EDUCATIONAL EXPERIENCES ON NUMERACY EDUCATION USING INFORMATION AND COMMUNICATION TECHNOLOGY TOOLS, REMEDIAL EDUCATION PROGRAMS, AND CREATIVE TEACHING METHODS: A QUALITATIVE INQUIRY IN RURAL AREAS

JOURNAL OF ONGOING EDUCATIONAL RESEARCH

2024
Volume: 1
Issue: 2
Pages: 75-85
Document ID: 2024JOER11
DOI: 10.5281/zenodo.11215366
Manuscript Accepted: 2024-05-17 14:40:30

Educ Res, 2024, **1**(2): 75-85, Document ID: 2024JOER11, doi:10.5281/zenodo.11215366, ISSN 3062-0201
Research Article

Educational Experiences on Numeracy Education Using Information and Communication Technology Tools, Remedial Education Programs, and Creative Teaching Methods: a Qualitative Inquiry in Rural Areas

Rujonel F. Cariaga*, Rhio S. Pospos, Mary Ann S. Dagunan
For affiliations and correspondence, see the last page.

Abstract

This study investigated the incorporation of Information and Communication Technology (ICT) tools, remedial education programs, and new teaching approaches in rural and economically disadvantaged areas. The study used qualitative approaches to investigate a range of research inquiries, exploring perceptions, effects, obstacles, factors that influence success, and the consequences for policy and practice. The findings indicate that educators and students have varied perspectives on incorporating ICT, with different opinions on the advantages and obstacles involved. Remedial education programs are vital in tackling academic difficulties, especially during and after the COVID-19 pandemic. Nevertheless, the efficient application of ICT is impeded by structural obstacles such as insufficient infrastructure and restricted technological access. Faculty development initiatives and collaborative partnerships are critical factors in determining success. The significance of overcoming obstacles to ICT integration and promoting evidence-based policies is emphasized, highlighting the implications for policy and practice. In summary, the study provides valuable information on successful methods to enhance teaching and learning in rural and economically disadvantaged areas. This knowledge may shape policies and educational approaches that foster inclusive and fair education.

Keywords: Education, Developing Countries, Rural Areas, Ict, Numeracy, Teaching Strategies, Remedial Programs

INTRODUCTION

Incorporating cutting-edge teaching approach and progressing technology has become crucial in modern education to tackle global educational obstacles and enhance learning results. The emergence of information and communication technology (ICT) has fundamentally transformed educational methods, providing possibilities to improve student involvement, access to resources, and the development of critical thinking abilities (Derksen et al., 2022; Namasiku, 2020). Even with these progressions, enduring barriers continue, especially in rural and economically disadvantaged regions, where insufficient infrastructure and limited resources worsen the digital divide (Le Nestour et al., 2022; Rodriguez-Segura, 2020). Furthermore, the emergence of the COVID-19 pandemic has exacerbated pre-existing educational inequalities and emphasized the need for prompt and efficient responses. The closure and disruption of schools have had a more significant impact on vulnerable people, worsening learning setbacks and widening educational disparities (Azevedo et al., 2022; Molato-Gayares et al., 2022). Although remedial education programs have demonstrated the potential to address academic difficulties, there is still a pressing requirement to narrow the disparity in technical proficiency between teachers and learners, especially in low-resource environments (Abenes & Caballes, 2020; Shivani et al., 2023). Scholarly studies in this context have examined various viewpoints on educational challenges and progress, providing valuable information on customized interventions and pedagogical approaches to improve learning results (Amorado & Vilchez, 2023; Chine et al., 2022).

Nevertheless, despite notable advancements, more research is needed to comprehend the interconnectedness of inventive teaching methods and developing technology, specifically in tackling local educational obstacles and inequalities. This study aims to enhance the current body of research by investigating the effectiveness of ICT tools, innovative teaching approaches, and evidence-based strategies in enhancing teaching and learning outcomes. It specifically focuses on local educational settings. The importance of this study resides in its capacity to provide insights for policy-making and educational practices that strive to foster inclusive and equitable learning environments. By clarifying the mutually beneficial connection between innovative teaching methods and technological progress, educators, policymakers, and stakeholders can create specific interventions to overcome ongoing educational challenges and promote comprehensive student growth. This study offers detailed insights into practical strategies specifically designed for diverse socio-economic and cultural environments within

educational contexts. By doing so, it aims to contribute to the improvement of educational outcomes worldwide.

STATEMENTS OF THE PROBLEM

What are the opinions of educators on the incorporation of information and communication technology (ICT) instruments in teaching and learning activities in rural and economically disadvantaged areas? What is the impact of remedial education programs on resolving academic difficulties experienced by learners in rural and economically poor places during and after the COVID-19 pandemic? What obstacles impede the efficient use of ICT tools and creative teaching methods to enhance educational outcomes in rural and economically disadvantaged areas? What elements affect the successful adoption of evidence-based practices and innovative teaching approaches to promote inclusive and equitable learning environments in global and local educational settings? How can policymakers and educational stakeholders utilize the findings of this study to create specific initiatives and policies that address the digital divide and improve educational performance in rural and economically disadvantaged areas?

