



MAKING SENSE TO CENTS: SENIOR HIGH STUDENTS' EXPERIENCES IN FINANCIAL LITERACY THROUGH APPLIED MATHEMATICS

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ABSTRACT

This study explored the lived experiences of rural senior high school learners regarding the integration of financial literacy lessons in Applied Mathematics in Paquibato District, Davao City. Specifically, it examined learners' experiences, the challenges they encountered, and the applicability of financial literacy lessons in their daily lives and future financial decisions. A qualitative phenomenological research design was employed involving ten purposively selected senior high school learners. Data were gathered through semi-structured interviews and analyzed using thematic analysis. The findings revealed that integrating financial literacy into mathematics enhanced learner engagement, confidence, and meaningful learning through contextualized lessons, practical activities, collaborative discussions, and relatable financial situations. Learners applied financial concepts to budgeting, savings, expense management, and family business activities. However, participants encountered challenges such as difficulties in understanding abstract financial concepts, low motivation during lecture-based instruction, socio-economic barriers, limited access to technology, and insufficient prior financial knowledge. Despite these challenges, the integration of financial literacy strengthened learners' financial discipline, goal-setting skills, self-efficacy, and future-oriented thinking. Based on the findings, the study recommends the use of contextualized, experiential, and learner-centered instructional approaches in teaching financial literacy through mathematics. It further recommends strengthening teacher preparation, providing localized instructional materials, encouraging parental and community involvement, and enhancing curriculum policies that support financial literacy integration in rural educational contexts.

KEYWORDS: *Financial Literacy, Applied Mathematics, rural learners*

I. INTRODUCTION

The Problem and its Setting

Financial literacy has become an essential competency in the modern world as individuals are increasingly expected to make informed financial decisions in relation to budgeting, saving, investing, and managing financial resources. In the context of education, financial literacy equips learners with the knowledge and skills necessary to address everyday financial challenges and achieve long-term economic stability. Despite its importance, many educational institutions, particularly those in rural communities, continue to face difficulties in providing meaningful and contextualized financial education to students. As a result, many learners remain inadequately prepared to apply financial concepts in real-life situations.

One promising strategy in addressing this concern is the integration of financial literacy into applied mathematics instruction. Applied mathematics provides learners with opportunities to connect mathematical concepts to authentic and practical experiences, including financial decision-making. Through contextualized learning activities, students are able to understand the relevance of mathematical principles in computing interests, budgeting, investments, and other financial transactions. Such integration not only strengthens students' mathematical competence but also develops their critical thinking, problem-solving, and decision-making skills.

Globally, financial literacy education remains a pressing educational concern. In Canada, financial literacy is often treated as a separate or optional learning component, causing many students to perceive it as disconnected from everyday life (Savard & Cavalcante, 2021). Similarly, several European countries continue to experience low levels of financial literacy, particularly in rural areas where communities encounter limited educational access, inadequate digital resources, and minimal financial support programs (Czech et al., 2024). In Vietnam, Nguyen and Vu (2023) emphasized that financial literacy programs are often ineffective because classroom instruction lacks contextualized and experiential approaches. These challenges reveal the importance of integrating practical and relevant financial experiences into mathematics instruction.

In the Philippines, the Department of Education has introduced policies promoting the integration of financial education into the K to 12 curriculum. DepEd Order No. 22, s. 2021 specifically encourages the infusion of financial concepts into subjects such as Mathematics and Araling Panlipunan. However, implementation remains inconsistent, particularly in rural schools where teachers often encounter insufficient training, lack of instructional resources, and limited contextualized learning materials.



In Sto. Domingo, Nueva Ecija, many senior high school learners primarily acquire financial knowledge from parents and peers rather than formal classroom instruction (Gabay et al., 2024). This dependence on informal learning sources often results in inconsistent and inaccurate understanding of financial concepts such as saving, budgeting, and investing.

In the Davao Region, particularly in geographically isolated rural barangays, schools continue to face difficulties in implementing effective financial literacy programs due to inadequate infrastructure, limited digital resources, and insufficient teacher preparation (Villaseñor, 2023).

These challenges highlight the need to explore more responsive and context-sensitive approaches in teaching financial literacy among rural senior high school learners. In particular, there remains a significant gap in understanding how applied mathematics may be utilized as a tool in improving financial literacy in marginalized rural communities. Existing studies largely focus on urban settings or generalized educational frameworks, resulting in limited literature that reflects the realities of rural learners.

