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Empowering Multiple Intelligences In Rural Areas: A Strategic Approach To Icts

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Summary

This article addresses the challenges and opportunities involved in the integration of Information and Communication Technologies (ICT) in the context of educational institutions with the aim of enhancing the development of multiple intelligences in students. Through a quantitative methodological approach, ICT competencies and learning preferences of students were evaluated, based on Howard Gardner's theory of multiple intelligences. The results underline the existence of basic ICT competencies and a favorable attitude towards learning. However, the need to implement specific didactic strategies that link the use of ICT with personal and academic growth is evident. This paper suggests a series of educational activities and resources designed to enrich the rural learning environment, with the active participation of the educational community and families, thus promoting a comprehensive educational model. We conclude that the strategic adoption of ICTs in rural education contributes significantly to improving the quality of education and preparing students to be competent citizens in a digital era, fostering their critical, creative and innovative capacity.

Keywords: *Rural Education, Information and Communication Technologies, Multiple Intelligences, Didactic Strategies, Student Development.*

Introduction

The integration of Information and Communication Technologies (ICT) in educational contexts has become a cornerstone for development and innovation in the 21st century. Its application in rural environments is of vital importance to overcome geographic and socioeconomic barriers that limit access to quality education (UNESCO, 2021). Education in these areas faces significant challenges, including limited access to technological resources and the lack of didactic strategies adapted to[1] the needs and contexts of students (García Aretio, 2017).

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The concept of multiple intelligences, introduced by Howard Gardner in 1983, states that individuals do not have a single intelligence, but multiple intelligences that include linguistic, logical-mathematical, spatial, musical, bodily, interpersonal and intrapersonal aspects, among others (Gardner, 1983). This theoretical framework suggests that educationshould be personalized and adapted to these diverse intelligences in order to promote moremeaningful and complete learning. In the rural context, where students may have diverse experiences and abilities due to their environment, it is especially relevant to consider thesetheories for the design of effective educational interventions.

The efforts made to integrate ICTs into the rural educational environment reflect a global trend towards the digitalization of education. Through agreements between governments, private enterprise and the community, a significant distribution of laptops to educational institutions has been achieved, marking an important step towards reducing the digital divide and fostering more inclusive and adaptive learning environments. These efforts are aligned with the United Nations Sustainable Development Goals, especially Goal 4 on quality education, which seeks to ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all (United Nations, 2015).

This study focuses on the implementation and evaluation of didactic strategies that integrate ICT in rural education, with the objective of fostering the development of multiple intelligences in students. Using a quantitative and descriptive methodology, surveys and tests based on Gardner's theory of multiple intelligences were applied to assess students' competencies and preferences in relation to ICTs. The results indicate that, although students possess basic ICT competencies and a positive disposition towards learning, it is crucial to implement specific strategies that connect these technologies with personal andacademic development.

The detailed proposal of activities and resources presented in this article is designed to involve the institution, the environment and families, creating a comprehensive approach that benefits student development. We conclude that the effective inclusion of ICTs in rural education not only improves educational quality, but also prepares students to be critical, creative and innovative citizens in an increasingly technological society.

However, the implementation of Information and Communication Technologies (ICTs) has transformed many areas of society, with education being one of the most impacted sectors.ICTs comprise a wide range of tools and resources that process, store and communicate information, facilitating the creation of innovative and dynamic learning environments. Theintegration of these technologies in education has opened the door to more flexible and accessible teaching and learning methods, allowing unprecedented access to information and global knowledge.

In modern education, ICTs have democratized access to knowledge, enabling distance learning and online courses, enriching educational material with multimedia and interactivity, and facilitating the personalization of learning. In this sense, rural education, with its unique characteristics, represents a particular area of interest for ICT implementation. Rural areas often face challenges such as geographic isolation, scarce resources and limited technological infrastructure. However, ICT can help overcome these barriers by connecting rural students to

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global educational resources and facilitating access to up-to-date and relevant information. Despite the challenges inherent in their implementation, such as the need for adequate infrastructure and teacher training, the possibilities for educational transformation are enormous.

Rural education has distinctive characteristics that significantly influence the implementation and effectiveness of ICT. These areas are often culturally diverse, geographically isolated and have limited resources compared to their urban counterparts. Understanding these characteristics is critical to designing and implementing educational strategies that are effective and relevant. The challenges facing rural education include not only the scarcity of technological and educational resources but also issues related to teacher training, infrastructure maintenance, and the cultural relevance of educational content. Overcoming these challenges is crucial for successful ICT integration and for ensuring that all students, regardless of their geographic location, have access to quality education.

