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Creative-thinking as a determinant of Academic Achievement of Primary School Pupils in Mathematics in Asa Local Government Area, Kwara State

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Abstract: *Students lack the ability to express, comprehend, reason, and convey mathematical material logically. As a result, in Asa Local Government Area, Kwara State, the researcher looked into creative-thinking as a factor in the academic achievement of primary school students in mathematics. A descriptive correlation-type survey design was used. There are 2,293 students in the primary six that make up the study's population. 120 students were chosen using a straightforward random sampling method. Both the Mathematics Achievement Test (MAT) and a creative-thinking (QCT) questionnaire were used. The dependability was calculated using Pearson's Product Moment Correlation Coefficient and set at.76. At a significance level of 0.05, the study hypothesis was tested using linear regression. The findings showed a strong association between creative thinking and students' academic achievement in mathematics (F (1,149) =38.227, P 0.05). It is advised that teachers should relate to their students' thoughts and encourage original thought.*

Keywords: Mathematics, creativity, and academic success

Introduction

Academic success might involve learning a variety of skills and demonstrating a student's intelligence, curiosity, and perseverance. It can also refer to how well a student, instructor, or institution has performed in relation to its short- and long-term educational goals. The result of education, or the degree to which a student, instructor, or institution has accomplished its educational goals, can also be shown in their academic success. Thus, test performance is related to course work and students' performance in mathematics (Kyoshaba, 2009).

The fundamental practises of counting, measuring, and describing the shapes of objects have given rise to mathematics, which is the science of structure, order, and relation. Its progress has required an increasing amount of idealisation and abstraction of its subject matter. It deals with logical reasoning and quantitative calculation (Encyclopaedia Britannica, 2022). All students in primary schools should take mathematics to develop their capacity for logical, analytical, methodical, critical, creative, and cooperative thought. Because it includes certain related concepts, mathematics can be seen as a network concept in its own right. The major challenge students face while studying mathematics as a network notion is connecting one thought with another visual (Widdiharto, 2008)

You may already be aware that math is not just for tasks done with paper and pencil. Making quick pricing calculations in stores, restaurants, or petrol stations calls on the use of a key skill: mental math. Inform your child that mental math skills are more self-assured (Margaret, 2020). Students need to be proficient in mathematics in order to deal with all of life's obstacles and comprehend information that is presented quantitatively. The foundation of modern systematic living is mathematics. Without numerical and mathematical evidence, it may be impossible to draw any conclusions about many real-world issues. Since mathematics is the foundation of science and technology, it is essential to the economic and social development of a country. Today's elementary schools teach mathematics, which is the most important subject and the foundation of civilization. Without mathematics ability, one may not prosper in any job (Mehraj, 2014).

As one may also be aware, mathematics includes the aptitude for comprehending, applying, computing, manipulating, interpreting outcomes, and communicating mathematical data. However, the opposite is true as some students lack the ability to talk, reason, and coherently present knowledge (Awofala & Anyikwa, 2014). It was because the teachers weren't able to inspire the students to think creatively about their lessons.

The ability to develop a variety of ideas, alter ideas in innovative ways, and combine unconventional ideas to describe novel possibilities that may neatly fulfil a specific aim is known as creative thinking (Australian Council for Educational Research,2020). Possessing the ability to "toy" with both already formed ideas and brand-new ones is a crucial component of creative thinking. It can result in "new" ideas through procedures like synthesis and adaption (Lassig, 2013). The capacity to deliberately explore ideas from several angles and think creatively within the limitations of a task are essential to this process.

In many nations, the scientific study of creativity faced severe challenges. The ability to think creatively is essential to the development of humanity because it enables one to offer more solutions to problems that arise on a daily basis. Students who think creatively accomplish their goals with the least amount of time, money, and effort. (2008) (Aldabagh). According to Torrance (1967), a person develops problem-solving skills through the use of creativity. The capacity of a person to develop fluidity, spontaneity, creativity, and remote linkages in response to a challenge or exciting circumstance (Khayrallah, 1975). People create novel and inventive works that are characterised by originality, variety, and the linking of elements with relationships to address challenges in novel ways. These qualities include fluency, flexibility, creativity, and relationships (Aldapagh, 2008).

