

The museum as a teaching-learning environment for history

Angel Willian Tenemaza Morocho*
Christian Paúl Naranjo Navas*

Abstract

The purpose of the present study was to analyze the effectiveness of the museum as a dynamic space for the teaching-learning process of history among students of the History and Social Sciences Pedagogy program at the National University of Chimborazo. A total of 37 students participated by responding to two surveys, administered before and after a museum visit, using a non-experimental, cross-sectional, and descriptive design. Statistical analyses included the Chi-square test ($X^2=74$, $p<0.001$), Student's t-test ($t=-0.638$, $p=0.528$), one-way ANOVA ($F=0.092$, $p=0.913$), and Spearman's correlation ($\rho=0.055$, $p=0.747$). The results showed that students with greater prior knowledge (mean=11.41 on a 0-27 scale) perceived a more significant educational impact, although no statistically significant differences were found in the pre- and post-visit comparison. The discussion underscored that learning could manifest in a delayed fashion and that follow-up pedagogical strategies were essential for consolidating the museographic experience. Therefore, while the museum proved to be a valuable tool to motivate autonomous research and foster the construction of historical knowledge, its effectiveness depended on teacher mediation and the implementation of interactive activities that would stimulate critical reflection on the observed content.

* Universidad Nacional de Chimborazo , awtenemaza.fes@unach.edu.ec
<https://orcid.org/0009-0009-1492-227X>

* Universidad Nacional de Chimborazo , Research group: Critical Reasoning, cnaranjo@unach.edu.ec
<https://orcid.org/0000-0003-1532-203X>

Keywords: Museum; History; Teaching-Learning; Pedagogy; Museographic Experience.

El museo como un entorno de enseñanza-aprendizaje de la historia

Resumen

El presente estudio tuvo como objetivo analizar la efectividad del museo como espacio dinámico para el proceso de enseñanza-aprendizaje de la historia en estudiantes de Pedagogía de la Historia y Ciencias Sociales de la Universidad Nacional de Chimborazo. Participaron 37 estudiantes que respondieron dos encuestas, aplicadas antes y después de una visita al museo, mediante un diseño no experimental, transversal y descriptivo. Se emplearon análisis estadísticos que incluyeron la prueba de Chi-cuadrado ($X^2=74$, $p<0.001$), t de Student ($t=-0.638$, $p=0.528$), ANOVA de una vía ($F=0.092$, $p=0.913$) y correlación de Spearman ($\rho=0.055$, $p=0.747$). Los resultados evidenciaron que los alumnos con mayor conocimiento previo (media=11.41 en una escala 0-27) percibieron un impacto educativo más significativo, aunque no se hallaron diferencias estadísticamente relevantes en la comparación pre y post-visita. La discusión resaltó que el aprendizaje podía manifestarse de manera retardada y que eran esenciales estrategias pedagógicas de seguimiento para consolidar la experiencia museográfica. Es por ello por lo que, si bien el museo representó una herramienta valiosa para motivar la investigación autónoma y fomentar la construcción de conocimientos históricos, su eficacia dependió de la mediación docente y la implementación de

actividades interactivas que estimularan la reflexión crítica de los contenidos observados.

Palabras clave: Museo; Historia; Enseñanza-Aprendizaje; Pedagogía; Experiencia Museográfica.

Received : 8-1-2025

Approved: 12-1-2025

INTRODUCTION

The field of study of history plays an undeniable and indispensable role in the formation of people, allowing them to have a critical and knowledgeable element of their social-historical context, therefore, the quality of history teaching directly influences the idea that students have about the construction of their identity and the future of society. However, this learning is conditioned by the teaching work, which is constantly challenged and updated in pedagogical practices to overcome traditional methods based on the memorization of facts or important dates in history, in order to awaken in students a considerable interest in understanding historical processes (Reyes et al., 2024).

As there are constant changes in society, the teaching of history faces constant challenges to motivate people in their development of critical thinking for a deep understanding of the events of the past. Therefore, it is essential to analyze pedagogical proposals that promote non-conventional learning spaces to complement the work that the teacher does in the classroom, being, one of many spaces, museums that highlight the ability to connect students with cultural heritage, collective memory and historical reality in a more tangible and experiential way (Karaoulas, 2025).

Although the integration of museums in the teaching-learning process of students is not new, in recent decades it has gained considerable momentum, since the development of didactic

approaches based on the active participation of students, thus promoting meaningful learning, represents a fundamental element to motivate and improve the teaching process. That is why, by conceiving a museum, not as a simple place to exhibit part of history but as a dynamic environment that allows exploration, interaction between people with objects and the collaborative construction of knowledge, historical education is revitalized and transcends the boundaries of traditional teaching (Todino & Campitiello, 2025).

Under this perspective and approach, the research was developed under the following problem: how can museums be used as dynamic environments for the teaching and learning of history in pedagogy students of the History and Social Sciences of the National University of Chimborazo? Although museums have presented an evolution in the methods of information dissemination through the integration of technological, audiovisual and recreational elements, it is important to analyze if these advances are assimilated to pedagogical practices to improve the understanding of history in order to encourage critical analysis and intellectual curiosity among students.