Despite these challenges, ICTs present significant opportunities to revitalize education in rural areas. They offer access to diverse and up-to-date educational content, facilitate collaborative learning, and enable the personalization of learning. The key is to adapt thesetechnologies to the specific needs and contexts of rural communities, ensuring that they are accessible, relevant and sustainable. Through careful planning and implementation, ICTs can be powerful tools to overcome educational barriers and promote more inclusive and equitable education.

The opportunities presented by ICTs in rural education are vast and transformative. By providing access to diversified and up-to-date educational resources, ICTs offer students and educators in rural areas the possibility of transcending geographic and socioeconomic limitations. Collaborative learning and the personalization of educational content become tangible realities that can be adapted to the specific needs and contexts of each community.These technologies not only improve the quality of learning, but also foster inclusion and equity in education, allowing all students, regardless of their location, the opportunity to develop their full potential.

However, the effective integration of ICTs in rural education requires addressing several keychallenges. Technological infrastructure in many rural areas remains inadequate, limiting access and quality of internet connectivity. In addition, teacher training in the use of innovative educational technologies and methodologies is essential to ensure that ICTs areeffectively integrated into the teaching and learning process. The cultural and linguistic relevance of the content provided through ICTs is also crucial to ensure that learning is meaningful and respectful of the cultural diversity of rural communities.

The theory of multiple intelligences, proposed by Howard Gardner, suggests that individuals possess a variety of intelligences, such as linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal and interpersonal. Education, according to this theory, should be personalized to cultivate these multiple intelligences in each student. ICTs offer varied tools and resources that can be adapted to develop these intelligences individually and collectively, providing a variety of learning experiences that go beyond traditional teaching.

In the context of rural education, the integration of ICT with a focus on multiple intelligencescould mean the difference between an education that simply transmits knowledge and one that truly empowers and develops students' individual capabilities. Technological activitiesand resources should be carefully designed and selected to align with students' needs, interests and cultural contexts, ensuring that learning is relevant and effective.

ICTs, therefore, are not simply tools for transmitting information; they are catalysts for innovation and personalization in education. The effective inclusion of these technologies in rural education can transform not only how students learn, but also how they think, interact and develop into critical, creative and innovative citizens. As we continue to exploreand expand the possibilities of ICTs in rural education, we must also commit to overcomingobstacles and maximizing their potential to enrich the educational experience of every student.

The effectiveness of ICTs in rural education is measured not only by improved access to knowledge but also by their ability to transform the educational experience in a meaningful way. When considering multiple intelligences, ICT offers a variety of means and approachesthat can be used to design educational activities and resources that align with the differentways each student learns. For example, digital platforms can provide interactive simulations for students with strong logical-mathematical intelligence, while audiovisual resources maybe more effective for those with spatial or musical intelligences (Gardner, 1983).

Personalization of learning through ICT not only serves the educational needs of students but also enhances their motivation and engagement in learning. Studies have shown that when students feel ownership of their educational process and when the content relates to their interests and skills, their performance and satisfaction improve significantly (Buckingham & Willett, 2013). In the rural context, where educational resources are often limited, ICT can provide a wide range of options and opportunities to enrich learning and make it more relevant and engaging.

Teacher training is another crucial component for the successful integration of ICTs in ruraleducation. Educators not only need to be proficient in the use of technologies but also in how to effectively integrate them into their pedagogical practices. This includes understanding how different technologies can support the development of various intelligences and how to adapt content and activities to the needs of their students. Continuous training and support are essential for teachers to explore and adopt educationalinnovations that enhance learning (UNESCO, 2021).

In addition, collaboration between educators, students and the community at large is critical to the success of ICT integration in rural education. Initiatives should be designed taking into account the cultural and social characteristics of the community, ensuring that the content is relevant and respectful of local diversity. Community participation not only enriches the educational process but also strengthens the sense of belonging and commitment to education (Ainscow, Booth & Dyson, 2006).

Thus, ICTs have the potential to transform rural education by providing opportunities for the development of multiple intelligences and the personalization of learning. However, forthis transformation to be effective, challenges related to infrastructure, teacher training and cultural relevance of content need to be addressed. Through a holistic approach that includes training, collaboration and

cultural adaptation, ICT can be a powerful tool for improving the quality and equity of education in rural areas.

