

ORGANIZATION AND STAGES OF EXPERIMENTAL WORK ON DEVELOPING HISTORICAL THINKING OF PRE-SERVICE HISTORY TEACHERS THROUGH MUSEUM PEDAGOGY

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Abstract

This article explores the organization and staged implementation of experimental work aimed at developing historical thinking among pre-service history teachers through museum pedagogy. The study reconceptualizes the museum environment not as a supplementary excursion space but as an educational laboratory in which historical knowledge is constructed through systematic engagement with material evidence, primary sources, and cultural heritage. Employing a quasi-experimental research design, the study is organized as a continuous classroom–museum–classroom didactic cycle comprising diagnostic, formative, and control stages. The article details participant selection criteria, procedures for ensuring comparability between experimental and control groups, assessment instruments, evaluation criteria, and ethical considerations. Special emphasis is placed on aligning instructional and assessment practices with core operations of historical thinking, including source-based reasoning, contextualization, causal explanation, interpretation, and reflective analysis. The study demonstrates that museum pedagogy, when methodologically structured, constitutes an effective resource for strengthening procedural dimensions of historical thinking in history teacher education.

Keywords: Museum pedagogy; historical thinking; pre-service history teachers; quasi-experimental design; reflection.

Introduction

In contemporary history education, the professional preparation of future history teachers increasingly emphasizes the development of historical thinking competencies rather than the memorization of factual knowledge. Historical thinking is widely conceptualized as a complex set of cognitive and interpretative operations that enable learners to analyze historical sources, evaluate evidence, establish causal explanations, contextualize historical phenomena, and critically reflect on competing interpretations of the past (Wineburg, 2001; Seixas & Morton, 2013). These competencies form the foundation of professional historical literacy and play a crucial role in preparing teachers capable of fostering critical historical consciousness among students.

Within this pedagogical paradigm, museum pedagogy has gained recognition as a powerful educational resource. Museums provide access to material culture, visual representations, and authentic historical sources that are often inaccessible in traditional classroom settings. Through

direct engagement with historical objects and curated narratives, learners are afforded opportunities to construct meaning through inquiry, interpretation, and reflection (Hein, 1998; Hooper-Greenhill, 2007). From a historical perspective, the growing pedagogical role of museums reflects broader transformations in the history of education, particularly the shift toward experiential and learner-centered approaches.

However, the pedagogical effectiveness of museum-based learning does not depend on museum visits per se. When museums are treated merely as illustrative or motivational supplements to classroom instruction, their educational potential remains underutilized. Research indicates that meaningful learning outcomes emerge only when museum experiences are systematically integrated into structured didactic scenarios and assessment models aligned with historical thinking operations (Brown, 2007).

The purpose of this article is to substantiate the methodological organization and staged implementation of experimental work designed to develop historical thinking among pre-service history teachers through museum pedagogy. Rather than focusing on quantitative outcomes, the article emphasizes the logic, structure, and pedagogical conditions of experimental work as a methodological contribution to history teacher education.

Research Design and Methodology

Research Model

The study employed a quasi-experimental research design suitable for higher education contexts in which random assignment of participants is constrained by institutional, curricular, and organizational conditions. Quasi-experimental designs are widely used in educational research because they preserve the natural instructional environment while enabling systematic comparison between experimental and control groups (Kolb, 1984).

In the present study, this design made it possible to analyze changes in students' historical thinking as outcomes of a structured methodological intervention based on museum pedagogy. The research model was grounded in experiential learning theory, which conceptualizes learning as a cyclical process involving experience, reflection, conceptualization, and application (Kolb, 1984). This theoretical framework aligns closely with the classroom–museum–classroom didactic cycle implemented in the study.

Participants and Sampling Criteria

Participants were undergraduate students enrolled in history teacher education programs. The sampling process was guided by methodological considerations aimed at ensuring comparability between experimental and control groups. Selection criteria included homogeneity of professional orientation, similarity of curricula and course content, comparable instructional conditions, and equivalent academic workload.

Baseline diagnostic assessment was conducted prior to the intervention to verify the equivalence of groups with regard to initial levels of historical thinking. This approach strengthened the internal validity of the study and reduced the influence of extraneous variables on the interpretation of results.



Research Ethics

The study adhered to fundamental principles of pedagogical and research ethics. Participation was voluntary, and students were informed about the objectives and procedures of the research. Confidentiality of data was ensured, and analytical reporting was conducted at the group level rather than the individual level. Particular attention was paid to maintaining fairness, transparency, and professional integrity in student–teacher interactions throughout the experimental process.

