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STAKEHOLDER'S PERSPECTIVE ON LEARNERS' MATHEMATICAL CREATIVITY IN PROBLEM SOLVING: BASES FOR POLICY RECOMMENDATION

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ABSTRACT

This descriptive-qualitative study examined stakeholders' perspectives on learners' mathematical creativity in problem-solving. Using purposive sampling, data were gathered through interviews with thematic analysis identifying key patterns to guide policy recommendations. The study revealed five key factors influencing learners' mathematical creativity: perceived difficulty of mathematics, reliance on single-solution approaches, limited parental support, rigid curricular time constraints, and the need for targeted policy interventions. In response, a policy intervention program is proposed to enhance learners' conceptual understanding, improve instructional approaches, foster classroom engagement, strengthen parental and institutional collaboration, and integrate varied assessment strategies.

Keywords: *mathematical creativity, problem-solving, stakeholders' perspectives, descriptive qualitative research, educational policy*

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INTRODUCTION

Mathematics serves as a cornerstone of modern education, functioning as a foundational discipline that cultivates critical thinking, problem-solving, and creative reasoning. In recent years, mathematical creativity has gained increasing recognition as a vital learning outcome across all educational tiers, from basic education through senior high school. Broadly defined, mathematical creativity transcends rote memorization and standard procedures. It encompasses originality, flexibility, and insight in both problem-solving and problem-posing, involving the generation of novel, contextually appropriate ideas and approaches within a mathematical framework (Sipahi & Bahar, 2025).

The development of mathematical creativity is supported by several robust theoretical frameworks. Cognitive theories emphasize divergent thinking—specifically fluency, flexibility, and originality—to generate multiple solution pathways. Constructivist theories assert that students build mathematical knowledge through active investigation and introspection, where task interaction naturally fosters creative engagement. Sociocultural theories highlight the role of social interaction, classroom discourse, and collaboration in shaping how creative thinking is nurtured and valued in an educational setting. Together, these frameworks illustrate that mathematical creativity is a product of instructional design, the social context of the learning environment, and individual cognitive processes (Sipahi & Bahar, 2025).

Translating these theoretical insights into practice depends heavily on the mathematics curriculum. Globally, curricula strive to balance conceptual understanding and procedural skills with higher-order thinking and inquiry-based reasoning (OECD, 2020; TIMSS & PIRLS, 2019).

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In the Philippines, the K–12 Basic Education Curriculum explicitly aims to equip students with 21st-century skills, including mathematical literacy and critical thinking (DepEd, 2023).

Despite these objectives, a significant gap remains between curricular intent and classroom reality. Studies suggest that students frequently perceive mathematics as a daunting subject, and discrepancies often arise between official goals and actual instructional strategies, particularly in senior high school, where foundational knowledge gaps often clash with the expectations of higher-order problem-solving (Ignacio, 2025).

The growth of mathematical creativity is a collective endeavor involving teachers, learners, and parents. As primary facilitators, teachers' pedagogical preparedness and beliefs significantly influence how creativity is encouraged. While many teachers' value inquiry-based approaches, challenges remain regarding assessment literacy and the integration of formative practices (Vigule et al., 2025). Simultaneously, learners' motivation, self-confidence, and perception of the subject dictate their openness to creative risk-taking. Furthermore, parental support provides essential moral guidance and encouragement at home; however, this support is sometimes hindered by knowledge gaps regarding modern mathematical approaches (McFeetors, McGarvey, & Palfy, 2020).

Fostering mathematical creativity requires a deliberate alignment of theoretical foundations, curriculum design, and stakeholder engagement. A comprehensive approach—integrating cognitive, constructivist, and sociocultural perspectives—provides a robust framework for understanding how students acquire creative competencies.

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These insights underscore the necessity for continued research into how curricula can better support creativity and how stakeholders can more effectively bridge the gap between educational policy and classroom practice.

MATERIALS AND METHODS

Research Methodology

This chapter describes the methodology employed in this study to examine stakeholders' perspectives on learners' mathematical creativity in problem-solving to offer evidence-based policy recommendations. Participants, data collection techniques, data analysis plans, research tools, research design, and ethical issues are all covered. To provide evidence-based policy recommendations, this chapter outlines the methodology used in this study to investigate stakeholders' perspectives on learners' mathematical creativity in problem-solving. It describes the participants, data collection methods, data analysis strategies, research instruments, research design, and ethical considerations.

Research Method

The research method used in the study was descriptive-qualitative using in-depth interviews. The interviewer and the participants were engaged in a one-on-one setting to elicit thoughtful responses. The interviewer asked few questions about the parents' motivational practices and teachers 'reaching strategies in the implementation of inclusive educations for policy recommendation. The aim was to get their views and experiences through their response to the questions.

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Research Design

This study employed a qualitative research design with a descriptive-qualitative approach, aiming to explore the perspectives of key stakeholders— teachers, parents, and learners—regarding learners' mathematical creativity in problem-solving. The qualitative approach was chosen because it allows for an in-depth understanding of participants' experiences, beliefs, and insights, which are critical in formulating evidence-based policy recommendations.

Participants with significant experience and involvement in the learners' mathematics education were chosen using a purposive sampling technique. With 15 participants—5 teachers, 5 parents, and 5 learners—all the major stakeholder groups involved in mathematics education were represented. Their willingness to provide rich, in-depth answers pertinent to the study's goals and their direct involvement in mathematics instruction, support, or learning served as the selection criteria.

Semi-structured interviews were used to gather data, giving participants the chance to share their opinions in their own words while the researcher could ask for clarifications and elaborations. Key elements of mathematical creativity, problem-solving techniques, obstacles to encouraging creativity, and recommendations for bettering practice and policy were all included in the interview protocols.

