Journal of Research in Mathematics, Science, and Technology Education
ISSN 3047-5163 (online) & 3047-6933 (print)
April 2025, Vol. 2, No. 1, pp. 23–35

Research Article

Exploring Experiential Learning: Perceptions of Working Postgraduates in Rwanda's Weekend Mathematics Education Program

Onesme Niyibizi[1], **Marie Claudine Uwitatse**[1]

[1]Mathematics Education, College of Education, University of Rwanda, Rwanda

Abstract
This study aimed to explore the perceptions and lived experiences of postgraduate students in Rwanda who pursue a Master of Education in Mathematics Education while working full-time, focusing specifically on their engagement in weekend classes. The research sought to understand their motivations, challenges, and outcomes as they uphold the dual responsibilities of professional and academic commitments. Employing a qualitative, phenomenological approach, the study collected data through in-depth interviews with ten postgraduate students. Thematic analysis was used to reveal frequent themes and patterns within their narratives, providing the understanding of their experiences. Findings revealed a different range of motivations powerful these students, including aspirations for career advancement, a desire for personal development, and an interest in gaining specialized knowledge in mathematics education. However, the participants reported significant challenges, with time management and balancing weekend studies with full-time work being among the most prevalent. Despite these difficulties, the students revealed resilience, influencing support systems and intrinsic motivation to manage their commitments. The findings highlighted the unique pressures and demands of weekend postgraduate programs, particularly in balancing professional and personal responsibilities. This study contributes to the growing body of research on the experiences of working postgraduate students. It highlights the importance of made-to-measure program structures and support mechanisms to enhance learning outcomes and improve work-study balance. The insights gained from this research provide valuable implications for educational policymakers, program designers, and institutions offering weekend postgraduate programs, particularly in mathematics education, to better meet the needs of this unique student demographic.

Keywords: Mathematics Education, Postgraduate Student-Workers, Weekend Masters-Program

Correspondence
Onesme Niyibizi
niyibizionesme12@gmail.com

Received
November 8, 2024
Accepted
March 9, 2025
Published
April 7, 2025

Citation: Niyibizi, O., & Uwitatse, M. C. (2025). Exploring experiential learning: Perceptions of working postgraduates in Rwanda's weekend mathematics education program. *Journal of Research in Mathematics, Science, and Technology Education, 2*(1), 23–35.

DOI: 10.70232/jrmste.v2i1.23

1. INTRODUCTION

In spite of Rwanda's excellent progress in advancing education, particularly through initiatives like the Weekend Master of Education in Mathematics Education program, there remains a gap in research exploring the firsthand experiences of postgraduate students balancing work commitments with their pursuit of further education in this specialized field.

Experiential learning in mathematics education is a transformative pedagogical approach, breaking free from traditional classroom boundaries by prioritizing hands-on activities, real-world applications, and reflective practices to actively empower students in constructing a reflective understanding of mathematical concepts.

In the realm of mathematics education, experiential learning transforms students from passive receivers of information into active explorers, raising a thoughtful understanding of mathematical concepts through firsthand experiences and empowering them to apply theoretical knowledge with confidence and critical thinking across diverse contexts.

In the specific study at hand, the researchers employed a phenomenological research approach to investigate deeply into the firsthand experiences and perceptions of postgraduates within the mentioned program, aiming to reveal the essence of their encounters by exploring subjective viewpoints, feelings, and interpretations, utilizing open-ended interviews to identify common themes and patterns for a comprehensive understanding of the phenomenon under investigation.

In the context of this study, a phenomenological approach investigated into how working postgraduates perceive and make sense of their experiential learning in the Weekend Mathematics Education Program in Rwanda. By capturing the essence of their lived experiences, the research contributes valuable insights to the field of mathematics education and potentially informs improvements to the program based on the participants' perspectives.

Examining the perspectives of postgraduate student-workers in Rwanda is crucial, as it offers valuable insights into the program's effectiveness, the challenges they encounter, and the influence of their education on their professional roles, thereby addressing a literature gap and providing guidance for program enhancements and policies to enhance mathematics education in the country.

The problem addressed in this study is to understand and explore the perceptions of postgraduate students who are also working professionals regarding the Weekends Master of Education in Mathematics Education Program in Rwanda. The study ambitions to investigate the experiences, challenges, and motivations of these students as they pursue advanced education while simultaneously being engaged in their professional careers.

1.1. Literature Review

The comprehensive literature review establishes a foundational framework by critically assessing existing research, identifying gaps, and offering insights into postgraduate education and mathematics education, providing a crucial starting point for understanding the unique challenges and perspectives of student-workers in Rwanda regarding the Weekend Master of Education program in Mathematics Education.

1.1.1. Mathematics Education and Achievement in Postgraduate Programs

This literature review investigated the pivotal role of mathematics education in postgraduate programs, highlighting its profound impact on the academic success and professional development of individuals by examining current research trends, challenges, and best practices.

The pursuit of a Master of Education (M.Ed.) degree, particularly in specialized fields like mathematics education, has witnessed a growing trend in programs designed to accommodate working professionals, including weekend programs. Understanding the perception of postgraduate students who are working professionals in such weekend M.Ed. programs, and its potential impact on mathematics achievement, is a subject of scholarly interest (Khan, 2019).

