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Redesigning Education: Inducing Creativity and Innovation in Learning

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Abstract

The study attempts to explore the creativity and innovation abilities in school education and tries to assess the impact of induced creativity and innovation in learning in the various types of Government schools in Chhattisgarh (India). The study has been designed around two types of schools: I) State Level Government schools (rural and urban) and Central Level Government schools (Rural and Urban). The sample comprised of 200 students, 50 (25 girls, 25 boys) from each school. Divergent Production Ability Battery (DPA) was used as the instrument to measure creativity and Learning Environment Scale (L.E.S). The Learning Environment Scale (LES) has been prepared as an adaptation of the Family Climate Scale (FCS) by Beena Shah and the School Environment Inventory (SEI) by Dr. Karuna Shankar Mishra (1984). The results of the data analysis revealed sufficient evidence to establish that there is a significant positive relationship between divergent production ability and learning environment of the students. Creativity can be induced through various learning activities. Specific learning activities have an effective impact in creativity and innovative practices in classroom learning and teaching practices. The post-test of the study reveals that, in the 21st century, children can depict high divergent production abilities if taken care ofand it makes the teaching and learning process more innovative, effective and interesting, especially for children who do not have the opportunity of high income or educated parents. The results of this study would help to foster creativity and innovation skills among the students.

Keywords: Divergent production ability, creativity, innovation

Introduction

Plato once said, "Do not train children to learning by force and harshness, but direct them to it by what amuses their minds, so that you may be able to discover with accuracy the peculiar bent of the genius of each." The National Curriculum Framework (NCF) (2005) also made it clear that "the development of self-esteem and ethics and the need to cultivate children's creativity, must receive primacy. In the context of a fast changing and competitive world, it is imperative that we respect children's native wisdom and imagination" (p.5). It continues that "education must provide the means and opportunities to enhance the child's creative expression and the capacity for aesthetic appreciation. Education for aesthetic appreciation and creativity is even more important today when aesthetic gullibility allows for opinion and taste to be manufactured and manipulated by market forces" (p.11). Creativity happens when we provide students a learning environment where they can't escape without thinking. The learning environment plays a major role in the quality of education and it influences the learning outcomes. A proper learning environment is a prerequisite for quality education available to a child, both in school and outside the school as learning is a social process that takes place in the environment around the learners through interaction, observation and experience. It leads to modification in human behavior, human critical and divergent thinking. Runco (1999) suggests that high achieving learning environments involve students in a variety of learning activities that are challenging and aligned with learning goals, promote engaged learning, and draw on the culture, life experiences, and knowledge of all students. They allow students to discuss, argue, and analyze issues and concepts. Students explore, solve problems, and construct knowledge rather than just memorizing it. Their work is authentic, engaging, and important, and it builds understanding from in-depth investigation.

Therefore, schools must be concerned about promoting and nurturing the creative powers of children. Reimers-Hild and King (2009) described components of innovation as fun, creative, diverse, collaborative, and intuitive. Taking small steps to accomplish this goal is the way to go, but in that area we need a lot of support and encouragement. Taking risks and sometimes even looking at failure as "fuel for innovation" can help promote this process (Ryshke, 2012). The revised Cognitive Model of Bloom (Anderson & Crathwohl, 2001) focuses on creativity as the highest objective of instruction. But most of our classroom teaching is limited to convergent thinking and very few practices are made for divergent thinking. Divergent thinking is a unique power of the human mind for leading human beings to a high level of intellectual functioning. Torrance defines it as a problem solving ability. A person is called creative if he has divergent type of thinking especially in the production of ideas, fluency, flexibility and originality. The present study is based on the divergent production ability, which is regarded as an evaluation or assessment of creative ability as explained by Guilford. Divergent thinking is cognition that leads in various directions, some conventional and some original. As explained by Runco (1999), "Because some of the resulting ideas are original, divergent thinking represents the potential for creative thinking and problem solving" (p. 577). Thus, to the degree that these tests are reliable and valid, they can be taken as estimates of the potential for creative thinking.

