JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Contribution of Academic Environment on Divergent Thinking Among Teenager Students of Government and Private Schools

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Abstract

Divergent Thinking as a part of creative problem-solving process, generates multiple solutions of a single problem through brain-storming and exploration. Teenage is a critical stage in which divergent thinking flourishes, fuel by cognitive flexibility, emotional intensity and social interaction. To nurture this divergent thinking capabilities of teenagers, academic environment of institutions plays a pivotal role. Most of the institutions at present only giving importance on securing marks rather than developing creative abilities which creates lack of opportunities to develop divergent thinking. Finding effective contribution of academic environment on divergent thinking of teenagers has received increased attention but has not yet be addressed thoroughly. Hence, this study bears an important rationale in the present context. 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.

Keywords: Academic Environment, Divergent Thinking, Teenager Students

Introduction

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 environment contribution on divergent thinking among teenager students of both government and private schools of Sambalpur district.

Facts revealed from the previous research work related to this research that The government school environment have higher creativity generating environment as compared to private school (Choudhary,2022); the mean gain academic achievement of high intelligence group was higher than that of average intelligence group (Kaur,2020); private school students excelled over government school, boys excelled over girls and urban students excelled over rural students in terms of academic achievement (Kumar,2019); creative stimulation and permissiveness dimension of school environment can be controlled for better academic achievement (Gil,2016); girls are superior than boys in originality components and inferior in fluency and flexibility components (Sharma,2015); worse

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institutional facilities have a negative impact on students achievement (Kwong,2015); student's stress susceptibility varies with arts, commerce and science stream (Samuel,2015); creativity, academic achievement and school environment are positively correlated (Asija,2013); urban students have very much stressful environment as compared to rural students (Lin,2021).

Divergent thinking of alternate school attended students are more than the traditional school attended students (Gu,2021); the use of Computer cognitive maps can improve students' Divergent Thinking Ability (Man,2021); divergent thinking decreases across the age in fluency, flexibility and originality dimensions (Bakhiet,2022); role playing in gamified classroom environment enhances students' verbal divergent thinking in classroom activities (Chen,2020);Girls performed better than Boys in all the test of Divergent Thinking (Muller,2020); in fostering the creative and innovative ideas, not only the brainstorming is essential condition but also divergent thinking play an important and active role (Kalagiros & Manning,2015); boys are superior than girl students on fluency and cognitive flexibility (Rabari,2011); older adults are more capable on giving original and elaborative ideas as compared to younger adults because they are more divergent (Palmiero, 2014); divergent thinking test for creative achievement are reliable and valid predictors of certain performance criteria (Runco,2012).

From the analysis of studies conducted on both academic environment and divergent thinking of students it was observed that there is no study conducted recently by taking these two variables. Therefore, the researcher adopts the study to focus on the contribution of academic environment on divergent thinking of teenager students and also set a comparative analysis over the government and private school academic environment.

Objectives of the study

1. To study the Divergent Production Abilities of teenager students.
2. To examine the contribution of academic environment on divergent thinking of teenager students.
3. To set a comparative analysis over government and private school's academic environment and its contribution on divergent thinking of teenager students.

Research Method and Design

In order to take the benefits of survey research, the researcher employed the descriptive survey method in this study. Here all the secondary school's teenager students are taken as the population of the study. The sample size of 150 (90 from government school and 60 from private school) students was determined based on the practicality and availability of participants on the day of data collection. The researcher used two types of tools for data collection i.e. self-made questionnaire and divergent production ability test scale. The self-made questionnaire is based on nominal scale and used to gather information about academic environment of the school which included three parts (Infrastructural Facilities, Teaching-learning Materials & Instructions and Methods). Standardized Divergent Production Ability Test scale (English version) based on Guilford model of Structure of Intellect devised by K.N. Sharma (2006) used to assess the divergent thinking ability of teenager students who were in the age group of 13 to 18 years. The battery of divergent production abilities contains six tests for measurement of eight abilities. The collected data was interpreted through simple percentage analysis and no sophisticated statistical techniques were applied.

Analysis and Interpretation of Data

TABLE-1

Summaries of the Divergent Production Abilities (DPAs) of government School Students

(N=90)

S.I. No.	Range of Raw Score	Grade	Level of DPAs	Number of respondents	Percentage of students
1	109 &more	A	Extremely High	-	-
2	98 to 108	B	High	-	-
3	87 to 97	C	Above Average	-	-
4	71 to 86	D	Average/Moderate	4	4.4%
5	60 to 70	E	Below Average	7	7.7%
6	49 to 59	F	Low	12	13.3%
7	48 & less	G	Extremely Low	67	74.4%

From the Table-1 the summary of divergent production abilities of government school students revealed that out of 90 numbers of student (both boys and girls) 4.4% (i.e. 4 in number) comes under Average/Moderate, 7.7% (i.e. 7 in number) comes under Below Average, 13.3% (i.e. 12 in number) comes under Low and 74.4% (i.e. 67 in number) comes under Extremely Low category.