The integration of ICTs in rural education is not only a question of access to technologies but also of how these technologies are used to enhance meaningful and diverse learning. The focus on multiple intelligences suggests the need for instructional design that recognizes and cultivates the different ways in which students understand and interact withthe world. ICT offers a variety of means to address these differences, from interactive educational programs to collaborative online projects, which can be adapted to the needs and preferences of students (Armstrong, 2009).

In addition, the effective implementation of ICTs in rural education implies the creation of content that is not only accessible but also relevant to students. This means developing educational materials that reflect the reality and culture of rural communities, integrating examples, languages and contexts that students find familiar and meaningful. Involving thecommunity in the development of this content not only ensures its relevance, but also fosters greater connection and engagement with the educational process (Zhao & Frank, 2003).

However, the challenges to effective ICT integration in rural education are numerous and multifaceted. In addition to technical and infrastructure barriers, challenges include resistance to change, lack of teacher training and sustainability of ICT programs. Overcoming these obstacles requires a comprehensive approach that involves all actors in the education system, from policy makers and technology providers to educators, studentsand local communities (Trucano, 2005).

As we move forward in the integration of ICTs in rural education, we must also consider their long-term sustainability. This implies not only ensuring the maintenance and updating of technological infrastructure but also fostering a culture of innovation and adaptability that enables rural communities to respond to the changing demands and opportunities of the digital world. Continuous training, technical support and collaboration among educational communities are key elements for a sustainable and effective integration of ICTs in rural education (UNESCO, 2011). ICTs have the potential to be a transformative toolin rural education, promoting the development of multiple intelligences and offering more personalized and relevant learning. However, for this potential to be fully realized, the technical, cultural and pedagogical challenges associated with its implementation need to be addressed. Through a collaborative and adaptive approach, we can overcome these challenges and harness the power of ICT to enrich education in rural areas.

The path towards an effective and sustainable integration of ICTs in rural education is continuous and requires constant evaluation and adaptation. The sustainability of ICTs is not only limited to physical and technological infrastructure, but also to the capacity of educational communities to adopt, adapt and maintain these technologies over time. It is essential that ICT programs be accompanied by teacher training strategies that focus not only on the technical use of the tools but also on their pedagogical integration. Teachers need to develop a deep understanding of how ICTs can be used to facilitate and enrich learning, adapting to the diverse styles and needs of students (Koehler & Mishra, 2009).

Continuous assessment is another key component in the integration of ICTs in education. Educational institutions should establish mechanisms to assess the impact of ICT on student learning and development. This includes not only measuring academic performance but also assessing how ICT is affecting other areas of student development, such as creativity, critical thinking, collaboration,

and self-efficacy. The data collected through these assessments can provide valuable information to continually adjust and improve ICT strategies (Fullan, 2007). In addition, for ICT to have a positive and lasting impact on rural education, it is essential that projects and programs be designed with a clear understandingof local needs and contexts. This means involving communities in the design, implementation and evaluation of ICT initiatives. Community participation not only ensuresthat solutions are relevant and culturally appropriate, but also fosters a greater sense of ownership and commitment to the success of these initiatives (Warschauer, 2004).

Ultimately, the goal of integrating ICTs into rural education is not simply to provide access to technology but to transform the educational experience in ways that promote more inclusive, equitable and quality education. This requires a holistic view that recognizes ICT as part of a broader strategy to improve education, one that considers the needs, resourcesand aspirations of rural communities. With a careful and strategic approach, ICT can be a powerful force for change, opening up new opportunities for learners and contributing to the sustainable development of their communities. Effective implementation of ICT in ruraleducation must be part of a comprehensive strategy that considers all aspects of the educational environment. This includes not only the provision of equipment and internet access but also the creation of relevant and accessible digital content, the professional development of teachers and the creation of a culture of sustainable technology use and maintenance. Collaboration between different actors, including governments, educational institutions, communities and the private sector, is essential to ensure that resources and efforts are aligned towards common and sustainable goals (Selwyn, 2013).

One of the critical aspects of ICT implementation is technological adaptability. Technologicalsolutions must be flexible and able to adapt to the changing needs and circumstances of rural communities. This may include technologies that work in conditions of low connectivity, programs that can be used without an internet connection, and platforms thatare compatible with a variety of devices, including those that are more commonly availablein rural communities (Unwin, 2009).