Consequently, it is important to know the background related to the use of the museum as a strategy for teaching history. Since the beginning of the history of education, several pedagogical currents have been developed that have promoted active learning and application as a key strategy for the integral formation of each person (Frechiani, 2024). Educational theories proposed by authors such as Jean Piaget, Maria Montessori and John Dewey in relation to the application of the museum as a learning strategy, allow offering a dynamic approach emphasizing participation, curiosity and critical analysis in students. The museum space provides a suitable environment for the development of educational philosophies by allowing interaction with the tangible objects in

the museum, fostering a deeper connection with all the material. By using it, the approach aligns with active, inquiry-based learning (Cavicchi, 2024).

On the other hand, an analysis from the sociocultural dimension of the museum emphasizes the idea that teaching should not be closed only to classrooms or textbooks, therefore, the museum, being considered as a cultural institution, keeps material and immaterial testimonies of past events of society and develops as a meeting place, exchange and collective construction of knowledge. For people who are in teacher training, the experience of learning from the perceptive and context of the museum not only facilitates learning the contents, but also becomes a practical pedagogical model, understanding the museum as a dynamic space, contributing to practical professional training (Latief et al., 2024).

Interactive strategies refer to methodologies that involve the active participation of students, such as project-based learning, problem solving, gamification and on-site documentary research. During a guided visit to the museum, the teacher can promote activities that encourage the search for information, the contrasting of sources and the elaboration of their own conclusions based on the observation and analysis of the museographic resources (Pradnyawati & Rati, 2023). In this sense, the intention is to foster intrinsic motivation, given that students feel they are participants in their formative process and see the museum not only as a place of exhibition, but also as a laboratory in which knowledge is built collaboratively.

A fundamental element that contributes significantly to the teaching-learning process, the teacher's attitude and ability to propose activities that connect theoretical content with the constant elements in the museum becomes central to enhancing

the experience (Amirullah & Patahuddin, 2023), therefore, museums serve as dynamic educational spaces that can significantly enrich history education by providing tangible connections to historical narratives. Teachers play a critical role in facilitating this connection by designing activities that foster critical thinking, creativity, and engagement with historical content (Aroche et al., 2024).

Consequently, it is essential that the teacher, the person in charge of training new teachers, possesses the knowledge and skills necessary to provide adequate guidance in the museum visit, as well as to be the clear link between the curriculum and the practical activities in order to encourage curiosity and the development of critical thinking in students. Without proper mediation, even the most innovative museum resources may be underutilized or irrelevant to the acquisition of historical knowledge (Aristeidou et al., 2022). Therefore, the teacher's work as a facilitator and mediator of the learning process highlights the need for specific training in the didactics of history and in the use of cultural spaces as part of their pedagogical praxis.

Therefore, the use of museums as pedagogical environments is becoming a conduit between the academic sphere and the community at large, facilitating future educators to acquire a deep understanding of the cultural heritage inherent in their environment and, at the same time, to develop the ability to transmit this knowledge in a meaningful way to subsequent generations.

On the other hand, the visit and interaction that students carry out in the museum promotes the development of transversal competencies, since it allows them to develop assertive communication, collaboration and the capacity for analysis in complex contexts. Students who actively participate in museum

visits learn to work as a team by researching, discussing and interpreting the historical testimonies they find in the exhibition rooms (Bautista, 2024). Likewise, it allows them to practice oral and written communication by sharing certain findings, formulating questions and drawing conclusions that articulate the information obtained with the theoretical frameworks of the discipline. These competencies are essential for future teachers, as they contribute directly to their training, since they facilitate the adaptation of different methodological strategies and the approach to complex topics in the classroom.

Therefore, inter-institutional cooperation between museums and universities is essential, since it offers multiple benefits for the parties, by generating an improvement in the educational, social and economic functions of museums, as well as expanding the didactic resources for universities. By carrying out these agreements, the collaboration allows a dynamic exchange of knowledge and resources, enriching the parties involved (Pereira, 2023). Museums benefit from the technical and academic expertise of universities as they can improve their practices and community involvement. Conversely, universities and their students benefit from access to museum collections and resources, which can enhance educational experiences and research opportunities.

The interest in developing an integrative approach also leads us to consider the socio-cultural impact of the museum on the educational community. For many students, a visit to the museum may be their first formal approach to local or national history, which implies a strong symbolic and affective charge. This direct contact with historical objects stimulates the construction of identity and collective memory, while reinforcing the sense of belonging to a shared cultural tradition. The experience becomes an essential formative exercise, since those involved in teaching

must be able to transmit not only content, but also values and attitudes that promote appreciation and care for heritage.

Constructivism and meaningful learning

The theoretical framework proposed by Jean Piaget advocates the active participation of students in the learning process, whereby knowledge is constructed through experiential encounters and social interactions, one of them being, the field trip to a museum, thus students engage in active observation, reflection and hypothesis formulation based on their experiential learning. In addition, the contribution of educators and peers as facilitators is consistent with Vygotsky's approach to social mediation, as it enhances the internalization of concepts and fosters a deeper understanding of the topic presented (Erawati & Adnyana, 2024).