The learning environment is the most dominating factor and background for enhancing divergent thinking skill. Most of the students who come from an economically poor class do not know where their future lies and what they are capable of. The teachers do not know how to induce the willingness to learn in these learners and keep them interested in learning. The structured classroom has no scope of creativity and innovation. The element of fun, curiosity, discovery, imagination, expression and thinking seems vague. The child is not interested in the art of learning.

Literature Review

Research into the development of creativity in education is little, although some commentators suggest that creativity can be developed. Seltzer and Bentley (1999), for example, suggest in their recommendations on knowledge and skills for the new economy, that "creativity can be learned" (p. 10) and that the school curriculum should be restructured "to reflect forms of learning which develop creative ability" (p. 10). There is, it seems, a dearth of conclusive research evidence suggesting that creativity can be developed or that progression can be identified in creativity.

An overview of findings from such studies is given below using five categories:

1. Comprehensive approaches: Stein (1974) has summarized studies up until the mid-1970s, in which researchers evaluated attempts to stimulate adult creativity at the individual and group level, using a range of techniques, including role play, brainstorming, psychotherapy and hypnosis.
2. Educational approaches: Various kinds of training programmes have been advocated to develop creative thought processes. Although there have been attempts to do this within a school context, Vernon (1989) concludes that the results of such studies suggest they are much less successful than is sometimes maintained.
3. Psychodynamic approaches: Both psychodynamic approaches and humanist approaches emphasize the development of personality traits.
4. Humanistic approaches: These approaches concentrate on growth within the individual agent. However, neither the psychodynamic nor the humanistic interventions have conclusively improved creative production (Stein, 1974).
5. Behaviorist approaches: Behaviorisms as a branch of psychology have not taken creativity to be a major focus of work. However Ryhammer and Brolin (1999) suggest that some educational programmes contain within them behaviorist assumptions.

The learning environment includes the space and how it is arranged and furnished, routines, materials and equipment, planned and unplanned activities, and the people who are present (Peterson & Kent, 1995). There are information society haves and have-nots; membership of these two classes is significantly predicted by income, education, and, to a lesser extent, race/ethnicity, location, and age. "Except for gender gaps, these disparities have persisted over a period when the technologies of interest have decreased dramatically in price and increased markedly in user-friendliness. More worrisome still, gaps based in income and education have not merely persisted but have, in fact, increased significantly. There is nothing in the data, then, to suggest that, without policy intervention, these gaps will close" (Bikson & Panis, 1997, p. 426). Although Shallcross (1981) identified a range of strategies important in pedagogical approaches to creativity, yet there is a need to find intervention to induce creativity and innovation in learning. Based on the above review of literature, the following research questions were framed:

1. How can we assess the creativity in the children at the elementary level?
2. How do the learning environments play a role in creativity and innovation?
3. How can we measure creativity in children?
4. Is there a way to induce creativity and an innovation in learning?
5. How can we create an environment that encourages innovation and creativity?

Hypotheses

H_1-. "There will be a significant difference in between the divergent production ability with respect to State Level Government Schools and in Central Level Government schools."

H_2-. "There will be no significant difference in between the divergent production ability with respect to the boys and girls of State government schools and Central government schools."

H_3-. "There will be a significant difference in between the Learning Environments (LE) with respect to State Level Government Schools and in Central Level Government schools."

H_4- "There will be significant difference in between DPA of high and low Learning Environments of students.

H_5- "There will be significant correlation between DPA and Learning Environment with respect to High, Average and Low Levels of Learning Environment."

H_6 - "There will be significant difference in the pre-test and post-test of divergent ability test after the implementation of Divergent Thinking Ability programme."

Operational Definition

1 Divergent Production Ability - According to Guilford (1970), divergent or "synthetic thinking" is the ability to draw on ideas from across disciplines and fields of inquiry to reach a deeper understanding of the world and one's place in it. Guilford has provided six divergent production abilities: ideational fluency, associational fluency, expressional fluency, spontaneous flexibility, oiginality and semantic elaboration.