In addition, it is crucial to recognize and support the role of teachers as key mediators in the ICT integration process. Teachers not only need to be competent in the use of technologies but also capable of integrating them effectively into their pedagogical practices. This requires a continuous training approach that allows them to develop skills and strategies to use ICTs in innovative and effective ways in the classroom. It is also important that teachers have spaces to share experiences and learn from each other, creating communities of practice that foster knowledge sharing and innovation (Voogt & Knezek, 2008). To illustrate the potential impact of ICTs in rural education, it is useful to consider case studies and examples of success. For example, programs that have managedto significantly improve access and quality of education in rural areas through technology integration, teacher training and community participation. These examples not only provideevidence of the value of ICTs but also offer lessons and practices that can be adapted and applied in other contexts.

Effective integration of ICTs in rural education requires a holistic and collaborative approachthat considers the needs, capacities and aspirations of rural communities. Through the implementation of adaptive technologies, continuous professional

development of teachers and collaboration among different stakeholders, we can work towards a rural education that is inclusive, equitable and capable of preparing students for the challenges and opportunities of the 21st century. Overcoming the challenges inherent in implementingICTs in rural settings requires a multifaceted approach. One of the first steps is to ensure that the necessary technological infrastructure is accessible and sustainable. This includes not only the availability of devices and Internet access but also ongoing maintenance and technical support to ensure that technologies are functional and up-to-date. Public-private partnerships can be key in this regard, providing the necessary resources and expertise to establish and maintain the technology infrastructure in these communities (Bhattacharya & Sharma, 2007).

In addition to infrastructure, it is essential to address teacher training and professional development. Training programs should be continuous and adapted to the changing needsof educators and the educational environment. Training should not only focus on technical skills but also on innovative pedagogical methods that effectively integrate ICTs into the teaching and learning process. Fostering a culture of learning and collaboration among teachers can contribute significantly to this goal, allowing them to share experiences, resources and strategies (Ertmer & Ottenbreit-Leftwich, 2010).

To measure the success of ICT integration in rural education, it is important to establish clear indicators and evaluation methods that consider a variety of factors. This includes notonly the academic performance of students but also the development of digital skills, increased motivation and commitment to learning, and improved quality of teaching. Regular monitoring studies and evaluations can provide valuable information on the impactof ICT and help identify areas for improvement (Kirkwood & Price, 2014). Case studies and examples of good practices can provide valuable insights on how to overcome challenges and maximize the impact of ICT in rural education. Analyzing successful initiatives can identify key success factors, lessons learned, and replicable strategies that can be adapted to different contexts. These studies can also inspire and motivate communities and educators to embark on their own ICT integration initiatives, providing a sense of possibilityand direction (Wang, 2013).

For the implementation of ICTs in rural education to be sustainable in the long term, carefuland strategic planning that considers not only current but also future needs is crucial. This involves keeping abreast of rapid technological evolutions and being able to adapt educational infrastructures and practices to new tools and methods as they becomeavailable. A flexible and scalable technology adoption strategy can ensure that investments made today will continue to benefit educational communities in the future (Norris & Soloway, 2011). Community involvement is another vital aspect for the success and sustainability of ICT in rural education. Communities must be involved in the ICT planning and implementation process, ensuring that solutions are relevant and respect the cultural and social particularities of each area. The active participation of parents, community leaders and other stakeholders not only improves the relevance and acceptance of initiatives but also strengthens sustainability, as the community becomes an active ally in the maintenance and promotion of ICT in education (Zhao, Pugh, Sheldon & Byers, 2002).

Moreover, adaptability is a key principle in the successful integration of ICT in any educational context, but especially in rural education. Changes in technology are rapid andconstant, and today's solutions may become obsolete in a few years or even months. Educational institutions must be prepared to adapt to these changing circumstances, whichimplies not only updating technological tools and

platforms but also continually reviewing and adjusting pedagogical practices to take full advantage of the new opportunities that technologies offer (Cuban, 2001).

To ensure effective and sustainable ICT implementation, it is essential to have policies and support programs that promote equitable access to technology, encourage teacher training and professional development, and provide the necessary resources for the maintenance and updating of technological infrastructure. Governments, together with international organizations, the private sector and civil society, have a crucial role to play in creating an enabling environment for the integration of ICTs in rural education (Resta & Laferrière, 2007).

