Demographic Influences on Creativity and Learning Styles in Elementary School Students

ABSTRACT

The aim of thiscross-sectional surveywas to investigate creativity(in terms of elaboration ability, originality) and learning style preferences of 303 elementary school studentsrandomly selected from Grade-VI, VII and VIII,from schools of PaschimMedinipur districtin the state of West Bengal, India. Creativity was measured using Baqer Mehdi's Non-Verbal Test of Creative Thinking. Learning style preferences were assessed using the Learning Style Inventory developed by Richard Oliver. Collected data were analysed concerning theage, grade, gender, and social caste of the participants through frequency, mean, standard deviation, percentage, independent samples t-test, one-way ANOVA and Chi Square test. Results revealed that age positively influence elaboration ability,withyounger students displayed higher originality. Originality, and overall creativitydid not show significant variations across age groups.Grade-VIII students performed best in all aspects of creativity; however, significant difference was present only in elaboration ability.No significant differences based on gender and social caste were observed in all aspects of creativity.A significant age and social castedifference was observed in learning style preferences, however, grade and gender differences were not found. Majority of students preferred unimodal learning styles, with visual learners demonstrating higher elaboration and originality. Elaboration ability was significantly influenced by learning styles preferences, however originality and overall creativity were invariant.The research fills the gap in existing literature by providing a comprehensive analysis of creativity and learning style preferences, offering insights into their combined impact on elementary school students' educational experiences.The findings contribute to the fields of education and social sciences, guiding educators and policymakers in adopting personalized learning approaches based on individual learning styles.This study underscores the significance of understanding creativity and learning styles concerning demographic factors, promoting inclusive and equitable educational practices for elementary school students.

Keywords:Creativity; Learning Styles;Elementary School Children; Age; Grade;Gender;SocialCaste;

1. INTRODUCTION

Creativity and learning style preferences are essential aspects of a child's educational journey, especially during their formative years in elementary school.Creativity refers to the ability to generate novel ideas, original solutions, and imaginative expressions. Elaboration ability an important factor of creativity, which refers to the ability of humans to expand, refine or add intricate nuances to thoughts, ideas or concepts. Creativity is a fundamental aspect of human cognition and problem-solving abilities, which can be viewed as a series of dimensions or attributes of an individual's ability to produce valuable ideas, or novel and workable tasks, or a unique talent, or to use imagination to create socially useful products [1-6]. While, Learning Style (LS)refers to a person's natural, habitual and preferred ways of learning. While defining Learning Styles (LSs) various cognitive psychologists have stressed on different viewpoints. Kolb sees learning style as the way we process the possibilities of each new emerging event [which] determines the range of choices and decisions we see, the choices and decisions we make, to some extent determine the events we live through, and these events influence our future choices [7]. According to Dunn and Dunn,"Learning-style is the way individuals concentrate on, absorb and retain new or difficult materials or skills"[8].LSs are characteristic, cognitive, affective and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment[9].In elementary school contexts, studying creativity and learning style preferences holds significant importance for several reasons.Fostering creativity at a young age can have far-reaching effects on a child's intellectual development, critical thinking skills, and adaptability in an ever-changing world.Without creativity, there would be no progress, and we would be forever repeating the same patterns [10]. It also plays an important role in technological advance, in social and behavioural sciences and in humanities and arts [11]. Therefore, education needs to foster creativity that is to encourage flexibility, innovation and positive identities [12]. According to Guilford, "Development of creativity on the part of students will depend upon changed attitudes of both the teacher and students" [13]. The revised Bloom's Taxonomyof Educational Objectives focuses on creativity as the highest objective of instruction [14]. Therefore, schools must be concerned to train the human brainto promoting and nurturing creative powers of children.

Need to define Elaboration abilityand originality.