David Ausubel's theory of meaningful learning indicates that prior knowledge is the most important factor influencing new learning, serving as the basis on which new information is built, so it is essential that educators evaluate and use students' existing cognitive structures (Batista, 2020). By relating the historical information exhibited in a museum with previous experiences or knowledge, the student achieves a deeper assimilation of the contents. That is why in practice a planned museum visit in which the teacher encourages the connection between the exhibition and the topics already covered in the classroom, thus strengthening the retention and understanding of historical events, is beneficial for the student's training process (Matienzo, 2020).

Active and experiential learning approaches

The experiential learning philosophy proposed by John Dewey emphasizes the importance of learning through direct experience

and reflection, aligning significantly with the educational potential of museums, thus providing a rich environment for experiential learning by offering tangible objects and interactive experiences that awaken students' curiosity and critical thinking. This approach is supported by several educational strategies, including workshops, participatory activities, and the integration of technology, which enhance the learning experience by making historical and cultural contexts more accessible and engaging (Padilha, 2023).

The experiential learning theory proposed by David Kolb describes a cycle of concrete experience, reflective observation, abstract conceptualization and active experimentation as a versatile framework that can be effectively applied in various educational settings, including museums. This theory emphasizes the importance of engaging learners in an active yet reflective manner, allowing them to construct knowledge through direct experience (Prušević et al., 2023). In a museum context, students can interact with historical items, reflect on their significance, relate them to academic concepts, consider the case for their own experiences, and apply their knowledge in new contexts. This approach not only enhances learning, but also fosters critical thinking and deeper understanding (Gordon, 2022).

Relationship of museums to the history curriculum.

Museums have exhibits of certain collections that cover different periods, important events and socio-cultural contexts, which is why there are several opportunities to make a link between the history curriculum and tangible reality (Bustan et al., 2024). When people have the possibility of observing certain artifacts or original ancestral documents, they enrich their understanding of historical processes, giving way to their own understanding of past events

and thus improving the development of critical thinking, since the student must compare, interpret and evaluate different sources. That is why the pedagogical methodology of the museum revolves around a model of teaching that includes phases of preparation before the visit as certain previous activities in class, to then perform a remarkable interaction during the visit that allows at the end of the tour, to make a reflection and evaluation (Amirullah & Patahuddin, 2023).

Therefore, the development of coherent pedagogical methodologies that take advantage of museum exhibits to enhance the educational experience of future teachers is essential to include them in the respective curricula, as museums serve as a vital educational resource by enriching the learning process and fostering critical analysis among students, being, the collaboration between universities and museums an effective element to significantly improve the training of history teachers, as students interact with museum environments, acquire practical knowledge and develop professional skills essential for their future roles (Elisafenko et al., 2020).

Museums by serving as ideal settings for teaching history as they have an alignment to constructivist principles and experiential learning methodologies, i.e., these educational approaches focus on active participation, personal experience, and contextual learning, factors that museums naturally facilitate through historical exhibits and artifacts. By adapting methodologies and carefully selecting activities, museums come to offer relevant and meaningful learning experiences (Džinkić & Milutinović, 2019). This convergence of educational theories and museum practices underscores the potential of museums as dynamic learning environments.

Teacher's role as mediator and facilitator

From the sociocultural aspect proposed by the author Vygotsky, he states that the teacher plays the role of mediator between the cultural content that can be reviewed in a museum with the cognitive capacity of the student, i.e., it is a visit to that place, the teacher should not only offer explanations, but should guide the observation, the generation of questions and encourage the collective construction of knowledge. To do so, he/she can rely on visual, technological and narrative resources that awaken curiosity, but, above all, the students' attention. The work of mediation requires the mastery of strategies that promote active participation, avoiding unilateral expositions or the simple reading of information (Zhang, 2024).

The scaffolding theory, proposed by Bruner and supported by Vygotsky, emphasizes the role of the teacher as an expert guide who facilitates the cognitive development of the student through personalized support. From the analysis of a visit to a museum, this theory can be applied by focusing on the teacher as the one who guides the students through the exhibits, as it is the one who offers clues, redirecting attention to important details and encouraging the formulation of historical questions (Wang, 2024). This approach transforms the visit into a collaborative discovery process, in which active student participation is crucial. The application of scaffolding in educational settings, as discussed in several studies, highlights its effectiveness in improving learning outcomes in different domains.

Collaborative learning strategies and gamification
During visits to the museum, the teacher applies collaborative learning as an effective strategy, since it is nourished by group dynamics to build knowledge. Authors such as Johnson and Holubec, in their research, point out that teamwork favors the development of communication skills, improves problem solving and the construction of historical meanings. For this reason, in

order for collaboration to be fruitful, the teacher can propose specific tasks, assign roles and establish clear goals for each team member. For example, groups can be formed to investigate a specific historical period, search for evidence in the museum rooms and present their findings to the rest of the class (Clipa & Caramida, 2024).