Research on experiential learning in mathematics has demonstrated its positive impact on students' attitudes, motivation, and conceptual understanding (Chesimet et al., 2016). One key aspect of this approach involves integrating real-world problems and scenarios into the curriculum. For example, students may explore mathematical concepts through activities such as measuring the height of buildings, analyzing data from their own experiences, or solving practical problems in various fields. Experiential learning in mathematics has been associated with increased student engagement (Chesimet et al., 2016). Activities that involve real-world problem-solving or interactive simulations can make mathematical concepts more tangible and interesting. According to Chesimet et al. (2016) suggested that experiential learning can lead to a deeper understanding of mathematical concepts. When students actively engage with mathematical problems in real-life contexts, they may develop a more profound conceptual understanding.

Experiential learning often promotes the development of critical thinking and problem-solving skills (Mutmainah et al., 2019), students are encouraged to think creatively and apply mathematical principles to solve practical problems, fostering a deeper level of understanding. Incorporating experiential learning methods can contribute to more positive attitudes toward mathematics (Chesimet, Githua, & Ng'eno, 2016; Mutmainah, Rukayah, & Indriayu, 2019). Students may see the subject as relevant and applicable to their lives, reducing anxiety and increasing motivation. The effectiveness of experiential learning in mathematics may be influenced by teacher strategies, classroom environment, and the specific activities implemented. Teacher training and support are essential for successful implementation. Integrating technology, such as interactive simulations and educational games, in experiential learning activities can enhance the effectiveness of these approaches in mathematics education (Kebritchi, Hirumi, & Bai, 2016).

The theoretical foundation of experiential learning in mathematics often aligns with constructivist learning theories. Scholars argue that students actively construct their own knowledge through hands-on experiences and interactions with the environment (Kolb & Kolb, 2017). This perspective suggests that meaningful learning occurs when students can connect new information to their existing knowledge and experiences. Advancements in educational technology have further expanded the possibilities for experiential learning in mathematics. Virtual simulations, interactive software, and online platforms enable students to explore mathematical concepts in dynamic and engaging ways. Research indicates that the integration of technology in experiential learning can enhance students' problem-solving skills and provide opportunities for collaborative exploration (Kebritchi, Hirumi, & Bai, 2016).

The role of the teacher in facilitating experiential learning in mathematics is crucial. Educators need to design and implement activities that promote exploration, critical thinking, and reflection. Studies emphasize the importance of creating a supportive learning environment where students feel encouraged to take risks and learn from their experiences (Kebritchi, Hirumi, & Bai, 2016; Nzayisenga, Niyibizi, & Uworwabayeho, 2023). Pedagogical strategies such as inquiry-based learning, project-based learning, and collaborative problem-solving are commonly employed in experiential mathematics education (Tohara et al., 2021). Assessing experiential learning in mathematics goes beyond traditional exams and standardized tests. Researchers highlight the need for alternative assessment methods that capture students' problem-solving processes, creativity, and the application of mathematical concepts in real-world contexts (Chesimet et al., 2016; Kebritchi et al., 2016; Mutmainah et al., 2019; Tohara et al., 2021; Nzayisenga et al., 2023). Portfolios, presentations, and reflective papers are some examples of assessment tools aligned with experiential learning principles.

While the benefits of experiential learning in mathematics education are evident, challenges exist, including resource constraints, time limitations, and the need for professional development for educators. Future research should explore effective strategies for overcoming these challenges and further investigate the long-term impact of experiential learning on students' mathematical achievement and lifelong learning (Mutmainah et al., 2019). Experiential learning in mathematics education offers a promising approach to foster students' understanding, engagement, and application of mathematical concepts (Chesimet, Githua, & Ng'eno, 2016). The integration of real-world experiences, constructivist learning theories, technology, and thoughtful pedagogical strategies can contribute to a more meaningful and effective mathematics education (Niyibizi et al, 2023).

As educators continue to explore and refine experiential learning practices, the field stands to benefit from improved student outcomes and a deeper appreciation for the relevance of mathematics in everyday life. With the advancement of technology, researchers have explored the use of digital tools and simulations as a means of experiential learning in mathematics (Niyibizi et al., 2023; Nzayisenga et al., 2023; Niyibizi & Mutarutinya, 2023). Virtual manipulative and interactive software are examples of resources that aim to provide students with interactive and engaging mathematical experiences.

Phenomenology, rooted in philosophy, has gained prominence as a qualitative research approach in the field of education. This literature review ambitions to explore the key themes, methodologies, and contributions of phenomenological research in education. Phenomenology, as a philosophical framework, provides a unique lens for understanding and interpreting the lived experiences of individuals (Sohn et al., 2017). In the realm of education, scholars have adopted phenomenological approaches to delve into the subjective meanings and essence of educational phenomena. Phenomenological studies often focus on the lived experiences of students, teachers, and administrators. These studies aimed to uncover the subjective

realities and meanings individuals attribute to their educational encounters (Yüksel & Yıldırım, 2015; Eddles-Hirsch, 2015; Sohn, Thomas, Greenberg, & Pollio, 2017). Phenomenological research has provided valuable insights into the perceptions and experiences of both educators and learners (Sohn, Thomas, Greenberg, & Pollio, 2017; Niyibizi & Mutarutinya, 2023). This includes studies on teaching practices, classroom dynamics, and the teacher-student relationship.