Understanding learning style preferences is crucial for creating effective and tailored learning experiences. Following byPask'stradition of research on styles and strategies,some others researchers have explored the various aspects of Learning Style [15-19].Learning styles helps students to discover different form of mental representations. Thus they are important when they construct knowledge. There are many styles of learning, and there is no evidence to suggest that one is better than another. What is better is the style that fits each person most comfortably, what is not better is to try to fit a person into a learning mode that seems alien and strange. An individual's basic style of learning is probably laid down early in life and is not subject to any fundamental change. For example, a pupil who likes to learn by listening and speaking (aural style) is unlikely to change completely and become an outstanding reader. Therefore, it is essential for students to become more aware of the learning styles and strategies to think out carefully what is expected to achieve from studying and to understand the implications of adopting a particular learning strategy. In order to carry out learning tasks successfully, efforts should be made to match instruction to important study characteristics of the learner [20]. Optimising learning for all students in classrooms can be achieved through multiple learning opportunities and style-ships for all students as these differences are valued and celebrated [20].Teachers are thus to identify students' learning styles and strategies and take them into consideration when designing instruction [21]. Teachers also need to provide opportunities for students to learn in a way which suits the preferred style of learning [22].Anyway there are different learning styles identified by different psychologists, however, the basic and mostly preferred LSs are visual, auditory and kinaesthetic. Visual learners learn best by seeing and for them audio visual presentation is most suitable method of teaching [23]. Auditory learners learn best by listening and for them the most suitable method of teaching is lecture method [23]. Kinaesthetic learners learn best by doing and for them learner cantered activity methods, cooperative learning, project method etc. are suitable [23]. The person who learns best by a particular learning style is titled after the particular style. A student prefers a particular style in most situations is termed as unimodal, while in different conditions preferring more than one LS are termed as multimodal learners.

2. REVIEW OF RELATED LITERATURE

This literature review presents a comprehensive view about the related studies conducted in the field of creativity and learning styles across diverse age groups and perspectives. Empirical evidence presents thatintervention positively impact verbal and graphic-figural creativity [24]. There are some variations in creativity concerning different factors. Like gender, which influences creativity having distinctions in fluency and originality among students [25].Significant impacts of gender, locality, and class on non-verbal creativity among high school studentswere also reported [26]. Disparities in creativity between private and government school students also present [27]. Continuous creativity development with gender differences in play behaviours is also revealed [28]. Kim observed static or decreasing creative thinking scores despite rising IQ scores [29]. Positive correlation between freedom and creativity is also found [30]. However, on the other hand, few studies reported no significant differences in children's creative abilities concerning gender, grade, and social caste [31-33]. Another study reported no significant differences in visual-spatial creativity between countries [34], while others observed high creative thinking ability in children unaffected by school type, age, or gender [35]. Ward and Warren identified socio-economic status but not gender as a significant factor in creativity [36].

The review of learning styles (LSs) research revealed varied preferences among secondary school students, with visual as the most preferred LS [37]. Another study reported no significant impact of LSs preferences on learning outcomes [38], while another study reported a divergence LS preference among the majority of students [39]. Correlates of LSs included intelligences, emotional intelligence [40] and academic performance [41], cultural values [42], creativity, and problem-solving styles [43]. Identification of the preferred learning styles may help instructors to differentiate the teaching process and may have positive impacts on obtaining and improving learning outcomes [44]. However, another study, revealed that providing instruction based on students' learning style preferences does not improve learning [45].Cultural, sex, and age-related differences in teacher instructional styles related to students' LS preferences is also present [46], whereas no significant correlations between LSs and learning outcomesis also revealed [47]. A studyuncovered differences in LS between High School and Pre-university students, with gender-based variations in kinesthetic LS [48]. Another study highlighted LS score differences based on factors such as year of study, field of study, and type of learning institution [49]. Some other studies revealed age-related and interactive influences betweenconcentration and LS on learning achievement, respectively [50,51]. LSs is also associated with academic performance by some of the researchers, but found no impact of demographic

variables on LS [52]. These findings collectively depict the intricate landscape of creativity and learning styles across diverse populations and educational contexts.
The above discussion revealed that there were plenty of studies on creativity but few attempts were taken to investigate about the non-verbal creativity of students. Till date non-verbal creative thinking is a fertile area of study in general that of elementary school children in particular. Further it was also found that no single attempt had been taken to make a comprehensive study of learning style and dimension/component wise study of each type of creativity and overall creativity with relation to age, grade, gender and social caste in West Bengal. Though many studies undertaken in order to know the impact of those factors but these studies produced mixed results and their results may not be generalized in every context or every place. These research gaps prompted the researchers to undertake the present study.That's why the present researchwas undertaken to study the creativity (in terms of elaboration ability and originality), and learning style preferencesof elementary school students concerning their age, grade, gender andsocial caste,and to measure the influence of learning style preferences on creativity of elementary school students. It was hypothesised that there is no significant difference in creativity of elementary school students concerning their age, grade, gender and social caste. Learning style preferences is not significantly influenced by their age, grade, gender and social caste. Further, it was also hypothesised that creativity of the elementary school students in not significantly influenced by their learning style preferences.

