

Impact of Productive Pedagogy Approaches on Academic Performance in Shanghai, China: Moderating Effect of Socioeconomic Status

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Abstract: This study examines the relationship between Productive Pedagogy Approaches and academic performance and the moderating role of socioeconomic status (SES) among elementary school students in Shanghai, China. Specifically, the study focuses on five variables related to Productive Pedagogy Approaches: collaborative learning, inquiry-based learning, differentiated instruction, active learning and technology integration. The study uses a mixed-methods research design and collects data from elementary school teachers in Shanghai, China, through surveys and interviews. The data are analyzed using descriptive and inferential statistics to identify the most effective Productive Pedagogy Approaches and to examine the relationship between these approaches, academic performance and SES. The findings of this study could provide insights into how educators can design effective pedagogical approaches to improve academic outcomes and reduce achievement gaps between students from different socioeconomic backgrounds.

Keywords: Productive Pedagogy Approaches; Elementary school students; China

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1. Introduction

1.1. Study objective

This study aims to investigate the relationship between Productive Pedagogy Approaches and academic performance among elementary school students in Shanghai, China and outcomes among elementary school students. To comprehensively analyze and understand these dynamics, careful consideration has been given to selecting a theoretical framework that best aligns with the research focus. After careful deliberation, Constructivism Theory has been chosen as the preferred theoretical lens for this study^[1]. This study will compare Constructivism Theory to explore the moderating role of SES in this relationship. Specifically, the study will examine five variables related to the Productive Pedagogy Approaches: collaborative learning, inquiry-based learning, differentiated instruction, active learning and technology integration. The findings of this study could provide insights into how educators can design effective pedagogical approaches to improve

academic outcomes and reduce achievement gaps between students from different socioeconomic backgrounds.

1.2. Problem statement and research questions

This study examines the effectiveness of Productive Pedagogy Approaches in promoting academic performance in elementary school mathematics classrooms in China. The research questions aim to investigate the Productive Pedagogy Approaches used in elementary school mathematics classrooms in Shanghai, China, the relationship between these approaches and academic performance in mathematics, and the moderating effect of socioeconomic status on this relationship ^[2]. The study concludes by discussing the significance and scope of the study, highlighting the importance of identifying effective strategies for promoting academic achievement in mathematics among elementary school students in Shanghai, China and understanding the factors that influence academic performance, particularly in relation to Productive Pedagogy Approaches and socioeconomic status.

2. Literature review

2.1. Theory selection

This research study aims to investigate the complex dynamics of social inequalities and education with other prominent theories, namely Social Reproduction Theory and Social Cognitive Theory, to highlight the reason why Constructivism Theory is the best fit for this research.

2.2. Conceptual framework

The conceptual framework for this study is based on the theoretical framework of productive pedagogies, which includes Collaborative Learning, Inquiry-Based Instruction, Problem-Based Learning, The Flipped Classroom and Differentiated Instruction. The study also considers the influence of socioeconomic status as a moderating variable on the relationship between the Productive Pedagogy Approaches and academic performance.

2.3. Moderating effect of socioeconomic status

Socioeconomic status (SES) refers to an individual's or family's position within a social hierarchy based on various factors such as income, education, occupation and social status ^[3]. It is a measure of an individual's access to resources and opportunities, and it can significantly impact one's quality of life, health, and well-being. SES is often used in research to examine the relationship between social factors and outcomes such as academic achievement, health outcomes, and economic success.

3. Research methodology

3.1. Research design

The research design of this study employs a qualitative method, specifically interviews, to explore the relationship between the Productive Pedagogy Approaches and academic performance with the moderating effect of socioeconomic status among elementary school students in Shanghai, China. Qualitative research is an appropriate approach for this study because it allows for an in-depth exploration of the participants' experiences and perspectives, and the use of interviews enables the researcher to gather rich and detailed data directly from the participants themselves.

The study will use purposive sampling to select participants who meet the inclusion criteria. Inclusion criteria include elementary school students in Shanghai, China, who have experience with the Productive Pedagogy Approaches and whose parents or guardians are willing to participate in the study. The sample will be

selected based on SES, with an equal number of participants from low, middle and high SES backgrounds.

Data will be collected through semi-structured interviews with the participants and their parents or guardians. The interview questions will be developed based on the research questions. They will explore the participants' experiences with the Productive Pedagogy Approaches, their academic performance and the influence of SES on the relationship between the two. The interviews will be audio-recorded and transcribed for analysis. Data analysis will be conducted using a thematic analysis approach. The researcher will analyze the data by identifying patterns, themes and categories from the participants' responses. The analysis will be guided by the research questions and the theoretical framework of the study ^[4].

3.2. Population and sample

In order to gather data for the study, this research will involve interviewing and observing elementary school mathematics teachers in Shanghai, China. These teachers will serve as the primary source of information regarding their practices, experiences and perspectives on using the Productive Pedagogy Approaches in mathematics education. By directly engaging with teachers, valuable insights can be gained into their instructional methods, classroom dynamics and the challenges they face in promoting academic achievement in mathematics.