The consolidation of ICTs in rural education requires continuous and reflective evaluation that considers not only the achievements and benefits obtained but also the challenges and obstacles encountered. Evaluations should be holistic, encompassing technical, pedagogicaland social aspects, and should involve all relevant stakeholders, including educators, students, parents and administrators. These evaluations not only measure the impact of ICTon student learning and development, but also identify opportunities for improvement andadjust strategies and practices accordingly (Reeves, 2008).

Community learning and development is another crucial aspect for the sustainability and long-term impact of ICT in rural education. Initiatives should encourage not only the adoption of technologies but also the development of digital and learning skills throughoutthe community. This includes training programs for parents and other community members, as well as the promotion of community spaces where ICTs are used for educational, social and cultural purposes. By strengthening community capacities, it ensures that technological knowledge and resources are effectively maintained and leveraged, even beyond the school setting (Warschauer, 2003).

In addition, the scalability of ICT initiatives is essential to expand their impact and benefit agreater number of rural communities. Projects should be designed in such a way that they can be replicated and adapted in different contexts, considering the diversity of rural environments and the varied needs of communities. This implies not only the replication oftechnological infrastructure but also the adaptation of pedagogical approaches and implementation strategies. Collaboration between different regions and the sharing of knowledge and experiences can facilitate this scalability process and ensure that lessons learned in one place benefit others (UNESCO, 2011).

To ensure that ICT initiatives in rural education are not only effective but also long-lasting, it is crucial to maintain a focus on continuous innovation. The field of technology is constantly evolving, and with it, the pedagogical and communicative possibilities it offers. Educational institutions and rural communities must be prepared to explore and adopt newtools and approaches as they become available, ensuring that the education they provide remains relevant and effective in an ever-changing world (Anderson, 2008). Strengthening collaborative networks among diverse stakeholders is critical to the success and sustainability of ICT initiatives. This includes cooperation between schools, communities, governments, non-governmental organizations and the private sector. Collaborative networks can facilitate the sharing of resources, knowledge and experiences, as well as provide mutual support and promote innovations. By

working together, different actors cancreate more robust and adaptive solutions that benefit a greater number of students and communities (Westera, 2011).

Adaptability is an essential characteristic for meeting future challenges and taking advantage of the opportunities that arise with technological advances. ICT initiatives must be flexible enough to adapt to changes in technology, educational needs, and the socioeconomic conditions of rural communities. This implies not only technological adaptability but also the ability to adjust pedagogical and organizational approaches to newcircumstances. Adaptability ensures that ICT initiatives can continue to provide significant long-term benefits, regardless of how the environment and needs evolve (Dede, 2010).

Thus, studies have shown a significant relationship between the use of learning strategies and students' multiple intelligences scores, suggesting that greater integration of ICT in education can facilitate more effective learning strategies tailored to students' different intelligences (Akbari & Hosseini, 2008). The theory of multiple intelligences, proposed by Gardner, has revolutionized the understanding of human abilities, suggesting that recognizing and cultivating different types of intelligences can lead to more effective and personalized learning (Gardner, 1983). By integrating ICT into education, a world of possibilities opens up to cater to these different intelligences, offering a variety of resourcesand adaptive approaches.