3. METHODOLOGY OF THE STUDY

3.1 Participants

This study was carried out on 303 elementary school students selected from five Bengali Medium Governmentaided schools of PaschimMedinipurdistrict in the state of West Bengal, India.The schools were conveniently selected as were easily accessible to the researchers, however the participants were selected randomly from Class-VI, VII and VIII. The age of the participants was ranging from 11 to 15 years. The participants comprise of male and female students, and there were representatives of General, Scheduled Social caste, Scheduled Tribe and Other Backward Classes.

3.2 Method and Procedure

For this study the researchers conducted a cross-sectional survey among the selected participants. Before conducting the survey, first of all, the researchers identified the target population i.e. elementary school students of PaschimMedinipur District, and then identified five schools of their convenience. Then they contacted to school heads, described the purpose of the study and asked for permission to conduct the study. After getting permission from the school heads, they physically meet the participants, interacted with them, and explained the purpose of the research and all legal research procedures and asked for voluntary participation. When they agreed, the researchers randomly selected 22 students from each Class-VI, VII and VIII from each school, and administered the survey instruments.While administering the instruments, the researchers gave a short and meaningful description about the use of theinstruments and items involved in it, and asked them to give their response accordingly. Fifty to fifty-five minutes was required to complete the survey. The total process of data collection was organized in 15 days. In total, 330 students participated in this study; however, after screening and scoring, due to incomplete information, 27 participants responses were excluded from the final analysis.

3.3 Measures

To measure the creativity and LSs of the participants, the researchers used standardized instruments. Creativity of the participants was measured in terms of flexibility and originality through the 'Non-Verbal Test of Creative Thinking (NVTCT-M) developed by Baqer Mehdi [53]. This non-verbal test of creative thinking is intended to measure the individual's ability to deal with figural content in a creative manner. This tool containing 26 items distributed in three different tasks/activities viz. Activity-I: Picture construction, Activity-II: Picture completion, and Activity-III: Triangles and ellipses. The total time required for administering the test is 35 minutes, in addition to the time necessary for giving instruction, passing out booklets and collecting them back. Scoring for elaboration, originality was done by following the manual of NVTCT-M. Finally, the elaboration and originality scores were summed up to compose the overall creativity score, where higher score indicates higher creativity.
The Learning Style Inventory developed by Richard Oliver,measures the individual's ability to deal with figural contents [54]. The tool contains 24 items in total, eight for each, visual, auditory and kinaesthetic/tactile LSs. Each item has threealternative choices i.e. often, sometimes and seldom. A score of 5 was assigned for each often response, 3 for sometimes and 1 for seldom. Finally, scoresof all the specified eight items for each LSs were summed up to get Visual Preference Score(VPS),

Auditory Preference Score(APS), and Tactual Preference Score(TPS).For each individual the highest scored dimension/s were considered as his/her preferred LSs.

3.4 Techniques Used for Data Analysis

The study employed various data analysis techniques to gain insights into the data. Descriptive statistics, including Frequency (N), Mean (M), Standard Deviation (SD), and percentage (%) analysis, were used to describe the data. The choice of hypothesis testing techniques was determined based on the nature of the data. For the randomised large participant group (303) and scaled data for creativity measures, parametric t-tests and One-way ANOVA (F) techniques were applied. However, for categorical data, such as LSs, a nonparametric Chi-square test was utilized.

4. RESULTS

4.1 Difference in Creativity among Different Age Groups

The study examined the relationship between age and the levels of elaboration, originality, and overall creativity among students. Analysis revealed that as the age increased, there was an increase in the mean score for elaboration ability (See Table 1). Specifically, the mean scores for the 11, 12, 13, 14, and 15 years' age groups were 30.42, 29.43, 32.94, 32.09, and 35.78, respectively, indicating higher elaboration ability in older students.However, when considering originality, the results showed a different pattern. The mean scores for the same age groups were 65.03, 56.51, 65.44, 63.11, and 61.50, respectively. This suggests that except 12 years' age group, younger students displayed higher levels of originality, which decreased with age.