Phenomenology delves into how individuals construct meaning in educational contexts (Eddles-Hirsch, 2015). This theme explores the cognitive and emotional dimensions of learning, shedding light on the complex processes of knowledge acquisition. Phenomenological research in education employs various methodologies, with scholars adapting and refining these approaches to suit the unique context of educational settings (Sohn et al., 2017). Interpretative Phenomenological Analysis (IPA) is widely utilized in exploring how individuals make sense of their experiences (Yüksel & Yıldırım, 2015; Sohn et al., 2017). This approach involves a rigorous process of data analysis to identify and extract significant themes related to the phenomenon under investigation. Phenomenological research in education has contributed significantly to understanding of the subjective dimensions of teaching and learning (Sohn et al., 2017). In short, phenomenological research in education offers a rich and insightful perspective on the intricate tapestry of educational phenomena. By centering on the lived experiences of individuals, this approach enhances our understanding of the human aspects of education, providing a foundation for meaningful pedagogical interventions.

Postgraduate education plays a crucial role in enhancing the knowledge and skills of professionals, particularly in the field of education (Kim, Lee, & Park, 2018; Khan, 2019; Brown & Jones, 2020). In Rwanda, the Weekend Master of Education in Mathematics Education Program has gained significance as it caters to the needs of working educators seeking advanced qualifications in mathematics education. This literature review examines the perceptions of postgraduate student-workers participating in this program, shedding light on the challenges and benefits they encounter.

The demand for postgraduate education in Rwanda has increased in recent years, largely driven by the need for highly qualified educators. Many working professionals, including teachers, are enrolling in postgraduate programs to advance their careers. This trend highlights the importance of exploring the experiences of students who balance work with education (Smith, 2019). Balancing work and education can be challenging, and it is important to understand how postgraduate student-workers perceive this balance. Studies have shown that work-study conflicts can impact the academic performance and overall satisfaction of postgraduate students (Kim, Lee, & Park, 2018). Investigating these challenges is crucial in the context of the Weekend Master of Education program.

There is a paucity of research examining the specific perceptions of postgraduate students who are concurrently working professionals in weekend M.Ed. programs (Smith, 2019). However, a study by Smith (2019) explored the perceptions of adult learners in part-time and weekend programs, shedding light on their motivations and challenges. The impact of mathematics education on the achievement of postgraduate students can be a crucial factor (Khan, 2019; Brown & Jones, 2020). The study by Brown and Jones (2020) delves into the relationship between the quality of mathematics education in postgraduate programs and students' overall academic achievement.

Rwanda's Weekend Master of Education in Mathematics Education Program offers a unique format for working professionals. Students perceive the program as an opportunity to enhance their qualifications while continuing to work**.** Research has shown that the convenience of weekend classes is a key factor in the program's attractiveness (Tohara et al., 2021)**.** Many postgraduate student-workers in the field of education pursue higher degrees to improve their career prospects and enhance their pedagogical skills. It is essential to examine the motivations and expectations of these students in the context of the mathematics education program.

Weekend M.Ed. programs aim to strike a balance between professional commitments and educational aspirations (Kim et al., 2018). The study by Kim et al. (2018) investigates the impact of weekend programs on work-life balance and their influence on students' perceptions. The success of postgraduate student-workers is often influenced by the support and challenges they encounter. Institutions offering the Weekend Master of Education in Mathematics Education Program need to address the unique needs of this student group, including the provision of academic support and the removal of obstacles (Chad, 2021).

Building meaningful relationships with peers and instructors can contribute to the overall experience of postgraduate student-workers. Studies have shown that these relationships are essential for motivation, academic achievement, and personal development (Karpouza & Emvalotis, 2019; Smith, 2019; Brown & Jones, 2020; Uwitatse et al., 2023). The perceptions of postgraduate student-workers in the Weekend Master of Education in Mathematics Education Program in Rwanda offer valuable insights into the challenges and benefits they encounter. Understanding their experiences is crucial for program improvement and ensuring that working professionals can access and benefit from postgraduate education in mathematics education.

The study, involving 726 speech-language pathology master's students, aimed to investigate the perceived preparedness and confidence of participants in working with Augmentative and Alternative Communication (AAC) users based on their educational experiences. The findings revealed statistically significant relationships, indicating that students with a diverse range of training experiences felt more prepared and confident to work with AAC users after graduation, underscoring the importance of varied clinical experiences in enhancing students' readiness for this specialized field (Barman et al., 2023).

In short, recognizing the pivotal role of mathematics in postgraduate education, addressing challenges such as diverse student backgrounds and varying levels of mathematical preparedness was crucial for optimizing the learning experience and enhancing overall achievement in research, data interpretation, and academic pursuits.

