

Educational psychology perspective on constructive, social play and academic performance of primary school children in Nigeria

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Abstract

Poor performance in numeracy at the primary level of education may result from inadequate instructional materials, methods, techniques, or strategies used in teaching it. This study investigated the effects of constructive and social play on pupils' academic performance in numeracy in Niger State. The study examined the interaction effects of constructive, social play, gender, and school type on pupils' academic performance in numeracy in Niger State. The study adopted the social-cultural theory of Lev Vygotsky. The research design used was a pretest-posttest control group non-equivalent quasi-experimental design. A stratified random sampling technique was adopted to select six schools for the study. The instrument used was Numeracy Performance Test (NPT). The Pearson Moment Correlation Coefficient was used to ascertain the reliability coefficient of 0.76 coefficients that were obtained. Frequency counts, percentage, mean, and ANCOVA were used to analyze the data collected. The results revealed that social and constructive play substantially impacted pupils' numeracy performance in Niger State. There was no gender-related difference in student performance in maths and no statistically significant interaction between therapy and gender on pupils' performance in numeracy. In Niger State, there was no discernible correlation between the type of school and pupils' performance in numeracy. Gender and school type did not significantly affect pupils' academic performance in numeracy, suggesting that social play and constructive play increased higher performance in math than the traditional style of instruction.

Keywords: *educational psychology, constructive play, social play, gender, school type.*



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Introduction

The need for educational psychology perspective in studying numeracy to promote students' performance. Numeracy is useful in all aspects of life; hence its importance and use cannot be overstated. According to Gerardi et al (2013), numeracy is the capacity to apply basic numerical concepts and to reason about them. A fundamental numeracy skill is the ability to comprehend addition, subtraction, multiplication, and division in basic arithmetic. The use of number sense, operation sense, measuring, and geometry are all included in the term "numeracy."

Numeracy is described as the capacity to acquire, use, interpret, and articulate mathematical ideas and information in order to engage in and manage the mathematical demands of a variety of situations in adult life (2013) by the Organization for Economic Cooperation and Development's expert panel on numeracy. Numeracy is necessary and important for daily basis. According to the Department of Education, Employment and Workplace Relations (DEEWR, 2019), numeracy is more than just counting as it also involves skills like pattern recognition, grouping and categorizing objects, talking about time and daily schedules, doing sums, arranging objects in space, and identifying forms. These are all illustrations of numeracy-related mathematical thinking. Early years lay the groundwork for a child's numeracy abilities.

According to Stephens (2014), children need to have chances to apply math at a young age in the mathematics lesson in addition to all other subject areas of the educational curriculum if they are to become numerate. He comes to the conclusion that numeracy is one of the basic learning domains that is crucial for success in school starting in early infancy because it prepares kids for future economic and social success. The quantity and quality of early numeracy skills are the most significant indicators of accomplishment, according to Thomson (2014). The term "numeracy" describes the capacity to understand and use fundamental numerical concepts. Understanding addition, subtraction, multiplication, and division are basic numeracy skills. For instance, if a youngster can comprehend straightforward math problems like $4 \times 4 = 16$ and $4 + 4 = 8$, it will probably help to prepare them for the fundamental concept of numbers. According to research in developmental cognitive psychology, children arrive at school with a variety of early mathematical abilities, but how and how quickly they pick up these ideas varies substantially (Klibanoff et al., 2006).

When children first begin school, their informal number sense builds the framework for their performance in school mathematics and is a reliable predictor of how well they will perform later in life (Geary, 2015). The observable and quantifiable behaviour of pupils in a certain setting might be viewed as an indicator of a student's academic performance. For example, observable and quantifiable behavior of students at any point during a course is included in students' academic success in numeracy. The academic achievement of pupils in math is determined by their scores on tests created by teachers, final exams, and midterm tests at any given moment (Yusuf, 2018). Children naturally learn through play, which can significantly increase their performance in all areas of learning (Abdulkareem, 2020). Poor instructional resources, methods, tactics, or teaching strategies may contribute to students' poor performance in math at the basic level of school. The ability to use basic numerical principles in everyday life is known as numeracy. Therefore, the aim of the study was to find how social and constructive play affected students' academic performance in math in Niger State. The study examined how educational psychology affected kids' academic progress in numeracy in Niger State, as well as the interactions between constructive, social play, gender, and school type.

