New Perspectives in Science Education
International Conference
NEW PERSPECTIVES in SCIENCE EDUCATION


Academic Education for Cultural Heritage Preservation: The Bulgarian Model in the Context of Digital Learning

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Abstract

This paper examines the role of academic education in the cultural heritage preservation system in Bulgaria, with a particular emphasis on how expert capacity is formed under conditions of accelerating digital learning and technology-driven heritage practices. The study conceptualises the "Bulgarian model" not as a formally adopted framework but as a de facto assemblage of regulatory requirements, institutional practices, and higher-education trajectories that operate without consistent conceptual coordination. It argues that Bulgarian heritage legislation and administrative procedures presuppose an integrated, multi-competence professional profile combining disciplinary expertise, procedural literacy, and inter-institutional coordination skills; however, higher education predominantly produces specialists along disciplinary lines, leaving the integration of competences to be completed in practice within institutions.

The paper extends this critique by showing that digital learning environments, including digitisation workflows, 3D capture, immersive visualisation and virtual reconstruction, are reshaping the competences required for heritage work and are simultaneously transforming the pedagogical models through which such competences are formed. As an empirical starting point, the analysis is based on the academic environment of the University of Library Studies and Information Technologies (ULSIT) - Sofia, Bulgaria, as a case study of practice-oriented heritage education that integrates field training in archives, libraries, museums and archaeological contexts with laboratory training in conservation, restoration, identification and authentication, together with digital heritage laboratories. These environments function as structured pedagogical settings framed around practice-based learning outcomes, project-oriented assessment and technology-mediated competence formation, aligning heritage education with contemporary science education approaches.

The paper concludes that sustainable improvement in heritage preservation practices depends on a coordinated competence framework linking cultural and educational governance, while universities can serve as institutional bridges by embedding digital learning and practice-based training into coherent professional pathways.

Keywords: *cultural heritage preservation; higher education; competence formation; digital learning; institutional capacity; Bulgaria*

1. Introduction

Ensuring the quality, consistency and sustainability of expertise is one of the central challenges in cultural heritage preservation as a public-policy field. Internationally, heritage governance has progressively shifted from narrow conservation concerns toward broader approaches that treat heritage as a strategic resource linked to identity, sustainable development, and the quality of public institutions and policies [1]. This shift has expanded the scope of required expertise: beyond conservation and restoration, contemporary heritage work includes documentation, interpretation, management planning, stakeholder engagement, regulatory compliance, and coordination across institutions and communities [2].

In Bulgaria, debates about heritage policy are present but often fragmented across regulatory, institutional and project-based levels. Much less attention is paid to the systematic formation of the professionals who execute heritage work in practice – within central and local administration, museums, archives, field research, expert councils, and the management of sites and programmes. This issue is frequently treated as an "internal university matter" (curricula, degrees, specialisations). Such a perspective understates its scale and consequences. The character of academic training directly shapes the quality of expertise, institutional capacity and the durability of decisions in a system regulated by a complex national framework, with the Cultural Heritage Act as its backbone [3].

This problem is aligned with the rationale of the research project *"New Scientific Paradigm: Model for Academic Cooperation in the Field of Science, Strategic Planning and Innovation for Cultural Identity*

Preservation and Capacity Building" (Bulgarian National Science Fund, Contract No. KP-06-N85/5 – 05.12.2024). The project proceeds from the premise that sustainable capacity cannot be built without effective connections among research, education and practice.

The aim of this paper is to provide a critical analysis of the functioning "Bulgarian model" of training heritage professionals, to identify its structural deficits, and to show how these deficits are amplified in the context of digital learning and technology-driven heritage work. The main thesis is that without deliberate rethinking of competence formation – especially in relation to digital learning environments – system-wide improvement in heritage preservation practices is unlikely.

2. Methodology and Analytical Approach

The study adopts a qualitative analytical approach combining: (a) critical review of the Bulgarian regulatory framework governing heritage preservation; (b) analysis of existing patterns of higher-education training relevant to heritage work; and (c) expert interpretation grounded in long-term engagement with the academic and institutional environment of heritage preservation. The paper does not pursue institution-by-institution quantitative measurement. Instead, it applies a problem-oriented analytical reading of the normative, educational and institutional layers that shape expert capacity.

The analysis draws on:

- Bulgarian heritage legislation and related procedural arrangements [3];
- international conceptual frameworks and doctrinal documents that define contemporary heritage safeguarding and management [1–2];
- scholarly perspectives that frame heritage as an institutional and social system rather than merely an object of protection [4].

Methodologically, the core procedure is comparative: regulatory and institutional expectations of expertise are juxtaposed with the competences systematically formed through academic training, in order to identify structural mismatches and their practical consequences. The emphasis is typological and explanatory rather than descriptive.