This study examined the lived experiences of rural senior high school learners in Paquibato District, Davao City regarding the integration of financial literacy into applied mathematics instruction. Specifically, the study explored the challenges encountered by learners, the strategies employed in facilitating financial understanding, and the applicability of financial literacy lessons in students' daily lives and future decision-making. The findings of this study may contribute to the development of more contextualized instructional approaches, curriculum enhancement, and policy recommendations that promote financial literacy and socio-economic empowerment among rural learners.

Statement of the Problem

Specifically, the study offered answers to the following questions:

1. What are the lived experiences of rural senior high school learners regarding the integration of financial literacy concepts into applied mathematics instruction?
2. What challenges do students encounter in their learning experiences when financial literacy is integrated into mathematics lessons?
3. What insights do students provide regarding the applicability of these lessons to their daily lives and future financial decisions?

Objectives of the Study

This study investigated the lived experiences of rural senior high school learners in learning financial literacy integrated into the mathematics curriculum. Specifically, it:

1. Explored the lived experiences of rural senior high school learners regarding the integration of financial literacy concepts into Applied Mathematics instruction,
2. Identified the challenges encountered by learners in their learning experiences when financial literacy is integrated into mathematics lessons. how school principals cope with these challenges, and
3. Examined the insights of learners regarding the applicability of financial literacy lessons to their daily lives and future financial decision-making.

Furthermore, the study understood how learners respond to the challenges encountered in learning financial literacy, as well as the potential implications of these experiences for improving mathematics instruction and strengthening financial literacy integration in rural education settings.

II. METHODOLOGY

Research Design

This study employed a qualitative research design, specifically grounded in a phenomenological approach. Qualitative research was a type of research that explored and provided deeper insights into real-world problems (Tenny et al., 2022). The primary objective of this design was to explore and describe the lived experiences of rural senior high school learners as they encountered financial literacy concepts embedded within applied mathematics instruction. Through this approach, the study aimed to uncover how students in rural settings perceived, responded to, and made meaning from the integration of financial topics into their mathematics education.

The use of phenomenology allowed the researcher to gain in-depth insights into the students' personal and contextual interpretations of financial literacy, particularly as influenced by their socio-economic conditions, community practices, and educational environment. By focusing on students' narratives, this approach helped illuminate not only the instructional challenges and engagement patterns, but also the perceived relevance and application of financial knowledge in everyday life.

The procedure of the study involved identifying rural schools in the Davao Region where applied mathematics included financial literacy instruction. After obtaining formal permissions from the relevant educational authorities, the researcher coordinated with school principals and mathematics teachers to identify participants who met the criteria. One-on-one, semi structured interviews were conducted to collect qualitative data. Each interview was scheduled at a time convenient for the students and held in a quiet and private setting to ensure comfort and openness. Interviews were audio recorded (with consent) and transcribed for thematic analysis.



Participants

This study involved a total of 10 senior high school learners from Paquibato District, Davao City. The selection of 10 participants for this study aligns with the recommendations of Creswell and Poth (2018), who suggest that a sample size of 3 to 10 participants is sufficient for a phenomenological design, particularly when the sample is homogeneous and purposefully selected to provide deep insights into a shared experience. The participants were purposely selected individuals who were (1) currently or previously enrolled in the General Mathematics subject under the Senior High School curriculum in public schools within the district (2) who had no failing grades in General Mathematics, (3) had regular class attendance, possessed basic numeracy skills, (4) had exposure to mathematics topics related to financial literacy, (5) willing and able to articulate their learning experiences and (6) had direct or indirect involvement in basic personal or household financial decision-making. These learners represented a rural student population that faced limited access to structured financial education and were therefore well positioned to provide authentic insights into how financial literacy concepts were integrated into applied mathematics instruction.

Data Gathering Procedure

This research underwent a structured process to ensure systematic and ethical data collection. The researcher began by requesting formal permission from the Dean of the Graduate School, Dr. Nelia B. Aga, to conduct the study. Upon receiving approval, the researcher was endorsed to the Schools Division Superintendent of the Davao City Division to request authorization to carry out the study in selected senior high schools located in rural areas where applied mathematics instruction included financial literacy components. Once the division office granted approval, coordination with school principals and mathematics teachers followed to arrange interview schedules with student participants during their free periods or designated time slots to avoid disruption to their academic activities.