The study adopted the social cultural theory of Lev Vygotsky before the theory gives learners the freedom to construct knowledge by themselves. The play has numerous facets, and children play in a variety of ways, which adds to its complexity. It also comes naturally to a child's life, giving them countless chances to play and collaborate with their classmates (Whitebread & Jameson, 2020). This is strengthened by the fact that young children spend the bulk of their time playing, which promotes cognitive growth, social and emotional development, and physical development. Many of the skills necessary to succeed in a classroom environment are learned through play. Since play does not make kids bored, it is appropriate to use play activities to teach kids different concepts and abilities. When given enough playthings, such as models of real-world products and other goods available to kids in affluent countries, children from underdeveloped countries will likely gain the same advantages. These play behaviours are frequently categorized under the phrase "constructive play," which is important to our study. It has been shown that constructive play and spatial ability are positively correlated (Levin, 2012), and the performance

in solving mathematical word problems is positively connected with spatial aptitude (Ouyang et al., 2022).

The relationship between constructive play and competence in answering mathematical word problems has, however, received little research. It has been discovered that the development of visual-schematic representations is positively correlated with numeracy competence (Siregar et al., 2022). The social constructivism theory of Lev Vygotsky serves as the foundation for this investigation. The Social Constructivism Theory applies to this study since it provides learners with the opportunity to create their knowledge. All indications point to the development of learner-centred teaching strategies like social play and constructive play, which is the main subject.

Despite the importance of numeracy in logical reasoning, problem-solving skills, and having the confidence to use numbers in a variety of contexts, it is still documented that a large number of students fail miserably in numeracy for a variety of reasons, including teacher inefficiency and teaching methods. Given that numeracy is a necessary topic in schools, poor numeracy performance at the primary level of education, which may be caused by inadequate teaching materials, methods, or strategies utilized to teach numeracy, has been a source of concern for all stakeholders in education. The impact of social and constructive play on students' academic performance in numeracy in Niger State, Nigeria, does not appear to be supported by empirical data. Using numeracy strategies like guided discovery and problem-solving methods, constructive and social play, think pair share, and problem-solving, some researchers have examined the relationship between children's constructive play activities, mathematical word, problem-solving performance and spatial ability in other states.

This study's main goal is to examine how social interaction and enjoyable play affect pupils' academic development in numeracy in Niger State, Nigeria. The study's specific goals are to (i) look into how social and constructive play affects pupils' academic achievement in numeracy. (ii) Examine how gender primarily affects pupils' academic achievement in numeracy. (iii) Examine the main impact of school type on students' academic success in numeracy using indigenous gaming techniques. (iii) Analyze the interactions between social play, constructive play, and gender on students' academic progress in math. Examine how social play, constructive play, and school type combine to affect students' achievement in numeracy. (vi) Recognize how gender and school type interact to affect students' academic progress in math. (vii) Examine how gender, school type, social play, and constructive play interact to affect students' academic progress in math.

At a significant threshold of 0.05, the following theories were evaluated. H01: The main effect of the intervention on students' academic progress in numeracy is not clearly visible. H02: There is no obvious main effect of gender on students' academic achievement in numeracy. H03: The main impact of a student's school type on their academic progress in math is negligible. H04: The students' academic success in numeracy was unaffected by treatment or gender. H05: The interaction between therapy and school type had no significant effect on students' academic performance in math. H06: Gender and school type have no appreciable interactions on students' academic achievement in numeracy. H07: The effects of therapy, gender, and school type on students' academic achievement in numeracy are not statistically significant.

This study aims to support the value of social and constructive play as a teaching technique that improves kids' numeracy abilities among stakeholders including teachers, school administrators, parents, and policymakers. Additionally, it would be important for pupils because it will help kids build a variety of skills, and abilities, and strengthen their fine motor coordination. It will also help kids build numeracy skills like counting, adding, sorting, patterning, shaping, and basic geometry. It will also serve as a reference for educational researchers conducting related research and expand the body of knowledge.

Giving young learners the essential reading and writing skills, knowledge and attitudes for a successful transition into society is required (Asodike & Ikpitibo, 2014). Play and learning,

according to Disney (2022), go hand in hand, especially when it comes to developing young children's problem-solving, language, reading, numeracy, social, physical, and emotional skills. Researchers concur that play lays a solid basis for intellectual development, creativity, problem-solving, and fundamental academic knowledge (Fisher et al., 2020). Teachers are in the best position to determine whether students are learning by performance objectives formative and summative evaluation instruments to capture the competence or skill acquired. Thus, a school's ability to maintain or damage its reputation and standards depends on the academic performance of its students (Owede, 2016). Owede (2016) asserts that a student's academic performance should be taken into account when classifying them as low, moderate, or high-ability learners. Conversely, social play encourages youngsters to interact positively. Skills like logic, creativity, abstract or spatial thinking, critical thinking, problem-solving aptitude, and even successful communication can all be developed through math. The world could not move even a millimeter without numeracy. The value of numeracy in a child's early years cannot be overstated. The amount and quality of early numeracy encounters are the primary determinants of performance according to (Chen et al., 1996).