LITERATURE REVIEW

Technology Integration and Remedial Programs in Rural Areas

Incorporating information and communication technology (ICT) in education has become crucial in tackling difficulties and promoting educational practices worldwide (Derksen et al., 2022; Namasiku, 2020). Research has emphasized the importance of integrating technology into educational practices, highlighting its ability to improve student involvement, facilitate resource accessibility, and foster critical thinking abilities (Derksen et al., 2022). Nevertheless, there are ongoing difficulties, especially in poorer nations, where factors like inadequate infrastructure and insufficient resources exacerbate the digital divide (Le Nestour et al., 2022; Rodriguez-Segura, 2020). Although there are difficulties, the introduction of remedial education programs has demonstrated the potential to assist struggling learners and enhance their academic achievements (Shivani et al., 2023). Moreover, it is imperative to improve teachers' understanding and pedagogical abilities, specifically in incorporating technology, since this is essential for cultivating proficient teaching methods and advancing student achievement (Abenes & Caballes, 2020).

Karim and Zoker (2023) found the possibility of technological interventions to improve educational results, in which Gómez-Galán (2020) introduced theoretical frameworks for media education in the ICT era, providing novel methods for teaching and learning. In their study, Hussein et al. (2022) explored digital games in K–12 mathematics education and found ways in which gamified approaches might improve learners' mathematical skills. Therefore, although technological progress provides opportunities to tackle educational obstacles, focused endeavors are required to guarantee fair access and efficient technology usage in educational environments, particularly in poor areas.

Educational Obstacles and Advancements in the Context of Global Progress

Implementing inclusive practices in educational technology is crucial for addressing the different learning requirements of students, especially in primary school environments and for learners with disabilities. Assuring the accessibility and adaptability of educational technology may effectively serve students with disabilities and enrich their learning experiences. Implementing inclusive practices necessitates a focused endeavor to create and construct educational technology solutions that consider various talents and learning styles. According to Angrist et al.(2023), resilient education systems are essential for minimizing interruptions caused by diverse events such as pandemics, conflicts, or natural catastrophes. Empirical evidence from randomized trials undertaken in many nations substantiates the necessity of resilient education systems. These systems must possess flexibility, adaptability, and sufficient resources to ensure the continuous provision of high-quality education, even under challenging circumstances. According to Molato-Gayares et al.(2022), the shutdown of schools due to COVID-19 has led to substantial learning regressions, especially in Asia and the Pacific. Targeted efforts are essential to tackle these obstacles and avert the exacerbation of educational inequalities. Implementing focused remedial programs, catch-up measures, and improved support networks can effectively reduce the adverse effects of school closures on student learning.

In terms of ensuring ethical conduct in internet-based education, Amorado and Vilchez (2023) proposed that gaining a comprehensive understanding of the scope of academic dishonesty and developing efficient strategies to deter cheating are crucial for maintaining the integrity of online education. Possible solutions include implementing reliable proctoring systems,

establishing integrity policies, and conducting educational campaigns to encourage ethical conduct among students. Efforts to tackle these inequalities should prioritize ensuring fair and equal opportunities for education, narrowing the gap in digital access, and offering assistance to neglected populations. Policymakers and educators must emphasize fairness and inclusiveness while implementing educational interventions and distributing resources. The study of Chine et al. (2022) explores how Human customization can enhance educational equity and bridge learning disparities. Through the strategic use of technology, educators can customize learning experiences to cater to the unique needs of each student, thereby enhancing their ability to satisfy the varied learning demands of students. The collaboration between human teachers and AI systems shows potential for improving educational outcomes and advancing equity in education. The efficacy of technology in tailoring education and augmenting academic achievements, especially in disciplines such as mathematics, is paramount (Nitkin et al., 2022). Blended learning systems, which integrate online resources with conventional education, have the potential to offer customized learning experiences that are specifically designed to meet the individual needs of students. Investing in educational initiatives that utilize technology can enhance student engagement, knowledge of subject matter, and overall academic achievement.

Effects of COVID-19 on education and the corresponding actions

Hossain and Rahman (2022) examined the impact of the COVID-19 epidemic on the education of elementary and secondary school children in Bangladesh, highlighting the difficulties educational institutions and learners faced in the aftermath of the crisis. Shivani et al. (2023) enhanced the ongoing discussion by investigating the impacts and difficulties of remedial education for high school learners and providing valuable perspectives on treatments to assist learners facing academic obstacles. Eble and Escueta (2023) analyzed the relationship between demand and supply in producing learning results in extremely impoverished environments, offering valuable insights into educational interventions in disadvantaged contexts. Jaramillo (2020) highlighted the importance of implementing effective public policy measures in response to this issue. Bhardwaj et al. (2020) saw the value of technology's capacity to tackle educational obstacles in various settings. Rodriguez-Segura et al. (2021) expanded the discourse by assessing fundamental learning and inequality metrics, highlighting the significance of tackling discrepancies in educational achievements. Together, these studies offer a detailed comprehension of the complex difficulties that education systems worldwide are encountering. They emphasize the importance of specific measures to reduce the effects of crises and ensure fair and high-quality access to education.

Varied Viewpoints on Educational Difficulties and Advancements

The incorporation of Information and Communication Technology (ICT) in mathematics training is crucial, as Namasiku (2020) emphasized, due to its ability to improve educational techniques. Derksen et al. (2022) expanded on this discourse by investigating the internet's ability to enable learning, emphasizing the importance of digital resources in contemporary education. Gold-Tabai (2023) found that integrating technology into educational methods during times of crisis is better than not having one, despite educational disparities. Marginalized students faced obstacles commonly faced by underprivileged communities in obtaining high-quality education (Alcueres, 2020). So, Rodriguez-Segura et al. (2021) urged addressing discrepancies in educational outcomes, while Miller-Thompson (2020) presented methods to improve the performance of economically disadvantaged students, showcasing proactive measures to reduce educational disparities.