In his 2001 study, Al-Ja'afra contrasted the innovative thinking and drive for success of Jordan's brightest and most brilliant students. Students (boys and girls) were divided into three programmes by the researcher. According to the research, there is no statistically significant difference between boys and girls in terms of the development of creative thinking and motivation for achievement (Al-Ja'afra, 2001). Using the CGPAs of 235 students, Ogunsanya, Akintunde, and Olatoye (2010) looked into the connection between students' creativity and academic success. According to the study, there is a weak negative significant correlation between creativity and CGPA scores, with the degree of creativity in a student's work being inversely correlated with CGPA scores. Nasef (2010) discovered a link between motivation for academic accomplishment and critical and creative thinking abilities. Through enrichment programmes, the study's participants improved their ability to think critically, which sparked their ambition to excel in school.

A study of 306 randomly chosen students found a tenuous but adverse relationship between pupils' academic achievement and their capacity for creativity. According to the given r = -.090 value, there is a poor correlation. The researchers came to the conclusion that someone who is creative may not always perform well in school (Mishra & Garg,2015). In a sample of gifted kids, Abu Hilal and Al-study Tahan's from 2002 discovered a connection between imaginative thinking and academic success. Between intelligence, inventiveness, and achievement, it was studied in the United Arab Emirates (406 sixth-grade students). In contrast to the aforementioned arguments, creative thinking is a factor in how well primary school students in Asa Local Government Area, Kwara State, do academically in mathematics.

Description of the Issue

Understanding, performing calculations, manipulating data, deriving conclusions, and expressing mathematical information are all parts of mathematics. However, the opposite is also true in that certain students lack the ability to think, comprehend, communicate, and present mathematical material coherently. A creative-thinking technique cannot be used by teachers to convey their instructions to the students during teaching and learning. As a result, the researcher looked into how creative thinking affected the academic success of primary school students in the mathematics department in Asa Local Government Area, Kwara State.

Research Issue

How imaginative are the elementary school students in Kwara State's Asa Local Government Area?

Study Hypothesis

In the Asa Local Government Area of Kwara, there is no correlation between mathematical achievement and creative thinking among elementary school students.

Methodology

A descriptive survey design of the correlation type was chosen as the research methodology for the investigation. All 2,293 students in the primary six in the Asa Local Government Area of Kwara State make up the study population. By contrast, using a straightforward random sampling technique, the study's target population was determined to be all primary-six students in the local government, or 120 students from 10 different schools. With the help of research assistants, a questionnaire on creative-thinking (QCT) and a mathematics achievement test (MAT) were utilised to gather data from the students. The tools were approved by math teachers. Within two weeks, 25 final draught copies were trial-tested twice on the randomly chosen students outside the sample schools. After that, the reliability of was determined using Pearson's Product Moment Correlation Coefficient. 76. By summarising the data that was obtained, descriptive statistical analysis was employed to analyse the data. Additionally, data were analysed using descriptive statistical analysis, which describes the data that was gathered. While testing the research hypothesis was conducted using inferential statistics of linear regression with a significance level of 0.05

Results

Research Question: What is the level of creativity among elementary school students in Asa Local Government Area, Kwara State?

Table 1: summarises the frequency, count, mean, and percentage of primary school students in Asa Local Government Area, Kwara State, who are able to think creatively.

S/N	Items	SA	A	D	SD	Mean
1	The student becomes logical in their mathematical decision-making through creative thinking	56(37.3)	40(26.7)	35(23.3)	19(12.7)	2.89
2	It encourages self-control, which ultimately helps students attain academic success in mathematics. mathematics academic achievement	50(33.3)	45(30.0)	30(20.0)	25(16.7)	2.80
3	It enables students to complete their math homework on their own	24(16.0)	20(13.3)	36(24.0)	70(46.7)	1.99
4	It encourages a sense of independence in leaning	14(9.3)	17(11.3)	57(38.0)	62(41.3)	1.89
5	It raises students' confidence in their ability to succeed in daily tasks	64(42.7)	47(31.3)	18(12.0)	21(14.0)	3.03
6	Students who think creatively display a supportive attitude and hold themselves to developmentally appropriate standards.	9(6.0)	16(10.7)	53(35.3)	72(48.0)	1.75
7	Students' low academic performance in mathematics improves with creative thinking	11(7.3)	36(24.0)	47(31.3)	56(37.3)	2.01
8	It helps students to address some environmental issues and produce creative solutions.	8(5.3)	36(24.0)	43(28.7)	63(42.0)	1.93
9	It helps people to assess the concepts, procedures, and outcomes.	23(15.3)	25(16.7)	43(28.7)	59(39.3)	2.07
10	Students who use creative thinking can use their imagination to produce questions, hypotheses, and ideas while experimenting with different solutions.	25(16.7)	22(14.7)	44(29.3)	59(39.3)	2.08
	Weighted Mean					**2.24**