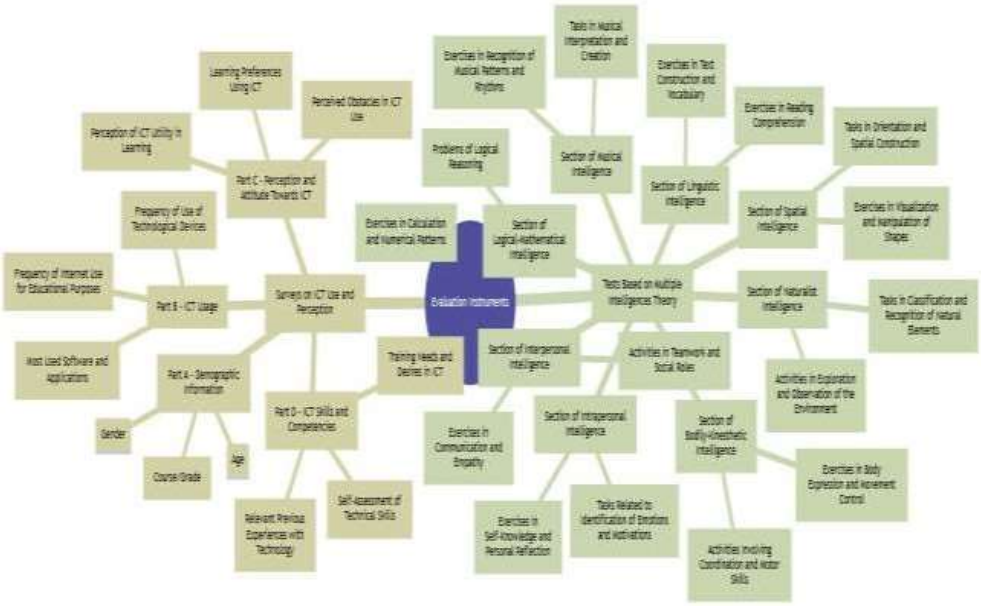
The adaptation of ICT in education, with a focus on multiple intelligences, prepares studentsnot only for the present but also for the future. Competence in using and adapting to new technologies is becoming an essential skill in a technologically advanced world (Anderson, 2008). Therefore, the educational system must recognize and use the power of ICT to enhance learning and the development of all intelligences, preparing students for the challenges of the future. The implementation of ICTs in the educational context, focused onthe development of multiple intelligences, not only improves access and quality of education, but also promotes a more inclusive and diverse pedagogical approach. These technologies can be a transformative tool, opening up new opportunities and facilitating an enriching and diverse learning environment for all students (Akbari & Hosseini, 2008).

Methodology

The study adopted a quantitative approach with a non-experimental, cross-sectional, descriptive design. This methodological choice allowed the collection and analysis of numerical data at a single point in time to describe the variables and analyze their interrelationship. The quantitative nature facilitated the objective measurement and generation of statistics related to ICT integration and the development of multiple intelligences among students.

The study population consisted of students from a specific rural educational institution, selected for its relevance and accessibility. The sample was determined using stratified probability sampling to ensure that it was representative of the diversity of students withinthe population. Variables such as age, gender, and academic performance were consideredfor stratification. The sample size was calculated using statistical formulas that considered the total population and the desired confidence level for the study. To assess students' competencies and preferences in relation to ICT and their development of multiple intelligences, two main instruments were used:

- Surveys on the use and perception of ICTs: Surveys were designed and administeredto collect information on how students use ICTs in their learning, their attitude towards these technologies and their perception of their effectiveness in supportingtheir education.
- Tests based on Gardner's theory of multiple intelligences: Tests were applied to measure the different intelligences of the students, based on Howard Gardner's theory. These tests made it possible to identify areas of strength and opportunitiesfor the development of specific intelligences through the integration of ICTs.



This mind map diagram illustrates the structure of the assessment instruments used to measure the use and perception of information and communication technologies (ict), as well as tests based on the theory of multiple intelligences.

Both instruments underwent a rigorous content validation process with experts in ICT, education and psychometrics. In addition, a pilot test was conducted with a small group ofstudents to adjust and improve the instruments based on the results and feedback received.To ensure the validity and reliability of the instruments, several measures were taken:

- Content Validity: Experts in education, technology and psychometrics reviewed the instruments to ensure that the items were relevant and adequate to measure the constructs of interest.
- Pilot Test: A pilot test was conducted to identify and correct any problems with theinstruments and to ensure their comprehensibility and relevance to the study population.
- Reliability: Cronbach's alpha coefficient was used for the questionnaires and tests to evaluate the internal consistency of the instruments. Adjustments were made basedon these results to improve reliability.

The data collected were coded and analyzed using statistical software. Descriptive analyses were performed to summarize the data and inferential analyses were performed to explore relationships between variables of interest. The analysis included correlation tests, analysis of variance, and other statistical techniques relevant to the objectives of the study.

Informed consent was obtained from all participants, and confidentiality and anonymity of data were assured. The study was reviewed and approved by an institutional ethics committee to ensure that all relevant ethical and legal guidelines were followed (Creswell,2014).

Analysis and results

The ICT Competencies Dimension evaluated among students included indicators such as creativity and innovation, communication and collaboration, research and information management, critical thinking, digital citizenship, and ICT operations and concepts. The results are presented in Table 1, following the measures of central tendency: arithmetic mean and mode for each indicator.