Gamification is known as the incorporation of playful elements of games in educational contexts (Kapp, 2012), therefore, it has become popular as a strategy that increases motivation and engagement. In a museum, gamification could be translated into tools such as the treasure hunt, which is a theme through which students solve clues related to historical content, or the use of interactive applications that guide the tour and provide virtual rewards. These playful dynamics promote participation and curiosity, while reinforcing students' competence to analyze historical information in an agile and entertaining way (Yolthasart et al., 2024).

Formative evaluation and feedback

The effectiveness of the application of interactive strategies is also reflected in the way learning is evaluated during and after the museum visit. Formative evaluation is oriented towards gathering evidence of student progress through questions, discussions and written or audiovisual productions that show their level of understanding. By observing the interactions and products resulting from the activity, the teacher can provide immediate feedback, make clarifications and reinforce achievements. The incorporation of clear rubrics for the assessment of participation, teamwork or creativity in problem solving provides transparency and guides the learner in his or her process of continuous improvement (Baimakhanova et al., 2023).

At this point, the role of the teacher as a facilitator of reflection is key to deepen the connection between what is observed in the museum and the curricular objectives. The open questions, the stimulus to confront ideas and the invitation to establish analogies with the present or with other areas of knowledge generate a learning climate that transcends the moment of the visit, leaving a mark in the mindset of future history teachers (Marshall et al., 2022).

Student perceptions of the effectiveness of museums as learning environments

Motivation, interest and attitude towards learning history

Motivation is a determining factor in the learning experience. When students perceive that the proposed activity has a representative value for their education, is challenging, relevant and linked to their interests, their academic engagement increases significantly (Urhahne & Wijnia, 2023). In history teaching, motivation is often limited by an approach focused on memorizing dates and facts, which is unattractive for many students. Therefore, transferring part of the educational experience to the museum provides sensory and cognitive stimuli that awaken curiosity and active participation (Latief et al., 2024).

To measure the motivation and attitude of students towards the use of museums as part of their academic training, it is common to apply questionnaires and interviews that inquire into the perception of the value of the experience, the feeling of autonomy, satisfaction with the methodology and the emotional connection with the contents. These perceptions reflect the extent to which the museum visit fulfills its function of enriching historical learning and generating a sense of belonging with respect to cultural heritage.

Meaningful learning and construction of historical identity

The construct of meaningful learning proposed by Ausubel is strengthened when the student can anchor the new historical information to his or her own reality, values and experiences. In this sense, the perception that the student develops about the usefulness and applicability of the historical information exhibited in the museum is linked to the degree to which he/she integrates the knowledge to his/her own understanding of the world. The museum, by displaying objects and stories from different eras, presents itself as a space where history materializes, allows students to place themselves in a temporal context and reflect on the evolution of society (Bryce & Blown, 2024). As students approach the cultural heritage contained in the museum, they construct a coherent narrative of their origin and place in the world, which positively impacts their disposition towards the study of history.

Critical reflection and self-regulation of learning

Students' ability to critically reflect on their learning and the process itself is a crucial component of self-regulated learning, as Zimmerman and Schunk emphasize. In the museum context, this involves students analyzing materials, contrasting historical sources, and evaluating the credibility of stories. This reflective process is integral to self-regulated learning, which encompasses planning, monitoring, and evaluating learning (Siregar et al., 2021).

Critical appraisal of the literature

In the study entitled "The museum: a powerful educational space in the contemporary world" by the author Luz Maceira, she emphasizes that museums can contribute significantly to the formation of a historical and social conscience, being an approach that seeks to generate in visitors a deep reflection on the human

experience, promoting empathy, self-reflection and an active ethical stance in the face of reality . By integrating different languages and resources, the museum offers the possibility of observing and, in a way, witnessing history from multiple perspectives, placing the public before the causes and consequences of inequity, injustice or intolerance, and encouraging openness to dialogue. Thus, it becomes a space that not only exposes dramatic events, but also encourages the construction of new horizons and the articulation of actions to prevent the repetition of similar situations. The pedagogical and interdisciplinary nature of the museum makes it possible to deal with topics that are not very much legitimized in other spheres, fuels social debate and fosters understanding of global interdependence, without this entailing uniformity of visions or cultural homogeneity. Thus, it emerges as a dynamic, reflective and transformative learning environment that promotes critical capacity, social responsibility and the strengthening of a conscience sensitive to collective memory (Maceira, 2009).

In an approach for Latin America, the research conducted in 2019 under the title "The museum as an educational tool towards diversity: the experience of the Jewish Museum of Chile" recognizes the museum as a communication system and a non-formal education resource that through exhibitions, online materials and face-to-face activities, promotes continuous training and interaction with the community, therefore, understands the importance of meeting the needs of its audience, adapting to their socioeconomic and cultural reality, and constantly evaluating the impact of its initiatives to improve its contribution to peaceful coexistence. This approach, that advocates multiculturalism and inclusion, aligns with the idea that museums should forge social bonds, promote knowledge of one's roots, provide historical

meaning to visitors, and counteract hatred and violence (Roitman et al., 2019).