3.3. Unit of analysis

The unit of analysis in a research study refers to the individual, group or entity that is the focus of the research investigation. In this study, the unit of analysis is elementary school students in Shanghai, China. The study seeks to examine the relationship between productive pedagogy approaches and academic performance with the moderating effect of socioeconomic status on this relationship ^[5].

3.4. Research technique

The research technique used in this study is semi-structured interviews. Semi-structured interviews involve a set of pre-determined questions that are open-ended and flexible, allowing the interviewee to expand on their answers and share their experiences in greater detail.

4. Results and findings

4.1. Results

The analysis is presented that synthesizes the empirical data collected during a study conducted in Shanghai. The study aimed to investigate the influence of different pedagogical approaches on elementary school student's academic performance while also considering the potential moderating effects of socioeconomic status. This part comprehensively analyzes the results obtained from descriptive statistics, reliability tests, validity assessments and the interrelationships among the variables investigated ^[6]. This part begins by providing a comprehensive explanation of the statistical measures used to assess the effectiveness of different teaching methods. Descriptive statistics offer a fundamental comprehension of the distribution of data and its central tendencies, thus establishing a framework for more intricate inferential analysis. This section is of utmost importance as it lays the foundation for understanding the key attributes of the sample population and the preliminary findings pertaining to academic achievement among various socioeconomic status categories.

Following this, the chapter explores the validity and reliability tests carried out to ensure the integrity and consistency of the instruments utilized in the study. The assessments of construct validity, convergent validity and discriminant validity are presented to showcase the strength and reliability of the measures in accurately

capturing the intended constructs. The reliability of the constructs is further validated through a range of statistical methods, which guarantee the replicability and accuracy of the results. This part comprehensively examines the connections between pedagogical approaches and academic performance, emphasizing noteworthy interactions with socioeconomic status ^[7]. This encompasses the investigation of how various socioeconomic status levels may potentially influence the impact of instructional approaches, such as collaborative learning, inquiry-based instruction and differentiated instruction, on students' academic achievements. The findings of the study are thoroughly examined in light of the initial hypotheses, providing a comprehensive analysis of whether each hypothesis was corroborated or disproven based on the statistical data.

4.2. Findings

In the final section of the chapter, a thorough summary of the findings is presented, effectively incorporating them into the wider scope of educational research and practice. The implications of these findings for educational policy and classroom practices, particularly in diverse socioeconomic settings, are carefully considered. The discourse additionally highlights potential constraints of the study and proposes avenues for future investigation, underscoring the imperative for continuous exploration of efficacious pedagogical approaches in diverse socioeconomic contexts ^[8].

5. Conclusion and implications

5.1. Theoretical implications

The study's theoretical implications are examined, specifically focusing on constructivism, social cognitive and social reproduction theories. This provides a comprehensive comprehension of how these frameworks form the foundation of the investigation into pedagogical practices and their impact on academic achievement in Shanghai, China ^[9]. The theories presented offer a comprehensive analysis of education dynamics, inequality and learning processes. They provide valuable insights into the intricate interactions within the educational system.

5.2. Managerial implications

The managerial implications of this study advocate for a holistic approach to adopting Productive Pedagogical Approaches in Shanghai's elementary schools. By aligning resource allocation, curriculum development, teacher training, and educational policies with the needs and realities of contemporary education, Shanghai can continue to enhance its educational system, making it more inclusive, engaging and effective.

5.3. Pedagogy implications

The pedagogical implications highlight the importance of an educational paradigm shift towards interactive and student-centered learning environments that consider students' specific contexts and requirements. These modifications should be backed by corresponding adaptations in teacher training, curriculum design and resource allocation, guaranteeing that the teaching techniques not only accommodate but also actively utilize all students' varied capabilities and backgrounds. Implementing these strategies proficiently can result in a more comprehensive, captivating and efficient learning environment that equips students with the intricacies of the contemporary world.

5.4. Limitations of the study

The research is limited to elementary schools in Shanghai, a distinctive urban setting characterized by

its distinct educational policies, cultural contexts and socioeconomic dynamics ^[10]. Consequently, the generalizability of the findings to other regions of China or countries with distinct educational systems and cultural values may be limited. This limitation is of utmost importance for stakeholders and educators beyond the confines of Shanghai, as the particular pedagogical methods examined may produce varying outcomes in diverse educational settings.

5.5. Recommendations for future studies

Based on the findings of this research, there are several suggestions for future studies that aim to further develop the comprehension and implementation of Productive Pedagogy Approaches in various educational environments, with a specific focus on Shanghai, China. Future studies should be conducted to broaden the demographic and geographic scope of the study. By broadening the scope of this investigation to encompass educational institutions beyond elementary schools in Shanghai and incorporating diverse educational levels and geographical regions within China or even internationally, a more all-encompassing comprehension of the suitability and efficacy of various pedagogical approaches could be attained. Expanding the scope of the research would contribute to assessing the generalizability of the results and enable the customization of educational strategies to accommodate diverse cultural or socioeconomic backgrounds.

Disclosure statement

The authors declare no conflict of interest.

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