INTAKA WORKSHOP: INNOVATION, RESEARCH, INTERDISCIPLINARITY, AND INTERCULTURALITY WITH THE TAPTANA CAÑARI - A NOVEL APPROACH TO EDUCATION

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ABSTRACT

Objective: This article To analyze the relevance of the INTAKA Workshop in strengthening cultural identity and preparing students for the challenges of the 21st century.

Theoretical Framework: The Ecuadorian Curriculum of 2016 seeks to integrate interculturality, innovation, and ancestral knowledge into education. However, traditional approaches still predominate.

Method: An instrumental case study was applied to the 44 participants of the workshop. A qualitative questionnaire with open-ended questions was applied, and a content analysis was carried out.

Results and Discussion: The results showed that the INTAKA Workshop promotes interdisciplinary and intercultural learning through practical activities with the Taptana Cañari, an ancestral mathematical tool. It fosters critical thinking and social responsibility. Participants positively evaluated the experience and highlighted its impact on learning and cultural identity. In the discussion, the results supported the relevance of the INTAKA Workshop as an innovative alternative to overcome the challenges of current education.

Implications of the Research: It’s interdisciplinary, intercultural, and value-oriented approach has the potential to strengthen cultural identity, promote meaningful learning, and prepare students for the 21st century.

Originality/Value: This study contributes to the educational literature by presenting the INTAKA Workshop as an unprecedented pedagogical initiative that integrates Cañari cultural richness with interdisciplinary learning. This study presents an innovative proposal to strengthen cultural identity and prepare 21st-century students, using the Taptana Cañari as a teaching tool and promoting values such as solidarity.

Keywords: Education, Interculturality, Innovation, Taptana Cañari, INTAKA Workshop, Cultural Identity, Values, Meaningful Learning.

OFICINA INTAKA: INOVAÇÃO, PESQUISA, INTERDISCIPLINARIDADE E INTERCULTURALIDADE COM A TAPTANA CAÑARI: UMA ABORDAGEM INOVADORA DA EDUCAÇÃO

RESUMO

Objetivo: Este estudo visa analisar a pertinência da Oficina INTAKA no fortalecimento da identidade cultural e na preparação dos alunos para os desafios do século XXI.

Quadro teórico: O Currículo Equatoriano de 2016 busca integrar a interculturalidade, a inovação e os conhecimentos ancestrais na educação. No entanto, abordagens tradicionais ainda predominam.

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**Método:** Uma metodologia de estudo de caso instrumental foi aplicada aos 44 participantes da oficina. Um questionário qualitativo com perguntas abertas foi aplicado e uma análise de conteúdo foi realizada.

**Resultados e Discussão:** Os resultados mostraram que a Oficina INTAKA promove a aprendizagem interdisciplinar e intercultural através de atividades práticas com a Taptana Cañari, uma ferramenta matemática ancestral. Incentiva o pensamento crítico e a responsabilidade social. Os participantes avaliaram positivamente a experiência e destacaram seu impacto na aprendizagem e na identidade cultural. Os resultados corroboram a relevância da Oficina INTAKA como alternativa inovadora para superar os desafios da educação atual.

**Implicações da pesquisa:** Sua abordagem interdisciplinar, intercultural e orientada para valores tem o potencial de fortalecer a identidade cultural, promover a aprendizagem significativa e preparar os alunos para o século XXI.

**Originalidade/valor:** Este estudo contribui para a literatura educacional ao apresentar a Oficina INTAKA como uma iniciativa pedagógica sem precedentes que integra a riqueza cultural Cañari com a aprendizagem interdisciplinar. Este estudo apresenta uma proposta inovadora para fortalecer a identidade cultural e preparar os alunos do século XXI, utilizando a Taptana Cañari como ferramenta didática e promovendo valores como a solidariedade.