In Ecuador, the published article "Museums: importance for the teaching of Social Sciences in Higher Basic Education" by the author María Calvas, recognizes museums as environments that promote culture, the dissemination of knowledge and education in the teaching-learning process, identifying that, despite their potential to promote active teaching and contact with reality, there are still limitations linked to the lack of knowledge and methodological preparation on the part of educators. In this sense, the purpose of the study focuses on highlighting the importance of museums in the teaching of Social Sciences at the Higher General Basic Education level, considering them as spaces that promote knowledge, recreation and active participation (Calvas Ojeda, 2023).

METHODOLOGY

With the purpose of analyzing the students' perception of the museum as a dynamic space in the teaching-learning process of history, two surveys were applied to 37 students of the Pedagogy of History and Social Sciences career of the National University of Chimborazo. The research was developed under a non-experimental, transversal and descriptive design, which allowed us to evaluate the perceptions of the participants before and after the visit to the museum.

The first survey, conducted prior to the visit, aimed to identify the degree of prior knowledge of the students about the historical topics addressed in the museum, as well as their expectations and level of preparation. It included questions on general and specific knowledge of history, familiarity with the concept of historical heritage, identification of primary sources, and degree of

academic preparation for the visit. The students' motivations and the type of activities expected inside the museum were also evaluated.

The second survey, applied after the visit, was designed to measure the educational impact of the museum experience. This survey explored dimensions such as the understanding of the historical contents, the perceived usefulness of the museum as an educational space, the motivation generated to investigate beyond the contents of the classroom, and the quality of the organization of the tour and the resources used. The differences between learning in a classroom and in a museum were also analyzed, as well as the importance of combining museum visits with theoretical classes.

The data collected were processed using statistical tools in order to identify patterns and significant differences in the students' responses before and after the visit. A descriptive analysis was performed based on frequencies and percentages, complemented with measures of central tendency and dispersion (mean, median, mode and standard deviation). To evaluate associations between categorical variables, the Chi-square test was used, and in cases where the observed frequencies were low, Fisher's exact test was applied. In addition, tests of mean differences were performed, using Student's t-test to contrast responses before and after the visit, and a one-way ANOVA to analyze differences according to the preferred learning modality. A correlation analysis was also carried out using Spearman's coefficient to measure the relationship between prior knowledge and perceived learning, as well as between initial motivation and perception of the educational impact of the museum.

The study guaranteed the anonymity and confidentiality of the participants, who participated voluntarily after giving their

informed consent. The ethical principles of social and educational research were respected, ensuring that the data collected were used exclusively for academic purposes and for the improvement of the teaching-learning process.

RESULTS

In order to evaluate the students' perception of the museum as a dynamic space in the teaching-learning process of history, two surveys were conducted before and after the visit to the museum. The results obtained were contrasted with previous studies to contextualize their relevance and contribute to the debate on the effectiveness of museum experiences in higher education.

Descriptive Analysis

The descriptive analysis revealed that the level of prior knowledge of the students is highly variable, with a mean of 11.41 points on a scale where 0 represents no knowledge and 27 the maximum. Familiarity with the museum and the concept of historical heritage showed values close to the overall mean, suggesting that approximately half of the students had moderate knowledge prior to the visit. Perception of the importance of history for understanding the present had a mean of 11.43 points, reflecting a generalized interest in the historical discipline.

After the visit, there was an increase in the perception of the usefulness of the museum as a complement to formal education. There was an increased motivation for independent research and a recognition of the museum as an interactive learning space. Previous studies, such as Falk and Dierking (2018), have highlighted that museum visits enhance conceptual understanding

and foster meaningful learning, which is consistent with our findings.

Table 1 . Descriptive statistics

Variable	Media	Standard Deviation	Minimum	Maximum
Prior knowledge	11.41	10.96	2	27
Importance of history	11.43	10.08	1	25
Familiarity with the museum	11.43	7.72	3	22
Motivation for research	12.05	10.35	0	25

Relationship between Prior Knowledge and Perception of Educational Impact

To determine whether prior knowledge influenced the perception of the educational impact of the museum, a Chi-square test was performed, obtaining a value $X^2 = 74$, $p < 0.001$. This indicates a significant relationship, i.e., students with greater prior knowledge perceived a greater educational impact. Previous research has identified this phenomenon in other experiential learning environments, noting that familiarity with content allows for greater assimilation of new knowledge (Hein, 2019).

Table 2 . Chi-Square Test

Statistician	Value
Chi-square	74
p-value	<0.001

Degrees of freedom 6

Before and After Visit Comparison

To assess whether the perception of the museum as an educational space changed after the visit, the responses before and after were compared using a Student's t-test. The results showed that the difference between the two measurements was not statistically significant ($t = -0.638$, $p = 0.528$). Despite this lack of significance, studies such as Rennie and Johnston (2018) suggest that the impact of museum visits may not be immediate and that learning may be consolidated over the long term.

Table 3 . Student's t-test

Statistician	Value
Student's t	-0.638
p-value	0.528

Differences according to Learning Modality

To analyze whether the preferred learning modality (theoretical, practical or blended) influenced the perception of the educational impact of the museum, a one-way ANOVA was performed. Results no showed significant differences between groups ($F = 0.092$, $p = 0.913$), suggesting that the perception of educational impact is homogeneous regardless of learning style. Previous studies have reported similar results, indicating that the effectiveness of museum visits does not depend exclusively on learning style but on the quality of the educational interaction within the museum (Hooper-Greenhill, 2017).