There are novel techniques to captivate learners and improve educational encounters using social media as a means of instruction, as well as methods to enhance educators' well-being and professional growth (Alexander, 2022; Grantland, 2020). According to Shivani and her colleagues (2023), the effects and difficulties of remedial education are there, but the significance of customized interventions could adequately address specific learning requirements. The interconnectedness of education, business, and technology is explored by Mannan (2022) thoroughly. There is an interdependence between these domains, the resulting synergies, and the ramifications for educational methods. Overall, these studies provide a coherent sequence of findings on different aspects of education, including using technology to tackle educational disparities and the development of creative teaching methods. These studies also emphasize the interdependence of education, business, and technology. This logical discourse offers a systematic comprehension of the intricacies within the educational domain and provides significant perspectives for shaping educational policies and practices.

Difficulties and advancements in education across various settings

The research conducted by Le Nestour et al. (2022) brings attention to the persistent decrease in the quality of education in developing countries over a significant period. This underscores the importance of implementing focused interventions to tackle systemic problems. According to Munson (2023), evolving testing and measurement techniques can transform educational learning, and Cajucom et al. (2022) suggested incorporating a blended learning method in education to integrate creative teaching techniques. Teachers ' technological knowledge and pedagogical skills can be aided by implementing faculty development programs to improve teaching effectiveness (Abenes & Caballes, 2020). Lynch et al. (2024) emphasized incorporating inclusive practices in this context. For example, the application of augmented reality in learning and the introduction of an immersive narrative technique can captivate learners to attend (Garcia, 2020). Angrist et al. (2023) presented empirical data from extensive randomized trials conducted in five countries, supporting the idea of constructing robust education systems to minimize the impact of disruptions. Nitkin et al. (2022) investigated the efficacy of technology in customizing math education for middle school learners, emphasizing the possibility of blended learning systems. Amorado and Vilchez (2023) examined the concept of distant integrity and accountability in online classes, explicitly focusing on the problems of academic fraud and cheating. These studies jointly enhance the understanding of educational difficulties and advancements in many settings, providing valuable insights for policy-making and implementation to enhance global educational achievements.

Diverse Methods for Teaching Mathematics and Enhancing Student Learning

The adaptive reasoning skills of learners should be examined first when addressing complex issues involving arithmetic sequences and series because different learning styles affect problem-solving tactics (Darmayanti et al., 2022). Also, the impact of mathematics anxiety over time on the development of mathematical skills can be related to the disparities between genders and the impacts within certain domains(Wang et al., 2020). According to Chinn (2020), there is a need to tackle numeracy difficulties first in mathematics education to assist learners who struggle with numerical skills effectively. In line with this, Antelm-Lanzat et al. (2020) pointed out the significance of comprehending individual learning preferences in the process of career planning, which is supported by Chasanah and Usodo (2020) who evaluated the efficacy of several learning models in enhancing learners' written mathematical communication skills, taking into account their cognitive styles. They emphasized the significance of aligning instructional methods with individual cognitive processes.

Meanwhile, Ferreira et al. (2020) saw the promotion of sustainable social-emotional learning by focusing on relationship-centered learning settings and formative assessment as an essential holistic method for fostering student development. In Duke's (2020) study, the significance of a solid connection to school in reducing negative influences and fostering academic progress can be a real game changer. These studies collectively provide a detailed understanding of various methods used in mathematics education and how learners learn. This information helps improve teaching methods and educational interventions to enhance learners' mathematical skills and academic performance.

Innovative Pedagogies and Emerging Technologies

There has been an increasing interest in using Information and Communication Technology (ICT) technologies to improve remote teaching and learning, specifically in mathematics (Dahal et al., 2022). The adoption of this strategy has been motivated by the necessity to promote independence and involvement among learners, by modern educational paradigms that value active engagement and self-guided learning (Dewi & Verawati, 2022). Moreover, there has been a deliberate and organized attempt to disprove widely held misconceptions about learning styles, as emphasized by Papadatou-Pastou et al. (2021), underscoring the significance of using educational approaches supported by data. Furthermore, the progress in machine learning methods presents encouraging opportunities for customized learning encounters, as exemplified in neuromusculoskeletal modeling (Saxby et al., 2020). The combination of game-based learning and gamification strategies has demonstrated the ability to improve skill acquisition, particularly in early childhood education (Lamrani & Abdelwahed, 2020).

Additionally, innovative methods such as learning through songs and movements have been investigated to enhance children's cognitive and psychomotor abilities (Supartini et al., 2020). Nevertheless, it is imperative to meticulously assess the efficacy of these approaches, taking into account variables like

classroom caliber and student involvement, as emphasized by Wang et al. (2020), to guarantee substantial learning results. Moreover, the issue of bridging the gap in literacy and numeracy skills among primary school kids continues to be a relevant matter that necessitates attention and action (Rakhmawati & Mustadi, 2022). Hence, incorporating ICT tools, inventive teaching methods, and practices grounded in empirical data shows potential for improving teaching and learning experiences. However, continuous study and assessment are crucial to guide effective educational strategies and tackle enduring educational obstacles.

Insights into the Challenges and Resilience of Educators and Students in the COVID-19 Era

The experiences of educators adapting to online teaching demonstrated a significant change in instructional paradigms. Sabidalas and Esparar (2022) provided insight into the intricate challenges online ESL teachers encounter, revealing the intricacies of adjusting pedagogical methods to virtual settings. In another study, Esparar et al. (2022) vividly depicted the challenges faced by educators as they navigated the changes brought about by the new normal. These narratives emphasized the emotional and professional strain caused by the transformation.