ITEMS	1	2	3	4	5	6	7	8
ARITHMETIC MEAN	1.29	1.57	1.14	1.07	3.14	1.50	1.43	1.43
FASHION	1	1	1	1	4	1	1	1

Table 1: ICT competencies that the student should have

The descriptive analysis revealed that item 5, corresponding to conducting science experiments using digital measurement instruments and implements, obtained a significantvalue of 3.14, placing it at a moderate rating. This implies that, although some students know ICT concepts and systems, not all know how to apply them effectively, indicating an opportunity for improvement in the understanding and practical application of ICT for problem solving and informed decision making. The other items ranged between values of1 and 1.80, suggesting that students showed generally good mastery in areas such as creative thinking, digital collaboration and communication, and recognition of ethical and legal issues associated with ICTs.

Multiple Intelligences

A test was applied to identify the multiple intelligences present in the students, grouping them together to facilitate self-exploration and mutual support. The dimension evaluated covered types of intelligence such as linguistic, logical-mathematical, kinesthetic-bodily, musical, visual-spatial, intrapersonal, interpersonal and naturalistic.

	INTELLIGENCIES							
STUDENTS	I. VERBAL	I.LOGI CO-MAT	I.VISUAL-ESP	I.KINESTE.	I.MUSICAL	I,INTRAPERSON	I. INTERPERSO.	NATURALIST
1	2	2	5	5	3	4	4	3
2	4	4	1	4	3	4	4	4
3	3	5	3	4	4	4	5	4
4	3	1	1	4	4	3	5	3
5	1	2	2	4	4	5	4	3
6	4	5	3	4	3	5	3	3
7	1	1	2	3	3	5	5	2
8	1	1	5	3	5	1	3	5
9	5	3	3	3	2	3	5	3
10	2	5	3	4	5	5	5	4
11	4	1	3	3	5	4	5	3
12	2	2	1	4	4	4	4	3
13	4	2	4	3	5	4	4	4
14	3	5	1	2	3	4	5	2

Table 2: Multiple Intelligences Test

The results showed that, for example, in verbal or linguistic intelligence, only a minority of the students evaluated showed a dominant ability, suggesting a need for strategies aimed at enhancing this area. In contrast, a greater proportion of students demonstrated markedabilities in intelligences such as interpersonal and intrapersonal, indicating a tendency towards understanding and effective management of personal relationships and self- knowledge.

The results obtained from the instruments applied reflect areas of strength and opportunity in ICT competencies and the development of students' multiple intelligences. While there is a general trend towards mastery of certain competencies and types of intelligence, specific areas requiring attention and improvement are also identified. These findings provide a valuable basis for the design of pedagogical interventions and ICT integration strategies that respond to students' needs and potential, with a focus on more personalized and holistic learning.

Correlational Analysis between ICT Competencies and Multiple Intelligences Development

To understand how competencies in the use of ICTs influence the development of the different multiple intelligences, a correlational analysis was conducted. The main findings include:

- A significant positive correlation was found between the frequency and diversity of ICT use and students' logical-mathematical skills. This suggests that a more intense and varied use of digital technologies may be associated with a greater developmentof analytical and problem-solving

skills.

- Familiarity with and frequent use of digital tools for communication and access to information correlated with higher development in linguistic intelligence. This includes skills in reading comprehension, writing and verbal expression.
- Skills related to critical thinking and digital citizenship showed a positive correlation with several intelligences, particularly intrapersonal and interpersonal, highlighting the importance of understanding and navigating the digital environment ethically and effectively.

Outcome-Based Teaching Strategies

- The results of the analysis suggest the need for didactic strategies that enhance the use of ICT in a manner aligned with the development of multiple intelligences. Somerecommendations include:
- Incorporate activities that use ICT to encourage logical reasoning and problem solving, such as programming, mathematical modeling, or educational games that challenge students to think critically and analytically.
- Encourage the use of blogs, discussion forums, and digital content creation tools toenhance students' writing and communication skills by providing diverse platformsfor creative and critical expression.
- Develop programs that teach students to navigate the digital world safely and responsibly, understanding the ethical implications of technology use and encouraging critical reflection on digital information and media.

Conclusions

The culmination of this study reveals a dynamic intersection between ICT competencies andthe development of multiple intelligences in the rural educational context. The strategic provision of laptops to educational institutions, as documented in the tripartite project (2021), is a tangible reflection of the drive to bridge the digital divide and foster inclusive and diversified education. Laptop delivery data in multiple rural areas underscores a commitment to accessibility and digital competence, being the cornerstone for building a future where technology is an extension of learning and cognitive expression.