According to Ahmed (2017), effective teaching and learning of numeracy depend on having a solid grasp of how kids acquire early numeracy skills. According to the National Association for the Education of Young Children (NAEYC) and National Council of Teachers of Mathematics (NCTM, 2020), they support the effectiveness of the following support strategies: encourage material exploration and manipulation, provide materials with a variety of sensory qualities, and allow children enough time and space to learn about the properties of those materials. It's also critical to observe, focus on, and answer the queries that children pose. Children can copy and alter the hands-on activities you model, challenge, and coach. However, it is essential to foster peer interaction to allow children to explain numeracy concepts to their peers more effectively than adults can. Children are prompted to explain and adjust their understanding when ideas are shared especially when those views are in dispute (Abdulkareem, 2020). Children can experience emotional growth, social and cognitive development and the development of the self-confidence necessary to explore novel places and circumstances through play (Maguire-Jack et al., 2022). Young students learn best through play, interaction with others, physical activity, learning new things, self-talk, communication with others, overcoming obstacles both physical and mental, being shown new things, practicing and repeating skills, and having fun (Bruce, 2011).

Children's logical skills can be developed through play with sand, blocks, water and clay. Block play promotes reasoning, problem-solving, and divergent thought, whereas water play helps children learn about volume. Children's numeracy skills are improved when they are familiar with shapes, directions and placements while using boxes to construct a tower. According to Disney (2022), play and learning are strongly associated in problem-solving, language development, literacy, numeracy, physical and emotional skills. Play lays a strong foundation for intellectual growth, creativity, problem-solving, and essential academic knowledge, according to researchers (Fisher et al., 2020). The performance test is the type of test that displays a person's ability to work with actual items as opposed to just symbols (Drever, 1981). Armstrong (2016) contends that academic performance refers to more than just supporting, encouraging, and passing exams. He asserts that a rigorous, uniform and required academic curriculum serving as a requirement for promotion and placement also includes academic content and skills, grade-based and standardized testing and academic performance. Olaide (2018) interprets academic achievement as grades and test results reflecting students' performance and ability levels. There is a link between constructive play and numeracy skills, and the complexity of a child's play at age four has a long-term predictive capacity for numeracy success.

According to researchers, a preschooler's capacity to duplicate a certain structure and his or her existing numeracy proficiency is related (Verdine et al., 2013). According to a study conducted in the Netherlands, sixth-graders who engaged in more free-play activities like building

things did better on a test measuring their ability to solve real-world math issues. Sri (2016) revealed that engaging in constructive play with peers improved the speaking abilities of pupils between the ages of 4 and 5. According to the quantitative analysis, 82.2% of students speaking skills were better after the second cycle than they were before pre-treatments. The 75% improvement indicated that the treatment was successful. The results further showed that speaking ability could be improved in pupils through constructive play with peers. All facets of pupils' speaking skills are enhanced through experiences in playing, having fun, and connecting with others. Pellegrini and Gustafson (2005) conducted a study in which they systematically observed three to five-year-olds throughout an academic year. Their findings show that constructive play increases children's literacy skills and future success in reading and writing. They showed that children's performance on physical problem-solving tasks was predicted by how much playfully exploratory activity, construction, and tool use was used to captivate the youngsters. Children's main method of peer engagement is through social play. Children can practice and improve social skills like perspective-taking, sharing, cooperating, interacting with peers, taking turns, problem-solving, and comprehending social rules through social play.