Regarding overall creativity, the findings indicated that the 13 years' age group had the highest mean score (98.37), followed by the 15 years' age group (97.28), the 11 years' age group (95.45), the 14 years' age group (95.20), and the 12 years' age group (86.06), which had the lowest mean score.Further, the one-way ANOVA results revealed a significant difference in elaboration ability ($P=.013<0.05$), however, no significant difference was present either in originality ($P=.136>0.05$) or in overall creativity ($P=.097>0.05$) concerning the age of the participants.

4.1 Difference in Creativity among Different Schooling Graders

Regarding grade (schooling), the analysis (See Table 1) showed that Grade-VI had the lowest mean score, while Grade-VIII had the highest mean score for elaboration ability, originality, and overall creativity. Additionally, the one-way ANOVA results indicated a significant difference in elaboration ability ($P=.009<0.01$), suggesting variations among different grade levels. However, no significant difference was observed in either originality ($P=.138>0.05$) or overall creativity ($P=.067>0.05$) among the different grades.

4.3 Difference in Creativity between Gender Groups

In the comparison of elaboration ability, originality, and overall creativity between male and female students, the analysis (See Table 1) indicated that females outperformed males in elaboration ability. Conversely, male students demonstrated better performance in originality and overall creativity. However, the t-test results showed no significant difference in any of the three cases.

4.4 Difference in Creativity among Students Representing Different Social Caste

When examining the social caste of the students, the study revealed that ST students achieved the highest mean score in elaboration ability (See Table 1). The second-highest mean score was observed among students from the General category, while OBC students obtained the lowest mean score.

Regarding originality, SC students attained the highest mean score, followed by General students with the second-highest mean, OBC students with the third-highest mean, and ST students with the lowest mean score. Similarly, for overall creativity, SC students had the highest mean score, General students ranked second, ST students placed third, and OBC students had the lowest mean score.However, no significant difference was present in any of the three cases.

Table 1. Comparison of elaboration, originality and overall creativity concerning age, grade, gender and social caste of the participants

			Elaboration			Originality			Overall Creativity		
		N	M	SD	t/F df (*P*)	M	SD	t/F df (*P*)	M	SD	t/F df (*P*)
	11y	31	30.42	5.56		65.03	17.98		95.45	21.10	

Age	12y	80	29.43	8.33	3.206 4/298 (.013*)	56.51	27.35	1.763 4/298 (.136)	86.06	34.55	1.986 4/298 (.097)
	13y	108	32.94	9.38		65.44	25.68		98.37	33.10	
	14y	66	32.09	7.79		63.11	18.42		95.20	24.06	
	15y	18	35.78	10.94		61.50	22.73		97.28	31.73	
Grade	VI	64	30.06	5.97	4.84 2/300 (.009**)	57.44	19.74	1.99 2/300 (.138)	87.50	24.24	2.73 2/300 (.067)
	VII	112	30.67	10.44		62.28	29.89		93.04	38.64	
	VIII	127	33.52	7.82		64.76	19.56		98.28	25.06	
Gender	Male	182	31.36	8.61	-.918 301 (.359)	63.09	20.38	.702 301 (.483)	94.47	26.64	.281 301 (.779)
	Female	121	32.30	8.79		61.11	29.69		93.45	35.35	
Social caste	General	181	31.76	8.89	.194 3/299 (.901)	63.66	8.68	1.406 3/299 (.241)	95.51	32.31	.914 3/299 (.435)
	SC	50	31.76	7.36		64.58	25.22		96.34	23.84	
	ST	58	32.03	9.36		57.09	18.55		89.02	31.65	
	OBC	14	30.07	8.03		58.07	24.30		88.14	29.93	

*Result is statistically significant at 0.05 level/ **Result is statistically significant at 0.01 level

4.5 Influence of Age on Learning Style Preferences

While the LS preferences were compared among the different age group students, the crosstab analysis (See Table 2) revealed that cumulatively 83.9 per cent 11 years' age group students preferred unimodalVLS and ALS, and only 3.2 percent students preferred TLS. On the other hand, only 12.9 percent of the same age group students were multimodal learners.Most of the 12years age group students (90%) also preferred unimodal learning styles, and the rest had multimodal preference. Most of the 13years age group students (80%) also preferred unimodal learning styles, and the rest had multimodal preference.Most of the 14years age group students (83.3%) also preferred unimodal learning styles, and the rest had multimodal preference.Most of the 15years age group students (61.2%) also preferred unimodal learning styles, and the rest had multimodal preference.Further the Pearson's Chi-square result revealed that LS preferences are significantly influenced by the age of the participants (P=.028<0.05).