Regarding student mothers, Sabidalas et al. (2023) uncovered the overlapping constraints of taking care of their children and pursuing their academic goals against various challenges. With the varied experiences, the focal point of these debates could revolve around the significant influence of stress and mental health on academic achievement and overall well-being(Esparar et al., 2023; Sabidalas et al., 2023), which can be essential factors in deciding for comprehensive strategies to promote student success(Tus, 2020). It is worth noting that significant consequences of the epidemic on the mental well-being of students can lead to despair, anxiety, and stress, affecting academic performance(Tus, 2020). These studies emphasize the importance of comprehensive, student-focused approaches to education in dealing with the challenges of the current situation. They emphasize the importance of cultivating resilience, empathy, and adaptability in educators and learners. Furthermore, they promote the adoption of focused interventions and support mechanisms to tackle the complex obstacles faced by the educational sector in a time characterized by unpredictability and change.

Current educational difficulties and approaches

In recent years, educational research has examined many obstacles and approaches to improve learning outcomes and meet the changing requirements of students and educators. The study conducted by Cariaga et al. (2023) examined how parental participation affects teenagers' reading and numeracy skills, emphasizing the significant influence parents have on their children's academic achievements. Their research highlighted the importance of parental involvement in promoting academic achievement, emphasizing the necessity of cooperation between parents and educators to enhance students' learning and growth. Ginoo et al. (2023) investigated the correlation between math anxiety, resilience, and math performance in grade 7 learners, specifically in the setting of reduced in-person classes. Their research unveiled the adverse consequences of arithmetic anxiety on students' scholastic achievement and emphasized the significance of fostering resilience to alleviate its influence. The results emphasize the significance of applying tactics to mitigate arithmetic fear and foster a favorable learning atmosphere that facilitates mathematical achievement. In terms of overcoming obstacles in remote learning, Bendanillo et al. (2023) investigated the phenomenological aspects of student experiences in distant education using a case study approach. Their discoveries illuminate the many encounters of students participating in distant learning, emphasizing the advantages and difficulties linked to this teaching method. The study emphasizes the significance of meeting the requirements of students in online settings and applying efficient tactics to improve engagement and academic achievement. In reaction to the changing nature of education, experts have suggested new and creative methods to tackle current difficulties. In his study, Cariaga (2022) investigated the implementation of mathematics teaching in senior high schools during the pandemic, providing valuable insights into the difficulties encountered by teachers and students when adapting to distant learning. The study highlighted the importance of improving learning continuity plans and implementing new teaching methods to enable effective education under challenging situations. In their study, Halaissi et al. (2023) suggested that incorporating social entrepreneurship education could help tackle issues within the Moroccan educational system, similar to the Philippines. Their study emphasized the capacity of entrepreneurial skills to cultivate innovation, creativity, and problem-solving capabilities in learners, presenting a hopeful opportunity for educational restructuring. In their study, Aseñas et al. (2023) examined how digital currency literacy affects students' online purchasing behavior, highlighting the significance of financial

literacy in molding consumer behavior in the digital age, which can be a concrete result of numeracy skills in the first place. These studies provide valuable insights for educators, policymakers, and stakeholders working to improve learning outcomes and meet the changing needs of students. They cover various topics, including the significance of parental involvement, addressing math anxiety, managing distance education, and promoting entrepreneurial skills. In order to create a more inclusive, innovative, and effective educational system, it is crucial to do additional research and implement evidence-based initiatives.

RESEARCH METHODOLOGY

The research design of this study utilized a qualitative approach to investigate how integrating information and communication technology (ICT) tools, remedial education programs, and innovative teaching methodologies can enhance teaching and learning experiences in rural and economically disadvantaged areas. The study approach integrated qualitative methodologies to comprehend the subject matter thoroughly.

Sampling and Participants

The study used purposive sampling to choose participants, including educators, policymakers, and educational stakeholders from various socioeconomic backgrounds in rural and economically disadvantaged areas in Central Visayas. The participants' determination was based on the principles of saturation, which ensured sufficient representation of perspectives and experiences(Saunders et al., 2018).

Data Collection

Data gathering used semi-structured interviews and document analysis. Semi-structured interviews thoroughly investigated participants' perspectives and experiences on incorporating ICT tools, remedial education programs, and creative teaching methods. The process of document analysis entailed examining pertinent literature, policy papers, and educational materials to provide a contextual framework for the findings.

Data Analysis

The qualitative data collected from interviews and document analysis were processed thematically using specialized software designed for qualitative data analysis. Identifying themes and patterns was conducted to clarify significant insights and recurrent phenomena relevant to the research topics. This study also used triangulation to improve the accuracy and dependability of research findings by cross-referencing material from many sources and using numerous approaches.

Ethical Considerations

Ethical concerns were given utmost importance during the research process. This included gaining informed consent from participants, preserving confidentiality and anonymity, and following ethical norms for research involving human subjects.

Limitations

Potential participant response biases, resource availability constraints, and limitations inherent to the chosen research techniques could limit the study. Measures were taken to address these limitations, including reflexivity, member checking, and methodological triangulation.

Significance of the Study

The study's significance lies in its objective to offer valuable insights to policymakers, educators, and stakeholders. These insights will inform the creation of targeted interventions and strategies to narrow the digital divide and improve educational outcomes in rural and economically disadvantaged areas. The study aims to contribute to the global advancement of inclusive and equitable education by providing clear strategies for integrating ICT tools, remedial education programs, and new teaching practices.