A person's gender is made up of a variety of physical, biological, mental, and behavioral traits that set them apart from one another. The term "academic success" is used to describe students' standing in their academic careers. Academic achievement, in the opinion of Zimmerman and Schunk (2001), refers to what a person can achieve within a particular set of requirements. Chebet (2011) investigated gender disparities in secondary school mathematics achievement among pupils in Kenya's Kericho County's Bureti Sub-County. The results of the study showed that there was a significant gender gap in performance, with male students outperforming female students in mathematics. According to the literature, gender plays a multidimensional role in mathematics education. Differences in academic achievement between genders in Mathematics become noticeable during upper primary school and become more pronounced in secondary schools. The study conducted in 2012 by Alimi et al. looked at how amenities provided by schools in Ondo State affected pupils' academic achievement. The goal was to ascertain whether there is a connection between secondary school amenities and academic achievement in both private and public institutions. Two sets of study tools—the School Facility Descriptive and Students' Academic Performance Questionnaire for principals and the School Facility Descriptive Questionnaire for teachers—were used in the descriptive survey design. A T-test was used to assess the data, and each hypothesis was given a significance level of 0.05. The results showed a sizable difference in the senior secondary amenities provided by public and private schools. However, there were no apparent differences between the two types of schools regarding the student academic performance.

Yusuf and Adigun (2010) investigated how location, sex and school type impacted students' academic performance. 36 public secondary schools were chosen at random and four government colleges (State Unity Colleges) were chosen. It was discovered that the school type, the sex of the students and the location had no bearing on their academic achievement. Armstrong (2016) claims that academic achievement means more than simply supporting and encouraging. He suggests that academic performance encompasses the mastery of academic subjects, acquisition of skills, evaluation through grades and standardized tests, and adherence to a rigorous, standardized, and mandatory curriculum that applies to all students as a requirement for advancement and placement. Academic performance is a direct outcome of meeting specific learning objectives in addition to learning new skills, knowledge and competencies whereby grades or scores are used to measure pupils' learning abilities.

Method

The data for this study were analyzed using the t-test method and an ex post facto design. Pre-test, post-test, control group non-equivalent quasi-experimental design using a 3X2X2

factorial design was the methodology used for the investigation. The control group and two treatment groups (a social and constructive kind of play-based approach of teaching) made up the first three stages. A person's gender (M or F) determined the second factorial level, and the type of school (public or private) determined the third factorial level. O₁ = pre-test of the treatment group 1 (CP), X₁ = treatment of the treatment group 1 (CP), O₂ = Post-test of the treatment group 1 (CP), O₃ = pre-test of the treatment group 2 (SP), X₂ = Treatment of the treatment group 2 (SP), O₄ = Post-test of the treatment group 2 (SP), O₅ = Pre-test of the control group, O₆ = Post-test of the control group. All students in Niger State's primary schools made up the study's population. The use of stratified random sampling was established. Public and private schools were divided into two strata, and three schools from each stratum were chosen at random. The treatment group consisted of one private school and one public school, while the treatment group two was made up of two private schools and two public schools. One private school and one public school made up the control group. Using the researcher's plan of attack, the multiple-choice questions were chosen from the school curriculum and were narrowly focused on the targeted topic. The treatment and control groups' treatment plans were created to promote effective numeracy teaching and learning. The four instruments have face validity and content validity. The final version was tested twice, with a two-week gap between each trial, on randomly selected students from schools outside the sample schools. The reliability from Pearson Product Moment Correlation analysis was 0.86.

Findings

Tables are used to present the findings of data analyses. Frequency counts, mean values, and percentages were used to analyze the participant's demographic data and scores. Analysis of Covariance (ANCOVA) was used to assess the research hypotheses with a significance level of 0.05.

Table 1. Demographic Information

Groups	No of Pupils	Gender	Frequency	Percentage (%)
Constructive Play	29	Male	12	10.0
		Female	17	14.2
Social Play	52	Male	23	19.2
		Female	29	24.2
Control group	39	Male	11	9.2
		Female	28	23.3
Total	120		120	100.0

Table 1 illustrates the demographic information of the groups (constructive play group, social play group and control groups). There were twenty-nine pupils in the constructive play group of which 12 were male (10.0%) and 17 were female (14.2%). There were also 52 pupils in the Social play group of whom 23 were males (19.2%) and 29 were females (24.2%) while the control group had 39 pupils of whom 11 were males (9.2%) and 28 were females (23.3%). There were 120 pupils altogether.

The effect of treatment on students' academic performance in numeracy in Niger State is seen in Table 2. The research showed that the treatment had a notable impact on students' academic achievement in numeracy in the Niger State ($F(2; 107) = 159.022, P 0.05$). As a result of the outcome, the hypothesis is disproved because the remarkable value (.000) is less than 0.05. It suggests that the Niger State intervention had a considerable impact on students' academic achievement in the numeracy subject.