2. Learning Environment - This includes the environmental conditions under which learning takes place, an environment or a climate, which not only facilitates learning of a prescribed curriculum and syllabus, but also promotes values and attitudes, creativity and thinking process. However, a child learns from the home environment, too. Hence, to study the learning environment, the investigator shall study both the school environment and home environment for the present study.

Methods of Research

Sample

The study consists of Purposive Random Sampling of class VIII students, boys and girls ranging from 14-15 years of age belonging to both state government schools and central government schools (Total - 04) of rural and urban areas of Bilaspur district, Chhattisgarh.

Interpretation of variables

1. Independent Variable - learning environment.
2. Dependent Variable - divergent thinking abilities.
3. Associated Variable - girls and boys from rural and urban locale.

Research Tools

1. The Battery of Divergent Production Abilities (DPA) Measure of Creativity by Dr. K.N. Sharma, Department of Psychology, University of Rajasthan, Jaipur.
2. The Learning Environment Scale (LES) has been prepared as an adaptation of the scale **FCS** (Family Climate Scale) by Beena Shah and **SEI** (School Environment Inventory) by Dr. Karuna Shankar Mishra (1984). Prayag Viswavidyalaya, Allahabad. (Scoring System is given in appendix 1.)

Research Design

The pre-test was taken by using the DPA test. The learning environment was categorized as low, moderate and high and both the learning environment of both State Level schools and Central Level schools were assessed by the Learning Environment Scale.

Professional development of teacher educators in the Divergent Thinking programme in teaching participated. Teachers developed lesson plans with the scope of creativity (DPA Test) – 1. Word Fluency 2. Ideational Fluency 3. Associational Fluency 4. Expressional Fluency 5. Spontaneous Flexibility 6. Adaptive Flexibility 7. Originality and 8. Elaboration.

Post-test was implemented after three months and inferences were drawn.

Findings

H_1-. "There will be a significant difference in between the divergent production ability with respect to State Level Government Schools and in Central Level Government schools."

With a view to putting to test the hypothesis, the data of the Divergent Production Ability (DPA) test of all the pupils were arranged into separate categories, and the mean and standard deviation of the Divergent Production Ability (DPA) of the pupil were calculated. The t-values were found out separately to see whether any significant differences exist in the categories. The scores were obtained for mean, S.D. and "t" values. The result obtained is shown in Table No. 1.1.

Group	N	M	S.D.	df	"t" values	Sig
1. Central	100	72.05	21.20	198	5.38	Significant P<0. 01
2. State	100	57.63	16.56.			

Table No. 1.1. DPA of students of class IX of Central & State Level Govt. Rural & Urban Schools

The "t" value (5.38) thus calculated is significantly higher than the table value (2.60) at .01 level of confidence. From the above calculation, the hypothesis is accepted. The difference between the mean of Central Level Government Schools (72.05) and the mean of State Level Government Schools (57.63) are more or, we can say, significant.

H_2-. "There will be no significant difference in between the divergent production ability with respect to the boys and girls of State government schools and Central government schools."

With a view to putting to test H_2, the data of the Divergent Production Ability (DPA) test of all the pupils were arranged into separate categories, and the mean and standard deviation of the Divergent Production Ability (DPA) of the pupil were calculated. The t-values were found out separately to see whether any significant differences exist in the categories. The scores were obtained for mean, S.D. and "t" values. The result obtained is shown in the given table:

Group	N	M	S.D.	df	"t" values	Sig
1. Girls	100	64.29	20.78	198	0.34	NS
2. Boys	100	65.39	19.91			

Table No 1.2: DPA of students of class IX of CENTRAL and STATE Level Govt. Schools Boys and Girls

The "t" value (0.34) thus calculated is significantly less than the tabled value (2.60) at .01 level of confidence. Thus, from the above calculation, Hypothesis -H_2- is accepted. The difference between the mean of girls (64.29) and the mean of boys (65.39) are much less or, we can say, insignificant.