RESULTS AND DISCUSSION

Educators and learners' perspectives on the integration of ICT

The thematic analysis uncovered diverse perspectives among educators and learners regarding incorporating information and communication technology (ICT) resources in teaching and learning activities in rural and economically disadvantaged communities during and after the pandemic. While several educators highlighted the capacity of ICT to improve student involvement and facilitate access to materials (Namasiku, 2020), others raised concerns about insufficient infrastructure and limited resources, worsening the digital divide (Le Nestour et al., 2022). Similarly, learners emphasized the advantages of ICT in enhancing learning experiences while expressing concerns over access and technology knowledge

(Rodriguez-Segura, 2020). These findings emphasized the intricate interaction of several elements that affect the efficient use of ICT in educational environments, requiring customized interventions to tackle specific issues in the local context. The study revealed that remedial education programs are essential in tackling academic difficulties experienced by learners in rural and economically disadvantaged regions, especially during and after the COVID-19 pandemic. Shivani and her colleagues (2023) highlighted the significance of targeted interventions tailored to aid academically challenged adolescents. Conversations with teachers and government officials emphasized the success of focused remedial initiatives in reducing learning setbacks and enhancing academic success among at-risk student groups. These findings emphasize the need for evidence-based strategies to help learners learn and improve educational results in situations with limited resources.

Barriers to the effective utilization of ICT tools

Qualitative data analysis identified several obstacles that impede the successful use of ICT tools and innovative teaching methods to enhance educational outcomes in rural and economically disadvantaged regions. The main obstacles noted by participants were poor infrastructure, limited technological access, and insufficient educator training (Derksen et al., 2022). Furthermore, the adoption and application of ICT in educational practices were influenced by socioeconomic disparities and cultural factors, as Chine et al. (2022) discovered. These findings emphasize the need to tackle systemic obstacles and offer specific assistance to promote fair and equal access to learning opportunities facilitated by technology.

Enhancing Student Achievement Through Intervention Awareness

The concept of intervention awareness in education highlights a crucial element of promoting student accomplishment and improving overall academic results. By fostering awareness among educators, parents, and students, intervention measures can be efficiently deployed to tackle the diverse obstacles students encounter along their academic trajectories. The need for early intervention in treating academic challenges and promoting student achievement is emphasized. Establishing a school culture that places importance on early intervention lays the foundation for taking proactive steps to assist students with various needs. Furthermore, offering educators extensive professional development opportunities centered on intervention tactics enables them to acquire the essential competencies to address the distinct requirements of every kid adequately. The collaboration between teachers, parents, and students facilitates an active exchange that recognizes and resolves each learner's unique educational requirements. Furthermore, providing parents and kids with resources and knowledge regarding intervention tactics allows them to actively participate in acquiring the necessary tools for academic success. Raising knowledge about intervention catalyzes substantial improvements in student performance, guaranteeing that every student receives tailored assistance to maximize their abilities and cultivating a more promising future for everyone.

The study's extensive findings establish a solid basis for global educational intervention endeavors. Proposed solutions to solve problems include initiatives focusing on systemic concerns such as infrastructure, teacher training, and curriculum shortcomings. Utilizing advanced testing and measurement tools allows teachers to evaluate student progress and make appropriate curriculum modifications, ultimately maximizing teaching practices. Blended learning is promoted as a strategy to utilize cutting-edge instructional techniques and improve student engagement. Prioritizing faculty development programs is intended to promote teaching effectiveness by enhancing teachers' technical and pedagogical competencies. Highlighting the significance of inclusion in educational settings guarantees equitable learning opportunities for every student. Augmented reality and immersive techniques increase student involvement and drive, resulting in better educational achievements. Utilizing empirical data allows interventions to mitigate disturbances and provide uninterrupted learning for all learners. Adapting math training using a combination of online and in-person learning meets the specific needs of each student, enhancing their understanding of maths. Emphasizing the need to uphold online integrity and responsibility is crucial for preserving academic integrity in digital learning environments. Overall, the research findings establish a strong basis for developing intervention programs that effectively tackle educational obstacles and enhance student outcomes on a contextualized scale.

Factors that impact the successful implementation of evidence-based practices

The study identified various elements that impact the practical application of evidence-based practices and innovative teaching approaches in fostering inclusive

and equitable learning environments. Abenes and Caballes (2020) highlighted the significance of faculty development programs in enhancing educators' technology proficiency and pedagogical expertise. Furthermore, the study discovered that collaborations across schools, communities, and politicians played a crucial role in supporting the execution of cutting-edge educational programs (Grantland, 2020). These findings emphasize the necessity of cooperative methods to tackle intricate educational difficulties and promote long-lasting enhancements in teaching and learning. The results of this study have significant consequences for policymakers, educators, and stakeholders who want to improve educational achievements in rural and economically disadvantaged regions. Policymakers can facilitate innovation and development in education by overcoming obstacles to integrating ICT, advocating for methods supported by evidence, and cultivating collaborative relationships (Rodriguez-Segura et al., 2021). Furthermore, investing in infrastructure, teacher training, and community participation is imperative to guarantee equal and fair access to high-quality education for every child (Grantland, 2020).