Figure-1 Graphical representation of Level of Divergent Production Abilities of Government school students

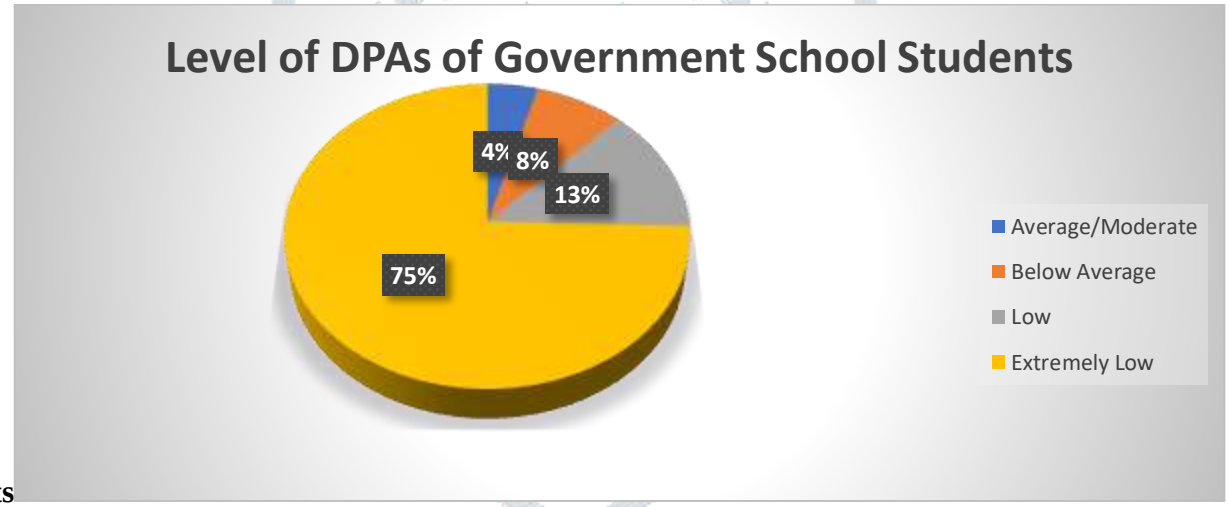

TABLE-2

Summary of the Divergent Production Abilities (DPAs)of private school Students

(N=60)

S.I. No.	Range of Raw Score	Grade	Level of DPAs	Number of respondents	Percentage of students
1	109 &more	A	Extremely High	-	-
2	98 to 108	B	High	-	-
3	87 to 97	C	Above Average	1	1.66%
4	71 to 86	D	Average/Moderate	3	5%
5	60 to 70	E	Below Average	8	13.33%
6	49 to 59	F	Low	12	20%
7	48 & less	G	Extremely Low	36	60%

From the Table-2 the summary of divergent production abilities of private school students revealed that out of 60 numbers of student (both boys and girls) 1.66% (i.e. 1 in number) comes under above average, 5% (i.e. 3 in number) comes under Average/Moderate, 13.33% (i.e. 8 in number) comes under Below Average, 20% (i.e. 12 in number) comes under Low and 60% (i.e. 36 in number) comes under Extremely Low category.

Figure-2: Graphical representation of Level of Divergent Production Abilities of Private school students

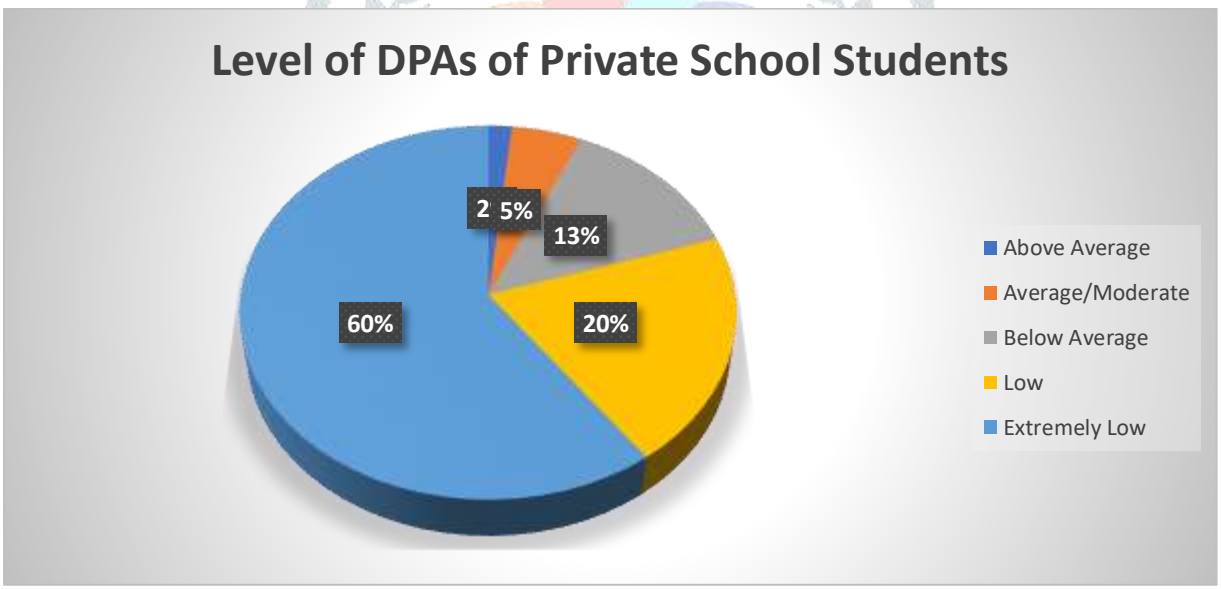

TABLE-3

Summary of comparative analysis on Divergent Production Abilities (DPAs) of government and private school students