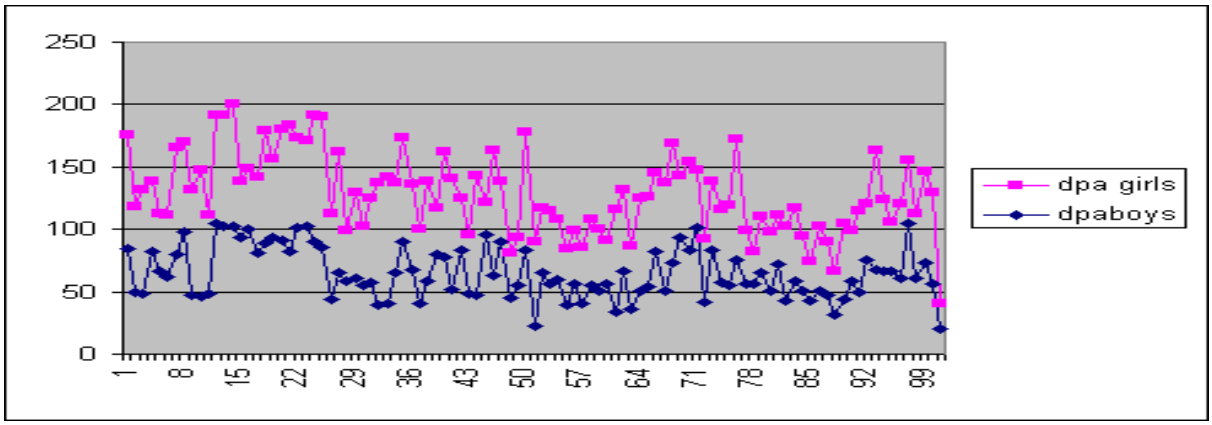

Figure 1: DPA of students of class IX of CENTRAL and STATE Level Govt. Schools Boys and Girls

H_3-. "There will be a significant difference in between the Learning Environments (LE) with respect to State Level Government Schools and in Central Level Government schools."

With a view to putting to test H_3, the data of the learning environment test of all the pupils where arranged into separate categories, and the mean and standard deviation of the learning environment (LE) of the pupil were calculated. The t-values were found out separately to see whether any significant differences exist in the categories. The scores were obtained for mean, S.D. and "t" values. The result obtained is shown in the table.

Group	**N**	**M**	**S.D.**	**df**	**"t" values**	**Sig**
1. Central	100	117.66	18.04	198	2.58	Significant P < 02
2. State	100	100.45	18.38			

Table No. 1.3. Learning Environment of students of Government Central Level Rural & Urban Schools

The "t' value (2.58) thus calculated is significantly higher than the table value (2.35) at .02 level of confidence. From the above calculation, Hypothesis- H_3 is accepted. The difference between the mean of Central Level Government Schools (117.66) and the mean of State Level Government Schools (100.45) are less and a significant difference exists between two groups.

H_4- "There will be a significant difference in between DPA of high and low Learning Environments of students."

With a view to putting to test H_4, the data of the learning environment test of all the pupils were arranged into separate categories, and the mean and standard deviation of the learning environment (LE) of the pupil were calculated. The t-values were found out separately to see whether any significant differences exist in the categories. The scores obtained for mean, S.D. and "t" values. The result obtained is shown in

Table No: 1.4.