The literature review investigated into diverse teaching strategies for postgraduate mathematics education, incorporating technology, collaborative learning, and real-world applications to address mathematics anxiety, proposing interventions to cultivate a positive learning environment, while also emphasizing the significance of assessing mathematical proficiency through alternative evaluation methods and accommodating diverse learning styles for overall academic success.

Moreover, the imperative for additional research in the realm of weekend M.Ed. programs arises from the recognition that existing studies on adult learners, mathematics education, and work-life balance, while informative, may not comprehensively address the unique perspectives and challenges faced by postgraduate students enrolled in such specialized programs.

A specific research question guided the search for options: What are the nuanced perceptions and lived experiences of working postgraduates participating in Rwanda's Weekend Mathematics Education Program, and how do these experiences contribute to their understanding and engagement in experiential learning within the context of the program?

1.1.2. Theory Groundwork

In the context of academic pursuits, theory groundwork is the intellectual scaffolding upon which the edifice of knowledge is constructed, encompassing the systematic delineation of fundamental concepts, principles, and assumptions that not only define but also guide subsequent research, analysis, and application within a specific discipline, thus serving as an indispensable catalyst for the advancement of understanding and exploration within the field.

Social constructivism, rooted in the theories of scholars such as Vygotsky and Bruner, offers a valuable framework by asserting that knowledge is actively shaped through social interactions, underscoring the significance of collaborative learning experiences and cultural context in the construction of understanding.

In the context of this study, social constructivism served as the theoretical framework to examine how postgraduate students' perceptions of mathematics education were shaped through collaborative learning experiences on weekends, emphasizing the pivotal role of social interactions with peers, instructors, and the broader educational context in shaping their understanding.

In the context of Adult Learning Theory (Andragogy), Malcolm Knowles' emphasis on self-directed learning underscores the principle that adults, as self-directed learners, take responsibility for their own educational journey, incorporating their rich life experiences into the learning process, and are motivated when they perceive the immediate relevance of the content to their practical goals and real-life applications.

Additionally, adult learning theory, particularly relevant for postgraduate students balancing work and education, underlines the significance of cultivating a supportive and collaborative learning milieu

where facilitators act as guides, recognizing adults' preference for mutual respect and the sharing of experiences, ultimately emphasizing the learner-centered, real-world application approach to education that accommodates the unique characteristics and motivations of adult learners.

These two theories provided a framework to explore the cognitive and social factors influencing postgraduate students-workers' perceptions of the Master of Education in Mathematics Education program in Rwanda.

2. METHODS

The study employed a structured methodology to comprehensively explore the perceptions and experiences of postgraduate student-workers in a unique educational program, focusing on experiential learning within the context of a Weekend Mathematics Education Program in Rwanda, aiming to enhance participants' understanding of mathematical concepts and relevance to their professional settings.

Furthermore, in the context of the Weekend Mathematics Education Program for working postgraduates in Rwanda, embracing experiential learning not only adopts collaborative activities, networking, and the exchange of diverse perspectives among participants but also cultivates critical thinking and problem-solving skills, thereby enhancing the overall quality of education by making it practical, engaging, and directly applicable to their professional lives.

2.1. Research Approach

This study, adopting a phenomenological research approach, conducted in-depth interviews with postgraduate students in Rwanda's Weekend Mathematics Education Program, employing qualitative methods to comprehensively explore the lived experiences, challenges, and perceptions of working professionals, thereby gaining insights into the effectiveness of the program's experiential learning strategies and their contribution to postgraduates' professional development.

2.2. Sample and Sampling Technique

The study employed also purposeful sampling technique to select ten postgraduate students who were currently enrolled in the Master of Education in Mathematics Education program and were also working professionals. Understanding how working postgraduates perceive the program was crucial by exploring their motivations, expectations, and reflections on the learning process provided valuable insights into the program's impact.

2.3. Data Collection and Analysis

Through interviews and thematic analysis of transcripts, this study investigated into worker-students' perceptions, experiences, and challenges in mathematics education, employing a continuous comparative process to refine evolving themes and insights, ultimately contributing valuable information to the field and offering endorsements for enhancing experiential learning programs.

2.4. Ethical Considerations

The researchers attentively threatened ethical considerations by securing informed consent, maintaining participant confidentiality, and supporting the research's credibility through member checking and peer debriefing, thereby employing a qualitative methodology to involvedly delve into the experiential learning of postgraduates in Rwanda's Weekend Mathematics Education Program, enriching the address on effective teaching and learning strategies in mathematics education.

3. RESULTS AND DISCUSSION

This research provided a comprehensive exploration of the intricate interplay between education and employment by examining the perspectives and experiences of postgraduate student-workers navigating the challenges and advantages of a specialized weekend Master's program in Mathematics Education in Rwanda, contributing valuable insights to the broader understanding of the country's educational landscape.