(N=150)

S.I. No.	Range of Raw Score	Grade	Level of DPAs	Government School		Private School	
				Number of students	% of students	Number of students	% of students
1	109 &more	A	Extremely High	-	-	-	-

2	98 to 108	B	High	-	-	-	-
3	87 to 97	C	Above Average	-	-	1	0.66%
4	71 to 86	D	Average/Moderate	4	2.66%	3	2%
5	60 to 70	E	Below Average	7	4.66%	8	5.33%
6	49 to 59	F	Low	12	8%	12	8%
7	48 & less	G	Extremely Low	67	44.66%	36	24%

From the table-3 the Summary of comparative analysis on Divergent Production Abilities (DPAs) of government and private school students revealed that out of the 150 students (90 from Government school and 60from Private school) only 0.66% students from private school comes under above average category. Nearly equal percentage of students comes under average/moderate category of both the schools. 4.66% from government school and 5.335 from private school comes under below average category. Equal percentage of students (i.e. 8%) comes under low category. 44.66% from government school and 24% from private school comes under extremely low category.

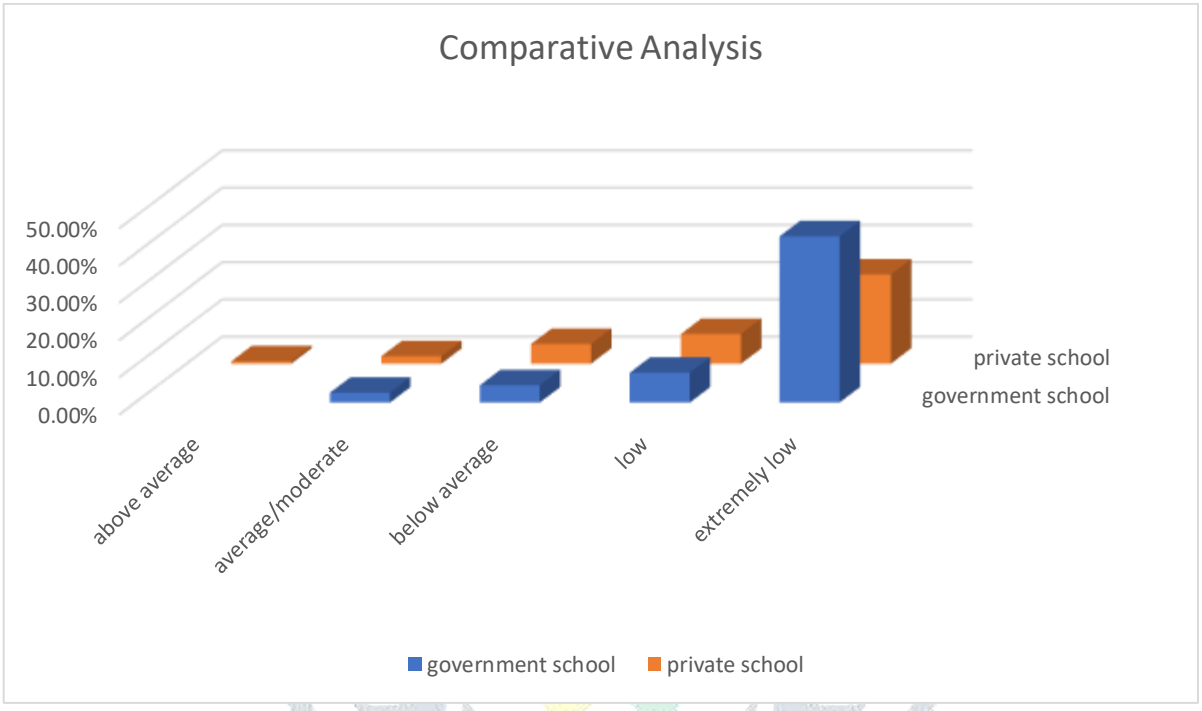

Figure-3: Graphical representation of comparative analysis on Divergent Production Abilities (DPAs) of government and private school students