3. The "Bulgarian Model" as a Three-Layer System: Regulation, Education, Practice

3.1. A De Facto Model Rather Than a Designed System

The "Bulgarian model" should not be understood as a formally adopted and clearly described system. It is a de facto configuration produced by the cumulative interaction of:

- regulatory requirements;
- higher education trajectories;
- institutional practice in heritage governance.

Because it is not based on a unified design, the model cannot be "located" in a single strategy document or institution. It becomes visible only through how these layers interact – often inconsistently – in everyday procedures, expert decisions, staffing practices and institutional coordination.

3.2. Regulatory Expectations: Integrated Competence without a Competence-Building Mechanism

Bulgarian heritage legislation constructs a wide and complex field of activities: identification and registration of cultural values, research and documentation, conservation and restoration, protective regimes, expert assessments, coordination procedures, management of sites and territories, and participation in international programmes [3].

The implied professional profile is not narrowly specialised. It presupposes an integrated competence combining:

- disciplinary knowledge (historical, archaeological, architectural, artistic, archival, museological);
- procedural and legal literacy (administrative steps, approvals, documentation standards);
- institutional navigation and inter-sector coordination (central/local governance, expert councils, stakeholder interactions).

However, while regulation presupposes such integrated expertise, it does not provide a systemic mechanism for building it. The formation of the professional profile is effectively "outsourced" to higher education and to subsequent professional learning inside institutions.

3.3. Higher Education: Disciplinary Production of Partial Profiles

In practice, Bulgarian higher education produces professionals along disciplinary lines: archaeologists, historians, architects, restorers, museologists, archivists, and cultural management specialists. This provides depth in segments of the heritage field but rarely creates a coherent competence set aligned with the integrated expectations embedded in regulation and institutional practice.
The result is a pattern of “partial profiles”: specialists who are well trained in their discipline but not systematically prepared for the composite functions demanded by the heritage governance system. Consequently, the integration of competences is deferred to later stages – employment, institutional socialisation and learning-by-doing.

3.4. Institutional Practice: Completing Profiles through Compensatory Mechanisms

The third layer is institutional practice, where regulatory demands and educational biographies meet. Key actors include the Ministry of Culture, specialised bodies responsible for expert evaluation and protective regimes, regional and municipal administrations, and museums/archives as daily operators of preservation work.
In this environment, professionals are expected to combine scientific understanding of heritage value with procedural competence, participation in expert councils, documentation work, and continuous coordination with other institutions and stakeholders. Because this integrated profile is rarely delivered as an outcome of a single educational trajectory, institutions routinely complete profiles through compensatory mechanisms: internal training, informal mentorship, and learning in practice.
Thus, expert capacity is not produced as a “finished product” by higher education. It is assembled gradually – unevenly – within institutional practice. This model reproduces structural tensions that cannot be reduced to individual errors or isolated administrative weaknesses; they follow from how the system is built and reproduced.

4. Digital Learning as a New Pressure Point in Heritage Competence Formation

Digital transformation introduces a new dimension to competence requirements. Digitisation workflows, metadata and standards, digital repositories, 3D capture, immersive visualisation and virtual reconstruction increasingly shape how heritage is documented, studied, preserved and presented. International approaches emphasise that safeguarding and management now depend on integrated professional capacity and cross-sector coordination, including technology-mediated work [1–2].
In the Bulgarian context, digital learning environments amplify existing mismatches in three ways:

- Expansion of competence scope. Digital heritage work requires combined competences – heritage knowledge plus digital documentation, data management, and technology-supported interpretation.
- Acceleration of practice expectations. Institutions increasingly expect graduates to operate within digital workflows, yet training remains uneven across disciplinary programmes.
- Risk of “technical reductionism”. Without conceptual grounding, digital tools can be treated as mere technical add-ons, weakening professional judgement and interpretive competence – precisely the opposite of what sustainable heritage governance requires.

Digital learning should therefore be treated not as a supplementary topic but as a competence environment that reconfigures professional profiles. This makes the need for a coordinated competence framework more urgent.

5. Case Study: ULSIT as an Integrated Model of Practice-Based and Digital Heritage Education

5.1. Analytical Relevance of the Institutional Case

Within the broader structural configuration described above, the academic environment of the University of Library Studies and Information Technologies (ULSIT) offers an analytically relevant example of how heritage education can be organised through the deliberate integration of disciplinary knowledge, practice-based training and digitally mediated learning environments. The relevance of the case does not derive from a claim that it resolves the systemic deficits of the national model, but from its capacity to illustrate how universities may function as institutional interfaces between regulatory expectations, professional practice and competence formation. In this sense, the case serves an

explanatory rather than representative function: it demonstrates how specific pedagogical configurations can mitigate structural mismatches embedded in the wider governance and education system.

ULSIT's training profile is situated at the intersection of cultural heritage studies, archival and documentary fields, conservation knowledge and information technologies. This interdisciplinary positioning enables the construction of educational trajectories in which heritage is approached simultaneously as an object of preservation, a documentation system and a knowledge infrastructure. The pedagogical significance of such positioning lies in its capacity to align academic training with the composite competence expectations described in heritage legislation and institutional practice.