Group	N	M	S.D.	df	"t" values	Sig
1.High Environment	74	85.90	12.50	93	20.68	Significant P<0.01
Low Environment	20	52.4	12.26			

Table No. 1.4. High and low Learning Environment of students of class IX of Central &State Level Govt. Rural & Urban Schools

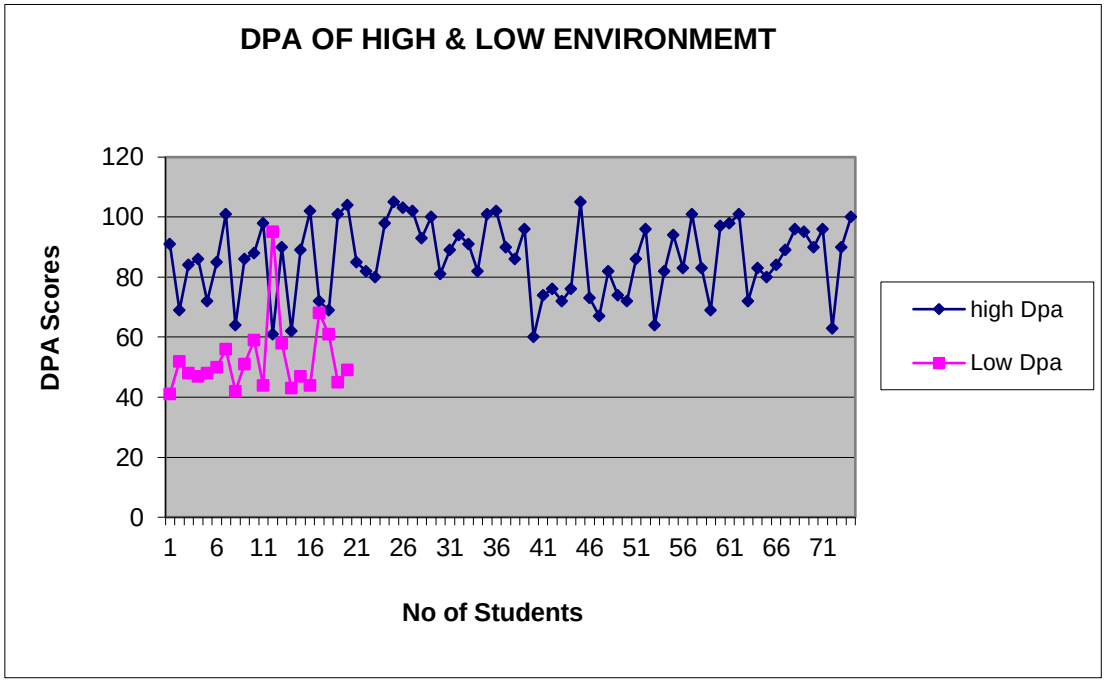

Figure 2. High and low Learning Environment of students of class IX of Central & State Level Govt. Rural & Urban Schools.

The "t" value (20.68) thus calculated is significantly higher than the tabled value (2.63) at .01 level of confidence. From the above calculation, Hypothesis H_4 is accepted. The difference between the mean of the high environment (85.90) and the mean of the low environment (52.4) is high and a significant difference exists between two environments.

H_5- "There will be significant correlation between DPA and Learning Environment with respect to High, Average and Low Levels of Learning Environment."

The present hypothesis has the objective to test the effects of the learning environment with the variable of divergent thinking ability of the students. With a view to putting H_5 to test, Pearson' coefficient relations (r) between the scores of DPA and LE have been compared. For the computation of correlation between divergent thinking ability and learning environment, coefficient of correlation (r) has been calculated for each class separately and for all the two types of school. The correlation thus found has been

transformed into Fischer's z-function and averages of these z's were calculated. The mean z has then again been converted into an equivalent (r).

To test the hypothesis on the basis of vicinity and for the total population, all the students of the two types of schools were combined for urban and rural areas separately and then jointly, and the correlation and its significance were tested. The results thus found have been shown below in Table No 1.5.