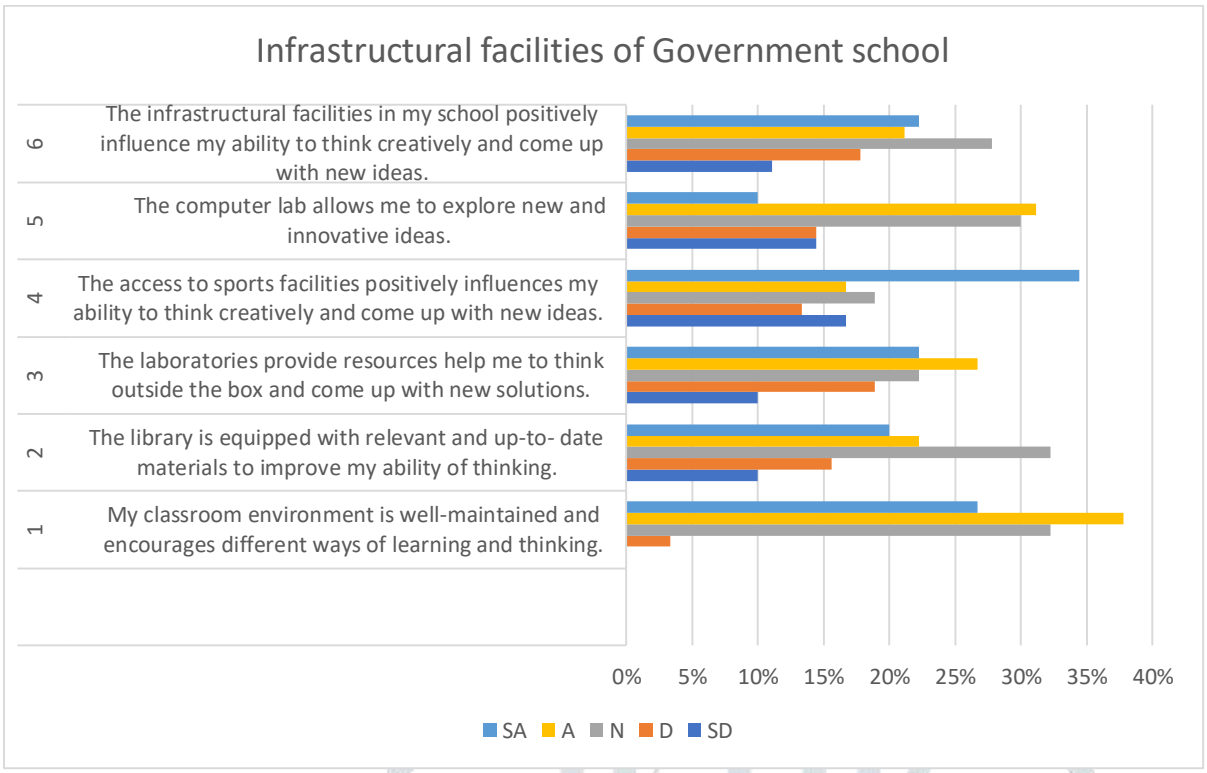

Figure-4.1 Graphical representation of effect of infrastructural facilities of government school on divergent thinking of teenagers

Figure-4.1revealed on effect of the infrastructural facilities on divergent thinking among government school students that 37.8% of respondent agreed that their classroom environment was well-maintained and encouraged different ways of learning and thinking, whereas 32.2% respondent neutral to respond. However, 26.7% of the respondent strongly agreed and 3.3% of respondent disagree to it. 22.2% and 20% of respondent agreed and strongly agreed respectively that their library was equipped with relevant and up-to-date materials to improve their ability of thinking, whereas 32.2% respondent neutral to respond. However, 10% respondent strongly disagreed and 15.6% respondent disagreed to it.26.7% respondent agreed that the laboratories were provided resources that help them to think outside the box and come up with new solutions, whereas 22.2% respondent neutral to respond. However, 22.2% strongly agreed, 10% strongly disagreed and 18.9% disagreed to it.34.4% respondent strongly agreed that their sports facilities positively influence the ability to think positively and come up with new ideas, whereas 18.9% respondent neutral to respond. However, 16.7% respondent strongly disagreed, 13.3% disagreed and 16.7% agreed to it.31.1% and 10% respondents agreed and strongly agreed respectively that their computer lab allows them to explore new and innovative ideas while, 30% remain neutral to respond. However, respondents responding to strongly disagree and disagree remain same (i.e. 14.4%). 22.2% respondents strongly agreed that influence of infrastructural facilities on their way of thinking, whereas 27.8% remain neutral to respond. However, 11.1% respondents strongly disagreed, 17.8% disagreed and 21.1% agreed on the same.