4.6 Influence of Grade on Learning Style Preferences

When the LS preference were compared among Grade-VI, VII and VIII students (See Table 2), the analysis revealed that in the case of elaboration ability cumulatively 92.2 per cent of the Grade-VI students preferred unimodal learning styles, and the rest had multimodal preference.In Grade-VII, cumulatively 87.5 percent students preferred unimodal learning styles, and the rest had multimodal preference.In Grade-VIII, cumulatively 64.8 percent students preferred unimodal learning styles, and the rest had multimodal preference. It means students in lower classes prefer unimodalLSs, however, in higher class more number of students prefer multimodal LSs. However, the Pearson's Chi-square result revealed that grade of the participants had no significant influenced on their LS preferences (P=.179>0.05).

4.7 Influence of Gender on Learning Style Preferences

When the LSs was compared between male and female students (See Table 2), the analysis revealed that in comparison to female students' greater proportion of the male studentspreferred VLS and ALS. However, greater proportion of the female students preferred TLS than males. In the case of LS mode preferences, cumulatively 86.3 percent male students preferred unimodal learning styles, the rest preferred multimodal LSs. On the other hand, cumulatively 78.6 percent female students preferred unimodal learning styles, the rest preferred multimodal LSs. That means in comparison to male students' greater proportion of female students preferred multimodal LSs. Further, the Pearson's Chi-square result revealed that gender of the participants had no significant influenced on their LS preferences (P=.114>0.05).

4.8 Influence of Social Caste on Learning Style Preferences

Most of the students belong from each social caste preferred unimodal LSs. In comparison to other three castes, greater proportion (47.5%) of the general caste students preferred VLS (See Table 2). However, in the case of ALS, in comparison to general and SC students, greater proportion of ST and OBC students preferred ALS. Further in the case of TLS, in comparison to SC and OBC students, greater proportion of general and ST students preferred TLS. The multimodal preference of LSs was higher among OBC students (28.5%) than SC (22%), General (15.5) and ST (13.7%) students.Further

the Pearson's Chi-square result revealed that LS preferences are significantly influenced by the social caste of the participants (P=.020<0.05).

Table 2. Distribution of LS preferences concerning age, grade, gender and social caste of the participants

	Categories	N (%)	VLS	ALS	TLS	VLS& ALS	VLS & TLS	ALS & TLS	VLS, ALS & TLS	X^2 df (*P*)
Age	11y	31 (100)	12 (38.7)	14 (45.2)	1 (3.2)	1 (3.2)	0 (0.0)	3 (9.7)	0 (0.0)	38.824 24 (.028*)
	12y	80 (100)	33 (41.3)	30 (37.5)	9 (11.3)	5 (6.3)	0 (0.0)	0 (0.0)	3 (3.8)	
	13y	108 (100)	41 (38.0)	33 (30.6)	13 (12.0)	11 (10.2)	5 (4.6)	3 (2.8)	2 (1.9)	
	14y	66 (100)	30 (45.5)	19 (28.8)	6 (9.1)	7 (10.6)	0 (0.0)	2 (3.0)	2 (3.0)	
	15y	18 (100)	7 (38.9)	3 (16.7)	1 (5.6)	1 (5.6)	2 (11.1)	3 (16.7)	1 (5.6)	
Grade	VI	64 (100)	28 (43.8)	26 (40.6)	5 (7.8)	1 (1.6)	1 (1.6)	1 (1.6)	2 (3.1)	16.227 12 (.179)
	VII	112 (100)	46 (41.1)	40 (35.7)	12 (10.7)	7 (6.3)	1 (0.9)	4 (3.6)	2 (1.8)	
	VIII	127 (100)	49 (38.6)	33 (26.0)	13 (10.2)	17 (13.4)	5 (3.9)	6 (4.7)	4 (3.1)	
Gender	Male	182 (100)	79 (43.4)	62 (34.1)	16 (8.8)	10 (5.5)	3 (1.6)	5 (2.7)	7 (3.8)	10.276 6 (.114)
	Female	121 (100)	44 (36.4)	37 (30.6)	14 (11.6)	15 (12.4)	4 (3.3)	6 (5.0)	1 (0.8)	
Social caste	General	181 (100)	86 (47.5)	48 (26.5)	19 (10.5)	15 (8.3)	4 (2.2)	5 (2.8)	4 (2.2)	32.267 18 (.020*)
	SC	50 (100)	19 (38.0)	17 (34.0)	3 (6.0)	7 (14.0)	0 (0.0)	3 (6.0)	1 (2.0)	
	ST	58 (100)	16 (27.6)	27 (46.6)	7 (12.1)	2 (3.4)	1 (1.7)	2 (3.4)	3 (5.2)	
	OBC	14 (100)	2 (14.3)	7 (50.0)	1 (7.1)	1 (7.1)	2 (14.3)	1 (7.1)	0 (0.0)	