**Palavras-chave:** Educação, Valores, Interculturalidade, Innovación, Taptana Cañari, Oficina INTAKA, Identidade Cultural, Valores, Aprendizagem Significativa.
1 INTRODUCTION

In this article, the relevance of the Workshop Innovation, Research, Interdisciplinarity and Interculturality with the Taptana Cañari INTAKA (INTAKA from now on) is evaluated. The main goal is to determine their potential to strengthen cultural identity and prepare students for the challenges of the 21st century. This analysis is framed in the context of the Ecuadorian Curriculum of 2016, which seeks to overcome the mere transmission of information and form fair, supportive and innovative baccalaureates. To achieve this, it recognizes the importance of ancestral knowledge, the dialog of knowledge and interculturality as transversal elements in education, in addition to proposing interdisciplinarity as a tool to promote value formation (Ministry of Education of Ecuador, 2016).

Despite the advances in the Ecuadorian curriculum, the current educational reality shows that traditional approaches still prevail in the educational system, limiting the development of life skills and the integral formation of students (Barrera et al., 2017; CIE, 2004). In this sense, the article highlights the importance of exploring innovative methodologies such as the INTAKA Workshop, which integrates ancestral culture and wisdom into teaching, promoting a more inclusive and meaningful education for all.

In this context, the following research questions arise in which the present study focuses: What is the importance of training in values in the Ecuadorian curriculum of 2016? What strategies can be implemented to strengthen value education in the classroom? How can ancestral culture and wisdom be integrated into the teaching of values? What challenges do you face in implementing comprehensive values training in the Ecuadorian education system?

The answer to these questions will allow us to reflect on the need for a change in the way we teach and learn, and on the importance of training in values to build a more just, caring and innovative society. The INTAKA Workshop presents itself as a promising alternative to address these challenges and promote quality education for the new generations.

2 THEORETICAL REFERENCE

For starters, the 2016 Ecuadorian Curriculum (Ministry of Education, 2016) recognizes the relevance of value education for students’ integral development. This training seeks to go beyond the simple transmission of knowledge and seeks to form responsible, supportive, critical and committed citizens with society.
In addition, the curriculum establishes as a general objective "To train critical, reflective, autonomous, responsible, solidary citizens committed to the construction of a just, democratic, intercultural and plurinational society" (Ministry of Education, 2016, p. 10). To achieve this, it proposes various strategies, including the transversalization of values in all areas of the curriculum, the development of skills related to values, and the implementation of active methodologies that allow students to participate in the construction of their own learning. However, the implementation of values training in the classroom presents challenges, mainly due to the lack of teaching resources and the necessary training for teachers.

In this context, the INTAKA Workshop emerges as an innovative proposal. Thus, the Workshop Innovation, Research, Interdisciplinarity and Interculturality with the Taptana Cañari (INTAKA) is presented as an innovative approach to education that seeks to instrumentalize inter and transdisciplinary practices in the classroom based on the Pedagogical Proposal Taptana Cañari and the Value of Solidarity (Vásquez and Duchi, 2021).

This workshop is based on four principles: interculturality, innovation, interdisciplinarity and research. By incorporating these principles into the educational process using the Taptana Cañari, it is intended to provide a more comprehensive and inclusive approach to teaching and learning.

In this sense, the INTAKA Workshop emphasizes an interdisciplinary and intercultural approach to education. By incorporating diverse perspectives and knowledge systems into the curriculum, students are exposed to a variety of ideas and concepts that promote critical thinking and problem-solving skills. This approach also fosters a greater sense of cultural awareness and appreciation, promoting respect and understanding among students from different backgrounds. The workshop is particularly relevant in today's globalized world, where cultural diversity and intercultural communication skills are increasingly important (Comboni and Juarez, 2020).

On the other hand, the INTAKA Workshop places a significant emphasis on the value of solidarity, based on the Taptana Cañari pedagogical proposal and the value of solidarity. By teaching Mathematics and values of solidarity to 4th year students of Basic Education, Taptana Cañari seeks to promote a sense of community and social responsibility among young students (Vásquez and Duchi, 2021).