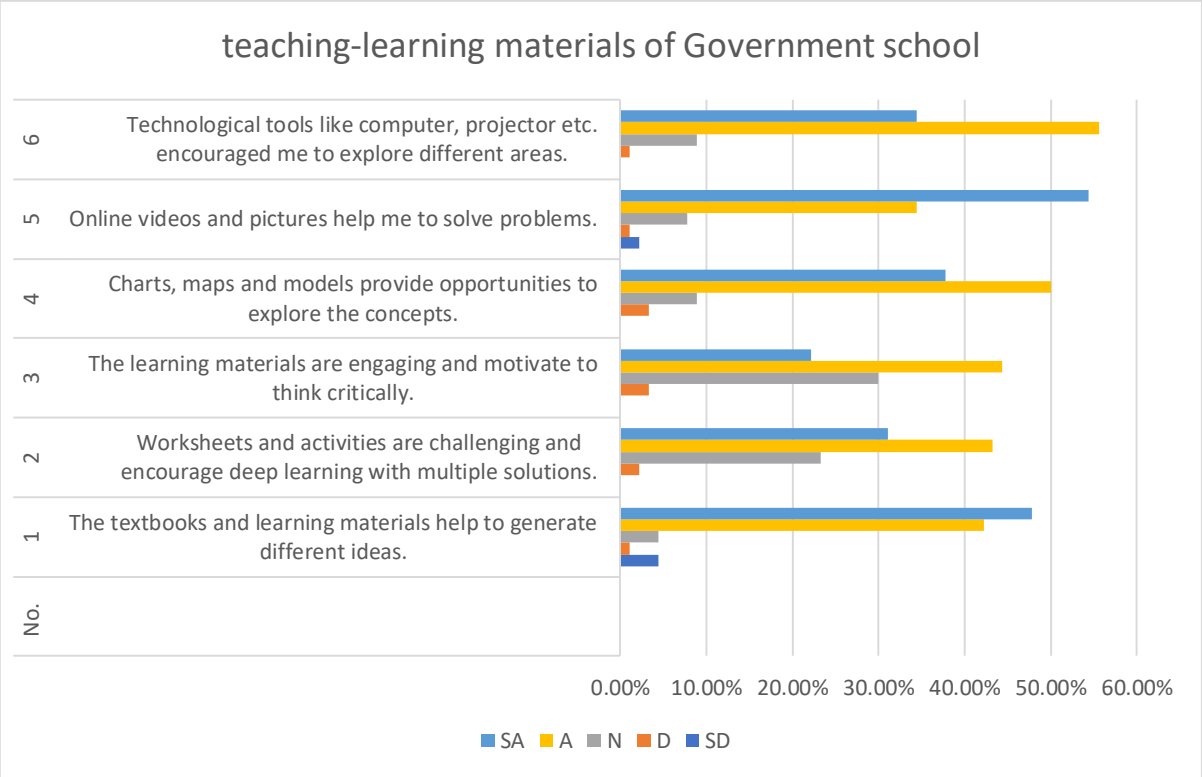

Figure-4.2 Graphical representation of effect of Teaching-Learning Materials used by government school on divergent thinking of teenagers

Figure-4.2 revealed on effect of the Teaching-Learning Materials on divergent thinking among government school students that 42.2% and 47.8% respondents agreed and strongly agreed that the textbooks and learning materials help to generate different ideas, whereas 1.1% disagreed on it. However, respondents responding to strongly disagree and neutral were remain same (i.e. 4.4%).43.3% respondents agreed that worksheets and activities were challenging and encouraged deep learning with multiple solutions, whereas 31.1% strongly agreed upon the same. However, 2.2% and 23.3% responded disagree and neutral on the same. 44.4% and 22.2% respondents agreed and strongly agreed respectively that the learning materials are engaging and motivate to think critically, whereas 30% remain neutral to it. Halves of the respondents (i.e. 50%) agreed that the charts, maps and models provided opportunities to explore the concepts whereas 37.8% strongly agreed upon it. 34.4% and 54.4% respondents agreed and strongly agreed that the online videos and pictures help them to solve problems, with a few (7.8%) remains neutral upon it.55.6% and 34.4% respondents agreed and strongly agreed that the technological tools like computer, projector etc. encouraged them to explore new areas while 8.9% remain neutral on it.

