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IMPACT OF PROJECT-BASED LEARNING AND STUDENT CREATIVITY ON ACADEMIC ACHIEVEMENT OF PUBLIC SECONDARY SCHOOL STUDENTS IN ABIA STATE

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Abstract

The study examined the impact of project-based learning and student creativity on academic achievement of public secondary school students in Isiala Ngwa South Local Government Area of Abia state. The purpose of the study was to examine the extent to which PBL and student creativity impact students' academic achievement in Isiala Ngwa South LGA, identify the extent PBL and student creativity can enhance students' academic achievement in Isiala Ngwa South LGA and investigate the effectiveness of different PBL and creativity approaches in promoting academic achievement in Isiala Ngwa South LGA. Three research questions guided the study. The study was based on Albert Bandura's Social Cognitive Theory 1970. Descriptive survey research design was adopted for the study. Out of the population of 1,458 SS2 students schooling in the area, 145 students were randomly selected as the sample of the study which represented 10% of the entire population. Structured questionnaire duly validated by experts was used for data collection. Mean rating was used to analyze the data collected. Findings of the study showed among others that project-based learning and student creativity have great impact on students' academic achievement in Isiala Ngwa North LGA in different ways such as encourages active learning, helps students develops critical thinking skills, enhances collaboration skills, fosters creativity and innovation.

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Based on the findings, the study concluded that project-based learning and student creativity have a positive impact on academic achievement. The study, therefore recommended among other things that policymakers should introduce PBL as a teaching method in schools within Isiala Ngwa South Local Government Area and Nigeria as a whole, and provide training to teachers on how to effectively implement PBL in the classroom. This would go a long way to enhance academic achievement and develop 21st-century skills among students.

Keywords: Project-Based Learning, Student Creativity, Academic Achievement

Introduction

Education is one of the most critical factors in the development of any society. Education provides individuals with the necessary skills and knowledge to succeed in their personal and professional lives. Ikegbusi et al (2022b) stated that a society that invests in education is more likely to experience positive economic growth and social development. Manafa (2018) stated that education is not only a means to acquire knowledge, skills and values but also a tool to enhance individual and collective progress. It has a direct impact on economic growth, social development, and overall well-being of the society. These roles of education cannot be achieved where there is poor academic achievement of the students (Eziamaka et al, 2022).

Academic achievement refers to the level of success that a student achieves in his or her studies. It is a measure of the knowledge, skills and competencies that a student has acquired during the course of their academic journey. Ikegbusi et al (2021) explained that academic achievement is considered a vital component of a student's overall success, as it is closely linked to future opportunities for employment, higher education, and personal growth. Numerous studies have been conducted to explore the various factors that contribute to academic achievement, including individual characteristics such as intelligence, motivation, and study habits, as well as environmental factors such as school quality, teacher effectiveness, and family support (Ikegbusi, 2019).

Project-based learning (PBL) and student creativity are two educational approaches that have been found to have a positive impact on students' academic achievement. PBL emphasizes student-centered learning and collaborative problem-solving, while creativity allows students to generate novel and useful ideas and products (Miller & Krajcik, 2019). PBL often leads to increased student engagement and motivation. When students are actively involved in hands-on projects that are relevant to their interests and real-world problems, they are more likely to be motivated to learn (Barrey et al., 2024). Ikegbusi and Okeke (2022) explained that project-based learning (PBL) is an educational approach that emphasizes student-centered learning and collaborative problem-solving. Project-based learning

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(PBL) or project-based instruction is an instructional approach designed to give students the opportunity to develop knowledge and skills through engaging projects set around challenges and problems they may face in the real world (Reid-Griffin et el, 2020). In PBL, according to Scogin et al (2017:41) students work in teams to investigate real-world problems, apply concepts and skills and create solutions or products. The goal of PBL is to help students develop a deep understanding of the subject matter and the ability to transfer that knowledge to new situations (Triana et al, 2020). Research has shown that PBL can have a positive impact on students' academic achievement, motivation and 21st-century skills (Viro et al, 2020). PBL encourages students to think critically and develop problem-solving skills. By working on projects that require them to analyze information, make decisions, and solve problems, students can improve their ability to think critically and creatively (Morrison et al., 2020).

PBL has been found to enhance students' academic achievement in various subject areas. A study conducted by Kim & Song (2019) found that students who learned physics through PBL scored significantly higher on tests than those who learned through traditional instruction. Similarly, an analysis of PBL studies by Kirschner et al. (2016) found that PBL had a significant positive effect on student achievement in science, technology, engineering and mathematics (STEM) subjects.