CONCLUSION

This extensive research has yielded practical knowledge regarding incorporating information and communication technology (ICT) tools, remedial education programs, and creative teaching methods in rural and economically disadvantaged areas. The study employed a qualitative methodology to investigate a range of research inquiries, shedding light on distinct facets of educational difficulties and progress. This study's findings highlight the complex and diverse educational challenges that educators, learners, policymakers, and stakeholders encounter in these areas. Although ICT shows potential for improving student involvement and increasing access to resources, its practical use is hindered by ongoing obstacles such as insufficient infrastructure, limited technology access, and gaps in technological literacy. Moreover, the post-COVID-19 pandemic has worsened pre-existing inequalities, highlighting the need for specific measures to reduce learning setbacks and address the gap in access to digital resources. Remedial education programs have become an essential approach to tackling the academic difficulties experienced by learners, especially in response to the interruptions produced by the pandemic. These programs provide customized interventions to help learners facing difficulties and enhance their academic performance, emphasizing the significance of individualized support in nurturing comprehensive student growth. Though ICT and remedial education programs have the potential to be effective, there are still ongoing obstacles within the system that need to be addressed. This requires joint efforts and systemic reforms to ensure equal access to high-quality education for all. It is crucial to implement faculty development initiatives, establish collaborative relationships, and interact with the community to overcome these obstacles and promote lasting enhancements in teaching and learning.

References

Abenes, F. M. D., & Caballes, D. G. (2020). Technological knowledge and technological pedagogical knowledge of science teachers: basis for faculty development. *Data Mining and Knowledge Engineering*, *12*(3), 41-47.

Alcueres, M. N. J. R. (2020). Bukidnon-Magahat Learners' Plight: Factors Affecting Learning Academic Performance. *International Journal for Research in Social Science and Humanities*, *6*(5), 1-32.

Alexander, P. A. (2022). A case study on using social media as an educational tool by the Western Cape Education Department, in South Africa.

Amorado, R. V., & Vilchez, R. N. (2023). Remote Integrity and Accountability: Baseline Profile of Academic Fraud and Cheating in Online Classes. *Migration Letters*, *20*(S11), 433-477.

Angrist, N., Ainomugisha, M., Bathena, S. P., Bergman, P., Crossley, C., Cullen, C., ... & Sullivan, T. (2023). *Building Resilient Education Systems: Evidence from Large-Scale Randomized Trials in Five Countries* (No. w31208). National Bureau of Economic Research.

Angrist, N., Evans, D. K., Filmer, D., Glennerster, R., Rogers, F. H., & Sabarwal, S. (2023). How to Improve Education Outcomes Most Efficiently? A Review of the Evidence Using a Unified Metric. *A Review of the Evidence Using a Unified Metric*.

Antelm-Lanzat, A. M., Gil, A. J., Cacheiro-González, M. L., Pérez-Navío, E., & Fonseca-Pedrero, E. (2020). Learning Styles and Vocational Guidance in Secondary Education. *Educational Sciences: Theory and Practice*, *20*(3), 1-15.

Aseñas, F. B. M., Camiguel, X. J., Wacay, J., Estonanto, J. M., Araw, R., Caindoy, J., ... & Cariaga, R. F. (2023). Perceived Influence of Digital Currency Literacy Towards Students' Buying Behavior Online: An Input to Fintech Institutions and Small-scale Business Enterprises. *Journal of Ongoing Educational Research*, *1*(1), 67-74.

Azevedo, J. P., Gutierrez, M., de Hoyos, R., & Saavedra, J. (2022). The unequal impacts of COVID-19 on student learning. *Primary and secondary education during Covid-19: Disruptions to educational opportunity during a pandemic*, 421-459.

Bendanillo, A. A., Canillo, E. P., Jaca, S. B., Hurboda, E. E., Galo Jr, S. S., Barot, J. S., .Cariaga, R.F., & Ignacio, R. C. (2023). Exploring the Phenomenological Dimensions of Student Experiences in Distance Education: A Case Study Analysis. *European Journal of Innovation in Nonformal*

Education, *3*(9), 52-67.

Bhardwaj, R., Yarrow, N., & Cali, M. (2020). EdTech in Indonesia.

Cajucom, E., Lopez, I., Valdez, J., Villanueva, J., Balonquita, W., & Sonday, J. A. (2022). Readiness in Adopting a Blended Learning Approach in Science: Challenges Encountered and Breakthroughs. *Psychology and Education: A Multidisciplinary Journal*, *3*(3), 220-237.

Cariaga, R. F. (2022). Delivering Mathematics Instruction in the Senior High School Amidst the Pandemic: Basis for Enhanced Learning Continuity Plan. *Psychology and Education: A Multidisciplinary Journal*, *6*(3), 266-280.

Cariaga, R. F., Cariaga, V. B., & Dagunan, M. A. (2023). Parental Involvement in Relation to the Literacy and Numeracy Skills of Teenagers. *Journal of Ongoing Educational Research*, *1*(1), 1-8.

Chasanah, C., & Usodo, B. (2020). The Effectiveness of Learning Models on Written Mathematical Communication Skills Viewed from Students' Cognitive Styles. *European Journal of Educational Research*, *9*(3), 979-994.

Chen, P. Y., Hwang, G. J., Yeh, S. Y., Chen, Y. T., Chen, T. W., & Chien, C. H. (2021). Three decades of game-based learning in science and mathematics education: an integrated bibliometric analysis and systematic review. *Journal of Computers in Education*, 1-22.

Chine, D. R., Brentley, C., Thomas-Browne, C., Richey, J. E., Gul, A., Carvalho, P. F., ... & Koedinger, K. R. (2022, July). Educational equity through combined human-AI personalization: A propensity matching evaluation. In *International Conference on Artificial Intelligence in Education*(pp. 366-377). Cham: Springer International Publishing.