When analyzing the results obtained, there is a clear correlation between access to ICTs and the strengthening of critical skills, especially in ICT operations and concepts, where students demonstrated an average knowledge in their practical application. This finding is congruentwith previous studies (Akbari & Hosseini, 2008), which emphasize the importance oflearning strategies in the development of competencies and how ICT can be a catalyst for this process.

Multiple intelligences, from linguistic to naturalistic, were presented in a varied manner among students, evidencing the cognitive diversity that must be addressed through adaptive pedagogical practices. The integration of ICT has proven to be a key facilitator in this process, providing resources that cater to different learning styles and promote a richerand more personalized educational environment.

The research underscores the need for educational strategies that not only provide access to ICTs but also promote their critical and creative use, enabling students to develop a full spectrum of multiple intelligences. Consequently, continued investment in teacher training,technological infrastructure and digital educational resources is recommended to sustain and expand these competencies among the student population.

On the horizon of contemporary education, marked by rapid digital evolution, this study acts as a call to action for educational institutions, policy makers and the community at large to recognize and act on the interdependence between technology and cognitive development. Education, therefore, must be an amalgam of access, quality and relevance, preparing students for a world where technology is pervasive and central to their personaland professional success.

Recommendations

Rural educational institutions adopt a systematic approach to integrate ICT into pedagogicalplanning, enhancing multiple intelligences through specific didactic strategies:

- Logic-Mathematics: Implement mathematics clubs that use modeling and problem solving through digital platforms, encouraging the use of educational applications toexercise deduction and induction (Churches, 2009).
- Linguistics: Encourage the use of digital tools for debates and round tables, promoting digital storytelling and blogging to improve writing and communication skills (López, 2014).

For the other intelligences, we suggest the following activities aligned with the digitalBloom's Taxonomy:

- Spatial: Use design software for students to create mentefacts and concept maps,facilitating visual and spatial understanding.
- Naturalist: Organize field trips and citizen science projects that incorporate digital devices for observing and recording data from the natural environment.
- Musical: Incorporate technology in music education by enabling composition andperformance through specific applications and programs.

It is essential for educators to become familiar with Bloom's Taxonomy of digital (Churches,2009) in order to design activities that not only address the cognitive domain but also incorporate digital methods and tools:

- Body-Kinesthetic: Include educational video games and augmented reality applications that require physical interaction and promote active learning.
- Intrapersonal and Interpersonal: Implement online collaborative projects that encourage reflection and teamwork, using educational social networks and collaborative platforms.

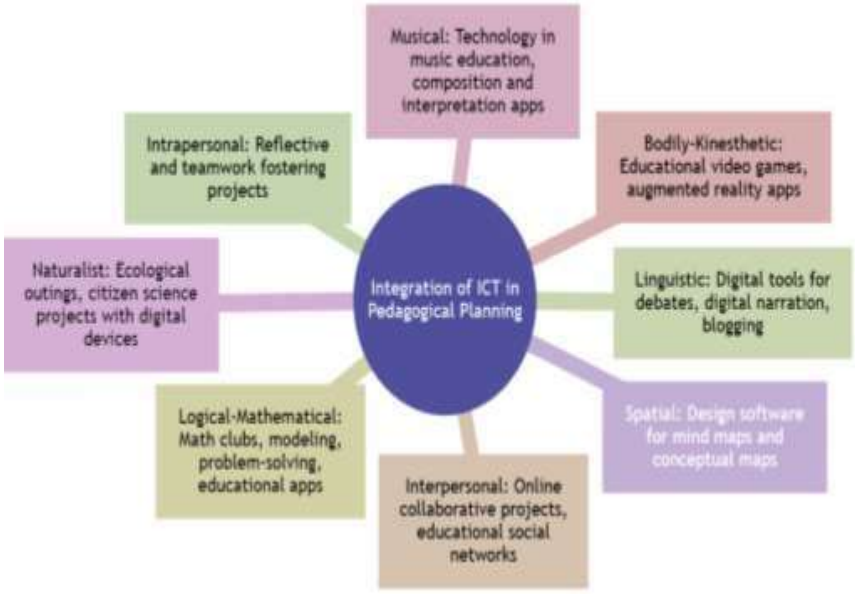


Figure 2. Proposal of integral strategies to potentiate multiple intelligences.

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