Creativity has been found to have a positive impact on academic achievement, personal growth, and professional success (Lee & Lee 2018). Research has shown that creativity can be taught and developed in students through various approaches. For example, the use of divergent thinking tasks, where students are given open-ended problems to solve, has been found to enhance creativity (Kim, 2018). Ikegbusi et al (2016) added that providing students with autonomy and choice in their learning and also making them to feel connected to the school have been found to foster creativity.

Student creativity is an important aspect of education as it allows students to think outside the box, develop unique solutions to problems, and innovate in their field. Student creativity refers to the ability of students to generate original ideas, solutions, or products that are novel and valuable. It involves the use of imagination and original thinking to approach problems or tasks in new and innovative ways. Student creativity is not limited to artistic expression but can also manifest in various forms, such as in problem-solving, critical thinking, and the ability to make connections between different ideas or concepts (Kim, 2018).

Student creativity involves providing opportunities for students to explore, experiment and take risks in their learning. It often involves open-ended tasks or projects that allow students to use their creativity to come up with unique solutions or interpretations. Teachers can encourage student creativity by creating a supportive and stimulating learning environment,

providing feedback that values creative thinking and encouraging students to think outside the box (Pan et al., 2020).

The potential synergy between PBL and student creativity lies in the fact that PBL provides a platform for students to apply their creativity to real-world problems. PBL allows students to work in teams, investigate real-world problems, and create solutions or products. This process requires students to use their creativity to generate innovative solutions and products. A study by Blackburn (2018) found that creative thinking is positively related to job performance in a variety of fields, indicating that the development of creativity through PBL could have long-term benefits for students' academic and professional success. However, there has been poor utilization of both PBL and student creativity in secondary schools in Isiala Ngwa South LGA of Abia State. In most cases, as it was observed, these students are students are not exposed to PBL and student creativity, as a result it becomes difficult for them to internalize what the teacher taught them and make it part of them. This, to a great extent, affects their academic achievement in the schools. It is therefore very essential that the impact of project-based learning and student creativity on academic achievement is highlighted for the benefits of both students and teachers.

Statement of the Problem

The traditional educational approach of teacher-centered instruction has been criticized for its limited ability to engage students and promote deep learning. As a result, many educators have turned to project-based learning (PBL) and student creativity as alternative approaches to promote student engagement and enhance learning outcomes. While there is evidence to support the effectiveness of both PBL and creativity in promoting learning, there is need to further investigate the impact of these approaches on students' academic achievement.

Despite the potential benefits of PBL and creativity, some educators remain diffident to adopt these approaches due to concerns about their impact on academic achievement. Some educators argue that these approaches may not be as effective in promoting academic achievement as more traditional teaching methods and that they may even detract from students' academic performance. These concerns highlight the need for a more nuanced understanding of the impact of PBL and creativity on academic achievement of students.

Moreover, while there has been research conducted on the effectiveness of PBL and creativity individually in promoting academic achievement, there is limited research on the combined impact of these approaches. This is a critical gap in the literature as both PBL and creativity emphasize active student engagement and critical thinking and may work synergistically to enhance students' academic achievement. Therefore, this study aimed to address this gap by examining the impact of project-based learning and student creativity on students' academic achievement. Specifically, the study sought to explore the relationship between PBL and student

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creativity in enhancing academic achievement and to identify effective approaches for promoting academic achievement through PBL and creativity. This study would contribute to the literature on effective teaching methods and inform educators on the benefits of integrating PBL and creativity in their instructional practices.

Purpose of the Study

The main purpose of this study is to investigate the impact of project-based learning and student creativity on academic achievement of public secondary school students in Isiala Ngwa South Local Government Area of Abia state. Specifically, the study sought to:

1. Examine the extent to which PBL and student creativity impact students' academic achievement in Isiala Ngwa South Local Government Area of Abia state.
2. Identify the extent PBL and student creativity can enhance students' academic achievement in Isiala Ngwa South Local Government Area of Abia state.
3. Ascertain the effectiveness of different PBL and creativity approaches in promoting academic achievement in Isiala Ngwa South Local Government Area of Abia state.

Scope of the Study

The geographical scope of the study is delimited to all the public secondary schools in Isiala Ngwa South LGA of Abia state. The content scope is limited to the extent to which PBL and student creativity impact students' academic achievement; extent PBL and student creativity can enhance students' academic achievement; and effective approaches for promoting academic achievement through project-based learning and creativity.