Table 3 shows that the considerable difference between constructive play, social play, and conventional approach leads to the significant main effect reported by Table 2. The difference in the performance between constructive and social play was 11.844 which was statistically significant. Also, the difference in the performance between social play and the conventional method was 21.905 which

was statistically significant. Finally, the difference in the performance between constructive play and the conventional method was statistically significant with a mean difference of 33.749.

Table 2. Summary of ANCOVA analysis of treatment on pupils 'academic performance in Numeracy in Niger State

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	19975.842 ^a	12	1664.653	56.543	.000
Intercept	5310.815	1	5310.815	180.391	.000
Pretest	52.331	1	52.331	1.778	.185
Treatment	9363.424	2	4681.712	159.022	.000
Gender	74.490	1	74.490	2.530	.115
School type	4.662	1	4.662	.158	.691
Treatment * Gender	117.148	2	58.574	1.990	.142
School type * Treatment	44.351	2	22.175	.753	.473
School type * Gender	55.426	1	55.426	1.883	.173
School type * Treatment * Gender	41.711	2	20.855	.708	.495
Error	3150.150	107	29.441		
Total	736301.000	120			
Corrected Total	23125.992	119			

Table 3. Summary of Bonferroni's Post Hoc pairwise Comparison

Treatment	Mean Score	Treatment 1	Treatment 2	Control Group
Constructive Play	92.932		*	*
Social Play	81.088	*		*
Conventional Method	59.183	*	*	

Research Hypothesis 2: It is difficult to explain how gender affects students' academic ability in math as an individual affect by their personality rather than the gender. The result of gender on students' academic achievement in numeracy can be observed in Table 3. According to the analysis, gender showed no visible impact on students' academic achievement in Niger State's Numeracy ($F(1; 107) = 2.530; P > 0.05$). The hypothesis is therefore rejected based on the results as the significant value (.115) is more extensive than 0.05. It can be understood as every student has same potential to achieve a good result in numeracy apart from their gender.

Research Hypothesis 3: the primary impact of school type on students' academic progress in numeracy is negligible. The combined impact of treatment and gender on students' academic achievement in numeracy in Niger State is demonstrated in Table 2. The research illustrated that there was no statistically significant interaction between treatment and gender on students' academic achievement in numeracy in the Niger State ($F(2; 107) = 1.990; P > 0.05$). Therefore, the hypothesis is not disproved based on the results because the significant value (.142) is higher than 0.05. This implies that the interplay between treatment and gender in Niger State did not significantly affect students' academic success in numeracy.

Research Hypothesis 4: It is impossible to explain how treatment and gender affect students' numeracy skill. The effect of school type on students' academic achievement in numeracy in Niger State can be seen in Table 2. The research found that there was a significant relationship between school type and students' academic achievement in numeracy ($F(1; 107) = .158; P > 0.05$). The hypothesis is therefore not disproved based on the findings because the significant value (.691) is higher than 0.05. This suggests that in Niger State, school type did not significantly affect students' academic success in numeracy.

Research Hypothesis 5: The interaction between a student's treatment and the type of school has no discernible influence on how well they perform academically in math. The correlation effect of gender and school type on students' academic achievement in numeracy in Niger State is shown in Table 2. The results of the analysis revealed that gender and school type had no discernible effects on students' academic achievement in numeracy in the Niger State ($F(1; 107) = 1.883; P > 0.05$). The hypothesis is therefore not disproved based on the results because the significant value (.178) is higher

than 0.05. This suggests that, in Niger State, the connection between gender and school type did not significantly affect students' academic ability in numeracy.

Research Hypothesis Six: Gender and school type do not significantly interact to affect students' academic achievement in numeracy. The interaction impact of therapy and school type on students' academic achievement in numeracy in Niger State is also illustrated in Table 2. In Niger State, the research found no statistically significant interaction between therapy and school type on students' academic achievement in numeracy ($F(2; 107) = .753; P > 0.05$). The hypothesis is not accepted as a result of the results because the significant value (.473) is higher than 0.05. This implies that the academic success of students in Niger State in the subject of numeracy was not significantly impacted by therapy or school type.

Seventh research hypothesis: There is no significant correlation between therapy, gender, and school type toward students' academic achievement in numeracy. Table 2 shows the interaction effect between therapy, gender, and school type on students' academic performance in numeracy in Niger State. According to the study, treatment, gender, and school type had no significant effect on students' academic achievement in numeracy in Niger State ($F(2; 107) = .708; P > 0.05$). The hypothesis is rejected as the significant value (.495) is higher than 0.05. This suggests that the academic achievement of students in numeracy in Niger State was not significantly affected by the three variables and possibly other factors.