*Result is statistically significant at 0.05 level

4.9 Difference in Creativity among Different Learning Style Preference Groups

Table 3 presents the preferences of the 303 participants regarding learning styles (LS). Among the participants, 123 (40.59%) preferred Visual Learning Style (VLS), 99 (32.67%) preferred Auditory Learning Style (ALS), and 30 (9.90%) preferred Tactile Learning Style (TLS). Cumulatively, 83.16% of the students preferred a unimodal LS, such as VLS, ALS, or TLS. Conversely, only 16.84% of the students preferred a multimodal LS, which involves a combination of VLS and ALS, VLS and TLS, ALS and TLS, or VLS, ALS, and TLS.

The same table also reveals that students who preferred Visual Learning Style (VLS) obtained the highest mean score in elaboration. The second-highest mean score in elaboration was observed among students who preferred a combination of VLS and Auditory Learning Style (ALS), followed by students who preferred a combination of ALS and Tactile Learning Style (TLS). Interestingly, the lowest mean score was found among students who preferred a combination of all three learning styles (VLS, ALS, and TLS).

Regarding originality, the analysis indicates that students who preferred Visual Learning Style (VLS) achieved the highest mean score. The second-highest mean score in originality was observed among students who preferred a combination of Auditory Learning Style (ALS) and Tactile Learning Style (TLS), followed by students who preferred a combination of VLS and ALS. Notably, the lowest mean score was found among students who preferred a combination of VLS and TLS.

When ranking the students based on their learning style preferences in terms of overall creativity, the order from highest to lowest is as follows: Visual Learning Style (VLS); a combination of Auditory

Learning Style (ALS) and Tactile Learning Style (TLS); a combination of VLS and ALS; a combination of VLS, ALS, and TLS; ALS; TLS; and a combination of VLS and TLS.
After comparing the mean scores, the results of the one-way ANOVA indicated a significant difference in the elaboration ability (P=.039 < 0.05). However, there was no significant difference observed in either originality (P=.226 > 0.05) or overall creativity (P=.103>0.05).

Table 3. Comparison of elaboration, originality and overall creativity concerning the LS preferences of the participants

		Elaboration			Originality			Overall Creativity		
LS Preferences	**N (%)**	**M**	**SD**	**F df (*P*)**	**M**	**SD**	**F df (*P*)**	**M**	**SD**	**F df (*P*)**
VLS	123	33.63	9.62	2.242 9/296 (.039*)	66.55	27.80	1.372 6/296 (.226)	100.32	35.73	1.779 6/296 (.103)
ALS	99	30.06	7.96		59.19	23.45		89.19	29.98	
TLS	30	30.10	9.07		56.27	18.51		86.37	22.85	
VLS & ALS	25	32.72	7.12		62.12	15.04		94.84	20.15	
VLS & TLS	7	28.43	4.76		55.29	15.83		83.71	18.60	
ALS & TLS	11	32.27	6.50		65.00	17.45		97.27	21.08	
VLS, ALS & TLS	8	28.50	3.74		60.88	14.12		89.38	16.04	
Total	303	31.74	8.68		62.30	24.02		94.07	30.83	