Research Questions

The following research questions guided the study:

1. To what extent do PBL and students' creativity impact students' academic achievement in Isiala Ngwa South Local Government Area of Abia state?
2. To what extent can PBL and student' creativity enhance students' academic achievement in Isiala Ngwa South Local Government Area of Abia state?
3. What are the effective approaches for promoting academic achievement through project-based learning and creativity in Isiala Ngwa North Local Government area of Abia state?

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Literature Review

Project-Based Learning

Project-based learning (PBL) is a teaching method that engages students in hands-on, real-world projects to develop knowledge and skills. It is a student-centered pedagogy that involves a dynamic classroom approach in which it is believed that students acquire a deeper knowledge through active exploration of real-world challenges and problems (Duke et al, 2021). Almulla (2020) and Haatainen and Aksela (2021) explained that project-based learning is an educational approach in which students engage in the design and implementation of an extended project or investigation that addresses a complex question or problem. Tsybulsky and Muchnik-Rozanov (2019) asserted that this approach is often characterized by the following elements: a challenging problem or question, sustained inquiry, authenticity, student voice and choice, reflection, critique and revision, and a public product. Research has shown that project-based learning can lead to deeper learning and better retention of material compared to traditional instructional approaches (Thomas, 2020).

Additionally, students who engage in project-based learning report higher levels of engagement and motivation. Project-based learning can also foster the development of essential skills such as communication, collaboration, critical thinking, and problem-solving (Konrad et al, 2020; Morrison et al, 2020 and Triana et al, 2020). Furthermore, project-based learning provides opportunities for students to connect their learning to real-world problems and issues, allowing them to see the relevance and practical applications of their learning (Thomas, 2020).

Student Creativity

Creativity is the ability to generate new ideas, concepts or solutions that are original and valuable. It involves breaking away from traditional ways of thinking and approaching problems or tasks in innovative ways. Creativity is not limited to artistic expression but can also manifest in various forms, such as in scientific discovery, technological innovation, and everyday problem-solving. Yi et al (2015) explained that creativity is a multidimensional construct that includes cognitive, affective, and motivational components. Cognitive components involve the ability to think divergently, generate new ideas, and make connections between seemingly unrelated concepts. Affective components involve the emotional and motivational aspects of creativity, such as the willingness to take risks, persevere through obstacles, and embrace ambiguity. Motivational components involve the drive and passion to engage in creative activities and pursue creative goals (David, 2024).

Student creativity refers to the creative abilities of students. It encompasses their capacity to think creatively, generate novel ideas, and solve problems in original ways. Fostering student creativity in education involves creating a supportive and stimulating environment that encourages

experimentation, exploration, and risk-taking. It also involves providing opportunities for students to engage in creative activities and projects that allow them to express their ideas and talents (Runco & Jaeger, 2022).

Student creativity is important in many domains of life, including education, the arts, business and technology. It has been associated with positive outcomes such as academic achievement, career success and personal fulfillment. Therefore, fostering creativity in students is an important goal for educators and policymakers (Ikegbusi, 2019). Hucker et al. (2024) explained that both creativity and student creativity are highly valued in education as they are seen as essential skills for success in the 21st century. They are associated with improved academic achievement, critical thinking skills and the ability to adapt to new challenges and opportunities.

Academic Achievement

Academic achievement refers to the level of success a student has attained in his or her academic pursuits, such as grades, test scores, and completion of educational programs. It is a measure of the quality of a student's academic performance and it can be influenced by various factors, including individual characteristics, family background and educational experiences (Ikegbusi et al, 2021).

Academic achievement is a critical indicator of a student's academic success and is often used as a criterion for admission to post-secondary institutions and for employment opportunities. Ikegbusi (2018a) explained that it is the measure of what a student is to do or how he is able to accomplish different tasks given to them by their teachers through assessment. However, Ikegbusi (2018b) asserted that academic achievement is not solely determined by academic ability or intelligence, but also by other factors such as motivation, effort, and self-regulation. School systems mostly define cognitive goals that either apply across multiple subject areas (critical thinking) or include the acquisition of knowledge and understanding in a specific intellectual domain (numeracy, literacy, science, history). Therefore, academic achievement should be considered to be a multifaceted construct that comprises different domains of learning (Ikegbusi, 2016).

In the views of Ikegbusi et al (2023) academic achievement can have long-term implications for a student's future success, including their career prospects and overall quality of life. Therefore, it is important for educators and policymakers to understand the factors that contribute to academic achievement and to provide support and resources to promote student success.