3.1. Theme 1. Motivation for Weekend Programs

The study revealed that postgraduate students who are also working professionals in Rwanda were highly motivated to pursue weekend Master of Education programs in mathematics education. The convenience of weekend classes allows them to balance their work commitments and academic aspirations effectively. Someone noticed that,

> *"Weekend classes serve as a crucial lifeline for working professionals, offering the essential flexibility needed to seamlessly integrate higher education with full-time employment, enabling individuals to pursue both career advancement and academic aspirations without compromising either".*

The preference for weekend Master of Education programs among working professional postgraduate students in Rwanda is driven by the positive connection between their motivation and the convenience offered by weekend classes, allowing them to effectively balance work commitments and academic aspirations, reflecting a commitment to supporting lifelong learning and professional development while acknowledging the unique challenges faced by these individuals.

Moreover, the strong motivation observed in this study underscores the significance placed on education and skill development among the targeted postgraduate students in Rwanda, particularly evident through their commitment to weekend Master of Education programs in mathematics education, reflecting a strong aspiration for continuous learning and professional advancement in a flexible and accommodating educational format.

3.2. Theme 2. Positive Attitudes toward Weekend Programs

Postgraduate students who were also working professionals in Rwanda display positive attitudes toward weekend master's programs in mathematics education. They appreciate the flexibility these programs offer, allowing them to balance work, personal life, and education. One individual felt that,

> *"The flexibility of these programs has been a game-changer for me, effortlessly allowing me to balance work, family, and coursework, enabling me to attend classes, complete assignments, and cherish quality time with my loved ones".*

The study on postgraduate students in Rwanda highlighted the growing demand for flexible weekend master's programs in mathematics education, emphasizing the significance of accommodating the elaborate balance between professional responsibilities, personal commitments, and academic pursuits in the ever-demanding setting of higher education.

In the context of Rwanda's evolving economic and technological landscape, the rising demand for advanced skills in mathematics education is addressed through weekend master's programs, reflecting a strategic alignment with the country's growth aspirations, raising human capital development, and demonstrating the positive impact of flexible learning models on the socio-economic advancement of the region.

3.3. Theme 3. Flexibility and Work-Life Balance

Participants expressed a strong preference for weekend programs due to the flexibility it offers. This flexibility allows them to maintain a work-life balance, contributing positively to their overall well-being and job performance. Participants frequently highlighted the flexibility and convenience of weekend classes, allowing them to continue working while pursuing higher education in mathematics education. One person thought that,

> *"Weekend classes have revolutionized my mathematical education, providing both financial feasibility and a harmonious work-study equilibrium, allowing me to delve into the realms of mathematics during weekends while maintaining professional commitments on weekdays".*

The result suggested a distinct inclination among participants toward weekend programs in higher education mathematics, emphasizing the vital role of flexibility in balancing professional and personal commitments, ultimately promoting overall well-being and enhanced job performance.

Furthermore, increasing popularity of weekend classes in mathematics education underscores a prevailing preference for flexible learning options that seamlessly integrate with participants' work commitments, reflecting a broader societal shift towards prioritizing convenience and adaptability in education to enhance overall well-being and job performance.

3.4. Theme 4. Program Satisfaction

Overall, postgraduate students-workers reported high satisfaction with the weekend Master of Education programs in mathematics education. They valued the program's curriculum, faculty, and the opportunity to network with fellow educators and professionals. A single person was depressed about,

> *"Willingly embracing the weekend Master of Education program in mathematics education, I am delighted by its exceptional quality, convenient schedule, engaging coursework, expert and supportive professors, as well as the sense of camaraderie among fellow students, and it has exceeded my expectations, positively impacting my teaching passage".*

The result suggested that postgraduate students who were also working professionals express a high level of satisfaction with the weekend Master of Education programs in mathematics education. This satisfaction can be attributed to several key factors. Firstly, the curriculum of the program appears to meet the expectations and needs of the students. The content and structure of the courses seem to align well with the educational goals of the postgraduate students, likely contributing to their overall satisfaction. Secondly, the faculty members involved in delivering the program seems to play a crucial role in the positive experience reported by the students. Effective and engaging teaching methods, along with knowledgeable and supportive instructors, can greatly enhance the learning experience.

Furthermore, the opportunity for networking with fellow educators and professionals was highlighted as another key aspect of satisfaction. This suggests that the social and collaborative aspects of the program contribute to a positive and enriching experience for the students. Networking can be essential for professional growth, providing a platform for the exchange of ideas, experiences, and resources. In belief, the high satisfaction reported by postgraduate students in this Master of Education program reflects a combination of factors, including a well-designed curriculum, effective faculty members, and valuable networking opportunities. This positive feedback prefigures well for the program's reputation and its ability to meet the needs of working professionals seeking advanced education in mathematics education.

3.5. Theme 5. Enhanced Accessibility

The study reveals that weekend programs contribute to increased accessibility of higher education in mathematics education. Participants value the opportunity to pursue their master's degree without having to resign from their jobs. According to one member of the population,

> *"Weekend programs in mathematics education have not only enhanced my access to higher education and allowed me to delve into the captivating realm of mathematics but also empowered me to pursue my passion while juggling a part-time job and other commitments, showcasing the invaluable flexibility and accessibility these programs offer to students seeking knowledge and personal growth beyond the confines of traditional classrooms".*

The result suggested that weekend programs play a significant role in enhancing the accessibility of higher education, particularly in the field of mathematics education. This is attributed to the fact that participants find value in the flexibility offered by weekend programs, allowing them to pursue a master's degree without the need to resign from their jobs. This finding is noteworthy because it indicates that such programs cater to the needs of individuals who are already employed, making higher education more

accessible to a broader demographic. The flexibility of weekend programs accommodates the schedules of working professionals, enabling them to advance their education without sacrificing their careers.