Table 4 . One-way ANOVA

Factor	Sum of Squares	Gl	Medium Square	F	p-value
Learning mode	19	2	9.56	0.092	0.913
Residual	3549	34	104.38	-	-

Relationship between Prior Knowledge and Motivation for the Research

The correlation between the level of prior knowledge and the motivation to investigate further on the topics addressed in the museum was evaluated. Spearman's correlation yielded a coefficient $\rho = 0.055$, $p = 0.747$, indicating a weak and non-significant relationship. This suggests that the level of prior knowledge does not directly predict subsequent interest in further research. Similar results have been reported by researchers who highlight the need for post-visit pedagogical strategies to consolidate learning and encourage independent research (Anderson et al., 2020).

Table 5 . Spearman's Correlation

Statistician	Value
Spearman Coefficient	0.055
p-value	0.747

The results indicate that the museum visit had a positive impact on students' overall perception of its usefulness as an educational tool, although the changes measured were not statistically significant in all dimensions. A strong relationship was found between prior knowledge and perception of educational impact,

suggesting that better prepared students may derive greater benefit from these experiences. However, motivation for independent research after the visit was not directly related to initial knowledge. These findings reinforce the need to design post-visit didactic strategies to maximize the educational impact of museums in history education.

The role of prior knowledge in the assimilation of museographic learning

The results obtained support the literature suggesting that the level of prior knowledge is a determining factor in the absorption of learning in museum environments (Hein, 2019). The significant relationship observed between initial knowledge and perception of educational impact is consistent with Falk and Dierking's (2018) Constructivist Processing Model, which posits that museum learning is not a simple transfer of information, but an active construction that depends on the individual's pre-existing cognitive base. In this sense, students who possessed greater familiarity with the concepts addressed in the exhibition were able to integrate and contextualize the contents in greater depth, generating a more meaningful learning experience.

This finding is consistent with studies in similar settings, where it has been shown that museum learning is conditioned by the interaction between pre-existing knowledge and new sensory and cognitive stimuli provided by the exhibit (Rennie & Johnston, 2018). However, it has also been suggested that museums can play a role in leveling educational disparities by providing accessible experiences to audiences with different levels of readiness (Hooper-Greenhill, 2017), suggesting the need to design didactic strategies that favor inclusive learning within these spaces.

Educational impact of the museum: an evaluation from experiential pedagogy.

The results obtained regarding perception before and after the museum visit reflect that, although students recognize the educational value of these spaces, the variation was not significant in quantitative terms. This finding challenges some of the assumptions of experiential constructivism, according to which direct interactions with historical objects and immersive environments should generate perceptible changes in the understanding of content (Dewey, 1938). A possible explanation for these results could lie in the absence of post-visit follow-up strategies, which has been identified as a key factor in the consolidation of experiential learning (Anderson et al., 2020).

Previous studies have shown that museum learning tends to manifest itself in a delayed manner, where cognitive effects may be evident days or even weeks after the experience (Ash et al., 2012). This phenomenon could explain why Student's t-test did not reflect immediate significant differences in perceived educational impact. The application of follow-up surveys could provide additional information on the degree to which the museum visit influences learning in the medium and long term.

Learning modality and its relation to the perception of the museum.

Analysis of variance (ANOVA) found no significant differences between the different learning styles (theoretical, hands-on and blended) in the perception of the educational impact of the museum. These results contrast with studies that have identified that the preferred learning modality can influence the museum

experience, particularly in the use of interactive elements (Falk & Storksdieck, 2010). However, a possible explanation for the lack of differences could lie in the design of the museum visited, which possibly provided an appropriate balance of visual, auditory, and participatory elements that allowed for an equitable learning experience for all cognitive styles.

Another possibility is that preference for a learning modality is not the sole determinant of perceived educational impact. Recent studies have suggested that factors such as intrinsic motivation, personal interest, and perceived relevance of content may influence the quality of museum learning more than the learning style category alone (Allen, 2019). Consequently, these findings suggest the need to expand educational mediation strategies in museums to cater to diverse learner profiles.

Motivation for research: beyond prior knowledge.

Although it was expected that greater prior knowledge would generate greater motivation for post-visit research, Spearman's correlation did not yield a significant relationship. This suggests that motivation to delve deeper into the topics covered in the museum could depend on factors other than pre-existing knowledge, such as perceived personal relevance, interaction with guides, or the quality of the exhibits (Eshach, 2007).

Previous studies have shown that museum experiences that incorporate emotional narratives and participatory elements have a greater impact on motivation for autonomous learning (Silverman, 2010). In this sense, the lack of correlation in the data obtained could indicate that the museum visited could optimize the use of narrative strategies that foster a deeper connection between visitors and the content on display.