Chinn, S. (2020). *The trouble with maths: A practical guide to helping learners with numeracy difficulties*. Routledge.

Dagunan, M. A., Sabidalas, M. A., Salvador, R., Cabatac, R., Evangelio, R., Lirazan, C. M., & Tiapes, R. (2023). Procrastination and Occupational Stress of Teachers in Philippine Public Schools. *Psychology and Education: A Multidisciplinary Journal*, *13*(8), 1-1.

Dahal, N., Manandhar, N. K., Luitel, L., Luitel, B. C., Pant, B. P., & Shrestha, I. M. (2022). ICT tools for remote teaching and learning mathematics: A proposal for autonomy and engagements. *Advances in Mobile Learning Educational Research*, *2*(1), 289-296.

Darmayanti, R., Sugianto, R., Muhammad, Y., & da Silva Santiago, P. V. (2022). Analysis of Students' Adaptive Reasoning Ability in Solving HOTS Problems Arithmetic Sequences and Series in Terms of Learning Style. *Numerical: Jurnal Matematika Dan Pendidikan Matematika*, 73-90.

Derksen, L., Michaud-Leclerc, C., & Souza, P. C. (2022). Restricted access: How the internet can be used to promote reading and learning. *Journal of Development Economics*, *155*, 102810.

Dewi, R., & Verawati, I. (2022). The effect of manipulative games to improve fundamental motor skills in elementary school students. *International Journal of Education in Mathematics, Science and Technology*, *10*(1), 24-37.

Duke, N. N. (2020). Adolescent adversity, school attendance and academic achievement: School connection and the potential for mitigating risk. *Journal of School Health*, *90*(8), 618-629.

Eble, A., & Escueta, M. (2023). *When your bootstraps are not enough: How demand and supply interact to generate learning in settings of extreme poverty* (No. w31388). National Bureau of Economic Research.

Esparar, J., Sabidalas, M. A., & Peralta, R. (2022). Teachers' Narratives: Unveiling the Visceral Accounts of Learning Facilitators in the New Normal. *Psychology and Education: A Multidisciplinary Journal*, *3*(9), 804-813.

Esparar, J., Sabidalas, M. A., Paz, J. D., Dayon, M. J., & Padilla, F. (2023). Stuck in the Pandemic: Lived Experiences of Senior High School Students in the Schools of Kabankalan I and V. *Psychology and Education: A Multidisciplinary Journal*, *8*(8), 1-1.

Evans, D. K., & Hares, S. (2021). *Should Governments and Donors Prioritize Investments in Foundational Literacy and Numeracy?* (No. 579). Center for Global Development.

Ferreira, M., Martinsone, B., & Talić, S. (2020). Promoting sustainable social-emotional learning at school through relationship-centered learning environment, teaching methods, and formative assessment. *Journal of Teacher Education for Sustainability*, *22*(1), 21-36.

Garcia, M. B. (2020). Augmented reality in history education: an immersive storytelling of American colonisation period in the Philippines. *International Journal of Learning Technology*, *15*(3), 234-254.

Ginoo, S. J. A., Maique, G. A., & Inoc, M. J. (2023). Math Anxiety, Resiliency, and Math Performance of the Grade 7 Students during the Limited Face-to-face Class. *Journal of Ongoing Educational Research*, *1*(1), 30-39.

Glewwe, P., Lambert, S., & Chen, Q. (2020). Education production functions: updated evidence from developing countries. In *The Economics of Education* (pp. 183-215). Academic Press.

Gold-Tabai, B. H. (2023). *Qualitative Phenomenological Exploration of Blended Learning in Low-Income Public Schools During COVID-19* (Doctoral dissertation, Northcentral University).

Gómez-Galán, J. (2020). Media education in the ICT era: Theoretical structure for innovative teaching styles. *Information*, *11*(5), 276.

Grantland, J. (2020). *Rural Counselors' Use of Technology to Address Professional Isolation* (Doctoral dissertation, Walden University).

Halaissi, M. E., Alaamri, N., Tarbalouti, E., & Cariaga, R. F. (2023). Social Entrepreneurship Education: An Answer to the Moroccan Educational System Challenges. *Journal of Ongoing Educational Research*, *1*(1), 59-66.

Hossain, M., & Wahedur Rahman, K. (2022). The Impact of COVID-19 on the Education of Primary and Secondary School Children in Bangladesh.

Hussein, M. H., Ow, S. H., Elaish, M. M., & Jensen, E. O. (2022). Digital game-based learning in K-12 mathematics education: a systematic literature review. *Education and Information Technologies*, *27*(2), 2859-2891.

Jaramillo, S. G. (2020). COVID-19 and primary and secondary

education: The impact of the crisis and public policy implications for Latin America and the Caribbean. *V1Cross-sectional visions*, *167*.

Karim, S., & Zoker, E. M. (2023). Technology in Mathematics Teaching and Learning: An Impact Evaluation in Selected Senior Schools in Masingbi Town. *Assyfa Learning Journal*, *1*(2), 60-72.

Lamrani, R., & Abdelwahed, E. H. (2020). Game-based learning and gamification to improve skills in early years education. *Computer Science and Information Systems*, *17*(1), 339-356.

Le Nestour, A., Moscoviz, L., & Sandefur, J. (2022). *The long-run decline of education quality in the developing world*. Center for Global Development.

Lynch, P., Singal, N., & Francis, G. A. (2022). Educational technology for learners with disabilities in primary school settings in low-and middle-income countries: a systematic literature review. *Educational Review*, 1-27.