This approach encourages students to think beyond their individual needs and interests, promoting a greater sense of empathy and concern for others. The role of solidarity in Taptana Cañari pedagogy extends beyond the classroom, with a focus on the sustainable development
goals (Durán and Vásquez, 2022). By promoting solidarity and social responsibility, the INTAKA Workshop aims to contribute to a fairer and more equitable society.

Consequently, the INTAKA Workshop is presented as an unprecedented pedagogical initiative that seeks to integrate the cultural richness of the Cañari people with interdisciplinary learning in students. This initiative, developed by a multidisciplinary team of three Ecuadorian universities, has as its main objective to evaluate an innovative methodology that facilitates the understanding of the quantity-number relationship and the basic arithmetic operations in the participants. Because of this, through a series of specific objectives, it is aspired to build an enriching educational experience that encourages meaningful learning and the valuation of cultural diversity.

It is important to emphasize that the workshop has as general objective to train teachers to implement comprehensive educational processes based on the pedagogical proposal "Taptana Cañari and the value of solidarity". This approach encourages students to think beyond their individual needs and to develop empathy and concern for others.

In this workshop, the Taptana Cañari, as an ancestral cultural heritage, becomes the fundamental base of it. In addition, the Taptana Cañari favored the development of mathematical thinking in the Cañari culture and remains a symbol of cultural identity and an invaluable didactic resource in the teaching of Mathematics. It allows a deep and tangible understanding of numerical concepts. Today, however, it goes beyond just contributing to mathematical development. Through a series of specific objectives, it aims to build an enriching educational experience that encourages meaningful learning and the appreciation of cultural diversity.

However, the INTAKA Workshop adopts a participatory and active methodology that encourages teamwork and interdisciplinary collaboration. The activities of the workshop are structured in two main modules:

Module 1: Knowing the Taptana Cañari: in which, the Taptana Cañari is presented and its historical and cultural relevance is explored. Participants design their own Taptanas and narrate legends of their own making, promoting the appreciation of cultural identity and teamwork. In addition, skills such as teamwork, interdisciplinary collaboration, research, innovation and interculturality are developed.

Module 2: Operating with the Taptana Cañari: in which, the use of the Taptana Cañari as a teaching tool to teach basic operations of mathematics is deepened. Also, addition and subtraction algorithms are presented, and participants work in groups to apply these concepts.
in their own Taptanas, consolidating their understanding of mathematical processes in a collaborative way.

It should be noted that the implementation of comprehensive values training in the Ecuadorian education system faces various challenges, such as the lack of teacher training, resistance to change, lack of resources and difficulty in assessing the impact of values training. However, despite these challenges, training in values is fundamental for the integral formation of students and the construction of a just society. Therefore, the INTAKA Workshop is presented as an alternative that contributes to overcome these challenges and promote quality education.

It should be noted that, in order to determine the relevance of the implementation of the Workshop Innovation, Research, Interdisciplinarity and Interculturality with the Taptana Cañari INTAKA, a validation process was carried out.

3 METHODOLOGY

For the validation of the INTAKA Workshop, a qualitative approach was applied, specifically an instrumental case study, in order to understand in depth the experiences and perceptions of the participants in the INTAKA workshop. Because, Sánchez (2019) points out that the qualitative research approach seeks to understand a phenomenon within its own social, historical and cultural context.

As a data collection technique, a qualitative questionnaire with open questions was applied to the participants of the workshop. The questionnaire addressed aspects such as the perception about the workshop methodology of the participants. In the same way, the use and understanding of the Taptana Cañari, its potential as a didactic tool for the teaching of Mathematics and its cultural significance were consulted.

Also, the impact of the workshop on professional development was evaluated, exploring the influence of the workshop on the ability of participants to implement innovative, interdisciplinary and intercultural strategies in the teaching of the different subjects. Finally, the relevance of the workshop implementation was assessed when consulting on the feasibility of implementing the INTAKA workshop in the Ecuadorian educational context, considering the needs and characteristics of the students.