CONCLUSIONS

The findings of this research confirm that museums can play a key role in the teaching of history, functioning as dynamic learning environments that complement formal classroom education. It was evident that students with greater prior knowledge about the topics covered in the museum perceived a greater educational impact, which supports constructivist approaches to meaningful learning. However, in spite of the fact that the museum experience was valued positively in general terms, no significant differences were found in the perception of learning before and after the visit, which suggests that the cognitive effects may manifest themselves in a delayed manner or depend on complementary pedagogical strategies after the museum experience. In this sense, the design of follow-up activities and the integration of interactive methodologies within the exhibitions could strengthen the retention and understanding of historical content.

In addition, the results revealed that students' preferred learning modality (theoretical, hands-on or blended) did not significantly influence the perceived educational impact of the museum. This suggests that the design of the tour and the nature of the exhibits were able to provide an appropriate balance of visual, auditory and participatory elements, allowing all student profiles to have similar learning opportunities. However, the lack of a significant correlation between prior knowledge and motivation to investigate beyond the visit highlights the need for didactic strategies that foster long-term academic interest. This is consistent with previous studies indicating that interaction with historical objects alone does not guarantee deep learning if it is not accompanied by

reflective processes and pedagogical tools that stimulate autonomous inquiry.

This research underlines the value of museums as experiential learning spaces, but also highlights the importance of pedagogical planning that optimizes their impact on the training of history students. The results obtained suggest that the use of these environments depends to a large extent on teaching mediation and the integration of activities that reinforce the knowledge acquired during the visit. Likewise, cooperation between universities and museums can contribute to the development of innovative strategies that transform the museum experience into a more effective educational resource, favoring not only the acquisition of knowledge, but also the development of critical and research skills in future history teachers.

REFERENCES

- Amirullah, A., & Patahuddin, P. (2023). Museum-Based History Learning Innovation With Outing Class. *Technium Social Sciences Journal*, 50, 466-474.
<https://doi.org/https://doi.org/10.47577/tssj.v50i1.9928>
- Aristeidou, M., Kouvara, T., Karachristos, C., Spyropoulou, N., Benavides-Lahnstein, A., Vulicevic, B., Lacapelle, A., Orphanoudakis, T., & Batsi, Z. (2022). Virtual Museum Tours for Schools: Teachers' Experiences and Expectations. *IEEE Global Engineering Education Conference, EDUCON, 2022-March*, 201-209.
<https://doi.org/10.1109/EDUCON52537.2022.9766548>.
<https://doi.org/10.1109/EDUCON52537.2022.9766548>.

- Aroche, A., Pupo, N., & Pérez, Y. (2024). Heritage education through the museum: improvement activities for teachers in educational institutions. *Health and Development Journal*, 8(3), e747. <https://doi.org/10.55717/BRJ14366>
- Baimakhanova, G., Kali, M., & Orynbasar, I. (2023). *Improving the effectiveness of the educational process using interactive methods*. 2(36). <https://doi.org/https://doi.org/10.58937/2023-2-7>
- Batista, J. (2020). A Teoria da Aprendizagem Significativa de David Ausubel: uma análise das condições necessárias. *Research, Society and Development*, 9(4), e09932803. <https://doi.org/10.33448/rsd-v9i4.2803>
- Bautista, T. (2024). A school museum design proposal for secondary education. *Cabás. Revista Internacional Sobre Patrimonio Histórico-Educativo*, 31, 125-147. <https://doi.org/10.1387/cabas.26177>
- Bryce, T., & Blown, E. (2024). Ausubel's meaningful learning revisited. *Current Psychology*, 43(5), 4579-4598. <https://doi.org/10.1007/s12144-023-04440-4>.
- Bustan, Jumadi, La Malihu, & Bahri (2024). Museum As a Laboratory of Past Education. *ICHELSS The 3rd International Conference on Humanities Education, Lawand Social Sciences, KnE Social Sciences*. <https://doi.org/10.18502/kss.v9i2.14905>
- Calvas Ojeda, M. G. (2023). Museums: importance for the teaching of Social Sciences in Higher Basic Education. *Portal de La Ciencia*, 4(2), 241-255. <https://doi.org/10.51247/pdlc.v4i2.364>

- Cavicchi, E. (2024). Curiosity Opens Relationships of the World and with Others: Narratives from Doing Teaching and Learning Through Curiosity. *Interchange*, 55(3), 261-301. <https://doi.org/10.1007/s10780-024-09529-8>.
- Clipa, O., & Caramida, B. (2024). Effectiveness of Collaborative Learning in the Educational Process. *Revista Romaneasca Pentru Educatie Multidimensionala*, 16(4), 442-459. <https://doi.org/10.18662/rrem/16.4/923>
- Džinkić, O., & Milutinović, J. (2019). Učenje u muzeju u svetlu konstruktivističke teorijske osnove. *Zbornik Odseka Za Pedagogiju*, 28, 93-110. <https://doi.org/10.19090/zop.2019.28.93-110>
- Elisafenko, M., Kruglikova, G., & Protasova, E. (2020). Museum as an Educational Resource. *Advances in Social Science, Education and Humanities Research*, 447. <https://doi.org/https://doi.org/10.2991/ASSEHR.K.200723.024>.
<https://doi.org/https://doi.org/10.2991/ASSEHR.K.200723.024>
- Erawati, N. K., & Adnyana, P. B. (2024). Implementation of jean peaget's theory of constructivism in learning: a literature review. *Indonesian Journal of Educational Development (IJED)*, 5(3), 394-401. <https://doi.org/10.59672/ijed.v5i3.4148>
- Frechiani, R. (2024). The museum in History teaching. *Educacao e Pesquisa*, 50. <https://doi.org/10.1590/S1678-4634202450272477EN>
- Gordon, S. (2022). Integrating the Experiential Learning Cycle with Educational Supervision. *Journal of Educational Supervision*, 5(3). <https://doi.org/10.31045/jes.5.3.1>