Decision rule: Low=00-2.49 High= 2.50-4.00 Note: The figures in parentheses are in percentages

The creative thinking skills of the primary school students in Asa Local Government Area, Kwara State, are shown in Table 1. The outcome showed that the following factors were significant: The ability to think creatively helps students make rational mathematical decisions (Mean=2.89), develop self-control and thus increase their academic accomplishment in mathematics (Mean=2.80), and increase their sense of self-efficacy in daily tasks (Mean=3.03). The following categories scored poorly: Students with creative thinking have a supportive attitude and developmentally appropriate expectations (Mean: 1.75); it reduces the poor academic performance of students in mathematics (Mean: 2.01); it enables them to deal with some environmental problems and produce novel solutions (Mean: 1.93); it enables them to evaluate the identity of others (Mean: 1.93); it fosters a sense of autonomy in learning (Mean: 1.89); it decreases the poor academic performance of students in mathematics (Me The results showed that the elementary school students' capacity for creative thought was limited. The weighted mean (2.24), a numerical indicator showing the creative-thinking capacity of the primary school students in Asa Local Government Area, Kwara state, was low in comparison to the mathematical concept

Test of Hypothesis

Research Hypothesis: In Asa Local Government Area, Kwara, primary school students' academic achievement in mathematics does not significantly correlate with their capacity for creative thought.

Table 2 displays the overview of the strong association between creative thinking and primary school students' academic ability in mathematics.

Variable	**Mean**	**SD**	**n**	**R**	**R Square**	**Adjusted R Square**	**F**	**Sig.**

Creative-thinking	22.44	9.604	150	.453	.205	.200	38.227	.000
MAT	21.97	10.928						

In the Asa Local Government Area of Kwara State, Table 2 displays the regression analysis of the substantial correlation between students' academic achievement and creative thinking. The findings showed a link between inventiveness and primary school students' academic success in mathematics (R =.453). Additionally, the R-Square is.205, indicating that the independent variable (creative thinking) adequately explained the dependent variable's variation of 20.5 percent (Academic Achievement of Pupils in Mathematics). It shows that the regression equation fits the data well. This shows that, in Asa Local Government Area of Kwara State, students' academic achievement in mathematics has a strong link with creative thinking (F (1,149) = 38.227, P 0.05). In light of the outcome and the fact that the significant value is less than 0.05, the hypothesis is consequently rejected. It suggests that the academic success of students in mathematics in the Asa Local Government Area of Kwara State is significantly correlated with creative thinking.

Discussion of the Results

The findings of this study indicated that creative thinking and academic achievement of primary school students in Mathematics were positively correlated (F (1,149) = 38.227, P 0.05). It was submitted concurrently with Al-study Ja'afra's (2001), which discovered a link between fostering creativity and drive for achievement. There are no appreciable differences between boys and girls, which is also consistent with the findings of Nasef (2010), who discovered a connection between the ability to think critically and creatively and the desire to accomplish academically. Through enrichment programmes, the study's participants improved their ability to think critically, which sparked their ambition to excel in school. In a sample of gifted kids, Abu Hilal and Al-study Tahan's from 2002 discovered a connection between imaginative thinking and academic success. In the United Arab Emirates, 406 sixth-grade students participated in a study examining the relationships between achievement, creativity, and IQ.

In contrast, the study's findings did not corroborate those of Mishra and Garg (2015), who found that creative thinking and students' academic achievement did not correlate favourably. The correlation value for the r = -.090 was indicated and was negative. The researchers came to the conclusion that a creative person might not always be an academic high achiever. A low negative significant link between creativity and CGPA scores was also discovered by Ogunsanya, Akintunde, and Olatoye (2010), who discovered that the more creative a student was, the worse their CGPA scores were.

Conclusion

It is determined that students who think creatively are learners who can experiment with concepts from the past and present and produce fresh ideas that are essential to resolving current problems, especially in mathematics.

Recommendations

1. The study's conclusions led to the following recommendations:
2. Teachers should work to foster a culture of compassion and acceptance.
3. Teachers ought to present and relate to students' ideas.
4. Teachers should revise tasks to encourage original thought
5. Teachers should employ innovative teaching techniques, materials, and models.
6. Teachers should promote independent learning

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