S. No	AREA	CLASS	NO.STUD	**Correlation (r)**	Significance
1	CLSURBAN	IX	50	+**0.88**	S, High
2	CLSRURAL	IX	50	**+0.69**	S. Moderate
3	TOTAL	IX	100	**+0.78**	S, Moderate
4	SLSURBAN	IX	50	**+0.72**	
5	SLSRURAL	IX	50	**+0.28**	**S. Moderate**
6	TOTAL	IX	100	**+0.50**	
7	GRAND TOTAL (CLSTOTAL+SLSTOTAL)	IX	200	Equivalent **r=0.63**	S, Low S, Moderate S, Moderate

Table No 1.5: Relationship between DPA and Learning Environment.

The correlation of learning environment of CLS with divergent production ability for class IX students shows significant positive correlation (**r=+0.88**), which is moderate in urban central schools, and slightly moderate significant positive correlation **(r= +0.69**) in rural central schools and significant moderate positive correlation (**r=+0.78**) in total CLS urban and rural schools.

The correlation of DPA of SLS with the learning environment for class XI students shows significant highly moderate positive correlation (**r=+0.72**) in urban state schools and shows low positive correlation **(r= 0.28)** in rural state schools and significant moderate correlation (**r=0.50**) in total SLS urban and rural schools.

These results indicate that the learning environment is highly significant in the central urban schools and moderately significant in central rural schools, moderately significantly in state urban and low positive significant in state rural schools. Jointly, we find that there is a moderate significant positive correlation between the learning environment and DPA of students of class IX (equivalent **r=+0.63**). On the strength of the above results, the hypothesis is accepted.

We infer that the learning environment has an important role to play in the divergent production ability of the students, which is considered as one of the most important creative factors of individuals. It also highlights that the learning environment of the Central Government Schools is better and have a positive impact on the DPA of the students while the State Government Schools' learning environment needs to be improved.

H_6 – "There will be a significant difference in the pre-test and post-test of divergent ability test after the implementation of Divergent Thinking Ability programme."

To test the above hypothesis, the mean scores of pre-test and post-test along with SD values on different areas of DPA were tabulated and subjected to t test.

Sl. No.	DPA	N	Pre-test		Post-test		t-value	Sig. level
			M	SD	M	SD		
1	Word fluency	100	**19.54**	**7.24**	**62.64**	**18.42**	**16.89**	0.01
2	Ideational fluency	100	**14.26**	**5.10**	**18.16**	5.12	6.12	0.01
3	Associational fluency	100	**9.49**	**7.63**	**19.16**	7.12	10.50	0.01
4	Expressional fluency	100	**2.46**	**4.37**	**5.99**	2.71	14.02	0.01
5	Spontaneous flexibility	100	**5.90**	**1.84**	**14.06**	4.08	8.72	0.01
6	Adaptive flexibility	100	**3.00**	**2.24**	**8.75**	4.32	11.61	0.01
7	Originality	35	**0.56**	**1.24**	**5.17**	3.64	8.54	0.01
8	Elaboration	35	**4.36**	**3.40**	**8.96**	6.23	9.59	0.01

Table 1.6. Pre-test and Post-test scores of the students

The above table indicates that all the 100 students of four schools who underwent the intervention programme of DPA depict significant differences in all the pre-test and post-scores in all the eight areas. In all the eight areas of divergent production abilities, the mean scores of pre-test differed from the post-test significantly at 0.01 level. It indicates that the intervention of inducing the Divergent Thinking Programme in eight areas as per the DPA test in three months has proven to be effective in bringing about significant differences in different areas of Divergent Production Abilities as the obtained t-value is found significant at 0.01 level. Hence, the above hypothesis is accepted. From this, we can infer that creativity can be enhanced/fostered or can be induced through teaching, and learning can be made more effective, innovative and creative by inducing different types of activities in classroom teaching. The research findings are supported by the findings of the study of Vora (1984) who reported that creativity increased as a result of treatment of the Divergent Thinking Programme.

Discussion

Results obtained in the present study showed that the independent variable learning environment (LE) is significantly associated with DPA, the dependent variable of the study. The noticed association of the two types of schools, i.e. State and Central, needs different interpretations.