Discussion

The results revealed a significant impact of constructive play and social play on students' academic performance in numeracy in Niger State. This shows that students who were taught using constructive play and social play achieved better academic outcomes compared to those taught using traditional methods. These findings align with previous research conducted by Oostermeijer et al. (2014) in the Netherlands, where it was discovered that 6th-grade students who engaged in more construction play during their free time performed better on a numeracy test involving real-world problems. Additionally, the present findings support the research conducted by Gavin et al. (2014), who explored social play spaces for community engagement and found that such spaces facilitated the utilization of technology and physical activity to enhance community culture and participation. Moreover, these results are in line with the work of Wolfgang et al. (2003), who summarized Ginsburg's (2003) findings on skills acquired through construction play, including measurement, classification, counting, ordering, and developing an understanding of length, width, symmetry, shape, depth, and space. Block play has also been associated with numeracy skills. Based on the results of this study and the collective findings of previous research on constructive and social play, it can be concluded that constructive play is a strategic approach to teaching numeracy.

Gender did not significantly affect students' academic achievement in Niger State's Numeracy, according to another study found. This implies that in Niger State, students' academic success in numeracy is not significantly influenced by gender. These results are consistent with studies by Okoye (2008), who hypothesizes that gender differences may have little to no impact on academic performance and that students' accomplishments are more driven by individual effort than by their gender. These results are at odds with those of Chebet (2011) and Adigun et al. (2015), who claimed that academic performance in secondary schools in Kenya and New Bussa varied significantly dependent on gender. Males also scored higher on attitude scales related to confidence in learning mathematics, according to Fennema and Sherman (1977), who also discovered that many people perceive mathematics as a field dominated by men. The fact that men perform significantly better in mathematics than women may be due to the stronger academic support that men receive. The study indicated that gender, social play, and constructive play did not significantly interact to affect students' academic performance in math in Niger State. This suggests that gender, social play, and constructive play did not substantially impact students' academic progress in Numeracy in Niger State.

In Niger State, school type had no discernible impact on students' academic achievement in numeracy. This implies that students' academic success in numeracy in Niger State was not significantly

impacted by the type of school they attended. These results align with those of Yusuf and Adigun (2010), who looked into the effects of school type, sex, and location on students' academic performance in Ekiti State Secondary Schools and discovered that none significantly affected those results. These results, however, contradict those of Okon and Archibong (2015), who looked at the academic achievement gaps between students in private and public secondary schools in Akwa Ibom State and found that private school students outperformed their public school counterparts. Better monitoring and supervision in private schools may be responsible for this considerable effect. Additionally, the results showed no discernible connection between gender and school type and students' academic achievement in numeracy in Niger State.

Contrary to Okon and Archibong's (2015) findings, which examined the academic success differences between students in private and public secondary schools in Akwa Ibom State and discovered that private school students outperformed their public school counterparts, these findings are in conflict with each other. This significant impact could be attributable to private schools having better oversight and monitoring. The findings also revealed that there was no conclusive link between gender, kind of school, and students' academic success in numeracy in Niger State. The seventh hypothesis examined at how gender, school type, social play, and constructive play interacted to affect students' academic achievement in math in Niger State. Similar to this, it was not discovered that gender, school type, social play, or constructive play had any significant interactions that affected students' academic achievement in numeracy in Niger State. This suggests that there was no significant relationship between students' academic success in Numeracy in Niger State and therapy, gender, or school type. Based on the discussion above, it can be concluded that, in comparison to the traditional teaching method, both social play and constructive play can contribute to greater and improved performance in numeracy. In the results of this study, however, it was discovered that constructive play was more successful than social play.

Conclusion

Based on the discussion above, it can be concluded that compared to the traditional method of education, social play and constructive play can encourage more and better performance in numeracy. Play that is productive rather than socially interactive is more effective. The study's findings demonstrate that neither gender nor kind of institution had a significant impact on students' academic achievement in Niger State's numeracy. The academic success of students in math did not appear to be impacted by gender, social play, or constructive play. The academic success of students in Niger State in math did not also demonstrate any obvious connections between gender and school type. In the state of Niger, social play, constructive play, and school type had no discernible impact on students' academic proficiency in numeracy. Social play, constructive play, gender, and school type did not significantly affect students' academic progress in numeracy in Niger State.

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