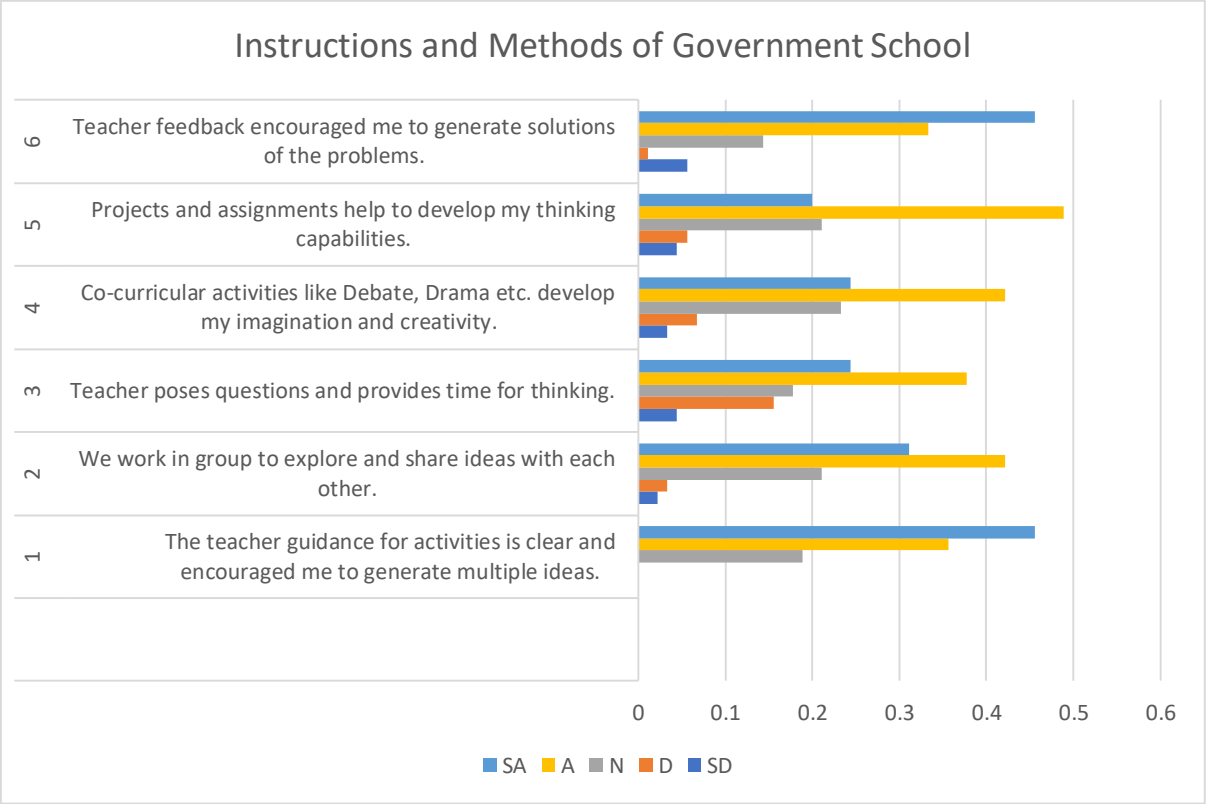

Figure-4.3 Graphical representation of effect of Instructions and Methods used by government school on divergent thinking of teenagers

Figure-4.3 revealed on effect of the Instructions and methods on divergent thinking among government school students that 35.5% and 45.6% respondents agreed and strongly agreed respectively upon the teacher guidance for activities was clear which encouraged them to generate multiple ideas, whereas 18.9% remain neutral on it. Nearly halves of the respondents (i.e. 42.2%) agreed that they worked in group to explore and share ideas with each other, whereas 31.1% strongly agreed upon it. However, 2.2% strongly disagreed, 3.3% disagreed and 21.1% remain neutral on the same.37.8% and 24.4% respondents agreed and strongly agreed respectively that their teachers posed questions and provided time for thinking whereas 17.8% remain neutral on it. However, 4.4% strongly disagreed and 15.6% disagreed on the same. Nearly halves of the respondents (i.e.42.2%) agreed that co-curricular activities like debate, drama etc. developed their imagination and creativity and 24.4% strongly agreed upon it. However, 3.3% respondent strongly disagreed, 6.7% disagreed and 23.3% neutral on it.48.9% and 20% respondents agreed and strongly agreed that the projects and assignments help to develop their thinking capabilities, whereas 21.1% remain neutral on it.45.6% respondents strongly agreed that the teachers feedback encouraged them to generate solutions of the problems and 33.3% respondents agreed on it. However, 14.4% remain neutral on it.

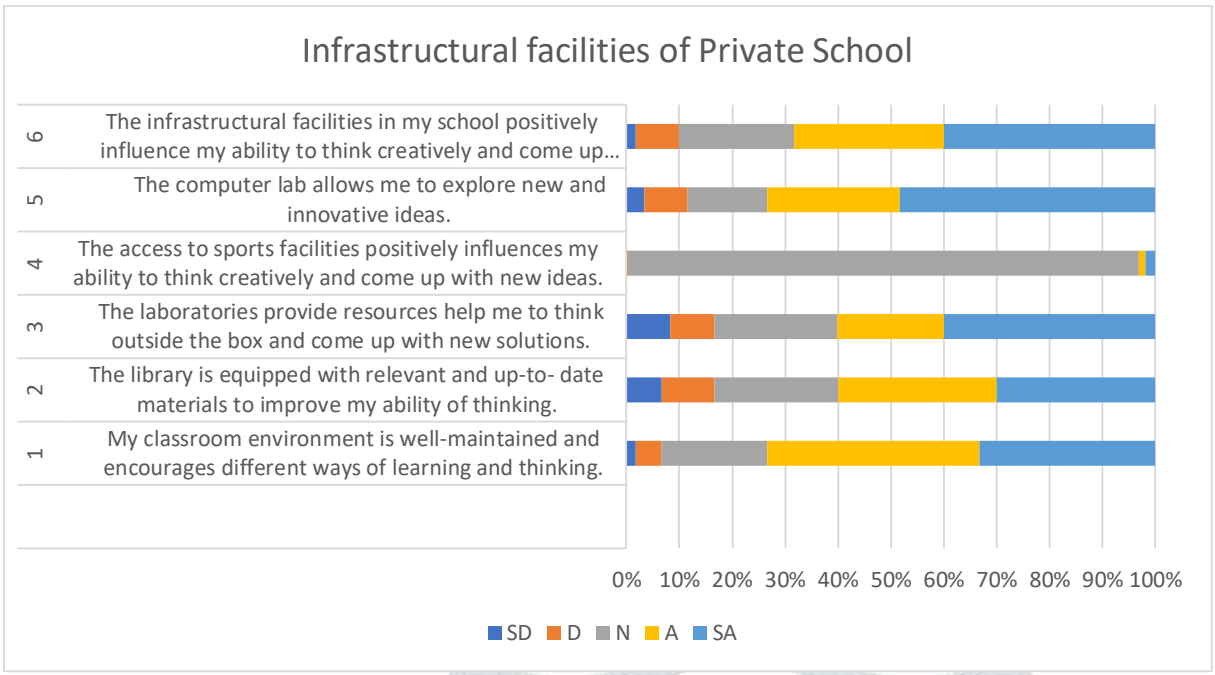

Figure-5.1 Graphical representation of effect of infrastructural facilities of private school on divergent thinking of teenagers