Influence of learning environment on DPA

The result obtained on H_5 indicates that Learning Environment of a child, which includes both school and home environment, emerged as the most significant factor interacting with DPA in the pupils of class IX of both urban and rural State level government schools and both urban and rural Central level government schools.

The present study suggests that the children belonging to urban locales have better DPA than those belonging to rural locales whether it is a state level school or a central level school. Wright (1987) listed the factors that influence creativity as home environment, “respect for the child, the stimulation of independence and enriched learning environment". Pratt-Summers (1989) found similar results to the one described above. Jausovoc (1988) and

Dorner (1979) discovered that the teacher's teaching style (based on Piagtian cognitive theory: exercise training, tactical training, and strategic training) was related to the development of creativity in students. These results support the notion that interpersonal variables are important catalysts and/or inhibitors of creativity. The Urban schools are better equipped with resources – both human and material and the influence of media – TV, internet, channels, peer groups and community all have an influence, which is always not available in rural areas. Sudhir Kumar, M.A. (1992) has reported similar findings of his study "Socio-educational Correlates of creativity among secondary school students in Arunachal Pradesh." The State government school students had an edge over the central school students in creativity. Exposure to mass media seemed to have a positive significant effect on the creative thinking ability. The students highly exposed to media had an advantage over the low exposed students in their creative disposition. Moreover, interest of an individual is related to DPA and there the above-mentioned media, technical information and sports play a major role which is directly associated with the creativity of a person. Of course, accessibility of these facilities is equally important.

Though the study suggests that that there is no significant difference between the DPA of State rural and urban school pupils, there is a significant difference between the rural and urban schools of central level schools. The findings of the present study are similar to those of Guilford, et al. (1970) who found little relationship between performance and divergent thinking and personal interest. However, it does not completely disagree with the findings of Pandey A.K. (1989) who found that the interest of an individual is related to DPA. As we find in the present study, there is a significant difference in between the rural and urban schools of central level schools. Dellas and Gaier (1970) reported in their study that "creative persons are distinguished more buy interests, attitudes and drives than by intellectual ability."

The relationship between DPA & LE is consistent and positive. The correlation between High LE & DPA, Average LE & DPA and Low LE & DPA are **.65, .52 and -.29**, respectively. Also, the number of students influenced varies accordingly like **74, 106** and **20**, respectively. This shows that correlation depends on the Learning Environment in high and medial status of learning environment and the maximum number of schools comes under the category of medial learning environment depicting a moderate status of correlation with DPA. While the DPA of higher level of L.E. is expected to be constantly high, it can also be noted that a very few people are influenced in their DPA with respect to low level of L.E. The negative correlation **– .29 –** also shows that the low level of correlation might affect divergent production ability (DPA) showing no influence due to learning environment. Hence, there could be many students whose DPA score are appreciable in spite of their low learning levels. This finding has been similar to the findings of Dubey (1986), who, in her study, "An Ecological Study of Educational Influences on Development," has accepted the hypotheses that there is a positive association between enriched school environments and creative thinking. Although recent studies of creativity have focused on systems approaches, which explore creativity in a social environment, there is nevertheless evidence (Spiel & Von Korff, 1998) that researchers tend to focus more on the person and the process than on the outcome or the social context in which the creativity occurs. There is some evidence from the Sudan that a "modern" education approach does not necessarily improve creativity (Khaleefa et al, 1997). However, it has been argued that it is essential to create the climate and the skills for fostering creativity in order to educate a generation of young people who can visualize new solutions to the problems of today and tomorrow's work force, social fabric, and environment (Kessler, 2000).

Influence of Gender Differences on DPA

The present study aimed at determining if there was only significant difference between the boys and girls with regard to divergent thinking ability. It has been found that there existed no significance difference in the DPA of girls and boys of class IX of both urban and rural State Level Schools and Central Level Schools. It may be said that sex has no effect on DPA. This finding of the present study is supported by the studies of Prakash (1966). The majority of the research which concentrates on gender states that there is not a consensus on the impact of gender upon creativity.