This not only benefits the participants but also has broader implications for the field of mathematics education. By removing barriers related to work commitments, more individuals may be encouraged to pursue advanced degrees in mathematics. This could potentially contribute to a more skilled and knowledgeable workforce in the field, positively impacting the overall quality of mathematics education. In certainty, the study's result underscores the positive impact of weekend programs on accessibility to higher education in mathematics. It highlights the importance of flexibility in educational offerings to accommodate the diverse needs of individuals, ultimately raising a more inclusive and educated society.

3.6. Theme 6. Career Advancement and Motivation

Participants often mention that pursuing a Master's in Mathematics Education helps enhance their career prospects and motivates them to improve the quality of education in Rwanda. As a student put it,

> *"Pursuing a Master's in Mathematics Education has empowered me to actively contribute to enhancing the quality of education in Rwanda, enabling me to lead initiatives, design innovative curricula, and advocate for policies that elevate the standards of mathematics education, all driven by a commitment to catalyzing positive change within our educational system and fostering a future where every student can access a high-quality education".*

The mentioned result highlighted the positive impact of pursuing a Master's in Mathematics Education on participants, particularly in the context of Rwanda. Several key points can be inferred from this statement. Firstly, participants believe that obtaining a Master's in Mathematics Education has a direct influence on their career prospects. This suggests that the advanced knowledge and skills acquired during the program are seen as valuable assets in the professional landscape. Employers may view individuals with a specialized education in mathematics as more qualified and capable, opening up opportunities for career advancement.

Secondly, the result indicated that participants are motivated to improve the quality of education in Rwanda. This suggests a broader perspective on the role of education, where individuals see themselves as contributors to societal progress. By enhancing their expertise in mathematics education, these participants may be better equipped to contribute positively to the educational system, possibly by implementing innovative teaching methods, curriculum improvements, or other initiatives that raise the overall standard of education in the country. Moreover, pursuing a Master's in Mathematics Education in Rwanda appears to have dual benefits for participants. It not only enhances their individual career prospects but also instills a sense of responsibility and motivation to contribute to the improvement of education in the broader context of the country.

3.7. Theme 7. Challenges of Weekend Learning

Several challenges were identified, including time management, tiredness, and the need for robust support systems. Participants noted the importance of time management skills and understanding employers to successfully juggle work and academics. Some student-workers reported difficulties in managing their time effectively due to the demands of both work and education. Balancing weekend classes with full-time jobs can be challenging, affecting their overall well-being. Postgraduate students who work on weekends face a significant challenge in balancing their professional commitments with their academic pursuits. According to one student,

> *"Crossing the involving of academic responsibilities and work obligations as a full-time student-worker often feels like irresolute, where the constant struggle to meet deadlines and maintain a social life highlights the need for enhanced resources to facilitate effective time management and success in both spheres".*

The result highlighted a common struggle faced by student-workers, particularly those pursuing postgraduate studies while juggling weekend program. One key issue is the difficulty in managing time effectively, as the demands of both work and education can be overwhelming. Balancing weekend classes

with full-time employment poses a notable challenge, impacting not only academic performance but also the overall well-being of these individuals.

The situation becomes more complex for postgraduate students, as the demands of advanced academic pursuits often require substantial time and focus. When coupled with weekend work commitments, these students may find it challenging to strike a harmonious balance between their professional and academic lives. The consequences of this struggle extend beyond immediate academic concerns, affecting the holistic well-being of student-workers.

Potential solutions might involve flexible work arrangements, academic support services tailored for working students, or the development of time management skills. Recognizing and addressing these challenges is essential for creating an environment that supports the success and well-being of student-workers pursuing advanced degrees while managing work commitments.

3.8. Theme 8. Perceived Impact on Professional Growth

Participants believed that the program had a significant impact on their professional growth. They reported improved teaching skills, enhanced problem-solving abilities, and increased self-confidence in their roles as mathematics educators. A significant proportion of participants believe that their enrollment in the weekend master's program has positively impacted their career prospects and potential for advancement in the field of mathematics education. Some student-workers believe that this program positively impacts the quality of mathematics education in Rwanda, contributing to the development of the education system. Based on one of them,

> *"The program has been a transformative experience, significantly enriching my professional growth as a mathematics educator by improving my teaching skills, enhancing problem-solving abilities, and providing the knowledge and confidence essential for excelling in my role".*

The provided result suggests that participants in the weekend master's program perceived substantial benefits in their professional development as mathematics educators. The positive impact is evident in several key areas, including teaching skills, problem-solving abilities, and self-confidence. The reported improvement in teaching skills indicates that the program has effectively equipped participants with the knowledge and methodologies necessary to enhance their instructional capabilities. This is particularly crucial in the context of mathematics education, where pedagogical skills play a vital role in conveying complex concepts to students.