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This study's research design offers a thorough framework for comprehending how stakeholders view mathematical creativity, producing insights that can guide evidence-based policy recommendations to improve students' problem-solving abilities.

Participants of the Study

The study's participants comprised key stakeholders who exerted a direct and meaningful impact on the mathematical development of learners. These five teachers, each in charge of instructing roughly five average-performing learners at the lower educational level, were included to offer insights into teaching methods and classroom strategies. To comprehend how parental involvement and instruction affect creativity, the study also concentrated on five learners who represented typical class performance. The parents of these learners also took part to discuss the resources, support, and encouragement they offer to encourage their kids' creative engagement with mathematics.

Sampling Design

A purposive sampling technique was employed to select participants who have substantial experience and engagement with learners' mathematics education. A total of 15 participants were involved in this study: 5 teachers, 5 parents, and 5 learners. This sampling ensured that the data collected reflected the perspectives of those most directly engaged in the learning process and could provide meaningful insights for policy recommendations.

Research Instrument

The main research tool for this study was a semi-structured interview guide to collect detailed information from stakeholders about learners' mathematical creativity in problem

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solving. While guaranteeing that all pertinent subjects related to the study variables are covered, the semi-structured format permits flexibility in examining participants' experiences.

The three main components of mathematical creativity—fluency, flexibility, and originality- served as the foundation for the interview guide. To capture the distinct viewpoints of each group of stakeholders—learners, teachers, and parents—separate but related sets of questions were prepared.

The tool concentrated on teachers' observations of learners' problem-solving techniques, teaching strategies, and difficulties in encouraging mathematical creativity. Every interview took place in a language that the participants find comfortable, such as English, Filipino or Kinaray-a.

To identify themes and develop policy recommendations pertaining to improving students' mathematical creativity in problem solving, this research tool was intended to extract rich, detailed, and contextual data.

Validity of the Research Instrument

The research instruments used in this study were validated by a panel of experts consisting of professionals in the fields of education, language teaching, and qualitative research. The panel reviewed the instruments to ensure clarity, relevance, and alignment with the study's objectives. Their feedback was incorporated to refine the tools, thereby enhancing the validity and reliability of the data collection process.

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Data Gathering Procedures

The instrument used to gather data was a research questionnaire. Permit was secured through letters from the office of the School Principal of Sta.Rita National High School during the School Year 2025-2026. Purposive sampling was used to choose participants based on how relevant they were to the study. Interviewing Depending on availability, interviews were done in person with the participants permission were recorded.

All the recorded interviews were noted and transcribed by the researcher or analysis.

Data Analyses

The study employed thematic analysis to extract significant patterns from the data. To maintain coherence with the study's conceptual framework, the themes were in line with the three main components of mathematical creativity.

The similarities and differences between the opinions of learners', teachers and parents regarding learner's' mathematical creativity were investigated through a comparative analysis. It sought to find recurring themes, gaps, and distinctive insights that can guide policy suggestions.

Braun and Clarke's (2006) six-phase framework was used to analyze the data.

The researcher first became acquainted with the data by taking notes and reading the transcripts several times. Second, to find significant units associated with mathematical creativity, pertinent data were methodically coded. Third, key themes like conceptual understanding, instructional practices, learner engagement, parental support, and assessment

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approaches emerged from the grouping of these codes into more general categories. Fourth, to make sure they were consistent and in line with the data, the themes were examined and improved. Fifth, each theme was given a name that accurately reflected its central idea. Ultimately, the themes were arranged into a logical story, which served as the foundation for the study's policy suggestions.

RESULTS AND DISCUSSIONS

The study investigated how teachers, parents, and administrators view mathematical creativity and how it affects learners' ability to solve problems creatively. Stakeholders see mathematical creativity as multifaceted, including originality, flexibility, and fluency; however, different groups have different interpretations, which results in inconsistent methods. Teachers use collaborative, inquiry-based, and open-ended teaching strategies, but they encounter obstacles like inflexible curricula, time constraints, and inadequate professional development. Although learners' self-assurance and active participation are essential, fear of making mistakes and a lack of support can stifle creative expression.

Schools frequently require programs and resources to effectively foster creativity, and parental and institutional support is essential, even though parents may lack guidance. Stakeholders are advocating for formative, authentic, and performance-based assessments that value process, originality, and innovation because traditional assessment methods that emphasize correctness limit creative potential. Overall, the results show that systemic support,

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learner engagement, teaching strategies, and stakeholder perceptions interact to foster mathematical creativity.

To develop policy recommendations, the study looked at stakeholders' perspectives on learners' mathematical creativity in problem solving, especially those of teachers, parents, and school administrators. The results showed that stakeholders generally define mathematical creativity as the capacity to generate several, adaptable, and unique solutions, with a focus on critical thinking and creativity that goes beyond right answers. Despite time and curriculum constraints, teachers emphasized the important role of instructional strategies like exploratory learning and open-ended tasks. To develop policy recommendations, the study looked at stakeholders' perspectives on learners' mathematical creativity in problem solving, especially those of teachers, parents, and school administrators. The results showed that stakeholders generally define mathematical creativity as the capacity to generate several, adaptable, and unique solutions, with a focus on critical thinking and creativity that goes beyond right answers. Despite time and curriculum constraints, teachers emphasized the important role of instructional strategies like exploratory learning and open-ended tasks.

CONCLUSION

To fully realize learners' mathematical creativity, a cohesive integration of policy and practice is required, demanding synergy between teachers, administrators, and parents. Educational policies must be transformed to include clear frameworks, robust opportunities for professional development, and adaptable evaluation procedures that equally value procedural competence and creative thinking. By effectively coordinating understanding,

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instruction, support, and assessment across all levels, educational systems can systematically foster innovative problem-solving and ensure the long-term creative development of every learner.

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