Upon final approval of the interview protocol, participants were selected through purposive sampling. This non-probability technique enabled the deliberate inclusion of students who met the study's inclusion criteria, such as being currently enrolled in or having previously taken applied mathematics subjects that integrated financial literacy topics like budgeting, saving, and interest computation. Prior to the actual interviews, an orientation session was held with the selected participants to explain the objectives of the study, their role as participants, the voluntary nature of their involvement, and the measures taken to ensure their confidentiality and well-being. Written informed consent was obtained from all participants before the interviews proceeded.

Data collection primarily involved semi-structured, one-on-one interviews guided by the validated interview protocol. Each interview lasted approximately 30 to 45 minutes and was conducted in a quiet, safe, and comfortable environment within the school premises. When necessary, virtual interviews were arranged through secure online platforms. With the participants' consent, the interviews were audio-recorded to ensure accuracy and completeness. The researcher also took field notes during each session to capture non-verbal cues and contextual observations. After the interviews, the recorded data were transcribed verbatim and prepared for analysis. This process allowed the researcher to identify recurring themes, gain deeper insight into the students' experiences, and draw meaningful conclusions about the role of applied mathematics in enhancing financial literacy among rural senior high school learners.

Data Analysis

The data gathered from the interviews were analyzed using thematic analysis, which provided a structured yet flexible framework for identifying, analyzing, and interpreting patterns of meaning within the participants' narratives (Ahmed et al., 2025). The analysis began with the familiarization phase, during which the researcher read and re-read the transcribed interviews to gain a comprehensive understanding of the learners' experiences. This step allowed the researcher to immerse in the data, note recurring ideas, language, and expressions, and develop preliminary impressions regarding how financial literacy was integrated into applied mathematics instruction.

Following this, initial coding was conducted by systematically highlighting significant statements or segments that were relevant to the research questions. These codes captured participants' insights, challenges, instructional strategies, and reflections on financial concepts, serving as the foundation for identifying patterns within the data.

After coding, similar codes were grouped together to generate broader themes, which represented overarching patterns in the participants' experiences. The themes were then carefully reviewed to ensure they were well-supported by the data, distinct from one another, and coherent in representing participants' experiences. Themes that were overlapping, redundant, or insufficiently evidenced were refined, merged, or discarded to maintain clarity and rigor.

Once refined, each theme was clearly defined and labeled, with representative quotes selected to illustrate and substantiate the findings. This process allowed the researcher to articulate the essence of each theme and explain its relevance to the study's objectives. Finally, the reporting phase involved constructing a detailed narrative that integrated the themes into a cohesive story of the students' experiences, challenges, and perspectives.

Throughout the analysis, the researcher practiced reflexivity, continuously reflecting on personal assumptions and potential biases to ensure an accurate and faithful interpretation of the participants' voices. This thematic analysis framework enabled the researcher to uncover nuanced insights into how rural senior high school learners perceived, engaged with, and applied financial literacy concepts through applied mathematics, highlighting both the opportunities and challenges encountered in the learning process.



III. RESULTS AND DISCUSSION

Lived Experiences of Rural Senior High School Learners in Financial Literacy Integration

The study identified four major themes that describe the lived experiences of rural senior high school learners regarding the integration of financial literacy into Applied Mathematics instruction: positive student engagement and confidence, teaching approaches and learning activities, the role of teachers in facilitating or hindering the learning experience, and contextual influences. These themes demonstrate how the integration of financial literacy makes mathematics more meaningful and relevant by connecting mathematical concepts to learners' daily lives, family experiences, and community realities.

Positive student engagement and confidence emerged as one of the most significant experiences shared by the participants. According to the learners, mathematics became more interesting and easier to understand when lessons focused on financial concepts such as budgeting, saving, and managing expenses. By relating mathematical concepts to real-life situations, learners reported reduced fear and anxiety toward mathematics and increased willingness to participate in classroom activities. They became more motivated to learn because they recognized the practical value of mathematics in addressing everyday financial concerns. These experiences suggest that financial literacy integration not only enhances learners' understanding of mathematical concepts but also strengthens their confidence, motivation, and overall engagement in the learning process.

The participants also highlighted the importance of teaching approaches and learning activities in shaping their learning experiences. Learners expressed a strong preference for instructional strategies that incorporate real-life examples, collaborative group activities, and experiential learning opportunities. These approaches enabled them to actively engage with financial and mathematical concepts rather than simply receiving information passively. Through group discussions, simulations, and practical applications, learners were able to connect classroom lessons to authentic situations involving budgeting, profit, loss, and financial decision-making. As a result, mathematical concepts that were once perceived as difficult and abstract became more understandable, relevant, and meaningful. These findings emphasize the value of interactive and learner-centered teaching strategies in promoting effective financial literacy education.