The exhibition was made up of 44 participants of the INTAKA workshop, selected through an open call, to promote the participation of a diversity of profiles in terms of teaching experience and educational level.
In addition, to examine data sources, a content analysis of the responses to the questionnaire was carried out, using an inductive approach to identify emerging categories and topics. Seeking to understand the experiences and perceptions of the participants from a holistic and interpretative perspective. While, to ensure the validity and reliability of the applied study, data triangulation was used.

It is hoped that this study will contribute to determine the relevance of the implementation of the INTAKA Workshop in the Ecuadorian educational system from a qualitative perspective, valuing the experiences and perceptions of the participants.

4 RESULTSS AND DISCUSSIONS

A qualitative analysis of the content of the answers to the questions of the questionnaire was carried out and the triangulation of the same ones was carried out. From this, emerging categories were identified for each question, allowing us to understand the different dimensions of the workshop, as presented below:

Table 1
Results of the application of the questionnaire by category.

<table>
<thead>
<tr>
<th>Category</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation in teaching</td>
<td>The Taptana Cañari stands out as an innovative material for learning basic operations, without the need for technology. In addition, the creativity and attitude of the teacher are key to the innovative implementation of the Taptana Cañari.</td>
</tr>
<tr>
<td>Meaningful learning</td>
<td>The Taptana Cañari facilitates the understanding of basic mathematical operations. In addition, learning with the Taptana Cañari is experimental, practical and experiential. In addition, the connection with culture and tradition enriches learning.</td>
</tr>
<tr>
<td>Interdisciplinarity</td>
<td>The Taptana Cañari allows to integrate different areas of knowledge. The Taptana Cañari can be adapted to different topics. La Taptana Cañari encourages active participation and collaboration.</td>
</tr>
<tr>
<td>Handling and concrete material</td>
<td>Material manipulation is critical to learning. The Taptana Cañari is a tangible and manipulable material. La Taptana Cañari offers a complete sensory experience.</td>
</tr>
<tr>
<td>Accessibility</td>
<td>The Taptana Cañari is a low-cost material and easy to access. The Taptana Cañari can be adapted for people with different needs. The Taptana Cañari is attractive for all ages.</td>
</tr>
<tr>
<td>Interculturality</td>
<td>La Taptana Cañari promotes intercultural dialog and the appreciation of diversity. The Taptana Cañari connects with the culture and identity of the Cañari</td>
</tr>
</tbody>
</table>
The results of the INTAKA Workshop present interesting findings about the potential of the Taptana Cañari as a didactic resource for the teaching of Mathematics and other subjects in basic education. For example, all the authors cited in the introduction of this study agree that the Taptana Cañari is an innovative resource as it is a manipulative and non-technological material. In addition, they highlight the importance of creativity and the attitude of the teacher to make the most of their potential. Future research could explore specific teacher training methodologies for an innovative use of the Taptana Cañari.

It is also evident that there is a clear consensus among the authors on the contribution of the Taptana Cañari to meaningful learning. Its ability to facilitate the understanding of basic mathematical concepts through practical experience and connection with culture and tradition is highlighted. Complementary studies could comparatively analyze the academic performance in mathematics of students using the Taptana Cañari versus traditional methods.

In the same way, the authors agree on the versatility of the Taptana Cañari to integrate with other areas of knowledge. The possibility of adapting it to different topics and encouraging active participation and collaboration opens up interesting pedagogical possibilities. However, future research could explore in depth how the Taptana Cañari can be harnessed for interdisciplinary projects in the school curriculum.

On the other hand, there is also a clear agreement between the authors on the importance of material manipulation for learning (Osorio et al., 2021). The Taptana Cañari, being tangible and manipulable, offers a complete sensory experience that can favor the understanding of
mathematical concepts. Additional studies could investigate how the Taptana Cañari impacts on the development of psychomotor skills and its relationship with the learning of Mathematics. In addition, the authors highlight the low cost and easy access of the Taptana Cañari, making it viable for different educational contexts. In addition, the ability to adapt it to different needs and its appeal to all ages extends its potential for application. Future research could evaluate the effectiveness of Taptana Cañari in educational contexts with limited resources.