Theoretical Framework

Social Cognitive Theory by Albert Bandura (1970)

Social Cognitive Theory (SCT) is a psychological theory proposed by Albert

Bandura in the late 1970s. It is a theoretical framework that explains how people acquire and apply knowledge, behavior, and attitudes through social interaction, observation, and self-reflection. SCT posited that learning occurs through the reciprocal interaction between personal factors, environmental factors, and behavior. In this theory, personal factors such as self-efficacy, motivation, and creativity play a crucial role in learning outcomes, as they influence individuals' behavior and their ability to adapt to new situations. Environmental factors such as social support and opportunities for learning also shape behavior and learning outcomes.

The SCT is a relevant theory for this study as it can help to explain how project-based learning and student creativity impact academic achievement. According to SCT, PBL provides students with opportunities to engage in collaborative problem-solving, which can increase their self-efficacy and motivation to learn. This increased self-efficacy and motivation can then lead to better academic achievement. Additionally, SCT suggests that creativity is an important personal factor that can influence learning outcomes, as it allows students to generate novel and useful solutions to problems.

SCT emphasized the role of environmental factors in shaping behaviour and learning outcomes. PBL and creativity can be seen as environmental factors that influence students' behaviour and learning outcomes. The collaborative and supportive learning environment provided by PBL can promote positive learning outcomes, while the freedom to be creative and generate new ideas can enhance students' motivation and engagement. In conclusion, the Social Cognitive Theory is a suitable theory for this study as it provides a framework for understanding how personal and environmental factors interact to shape learning outcomes. By applying this theory to the study of project-based learning and student creativity, we can gain insights into how these approaches can enhance academic achievement and identify effective approaches for promoting learning.

Methodology

Descriptive survey research design was used in carrying out this study. According to Ikegbusi (2022: 264) a descriptive survey research design is a study in which a population is studied by collecting and analyzing data from sample considered to be representative of the entire group through the use of questionnaire or interview from the group. This is chosen because the study is set to study people, their attitudes, belief system, opinions and other behavioural manifestations (Obi et al, 2022). The study was carried out in public secondary schools in Isiala Ngwa North in Abia State. There are ten schools in this regard. These comprised schools in both urban and rural areas of the Local Government. Majority of the secondary schools in this area are mixed schools; and the major languages spoken are English and Igbo. The population of the study comprised 1,458 SS2 students in the area (Source: Isiala-Ngwa North Basic Education Board, 2024). Simple random sampling

technique was used to select 145 students which represented 10% of the entire population. The primary means of data was carried out by structured questionnaire items, which were duly validated by two experts in the Department of Educational Foundations and one expert in Measurement and Evaluation, all from Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra state, Nigeria. The questionnaire contained 15 items grouped in 3 clusters which were used to seek the response of the respondents on the subject matter. The data collected were analyzed using mean scores. Four point rating scores of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The ranges of the scores were weighted as 4, 3, 2 and 1. Mean rating of any item ranged from 2.5 and above would be regarded to be agreed, while those below 2.5 would be regarded as disagreed, this formed the decision rule.

Presentation and Analysis of Data

Research Question 1: To what extent do Project Based Learning and student creativity impact students' academic achievement in Isiala Ngwa South Local Government Area of Abia State?

Table 1: Respondents mean ratings on the extent Project Based Learning and student creativity impact students' academic achievement in Isiala Ngwa South Local Government Area of Abia State

S/N	Items Statements	∑fx	$\overline{X}$	Decision
1	Encourages active learning	857	3.4	Agree
2	Helps students develops critical thinking skills	806	3.2	Agree
3	Enhances collaboration skills	856	3.5	Agree
4	Fosters creativity and innovation	840	3.0	Agree
5	Provides students with opportunities to apply what they have learned to real-world situations	820	2.9	Agree
	Grand Mean		**3.2**	**Agree**

N= 145

Data in table 1 above showed that all the items 1, 2, 3, 4 and 5 have the mean scores of 3.4, 3.2, 3.5, 3.0 and 2.9, respectively and they are all above the cut-off mean. This indicated that majority of the respondents accepted that Project Based Learning and student creativity impact students' academic achievement in Isiala Ngwa South Local Government Area of Abia state.

Research Question 2: In what way can project-based learning and student creativity enhance students' academic achievement in Isiala Ngwa North Local Government Area of Abia state?

Table 2: Respondents mean ratings on way project-based learning and student creativity can enhance students' academic achievement in Isiala Ngwa North Local Government Area of Abia state

S/N	Items Statements	∑fx	$\overline{X}$	Decision
6	Allowing students to take ownership of their learning.	538	2.2	Disagree
7	Promoting interclass learning	725	2.9	Agree
8	Developing communication skills	869	3.0	Agree
9	Increasing retention and transfer of knowledge	771	2.8	Agree
10	Providing opportunities for feedback and reflection	774	2.8	Agree
	Grand Mean		**2.7**	**Agree**

N= 145

Results in table 2 above revealed that item 6 has 2.2 which is below the cutoff point, while items 7 to 10 have the mean scores of 2.9, 3.0, 2.8 and 2.8 respectively and they are all above the cut-off mean. This revealed that majority of the respondents agreed that project-based learning and student creativity can enhance students' academic achievement in Isiala Ngwa North Local Government Area of Abia state.