Figure-5.1 revealed on effect of the infrastructural facilities on divergent thinking among private school students that 40% and 33.3% of respondent agreed and strongly agreed respectively that their classroom environment was well-maintained and encouraged different ways of learning and thinking, whereas 20% respondent neutral to respond. However, 1.7% of the respondent strongly disagreed and 5% of respondent disagree to it. Respondents responding to agreed and strongly agreed remain same (i.e. 30%) that the library was equipped with relevant and up-to-date materials to improve their ability of thinking, whereas 23.3% remains neutral to respond. However, 6.7% and 10% respondent strongly disagreed and agreed on the same respectively.40% respondent strongly agreed that the laboratories were provided resources that help them to think outside the box and come up with new solutions, whereas 23.3% respondent neutral to respond. However, 20% agreed, 10% strongly disagreed and 18.9% disagreed to it.40% respondent strongly agreed that their sports facilities positively influence the ability to think positively and come up with new ideas, whereas 21.7% respondent neutral to respond. However, 3.3% respondent strongly disagreed, 5% disagreed and 30% agreed to it.25% and 48.3% respondents agreed and strongly agreed respectively that the computer labs allowed them to explore new and innovative ideas, whereas 15% remains neutral to respond. However, 3.3%of the respondent strongly disagreed and 8.3% respondent disagreed to it.28.3% and 40% respondent agreed and strongly agreed respectively that their infrastructural facilities positively influences their ability to think creatively and come up with new ideas, whereas 21.7% remain neutral to respond. However, 1.7% and 8.3% respondents strongly disagreed and disagreed to it respectively.

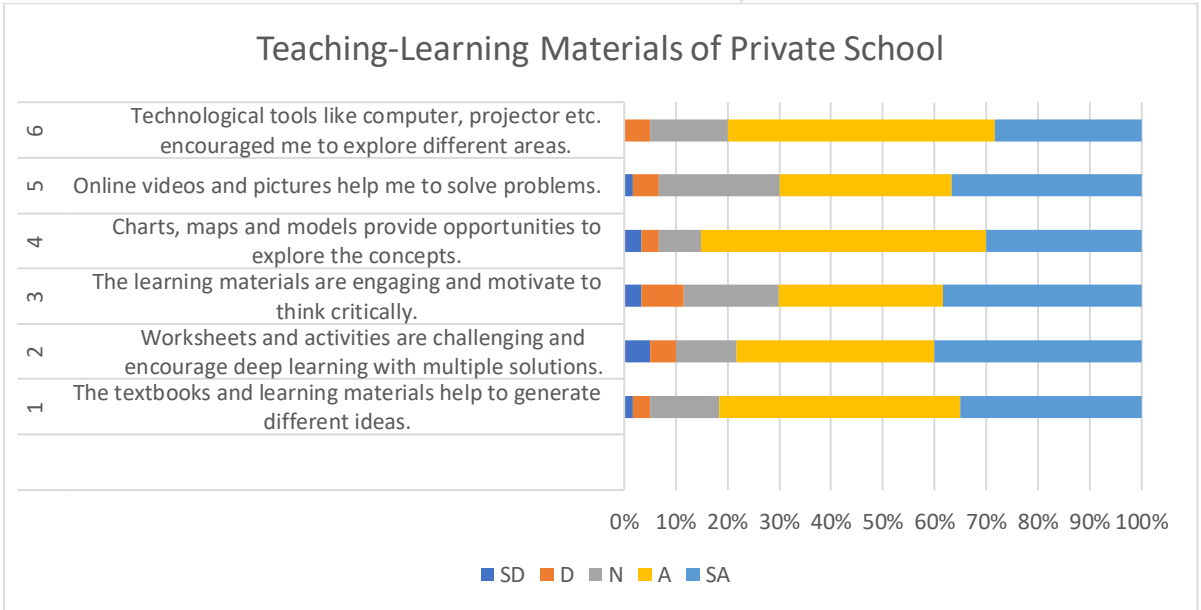

Figure-5.2 Graphical representation of effect of Teaching-Learning Materials

Figure-5.2 revealed on effect of the Teaching-Learning Materials on divergent thinking among private school students that 46.7% and 35% respondents agreed and strongly agreed that the textbooks and learning materials help to generate different ideas, whereas 13.3% neutral to it. However, respondents responding to strongly disagree and disagree were 1.7% and 3.3% respectively. 40% and 38.8% respondents strongly agreed and agreed respectively that worksheets and activities were challenging and encouraged deep learning with multiple solutions, whereas 13.3% neutral upon the same. However, Respondents responding to disagreed and strongly disagreed remain same (i.e. 5%).31.7% and 38.3% respondents agreed and strongly agreed respectively that the learning materials are engaging and motivate to think critically, whereas 18.3% remain neutral to it. However, respondents responding to strongly disagree and disagree were 3.3% and 8.3% respectively. More than halves of the respondents (i.e. 55%) agreed that the charts, maps and models provide opportunities to explore the concepts and 30% respondent strongly agreed on it. However, Respondents responding to disagreed and strongly disagreed remain same (i.e. 3.3%).33.3% and 36.7% respondents agreed and strongly agreed respectively that online videos and pictures help them to solve problems, whereas 23.3% remain neutral on the same. However, 1.75% responded strongly disagreed and 5% responded disagreed on it. Nearly halves of the respondents (51.7%) agreed that the technological tools like computer, projector etc. encouraged them to explore new ideas and 28.3% strongly agreed on it. However, 15% respondents remained neutral and 5% disagreed on the same.