*Result is statistically significant at 0.05 level

5. DISCUSSIONS

The results revealed interesting patterns, showing elaboration ability, originality and overall creativity scored varied across different age groups, with the 13-year-olds scoring the highest. Except elaboration ability, no statistically significant difference was found among the age groups. Empirical evidence present in support of this finding [28], however,contradictory results also present [29,33,35], which shows not specific pattern of creativity development across ages. When grade was the concern, our results showed a clear cut increase in elaboration ability, originality and consequently overall creativity from grade/class six to class eight. However, the variances in creativity scores were statistically significant only for elaboration ability, not for originality and overall creativity. Previous study also reported a grade wise significant difference [26], however, no significant differences were also reported [31-33]. Based on these discussions it is clear that it is not easy to detect the changes in creative abilities with a little age variation. But if we observe it considering two to three years of time gap, then the differenced will be clearly visible to us.
Gender differences were observed, with females excelling in elaboration ability and males showing higher scores in originality and overall creativity, although these differences were not statistically significant. Empirical evidence also presents in support of this finding [25,31,32,35]. That means creative abilities among the elementary school students are not gender biased. whoever, few contradictory results also exist [26, 28, 55].
A social caste-based little difference were found in mean creativity score, with ST students performing well in elaboration, SC students scoring highest in originality and overall creativity, and OBC students having lower scores. However, the statistical analysis did not establish significant differences in any of the cases. That means social caste of the students has no significant influence in creativity among elementary school students. This finding is similar to the findings of Samanta and Jana [31,32]. Thant means this finding confirms the notion that creative abilities are similar among all social caste categories.
The study also examined the learning style preferences and results revealed that majority of students preferred a unimodal learning style, that confirms previous research findings [37, 39, 43, 56]. However, a smaller portion favoured a multimodal approach[57].
When age was the concern, younger students preferred mostly VLS and ALS, however, ALS preferences was decreased withage, and in 15year age groups few students preferred multimodal LSs. It is established that age is a significant factor in learning style preferences. Further, this notion was confirmed by the grade wise analysis, which showed lower-grade students showed a higher preference for unimodal learning styles, while a higher percentage of higher-grade students preferred multimodal learning styles. However, the grade of the participants did not have a significant influence on their learning style preferences. To generalize this notion, further large scale survey is of utmost important.

When comparing the learning style preferences between male and female students, a greater proportion of both gender students preferred visual and auditory learning styles, while a greater proportion of female students than males preferred tactile learning styles. However, the gender of the participants did not have a significant influence on their learning style preferences. This finding is not in line with the previous research, which presents a gender based variations [48].
Regarding social caste, most students from each social caste preferred unimodal learning styles. The general social caste had a higher preference for visual learning styles, while ST and OBC students showed a higher preference for auditory learning styles. Tactile learning style preference was higher among general and ST students. The Pearson's Chi-square test revealed that social caste significantly influenced learning style preferences.
Visual learners achieved higher scores in all aspects of creativity, whereas the combination of auditory and tactile learning styles also yielded favourable results. Concerning the LS preferences,a statistical significant difference was present in elaboration ability, however, there was no significant difference in originality and overall creativity. These findings emphasize the importance of considering individual learning styles when promoting creativity in educational settings.

6. CONCLUSIONS

This study intended to explore the influences of age, grade, gender, and social caste on the creative abilities and learning style preferences, and the influence of learning style preferences on creative abilities of elementary-level students in West Bengal. The findings underscore that age, social caste, and to a certain extent, grade, play influential roles in shaping students' learning style preferences. The study's contribution lies in its potential to enhance our comprehension of how individual variations in learning styles can be strategically integrated into educational methodologies and interventions. While the majority of students exhibited a preference for unimodal learning styles, with visual learners excelling in elaboration, originality, and overall creativity, the nuances uncovered emphasize the need for tailored educational approaches. The multifaceted implications of this research extend to students, teachers, parents, and policymakers, urging them to consider age, grade, gender, and social caste dynamics in teaching, parenting and policy-making for the development of creative abilities. This study advocates for a paradigm shift towards recognizing and accommodating individual learning styles in the design and implementation of educational strategies. The present study was consideredfewer number of participants, with considering only the non-verbal test of creativity in a very small area. Further, larger scale comprehensive investigations, by considering both verbal and non-verbal and contemporary tests are suggested to refine and generalize our understanding of these complex relationships.

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