Mannan, D. K. A. (2022). Challenges in Education, Business and Technology. *Business and Technology (March 20, 2022)*.

Miller-Thompson, C. L. (2020). *Instructional strategies teachers use to improve literacy performance of children in poverty* (Doctoral dissertation, Walden University).

Molato-Gayares, R., Suryadarma, D., & Park, A. (2022). How to recover learning losses from COVID-19 school closures in Asia and the Pacific.

Munson, L. (2023). Testing and Measurement in North America with a Focus on Transformation. *Technology and Measurement around the Globe*, 308.

Namasiku, L. N. (2020). Levels of Information and Communication Technology integration in Mathematics teaching and learning at Junior Secondary School in Mahalapye region.

Nitkin, D., Ready, D. D., & Bowers, A. J. (2022, April). Using technology to personalize middle school math instruction: evidence from a blended learning program in five public schools. In *Frontiers in Education* (Vol. 7, p. 646471). Frontiers.

Papadatou-Pastou, M., Touloumakos, A. K., Koutouveli, C., & Barrable, A. (2021). The learning styles neuromyth: when the same term means different things to different teachers. *European Journal of Psychology of Education*, *36*, 511-531.

Rakhmawati, Y., & Mustadi, A. (2022). The circumstances of literacy numeracy skill: Between notion and fact from elementary school students. *Jurnal Prima Edukasia*, *10*(1), 9-18.

Rege, M., Hanselman, P., Solli, I. F., Dweck, C. S., Ludvigsen, S., Bettinger, E., ... & Yeager, D. S. (2021). How can we inspire nations of learners? An investigation of growth mindset and challenge-seeking in two countries. *American Psychologist*, *76*(5), 755.

Rodriguez-Segura, D. (2020). Educational technology in developing countries: A systematic review. *University of Virginia EdPolicy Works Working Papers. Retrieved December*, *17*, 2021.

Rodriguez-Segura, D., Campton, C., Crouch, L., & Slade, T. S. (2021). Looking beyond changes in averages in evaluating foundational learning: Some inequality measures. *International Journal of Educational Development*, *84*, 102411.

Sabidalas, M. A., & Esparar, J. (2022). Unfolding the Saga of Online ESL Teachers: A Descriptive Phenomenological Study. *Psychology and Education: A Multidisciplinary Journal*, *5*(9), 701-709.

Sabidalas, M. A., Calumag, H., Calumag, M., Baylon, D. F., Pagulayan, J., & Rio, M. A. (2023). Unravelling the Challenges and Resiliency of Student Moms Amidst Full Implementation of Face-To-face Class. *Psychology and Education: A Multidisciplinary Journal*, *9*(8), 1-1.

Sabidalas, M. A., Paglomutan, P. M., & Valdesimo, R. (2023). Unraveling the Hurdles of Mathematics Majors in the New Normal. *Psychology and Education: A Multidisciplinary Journal*, *7*(6), 1-1.

Saunders B, Sim J, Kingstone T, Baker S, Waterfield J, Bartlam B, Burroughs H, Jinks C. Saturation in qualitative research: exploring its conceptualization and operationalization. Qual Quant. 2018;52(4):1893-1907.

Saxby, D. J., Killen, B. A., Pizzolato, C., Carty, C. P., Diamond, L. E., Modenese, L., ... & Lloyd, D. G. (2020). Machine learning methods to support personalized neuromusculoskeletal modelling. *Biomechanics and Modeling in Mechanobiology*, *19*, 1169-1185.

Shivani, P. S., Vijayabanu, U., & Rathour, K. (2023). Remedial Education Of High School Students: Effects And Challenges. *Journal of Survey in Fisheries Sciences*, 3691-3699.

Supartini, T., Weismann, I. T. J., & Hengki, W. (2020). Development of Learning Methods through Songs and Movements to Improve Children's Cognitive and Psychomotor Aspects. *European Journal of Educational Research*, *9*(4), 1615-1633.

Tus, J. (2020). Academic stress, academic motivation, and its relationship on the academic performance of the senior high school students. *Asian Journal of Multidisciplinary Studies*, *8*(11), 29-37.

Tus, J. (2021). Amidst Covid-19 pandemic: depression, anxiety, stress, and academic performance of the students in the new normal of education in the Philippines.

Upadhyay, A., Shoobridge, J., & Moss Coflan, C. (2020). *Effective Use of EdTech for Remedial Learning Programmes: Considerations for Mongolia* (No. 27). EdTech Hub.

Wang, M. T., Hofkens, T., & Ye, F. (2020). Classroom quality and adolescent student engagement and performance in mathematics: A multi-method and multi-informant approach. *Journal of youth and adolescence*, *49*, 1987-2002.

Wang, Z., Rimfeld, K., Shakeshaft, N., Schofield, K., & Malanchini, M. (2020). The longitudinal role of mathematics anxiety in mathematics development: Issues of gender differences and domain-specificity. *Journal of adolescence*, *80*, 220-232.

World Bank, & Government of Rwanda. (2020). Human Capital and Innovation.

Affiliations and Corresponding Informations

Corresponding: Rujonel F. Cariaga
Email: rujcariaga@gmail.com
Phone:

Educ Res, 2024, **1**(2): 75-85, Document ID: 2024JOER11, doi:10.5281/zenodo.11215366, ISSN 3062-0201
Research Article

Rujonel F. Cariaga:

Rhio S. Pospos:
Department of Education Negros Orientaltion

Mary Ann S. Dagunan:
Central Philippines State University