Another important theme that emerged was the role of teachers in facilitating or hindering the learning experience. Participants emphasized that teachers play a crucial role in helping learners understand and appreciate financial literacy concepts. Clear explanations, step-by-step guidance, and the use of contextualized examples were identified as essential factors that support learning. Learners reported that they felt more confident and capable of applying financial concepts when teachers provided adequate support and encouragement throughout the learning process. Conversely, unclear instruction and insufficient guidance often created confusion and limited learners' understanding. These experiences highlight the significant influence of teachers not only as providers of knowledge but also as facilitators who create supportive and meaningful learning environments.

Contextual influences also emerged as a major factor shaping learners' experiences with financial literacy integration. The findings revealed that learners' understanding of financial concepts is strongly influenced by family livelihood, community financial practices, and socio-economic conditions. Many participants related classroom discussions to their experiences with farming, small-scale businesses, and household budgeting. These real-life experiences served as valuable foundations for understanding financial literacy concepts. However, learners also encountered challenges, including limited instructional resources and difficulties in understanding financial terminology that was unfamiliar or not commonly used in their local dialect. To address these challenges, the use of locally relevant examples and familiar language helped make lessons more accessible and meaningful. These findings underscore the importance of context-sensitive instruction that acknowledges and responds to learners' socio-economic realities.

Overall, the lived experiences of rural senior high school learners indicate that financial literacy integration in Applied Mathematics becomes most effective when instruction is contextualized, interactive, and responsive to learners' lived realities. The connection between mathematical concepts and authentic financial experiences promotes greater engagement, reduces learning anxiety, and strengthens conceptual understanding. Furthermore, the findings emphasize the importance of learner-centered instructional strategies, effective teacher facilitation, and contextually relevant learning experiences in enhancing both mathematical learning and financial literacy among rural learners.