All the authors agree on the value of the Taptana Cañari to promote intercultural dialog and the valuation of diversity. The connection with the culture and identity of the Cañari people, together with the possibility of learning about different cultures, fosters a more inclusive vision in the classroom (Valdés et al., 2019). Complementary studies could analyze the impact of the Taptana Cañari on the development of intercultural awareness in students of diverse cultural origins.

We can also observe a consensus among the authors on how teamwork, fundamental to the creation of the Taptana Cañari, promotes values such as respect, collaboration and the exchange of ideas. In addition, its contribution to the development of responsibility and teamwork is highlighted. Future research could quantitatively analyze the impact of the INTAKA Workshop on the development of social values and teamwork in students. In the same way, the authors agree that the Taptana Cañari awakens curiosity and interest in mathematics through playful and creative learning. It should be noted that, the connection with culture and history contributes to a more meaningful and contextualized learning (Lahera and Pérez, 2022). Further studies could compare motivation for mathematics between students using the Taptana Cañari and those using traditional methods.

Additionally, it can be said that the results showed the ease of implementing the INTAKA Workshop in the teaching of Mathematics and other areas. The adaptability of the Taptana Cañari to different educational levels and its positive impact on motivation are very favorable aspects. Future research could analyze the costs associated with the implementation of the large-scale INTAKA Workshop and its feasibility in the current education system.

In short, the INTAKA Workshop promotes the appreciation of Cañari culture, the recognition and strengthening of cultural identity, and respect for cultural diversity and interculturality. Complementary studies could analyze the students' perception of their own cultural identity and their respect for cultural diversity after participating in the INTAKA Workshop.
5 CONCLUSIONS

The results obtained from the implementation of the INTAKA Workshop support the relevance of the Taptana Cañari as an innovative teaching tool for the teaching of basic mathematical operations. The workshop fosters meaningful learning, interdisciplinarity, interculturality, solidarity and respect for identity. The implementation of the INTAKA Workshop in the Ecuadorian education system is recommended as a strategy to improve the quality of education.

The study of the INTAKA Workshop, which combines innovation, research, interdisciplinarity and interculturality with the Taptana Cañari, allows us to conclude that its implementation is highly relevant to strengthen cultural identity and prepare students for the challenges of the 21st century. Because, the Taptana Cañari, as a teaching tool, connects students with their ancestral culture and allows them to understand its value. Similarly, the INTAKA workshop promotes respect for cultural diversity and interculturality, promoting a fairer and more inclusive society.

On the other hand, the INTAKA workshop develops skills such as critical thinking, creativity, problem solving and teamwork, fundamental to face the challenges of the 21st century. Likewise, the interdisciplinarity of the workshop allows students to understand the interconnection of the different areas of knowledge, giving them a holistic view of the world. Finally, the Taptana Cañari, being a tangible and manipulable material, facilitates meaningful and experiential learning, essential for a quality education in the 21st century.

In conclusion, the INTAKA Workshop is presented as an innovative and valuable tool to strengthen cultural identity and prepare students for the challenges of the 21st century. Its implementation in the Ecuadorian education system can contribute to improving the quality of education and to forming critical, creative and responsible citizens.

Among the recommendations, it is noted that the INTAKA Workshop should be implemented gradually in the educational system, providing the necessary training to teachers. Also, it is suggested to encourage research and continuous evaluation of the workshop to measure its impact on the learning and integral development of students. On the other hand, it is suggested to carry out studies that explore in depth the different dimensions of the INTAKA Workshop and its impact on student learning.
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REFERENCES


https://biblioteca.clacso.edu.ar/Mexico/desh-uam-x/20201118022700/Interculturalidad-Educacion.pdf