higher Secondary Students with regard to type of school.

Table-4

Significance of Difference between the mean score of Academic Achievement of higher secondary students with respect to their Type of School

Variable	Type of School	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Academic Achievement	National	255	55.83	11.31	2.42	Significant
	Provincial	365	58.21	12.67		

It is found from the table-4 that the calculated 't' value is 2.42 which is higher than the table value 1.96 at 0.05 level of significance. Hence the above stated hypothesis is rejected and it is concluded that academic achievement of higher secondary students differ significantly with respect to their type of school. It is also inferred that provincial school students have high Academic Achievement than the national school students.

Result of Hypothesis 5

There is no significant difference in the Divergent Thinking of Higher Secondary Students with regard to gender.

Table-5

Significance of Difference between the mean score of Divergent Thinking of Higher Secondary Students with respect to their Gender

Variable	Gender	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Divergent Thinking	Male	331	64.53	8.14	2.55	Significant
	Female	289	66.42	9.41		

It is found from the table-5 that the calculated 't' value is 2.55 which is higher than the table value 1.96 at 0.05 level of significance. Hence the above stated null hypothesis is rejected and it is concluded that male and female Higher Secondary Students differ significantly in their Divergent Thinking. It is also inferred that female students have high Divergent Thinking than the male students.

Result of Hypothesis 6

There is no significant difference in the Divergent Thinking of higher secondary school students with regard to type of school.

Table-6

Significance of Difference between the mean score of Divergent Thinking of Higher Secondary Students with respect to their Type of School

Variable	Type of School	N	Mean	SD	't' Value	Level of Significance at 0.05 Level
Divergent Thinking	National	255	64.16	8.67	4.10	Significant
	Provincial	365	67.17	10.43		

It is found from the table-6 that the calculated 't' value is 4.10 which is higher than the table value 1.96 at 0.05 level of significance. Hence the above stated hypothesis is rejected and it is concluded that Divergent Thinking of Higher Secondary Students differ significantly with respect to their type of school. It is also inferred that provincial school students have high Divergent Thinking than the national school students.

Correlation Analysis

Result of Hypothesis 7

There is no significant relationship between Academic Achievement and Divergent Thinking of Higher Secondary Students.

Table-7

Coefficient of correlation between Academic Achievement and Divergent Thinking of Higher Secondary Students

Variable	N	'r' Value	Level of Significance At 0.01 Level
Academic Achievement and Divergent Thinking	620	0.425**	Significant

**. Correlation at 0.01 level (2-tailed)

From the table-7, the obtained coefficient of correlation (r) between Academic Achievement and Divergent Thinking of High Secondary Students is found to be 0.425 which is significant at 0.01 ($p < 0.01$). Hence the above stated null hypothesis is rejected at 0.01 level of significance and it is concluded that there is a significant and positive relationship between Academic Achievement and Divergent Thinking of Higher Secondary Students, that is, Higher Secondary Students who are having more sense of Divergent Thinking have better Academic Achievement and vice-versa.

Regression Analysis**Result of Hypothesis 8**

There is no significant contribution of Divergent Thinking on Academic Achievement of Higher Secondary Students.

Table-8

Regression model

	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Significant Level (0.05)
Academic Achievement	Divergent Thinking	0.325	0.122	0.169	5.174	Significant

From the table-7 shows r^2 value which is an estimation of the proportion of variance in the Academic Achievement that is accounted by Divergent Thinking and in this case r^2 is found to be 0.120, which indicates that only 12.2% of the total variance in Academic Achievement is attributed by Divergent Thinking of Higher Secondary Students.

9. Findings of the Study

- The level of Academic Achievement of Higher Secondary Students is average.
- The level of Divergent Thinking of Higher Secondary Students is average.
- There is a significant difference between male and female Higher Secondary Students with regard to Academic Achievement.
- There is a significant difference between national and provincial Higher Secondary Students in their Academic Achievement.
- There is a significant difference between male and female Higher Secondary Students with regard to Divergent Thinking.
- There is a significant difference between national and provincial Higher Secondary Students in their Divergent Thinking.
- There is a significant and positive relationship between Academic Achievement and Divergent Thinking of Higher Secondary Students.
- 12.2% of the total variance in Academic Achievement is attributed by Divergent Thinking of Higher Secondary Students.

10. Recommendations

1. In this study it has been found that the Academic Achievement level among higher secondary students is average. So, it is necessary to enhance academic achievement of the higher secondary students and it is also revealed by other researchers.
2. The teachers and parents encourage them to achieve more score in subjects, which leads them to acquire better knowledge in handling scientific problem in systematic manner.
3. Preparing training programs to develop the divergent thinking abilities of teachers through the use of some strategies and asking questions that develop this type of skills, which helps to achieve positive results.

4. Taking advantage of the divergent thinking test in future studies to reveal the level of learners in this style of thinking.
5. Interest in developing divergent thinking skills through science and chemistry curricula at all stages by including some activities and tasks that develop those skills.

11. Conclusion

The study revealed that Provincial school students excelled academic achievement in terms of academic achievement over the national school students and the divergent thinking of female students are found to be better than the male students.

12. References

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