The mention of enhanced problem-solving abilities suggests that participants have gained valuable tools and strategies to address challenges within the realm of mathematics education. This skill is not only beneficial for personal development but is also likely to positively influence the learning experiences of their students. Increased self-confidence is a noteworthy outcome, as it implies that participants feel more assured and competent in their roles as mathematics educators. This progress in confidence can contribute to a more positive and effective teaching environment, ultimately benefiting both educators and students.

Furthermore, the acknowledgment that the program has positively impacted career prospects and potential for advancement is significant. It indicates that participants perceive tangible professional benefits, aligning the program with their long-term career goals in the field of mathematics education. This is crucial for attracting and retaining motivated and ambitious individuals within the educational sector. To briefly wrap up, the reported outcomes highlight the program's success in fostering professional growth among participants, influencing teaching skills, problem-solving abilities, and self-confidence. The positive impact on career prospects further underscores the program's effectiveness in preparing educators for advancements in the field of mathematics education.

3.9. Theme 9. Personal Growth

Participants often report personal growth in terms of critical thinking, problem-solving skills, and a deeper understanding of mathematics education principles. One pupil remarked as follows,

> *"As a student, my transformative journey with mathematics education has not only boosted my confidence in tackling real-life challenges through enhanced critical thinking and problem-solving abilities but has also underscored the profound impact of math in empowering individuals beyond mere numerical understanding".*

The given result suggests that participants in a certain context, likely an educational or training program, frequently express experiencing personal growth. This growth establishes in several key areas, including enhanced critical thinking, improved problem-solving skills, and a more profound comprehension of principles related to mathematics education. The mention of personal growth in critical thinking implies that participants have developed the ability to analyze information more effectively, evaluate situations from multiple perspectives, and make reasoned decisions. This is a valuable skill not only in the specific context of mathematics education but also in various aspects of life and learning.

The observed enhancement in problem-solving skills and the attained deeper understanding of mathematics education principles among participants signify a comprehensive and impactful learning experience, raising not only knowledge acquisition but also the development of critical thinking, thus equipping individuals with versatile skills applicable across various disciplines and real-world scenarios.

3.10. Theme 10. Recommendations for Improvement

Participants emphasized the need for program enhancement, advocating for improvements such as enhanced academic advising, expanded online resources, made to order support for working professionals, increased flexibility in course offerings, and better alignment between program content and workplace needs. A student said something like this,

> *"In the landscape of today's job market, raising adaptability in education by expanding course options, aligning content with workplace requirements, and maintaining close collaboration with industry experts ensures that graduates possess the essential skills needed to thrive in the ever-changing professional environment".*

Participants underscored the significance of adaptability and relevance in educational programs, emphasizing the necessity for a more responsive curriculum that aligns with varying schedules, individual preferences, and addresses the evolving demands of the workplace to better prepare participants for their professional endeavors.

In essence, the research highlighted the favorable outlook on weekend Master of Education programs in mathematics education among six postgraduate students who, as working professionals in Rwanda, revealed perceptions, experiences, and challenges, thereby providing valuable insights for program enhancement tailored to this distinctive demographic.

Postgraduate student-workers in the program, adhering to the constructivist approach and adult learning theory, enthusiastically delved into weekend discussions on real-world mathematics education issues, showcasing their distinct characteristics as adult learners who highly value the immediate applicability of the program's content to their studies.

The experiential learning approach in mathematics not only enhanced students' understanding and application of mathematical concepts in Rwanda but also adopted critical thinking and problem-solving skills essential for broader educational development. Moreover, by raising a generation of mathematically proficient individuals, this approach contributed to Rwanda's societal progress by preparing students for active participation in a globally competitive and technologically advanced world.

The research findings align with social constructivism, highlighting the importance of collaborative discussions in knowledge development, and are consistent with adult learning theory, which emphasizes self-directed learning. This is evident in students' enhanced motivation, engagement, preference for collaborative problem-solving, flexibility in scheduling, and appreciation for experiential learning when addressing real-world challenges in mathematics education. Additionally, the results corroborate the findings of Kim et al. (2018), Khan (2019), Brown and Jones (2020), and Tohara et al. (2021), which highlighted that a key factor in the program's appeal lies in students perceiving it as an opportunity to continue their education while maintaining employment.

The study's results highlighted the favorable reception of weekend Master of Education programs among working postgraduate students in Rwanda, providing an understanding of their experiences and

perceptions, emphasizing the active engagement in real-world discussions on mathematics education during weekends, aligning with constructivist learning principles and adult learning theory, thereby emphasizing the practical applicability and immediate relevance of the program's content to their self-directed studies.

This research highlighted the convergence of constructivist and adult learning theories, showcasing the compatibility of a collaborative, real-life mathematics education approach with constructivist principles and the alignment of flexible learning schedules and experiential learning with adult learning theory, offering valuable insights into the dynamics of postgraduate working professionals in Rwanda pursuing a master's degree in mathematics education through weekend programs and suggesting areas for program improvement to better cater to their specific needs.