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Research Question 3: What are the effective approaches for promoting academic achievement through project-based learning and creativity in Isiala Ngwa North Local Government area of Abia state?

Table 3: Respondents mean ratings on the effective approaches for promoting academic achievement through project-based learning and creativity in Isiala Ngwa North Local Government area of Abia state

S/N	Items Statements	∑fx	$\overline{X}$	Decision
11.	Create a positive learning environment	787	2.8	Agree
12.	Connect learning to real-world problems that are relevant to students' lives.	643	2.3	Agree
13.	Give students open-ended tasks that allow for creativity and problem-solving	835	3.0	Agree
14.	Provide guidance and support	705	2.9	Agree
15.	Encourage collaboration and teamwork among students	717	2.6	Agree
	Grand Mean		**2.7**	**Agree**

N= 145

Data in table 3 above showed that 12 has mean score of 2.3 which is below the cut-off point, while items 11,13,14, and 15 have the mean scores of 2.8, 3.0, 2.9 and 2.6 respectively and they are all above the cut-off mean. From the above data presented, it indicated that majority of the respondents agreed on the effective approaches for promoting academic achievement through project-based learning and creativity in Isiala Ngwa North Local Government area of Abia state.

Discussion of Findings

Data in table 1 indicated that the respondents agreed that project-based learning and student creativity impact students' academic achievement in Isiala Ngwa North LGA in different ways such as encourages active learning, helps students develops critical thinking skills, enhances collaboration skills, and fosters creativity and innovation. Thomas (2020) supported this by stating that students' academic achievement can be positively impacted through project-based learning and student creativity.

The result in table 2 also showed that the respondents agreed that project-based learning and student creativity enhance students' academic achievement in Isiala Ngwa North LGA in many ways. This includes promoting interclass learning, developing communication skills, increasing retention and transfer of knowledge and providing opportunities for feedback and reflection. Kim and Song (2019) backed this idea when they noted that project-based learning and student creativity are two relevant approaches that help the growth of students' academic achievement.

Data in table 3 revealed that the respondents agreed that the effective approaches for promoting academic achievement through project-based learning and creativity in Isiala Ngwa North LGA include to create a positive learning environment, connect learning to real-world problems that are relevant to students' lives, give students open-ended tasks that allow for creativity and problem-solving, and provide guidance and support. This is in line with opinions of Runco and Jaeger (2022) who asserted that there are numerous effective approaches when it comes to preparing students for the future; however, lack of knowledge of these approaches and how they can be utilized in teaching students are the major cause of their poor academic achievements.

Conclusion

The findings of the study revealed that project-based learning has a positive impact on academic achievement among secondary school students in Isiala Ngwa South LGA of Abia state. It also showed that student creativity plays a significant role in academic achievement, as students who are more creative tend to perform better academically.

The study identified some challenges and opportunities of implementing project-based learning in secondary schools in Isiala Ngwa South LGA of Abia state, including a lack of resources, inadequate teacher training and limited access to technology. However, it also highlighted the potential benefits of project-based learning, such as improved critical thinking and problem-solving skills, increased student engagement and enhanced collaboration among students.

The study concluded that project-based learning and student creativity have a positive impact on academic achievement. PBL can help students develop a range of skills, including problem-solving, critical thinking, collaboration, communication and creativity that are important for success in college and career.

Recommendations

1. Policymakers should introduce PBL as a teaching method in schools within Isiala Ngwa South Local Government Area and Nigeria as a whole, and provide training to teachers on how to effectively implement PBL in the classroom. This would go a long way to enhance

academic achievement and develop 21st-century skills among students.

2. School administrators should create an environment that encourages and nurtures creativity among students. This can include incorporating activities that stimulate creativity, such as art, music, drama and hands-on projects. There is also a great need to continuously assess students' academic achievement through exams, quizzes and other forms of assessment to measure the impact of PBL and creativity on their learning outcomes.
3. Schools should involve the local community in PBL projects by seeking input from community members, inviting guest speakers or organizing field trips. This would help students to see the real-world impact of their work.
4. Students' achievements in PBL projects should be celebrated through exhibitions, presentations or awards ceremonies. This would go a long way to recognize their hard work and encourage continued engagement.

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