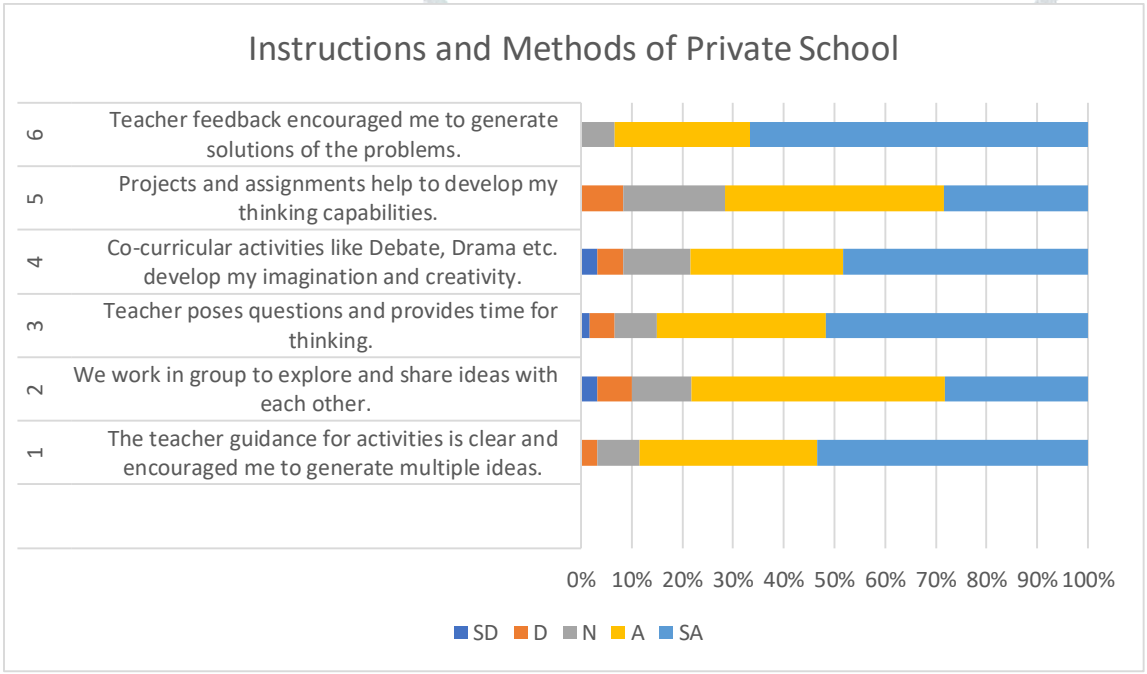

Figure-5.3 Graphical representation of effect of Instructions and Methods used by private school on divergent thinking of teenagers

Figure-5.3 revealed on effect of the Instructions and methods on divergent thinking among private school students that 35.5% and 53.3% respondents agreed and strongly agreed respectively upon the teacher guidance for activities was clear which encouraged them to generate multiple ideas, whereas 3.3% respondents disagreed and 8.3% remained neutral to it. Half of the respondents (i.e. 50%) agreed that they worked in group to explore and share ideas with each other, whereas 28.3% strongly agreed upon it. However, 3.3% strongly disagreed, 6.7% disagreed and 11.7% remain neutral on the same.33.3% and 51.7% respondents agreed and strongly agreed respectively that their teachers posed questions and provided time for thinking whereas 8.3% remain neutral on it. However, 1.7% strongly disagreed and 5% disagreed on the same. Nearly halves of the respondents (i.e.48.3%) strongly agreed that co-curricular activities like debate, drama etc. developed their imagination and creativity and 30% agreed upon it. However, 3.9% respondent strongly disagreed, 5% disagreed and 13.3% neutral on it.43.3% and 28.3% respondents agreed and strongly agreed that the projects and assignments help to develop their thinking

capabilities, whereas 20% remain neutral on it.66.7% respondents strongly agreed that the teachers feedback encouraged them to generate solutions of the problems and 26.7% respondents agreed on it. However, 6.7% remain neutral on it.

Conclusion and Discussion

Findings emerged from the analysis revealed that the divergent production abilities of private school students are more as compared to government school students in terms of academic environment, which is supported by Kumar (2019) that private school students excelled academic achievement in terms of academic environment over the public school students; the divergent production abilities of teenage girls are found to be better than the teenage boys which is supported by Sharma (2015) that girls are found to be better than boys on elaboration and originality components while boys scored higher on aspects related to fluency and flexibility components and Muller & Pietzner (2020) that girls performed better than boys in the different test of divergent thinking; teenager students were benefitted from the facilities related to ICT (Computer, Projector, and etc.) in order to explore new and innovative ideas through the proper guidance of teacher which is supported by Man (2021) that the use of Computer cognitive maps can improve students' Divergent Thinking Ability; co-curricular activities like debate, drama etc. developed imagination and creativity of teenager students which is more in case of private school which is supported by Chen (2020) that role playing in gamified classroom management enhances students' verbal divergent thinking in classroom activities and its influences on different dimensions of divergent thinking. Findings also evidenced that both government and private secondary school's academic environment provide nearly equal facilities to students but failed to influence on the divergent production abilities of teenager students.

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