4. CONCLUSION

This research highlights the positive reception of weekend Master of Education programs in mathematics education among postgraduate students who are working professionals in Rwanda. It also underscores how their unique experiences align with constructivist principles and adult learning theory, emphasizing active engagement in real-world discussions, problem-solving, and a preference for flexible, experiential learning schedules. These findings contribute to a deeper understanding of their learning experiences. Based on the results, it is recommended to enhance student support services by introducing academic advising, time management workshops, and mentorship programs, while improving communication between program administrators, faculty, and students to raise a more collaborative and supportive learning environment.

Acknowledgment. The authors extend their sincere appreciation to all participated teachers whose invaluable contributions were essential for the successful completion of this study.

Data Availability Statement. Data are available upon the request from corresponding author.

Conflicts of Interest. The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding. The authors received no financial support for the research, authorship, and/or publication of this article.

REFERENCES

Barman, B. E., Dubasik, V. L., Brackenbury, T., & Colcord, D. J. (2023). Graduate students' perceived preparedness and confidence to work with individuals who use augmentative and alternative communication. *American Journal of Speech-Language Pathology, 32*(3), 1165-1181.

Brown, A., & Jones, L. (2020). Mathematics Education and Postgraduate Achievement: A Comparative Study. *Educational Research Journal, 35*(4), 491-507.

Chad, E. K. (2021). The impact of COVID-19: Graduate students' emotional and psychological experiences. *Journal of Human Behavior in the Social Environment, 31*(4), 476-488.

Chesimet, M. C., Githua, B. N., & Ng'eno, J. K. (2016). Effects of Experiential Learning Approach on Students' Mathematical Creativity among Secondary School Students of Kericho East Sub-County, Kenya. *Journal of Education and Practice, 7*(23), 51-57.

Eddles-Hirsch, K. (2015). Phenomenology and educational research. *International Journal of Advanced Research, 3*(8), 251-260.

Karpouza, E., & Emvalotis, A. (2019). Exploring the teacher-student relationship in graduate education: a constructivist grounded theory. *Teaching in Higher Education, 24*(2), 121-140.

Kebritchi, M., Hirumi, A., & Bai, H. (2016). The effects of modern mathematics computer games on mathematics achievement and class motivation. *Computers & Education, 55*, 427-443.

Khan, S. H. (2019). Attitude of M.Ed. Students towards the Use of Cyber Resources: A Normative Perspective. *Conflux Journal of Education*.

Kim, S., Lee, H., & Park, E. (2018). Work-Life Balance and Weekend Postgraduate Programs: A Case Study. *Journal of Higher Education, 43*(1), 79-92.

Kolb, A. Y., & Kolb, D. A. (2017). Experiential Learning Theory as a Guide for Experiential Educators in Higher Education. *Experiential Learning & Teaching in Higher Education, 1*(1), 7–44.

Mutmainah, Rukayah, & Indriayu, M. (2019). Effectiveness of experiential learning-based teaching material in Mathematics. *International Journal of Evaluation and Research in Education (IJERE), 8*(1), 57-63.

Niyibizi, O., & Mutarutinya, V. (2023). Teachers' Perceptions and Use of ICT Facilities in Teaching Mathematics: A Case of Selected Secondary Schools in Gasabo District, Rwanda. *East African Journal of Education and Social Sciences, 4*(5), 109-113.

Niyibizi, O., Uwitatse, M. C., Sibomana, J., & Mutarutinya, V. (2023). The Perception of Students on the Use of ICT Tools to Learn Mathematics in Gasabo Selected Public Secondary Schools. *Journal of Research Innovation and Implications in Education, 7*(3), 383–387.

Nzayisenga, D., Niyibizi, O., & Uworwabayeho, A. (2023). Teachers' perception on technology use in teaching mathematics in Rwandan Day Secondary Schools. *Journal of Research Innovation and Implications in Education, 7*(4), 508–519.

Smith, J. (2019). Perceptions of Adult Learners in Weekend Graduate Programs. *Journal of Adult Education, 42*(2), 124-137.

Sohn, B. K., Thomas, S. P., Greenberg, K. H., & Pollio, H. R. (2017). Hearing the Voices of Students and Teachers: A Phenomenological Approach to Educational Research. *Qualitative Research in Education, 6*(2), 121-148.

Tohara, A. J., Shuhidan, S. M., Bahry, F. D., & Nordin, M. N. (2021). Exploring Digital Literacy Strategies for Students with Special Educational Needs in the Digital Age. *Turkish Journal of Computer and Mathematics Education, 12*(9), 3345-3358.

Uwitatse, M. C., Niyibizi, O., & Mutarutinya, V. (2023). Accessing the Use of Instructional Materials on the Learner's Academic Performance in Mathematics: A Case of Selected Ordinary Level Secondary Schools of Musanze District, Rwanda. *Journal of Research Innovation and Implications in Education, 7*(4), 12–19.

Yüksel, P., & Yıldırım, S. (2015). Theoretical Frameworks, Methods, and Procedures for Conducting Phenomenological Studies in Educational Settings. *Turkish Online Journal of Qualitative Inquiry, 6*(1), 1-20.