-
- Karaoulas, A. (2025). Education and society: the lack of pedagogical perspective in the modern era. *International Journal of Research in Education Humanities and Commerce*, 06(01), 535-544. <https://doi.org/10.37602/IJREHC.2025.6136>
- Latief, J., Iskandar, Misnah, Jayanti, I., Fikri, Moh., Kurniati, W., & Adam, A. Moh. (2024). The Utilization of Museums as a Contextual Learning Tool for History Education for Students of SMA Labschool Palu. *Indonesian Journal of Society Development*, 3(5), 297-304. <https://doi.org/10.55927/ijsd.v3i5.11828>.
<https://doi.org/10.55927/ijsd.v3i5.11828>
- Maceira, L. (2009). The museum: powerful educational space in the contemporary world. *Sinéctica*, 32. https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1665-109X2009000100007
- Marshall, T., Keville, S., Cain, A., & Adler, J. (2022). Facilitating reflection: a review and synthesis of the factors enabling effective facilitation of reflective practice. *Reflective Practice*, 23(4), 483-496. <https://doi.org/10.1080/14623943.2022.2064444>.
- Matienzo, R. (2020). Evolution of meaningful learning theory and its application in higher education. *Revista De Investigación Filosófica Y Teoría Social*, 2(3), 17-26. <https://journal.dialektika.org/ojs/index.php/logos/article/view/15>
- Padilha, L. (2023). Experiência, arte e educação pela perspectiva analítica de Dewey. *Revista Apotheke*, 9(2), 152-167. <https://doi.org/10.5965/24471267922023152>

- Pereira, O. (2023). Práticas colaborativas de curatoria e gestão de acervos no Museu da Imigração: uma reflexão sobre sociomuseologia e universidade. *Cadernos de Sociomuseologia*, 66(22).
<https://doi.org/https://orcid.org/0000-0002-1941-1489>
- Pradnyawati, C., & Rati, N. W. (2023). Interactive Multimedia Based on a Contextual Approach to Material Changes in the form of Objects. *Mimbar Ilmu*, 28(2), 255-264.
<https://doi.org/10.23887/mi.v28i2.63626>
- Prušević, F., Hodžić, H., & Župić, A. (2023). The Role of Experience in Learning. *Društvene i Humanističke Studije (Online)*, 8(1(22(22))), 281-292. <https://doi.org/10.51558/2490-3647.2023.8.1.281>
- Reyes, P., Navarro, C., & Santisteban, A. (2024). Historical and critical thinking in the educational context: a systematic review. *Panta Rei. Revista Digital de Historia y Didáctica de La Historia*, 18, 269-291. <https://doi.org/10.6018/pantarei.611711>
- Roitman, D., Interactivo, M., & De Chile, J. (2019). The museum as an educational tool towards diversity: the experience of the Jewish Museum of Chile. *Cuadernos Judaicos*, 36.
<https://dialnet.unirioja.es/descarga/articulo/7314836.pdf>.
<https://dialnet.unirioja.es/descarga/articulo/7314836.pdf>
- Siregar, H., Solfitri, T., & Siregar, S. (2021). The Relationship between Perceptions of Online Learning and Self-Regulation of Mathematics Education Students. *Jurnal Didaktik Matematika*, 8(2), 208-221.
<https://doi.org/10.24815/jdm.v8i2.21882>

- Todino, M. D., & Campitiello, L. (2025). Museum Education. *Encyclopedia*, 5(1), 3. <https://doi.org/10.3390/encyclopedia5010003>
- Urhahne, D., & Wijnia, L. (2023). Theories of Motivation in Education: an Integrative Framework. *Educational Psychology Review*, 35(2). <https://doi.org/10.1007/s10648-023-09767-9>. <https://doi.org/10.1007/s10648-023-09767-9>
- Wang, X. (2024). How to Apply Scaffolding Instruction to Continuation Writing Task Teaching in Senior High Schools. *International Journal of Education and Humanities*, 13(1). <https://doi.org/https://doi.org/10.54097/6c5ews07>. <https://doi.org/https://doi.org/10.54097/6c5ews07>
- Yolthasart, S., Intawong, K., Thongthip, P., & Puritat, K. (2024). The Game of Heritage: Enhancing Virtual Museum Visits Through Gamification for Tourists. *TEM Journal*, 13(4), 3359-3372. <https://doi.org/10.18421/TEM134-70>.
- Zhang, X. (2024). A Case Study on the Application of Socio-cultural Theory in International Chinese Language Classrooms. *Journal of Education and Educational Research*, 10(3). <https://doi.org/https://doi.org/10.54097/801c3v21>