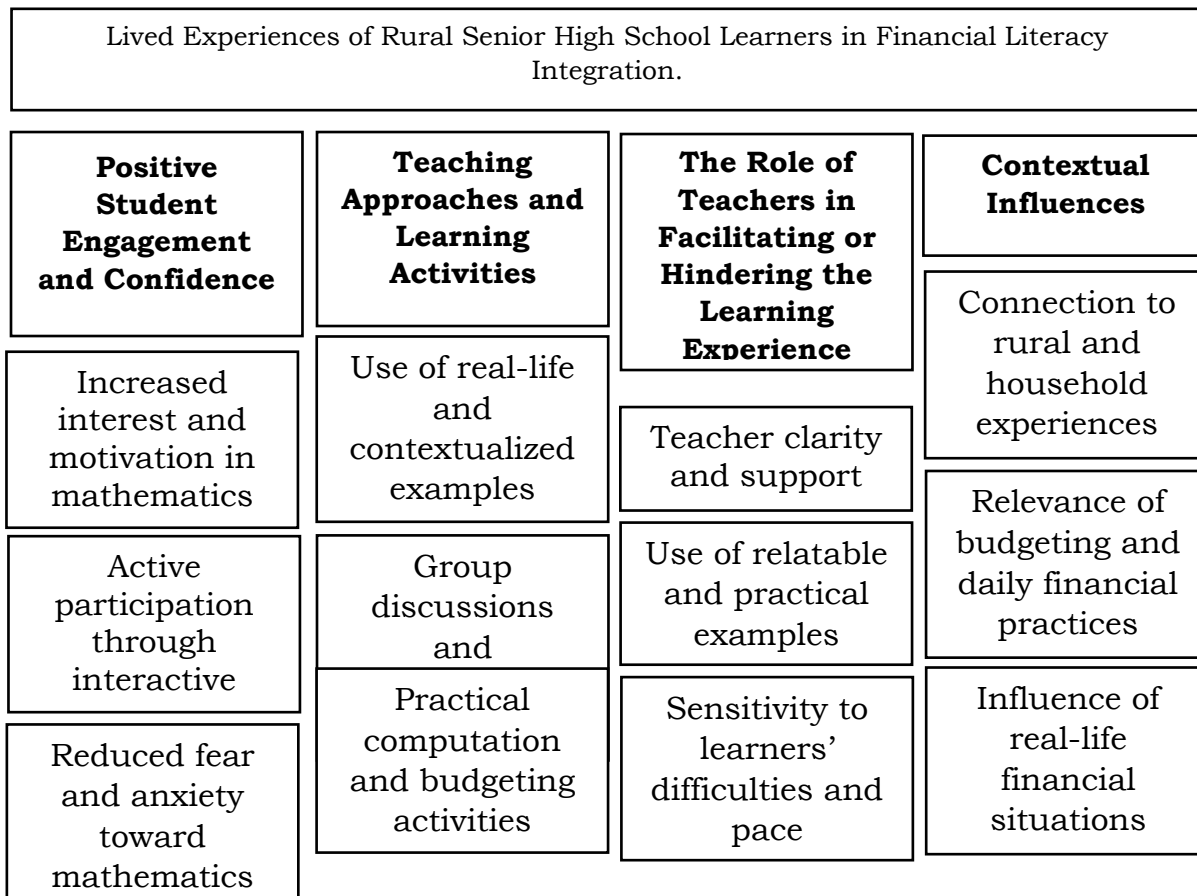


Figure 1. Lived Experiences of Rural Senior High School Learners in Financial Literacy Integration.

Challenges Encountered by Students in Learning Financial Literacy through Mathematics

The study identified four major challenges encountered by rural senior high school learners in learning financial literacy through Applied Mathematics: cognitive and conceptual difficulties, lack of motivation and engagement, socio-economic barriers, and limited prior financial knowledge. These challenges reflect the complex nature of learning financial concepts within mathematics, particularly among learners whose experiences are shaped by rural contexts, limited financial exposure, and varying socio-economic conditions. The findings suggest that learners encounter difficulties when financial literacy lessons are presented in abstract forms, lack contextual relevance, and are not adequately supported by appropriate instructional strategies.

Cognitive and conceptual difficulties emerged as one of the most significant challenges experienced by the participants. Learners reported struggling to understand unfamiliar financial concepts such as interest, loans, capital, profit, and expenses, particularly when these concepts were introduced without clear and relatable examples. The simultaneous demand of understanding mathematical procedures and financial terminology often resulted in confusion and cognitive overload. Moreover, the absence of real-life applications made it difficult for learners to appreciate the relevance of financial literacy concepts. These experiences indicate that abstract and computation-heavy instruction limits learners' ability to develop meaningful understanding and application of financial concepts in everyday situations.

Another challenge identified was the lack of motivation and engagement among learners. Participants revealed that they often lose interest in financial literacy lessons when they perceive the content as disconnected from their daily experiences and future needs. Lessons that rely heavily on lectures and theoretical discussions were viewed as less engaging, while interactive activities, simulations, and collaborative learning experiences were considered more meaningful and motivating. Learners also reported that low confidence in mathematics and difficulties in understanding financial concepts contributed to frustration, hesitation, and reduced classroom participation. These findings highlight the importance of contextualized and learner-centered instructional approaches in sustaining motivation and active engagement.

Socio-economic barriers also emerged as a significant challenge influencing learners' experiences with financial literacy integration. Many participants indicated that their understanding of financial concepts is shaped by the economic realities of their



families and communities. Limited access to financial resources, educational materials, and formal financial experiences restricted their opportunities to develop practical financial knowledge. Furthermore, some learners experienced difficulty understanding financial terminology due to language barriers and the limited use of locally familiar terms. These challenges demonstrate how socio-economic conditions and contextual realities influence learners' ability to engage with and apply financial literacy concepts effectively.

Limited prior financial knowledge was likewise identified as a major challenge among the participants. Many learners entered financial literacy lessons without sufficient background knowledge of basic concepts such as saving, banking, credit, and budgeting. As a result, they struggled to connect mathematical computations with real-world financial situations and frequently relied on teachers for clarification and guidance. The lack of early exposure to financial practices made it difficult for learners to independently interpret and apply financial concepts in problem-solving activities. Consequently, learners depended heavily on structured instruction, scaffolding, and teacher support to overcome gaps in understanding and develop financial literacy skills.

Overall, the challenges encountered by rural senior high school learners indicate that financial literacy integration in Applied Mathematics becomes difficult when learners are confronted with abstract concepts, limited financial experiences, socio-economic constraints, and insufficient foundational knowledge. These findings underscore the importance of contextualized instruction, experiential learning opportunities, scaffolded teaching approaches, and culturally responsive pedagogy in addressing learners' difficulties and enhancing the effectiveness of financial literacy education in rural settings.