Stages of Experimental Work

The experimental work was organized into three interrelated stages—diagnostic, formative, and control—implemented within a continuous classroom–museum–classroom didactic cycle. This cyclical structure ensured coherence between theoretical preparation, experiential inquiry, and reflective analysis.

Diagnostic Stage

The diagnostic stage aimed to identify students' initial levels of historical thinking and to ensure baseline comparability between experimental and control groups. Assessment focused on key indicators of historical thinking, including understanding of historical time and context, ability to formulate questions to sources, differentiation between evidence and interpretation, causal reasoning, and reflective awareness (Wineburg, 2001).

Diagnostic tools included source-based analytical tasks, causal modeling exercises, short analytical essays, structured observation protocols, and reflective prompts. Together, these instruments provided a multidimensional profile of students' historical thinking competencies and informed the design of subsequent instructional interventions.

Formative Stage

The formative stage constituted the core of the experimental intervention. During this stage, museum pedagogy-based instruction was systematically implemented in the experimental group. Museum visits were designed as inquiry-based learning environments rather than passive observational activities. This approach corresponds to constructivist perspectives on museum learning, which emphasize active meaning-making through interaction with material culture and interpretative dialogue (Hein, 1998; Hooper-Greenhill, 2007).

The formative stage followed a three-part instructional scenario:

Classroom preparation.

This phase involved the formulation of historical problems and research questions, activation of prior knowledge, conceptual and chronological framing, hypothesis development, and planning strategies for source analysis. Students were encouraged to articulate expectations and establish analytical criteria before engaging with museum materials.



Museum-based inquiry.

Within the museum environment, exhibits were treated as historical sources subject to critical examination. Students analyzed the origin, function, and contextual significance of material objects; distinguished between curatorial narratives and evidentiary data; and compared museum materials with written and visual sources. Dialogic interaction among students, instructors, and museum educators facilitated collaborative interpretation and critical discussion.

Post-museum analytical reflection.

After the museum visit, students engaged in analytical and reflective activities aimed at systematizing and verifying evidence. Tasks included analytical reporting using the evidence–interpretation–conclusion model, development of lesson plans or micro-projects based on museum materials, and reflective writing designed to enhance metacognitive awareness.

Throughout the formative stage, scaffolding strategies were applied to guide students progressively from observation to contextualization, interpretation, and argumentation, consistent with experiential learning principles (Kolb, 1984).

Control Stage

The control stage involved final assessment of historical thinking competencies using alternative task versions to minimize repetition effects. Evaluation combined analytical tasks, student portfolios, reflective writing, and project outcomes. This triangulated approach enabled a more comprehensive interpretation of learning results and enhanced the methodological reliability of the study.

Assessment Tools and Criteria

Assessment emphasized historical thinking operations rather than factual recall. Evaluation criteria included source-based reasoning, contextualization, causal explanation, consideration of multiple perspectives, argumentative coherence, and reflective analysis. These criteria correspond to internationally recognized models of historical thinking in history education research (Seixas & Morton, 2013). Assessment formats comprised analytical writing, portfolios, project products, observation protocols, and seminar-based discussions.

Discussion

The staged organization of experimental work enabled museum pedagogy to function as an integral component of the didactic cycle rather than an episodic instructional supplement. Systematic integration of museum-based inquiry supported the development of procedural aspects of historical thinking, particularly source analysis, contextualization, interpretation, and argumentation. These findings align with broader discussions on the educational potential of museums as structured learning environments rather than illustrative extensions of classroom instruction (Brown, 2007; Hein, 1998).

At the same time, the effectiveness of the methodology was influenced by organizational and institutional factors, including cooperation between universities and museums, logistical



conditions, time allocation, and instructional design. These considerations highlight the importance of contextual sensitivity in implementing museum pedagogy within history teacher education programs.

Conclusion

The study demonstrates that developing historical thinking through museum pedagogy is most effective when implemented through a structured quasi-experimental design encompassing diagnostic, formative, and control stages. The classroom–museum–classroom cycle ensures continuity between theoretical preparation, experiential inquiry, and reflective analysis. Assessment systems aligned with historical thinking operations provide more valid indicators of educational outcomes than fact-based testing alone. Museum pedagogy thus represents a strategically significant methodological resource in the professional preparation of future history teachers.

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