Torrance (1983) wrote, "a substantial body of evidence indicates that males and females perform at similar levels of tests designed to measure creative potential" (p. 134). Harriss (1989) found that women were discouraged from becoming artists. Torrance and Allioti (1969) discovered that 13-year-old girls had higher verbal creative ability compared to boys of the same age. Gupta (1979) did not find that there was a significant difference between boys and girls in verbal creative ability but found that there were distinct elements of non-verbal ability in which each scored significantly higher.

Vernon (1989) concludes that the results of such studies suggest they are much less successful than is sometimes maintained. For although specific skills, such as problem solving, can generally be trained and improved upon, there is rarely a transfer to more complex activities such as creative production and the influence of sex do not interfere in the creative process of an individual.

Creativity among Urban and Rural Students

In the present study from the tested hypotheses, we have come to the conclusion that there is no significant difference in the rural and urban State government as far as DPA is concerned. According to Sharma (2006) there is no significant difference between rural and urban students in terms of the degree of creativity. However, Sameeda (1982) supports the present finding that significant differences do exist between the divergent production ability with respect to rural and urban locales in Central government schools.

Inducing Creativity and Innovation in Learning

Divergent Thinking Ability is regarded as the "hallmark" of creativity. The present study infers that creativity can be induced through classroom teaching and learning in students and the test score of pre-test and post-test of the divergent thinking programme depicts a significant increase in DPA. Gulati (1999) also reported that the mean scores improved in post-test in comparison to pre-test significantly both in the case of flexibility and originality and it can make teaching much more effective and interesting as it indulges thinking and engaged minds.

Conclusion

There is a need to restructure and redesign the various aspects of our school; the physical space, the time tabling of lessons, and the relationship between subject areas, in ways which would encourage the interchange of knowledge and creative learning. In setting out on a journey of remodeling learning in new and powerful ways, it may be possible to promote dialogue with our family of schools to achieve consistent and creative learning experiences for pupils.

1. Aspects like Curriculum emphasis, the role of the classroom teacher, the structure of remedial educational environments should be able to foster creativity.
2. We need to actually find out the opportunities for developing activities that take learning out into wider communities and contexts other than schools.

3. Where this already happens, we might forge stronger connections between the formal curriculum and the wider learning that already exists.
4. We must seek community support, expertise and commitment to help in culturing creativity and co-ordinate with them those who can help us with this process.
5. We can also find out the kinds of assessment help to capture creativity and its value for the whole school.

Finally, for all this to happen, we need our schools and organization to entail this idea of fostering creativity as a challenge. The set of organizational challenges implies a task for leaders; to approach their own responsibilities and tasks in a way that models the creative learning process and strengthens culture of creativity. This can be particularly hard in high-pressure schools and organizations, which are striving to meet many different kinds of demand and accountability. However, the challenge is not just to exercise creativity in the gaps and in the margins – it is to bring creative capacity to bear on the core learning challenges and organizational problems those schools and their communities face. For example, if creativity partly involves the ability to transfer knowledge and experience between contexts, how much can this capacity be developed through a curriculum broken up into separate subjects? The national curriculum contains a number of cross-curricular themes, but how are they embedded in and diffused across the range of taught subjects? Is it possible to sequence and combine the teaching of different subjects and stages of the curriculum to maximize the opportunity for transfer of understanding across them, and for generating multiple perspectives on a common body of knowledge? The point is not that there is no scope for creativity in our existing frameworks, but that we should learn to see the extent to which habitual routines, hidden assumptions and external structures condition the extent to which we can model and develop creative learning and school can produce creative learners.

Delimitation of the Study

(a) The present study is delimited to class IX - the post-elementary level.
(b) Schools taken belong to the Central government and State government.
(c) Central government schools include Kendriya Vidyalaya from an urban locale and Navodaya Vidyalaya from a rural area.
(d) Two schools, one urban and one rural, were selected from the State government schools.

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