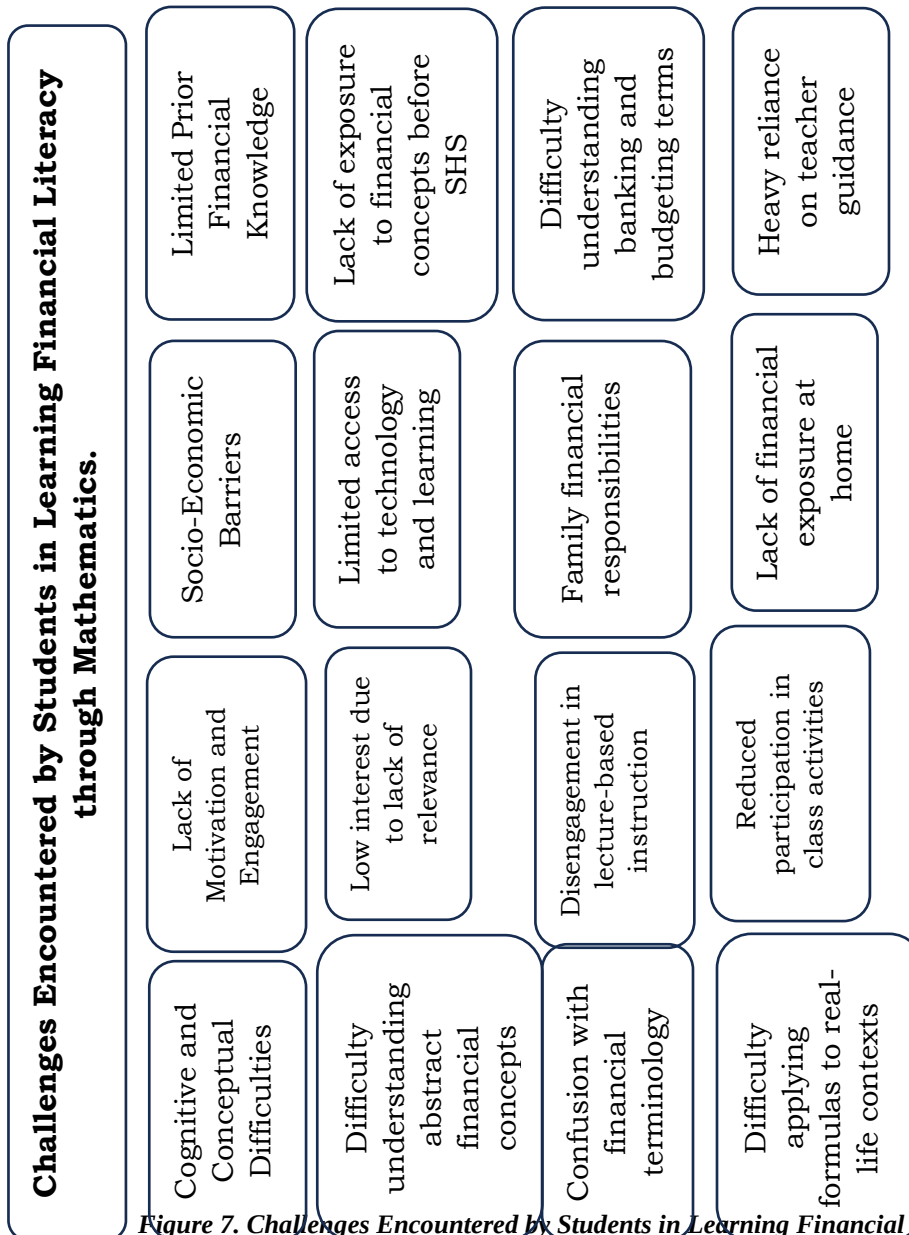


Figure 7. Challenges Encountered by Students in Learning Financial Literacy through Mathematics.



Applicability and Insights on Financial Literacy Lessons in Daily Life and Future Decisions

The study identified three major themes that describe the applicability and insights gained by rural senior high school learners from financial literacy lessons integrated into Applied Mathematics: real-life application of financial concepts, future financial preparedness, and goal setting. These themes demonstrate how learners connect mathematical and financial concepts to their daily experiences, family responsibilities, and future aspirations. The findings suggest that financial literacy integration enables learners to view mathematics as a practical tool for managing resources, making informed decisions, and preparing for future financial responsibilities.

The real-life application of financial concepts emerged as one of the most significant insights shared by the participants. Learners reported applying financial literacy lessons to household budgeting, allowance management, savings planning, and family business activities. Through lessons on budgeting, percentages, markup, profit, and cost computation, they developed a deeper understanding of how mathematics can be used to manage financial responsibilities in everyday life. Participants also highlighted how classroom simulations, budgeting exercises, and experiential projects allowed them to practice financial decision-making in realistic situations. These experiences helped learners recognize the practical value of mathematics and strengthened their ability to make responsible spending decisions, manage resources effectively, and contribute to family and community economic activities.

Another important theme that emerged was future financial preparedness. The participants emphasized that financial literacy lessons encouraged them to think beyond their present circumstances and prepare for future financial needs. Through activities involving savings plans, budgeting, financial planning, and goal-oriented projects, learners became more aware of the importance of preparing for higher education, family responsibilities, emergencies, and entrepreneurial opportunities. The integration of financial literacy also enhanced their long-term planning skills by encouraging them to set priorities, evaluate financial choices, and develop strategies for achieving future goals. As a result, learners viewed mathematics not merely as an academic subject but as a practical instrument for building financial stability, independence, and personal responsibility.

Goal setting likewise emerged as a significant theme in the learners' experiences. Participants described how financial literacy activities motivated them to establish savings habits, monitor their expenses, and set realistic financial goals related to education, personal development, and future careers. Through budgeting projects, financial plans, and savings activities, learners developed greater discipline in managing money and became more intentional in their spending decisions. These experiences also strengthened their confidence and sense of personal agency, as they recognized their ability to make informed financial decisions and work toward long-term aspirations. By connecting mathematical concepts to personal goals and future ambitions, financial literacy lessons transformed mathematics into a meaningful and empowering learning experience.

Overall, the applicability and insights gained from financial literacy integration demonstrate that learners are able to transfer mathematical and financial concepts beyond the classroom and into real-life situations. The findings indicate that contextualized and experiential financial literacy instruction promotes responsible financial behavior, strengthens future-oriented thinking, and encourages goal-directed decision-making.

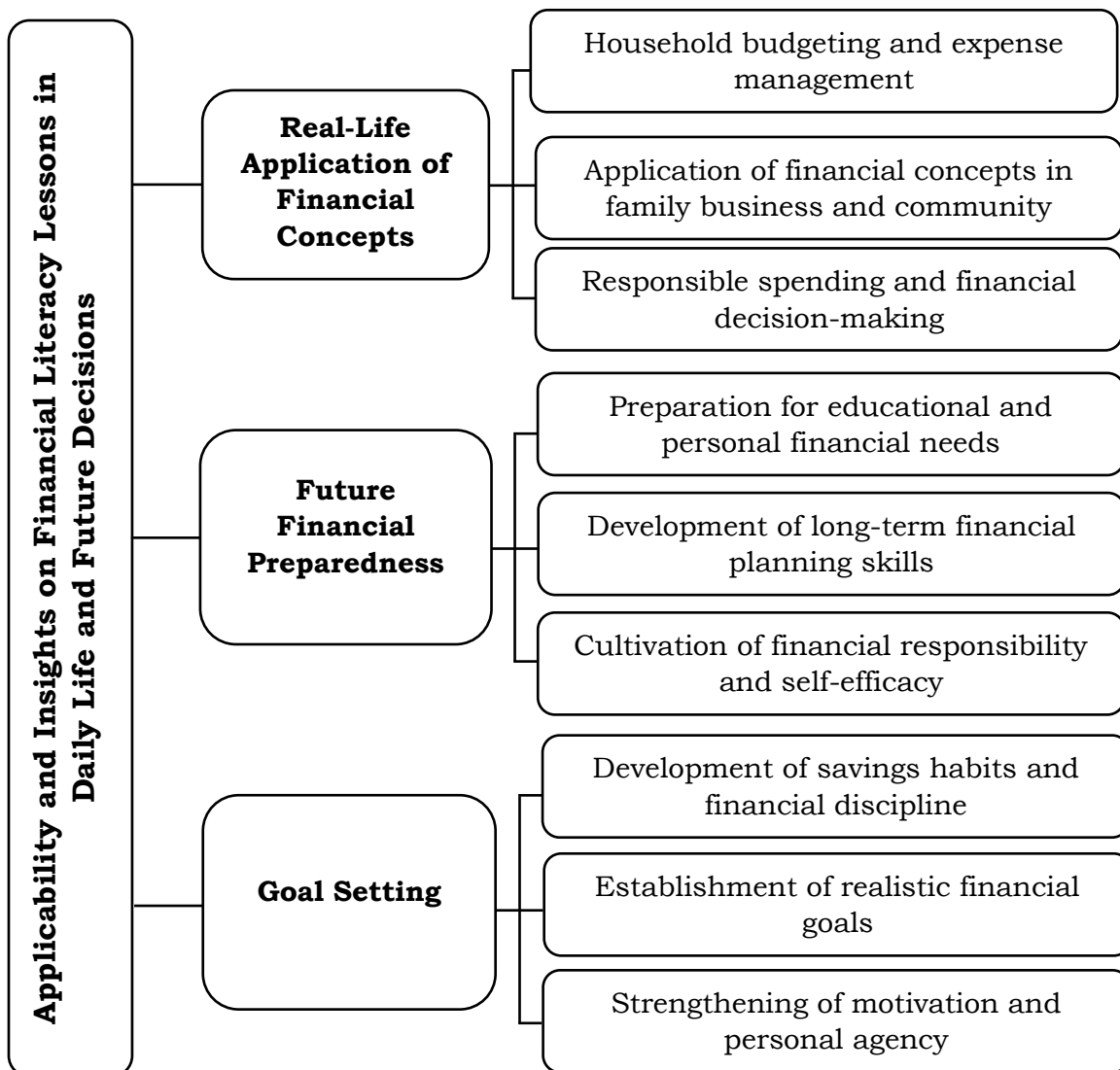


Figure 8. Applicability and Insights on Financial Literacy Lessons in Daily Life and Future Decisions.

IV. IMPLICATIONS AND RECOMMENDATIONS

Implications

The findings reveal significant insights into the benefits, difficulties, and transformative outcomes of incorporating financial literacy into mathematics education, particularly within rural learning contexts.

1.) The findings of the study indicate that integrating financial literacy into Applied Mathematics positively shaped the learning experiences of rural senior high school learners. Financial literacy lessons became more meaningful and engaging when connected to learners' real-life experiences, family responsibilities, and community contexts. Learners demonstrated increased interest, participation, and confidence in mathematics when lessons included contextualized examples, collaborative activities, and practical financial applications.

2.) However, the study also revealed that learners encountered significant challenges in understanding financial literacy concepts, particularly abstract financial terminologies and computations. Difficulties were further intensified by socio-economic constraints, limited exposure to financial systems, and inadequate access to technological resources. These findings highlight the importance of contextualized, learner-centered, and supportive teaching approaches that consider the realities of rural learners.



3.) Despite these challenges, the integration of financial literacy in mathematics fostered responsible financial behavior, goal-setting skills, and future-oriented thinking among learners. Students became more aware of budgeting, savings, financial planning, and decision-making processes that could support their educational, personal, and family goals. Overall, the study affirmed that financial literacy integration in mathematics serves not only as an academic enhancement but also as a transformative life skill that empowers rural learners to become financially responsible and future-ready individuals.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are offered:

1.) Mathematics teachers should employ contextualized, experiential, and learner-centered teaching strategies in integrating financial literacy lessons. Practical activities such as budgeting simulations, savings plans, business-related tasks, and collaborative problem-solving activities may strengthen learners' understanding and engagement in mathematics.

2.) Teachers should provide clear explanations, relatable examples, and scaffolded instruction when teaching complex financial concepts such as loans, interest, and inflation. Sensitivity to learners' pace and difficulties may help reduce anxiety and improve confidence in learning financial literacy concepts.

3.) Schools and educational leaders should support the integration of financial literacy in mathematics by providing localized instructional materials, technological resources, and professional development opportunities for teachers. Community-based and culturally relevant learning experiences should also be encouraged to align instruction with the realities of rural learners.

4.) Parents and community stakeholders should be encouraged to support learners' financial literacy development through practical financial discussions, budgeting practices, and exposure to responsible money management within the household and community.

5.) Curriculum developers and policymakers should strengthen the integration of financial literacy concepts in Applied Mathematics and related subjects to ensure that learners develop practical financial knowledge, responsible financial behavior, and long-term financial preparedness.

6.) Future researchers should conduct further studies on financial literacy integration in different educational contexts and explore instructional strategies that may improve learners' comprehension, engagement, and financial capability, particularly among rural and economically disadvantaged learners.

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