5.2. Fieldwork Training as a Pedagogical Environment

A central pedagogical component is the systematic integration of fieldwork-based learning within archives, libraries, museums and, where relevant, archaeological contexts. Field training is not conceived as an auxiliary internship but as a structured learning environment through which students engage directly with primary heritage materials, institutional documentation workflows and professional ethics frameworks.

Within this environment, learning outcomes include the ability to operate with primary documentary sources; to understand cataloguing, preservation and access regimes; and to situate heritage objects within institutional responsibility structures. Students develop interpretive judgement grounded in material engagement rather than abstract description. From a pedagogical standpoint, this mode of learning corresponds to experiential and situated education models in which knowledge acquisition is inseparable from professional context formation. Assessment is therefore competence-based and project-oriented, focusing on documentation exercises, interpretive reporting and institutional workflow analysis rather than solely on theoretical examination.

From a pedagogical perspective, this field-based component follows established experiential learning models, in which knowledge and professional judgement are constructed through direct engagement with real working environments and reflective practice [6].

5.3. Laboratory-Based Learning: Conservation, Restoration and Authentication

Complementing field environments, laboratory-based learning provides structured training in conservation, restoration principles and material analysis. Emphasis is placed on early printed books and documentary heritage, while selected training modules engage with material categories such as clay and metal artefacts when relevant to heritage preservation practice.

The pedagogical objective of laboratory training lies in cultivating preservation-oriented thinking: students acquire diagnostic awareness of material degradation processes, preventive conservation logic and documentation standards required for professional intervention. Learning outcomes include the ability to recognise preservation risks, to apply basic conservation assessment methods and to structure documentation in accordance with institutional and regulatory expectations.

In addition, specialised training in identification and authentication of cultural objects introduces methodological frameworks linked to provenance research, documentation integrity and object history analysis. This component strengthens analytical rigour and professional responsibility, positioning authentication not as a technical verification act but as an interpretive and evidentiary process embedded in heritage governance ethics. Evaluation in this environment is based on laboratory assignments, condition reporting exercises and object-analysis portfolios, aligning assessment methods with demonstrable competence acquisition.

Laboratory work in conservation, restoration and material analysis supports inquiry-oriented, object-centred learning, where students develop diagnostic reasoning and evidence-based documentation skills through supervised practice [7].

5.4. Digital Heritage Laboratories as Pedagogical Infrastructures

A distinctive dimension of the ULSIT model is the integration of digital heritage laboratories into the educational process. Digitisation workflows, metadata structuring, 3D imaging, immersive visualisation and virtual reconstruction are incorporated not as isolated technical modules but as pedagogical infrastructures through which heritage documentation, interpretation and representation are taught simultaneously.

Within this framework, digital learning functions as a competence-forming environment. Students acquire the ability to produce technology-assisted documentation outputs while critically situating these outputs within preservation ethics, authenticity considerations and interpretive responsibility. Learning outcomes extend beyond technical proficiency to include understanding the epistemological implications of digital representation: the relationship between material object and digital surrogate, the interpretive limits of reconstruction, and the role of digital mediation in public heritage communication.

Assessment methodologies correspond to science-education approaches that prioritise applied, project-based and interdisciplinary evaluation. Students are assessed through digitisation projects, 3D documentation assignments, virtual exhibition prototypes and reconstruction simulations, all of which require the integration of technical execution with heritage-oriented analytical reasoning. In this sense, digital laboratories operate simultaneously as technological and pedagogical systems.

In educational terms, these digital environments function as technology-mediated learning settings in which tools such as digitisation, 3D capture and virtual reconstruction operate as epistemic instruments that shape how students learn to document, analyse and interpret heritage objects [8].

5.5. Pedagogical Integration and Competence Articulation

The analytical value of the case emerges most clearly in the integration of fieldwork, laboratory learning and digital environments into coherent competence clusters. Rather than functioning as parallel training tracks, these components are pedagogically aligned to produce cumulative competence formation pathways.

From an educational-model perspective, three integrative effects can be identified. First, the combination of material engagement and digital documentation enables students to understand preservation simultaneously as a physical and informational process. Second, the embedding of laboratory and digital learning within institutional workflows strengthens procedural literacy and regulatory awareness. Third, the articulation of learning outcomes across these environments contributes to the formation of composite professional profiles capable of operating within interdisciplinary and inter-institutional heritage governance contexts.

5.6. Implications for the National Competence Model

The ULSIT case does not eliminate the structural tensions described in the Bulgarian model; however, it demonstrates that targeted pedagogical design can reduce reliance on compensatory institutional learning after employment. By integrating practice-based training and digitally mediated competence formation within higher education, universities can deliver more coherent professional baselines aligned with regulatory and institutional expectations.

Three transferable insights emerge. Integration of disciplinary, practical and digital training is pedagogically feasible when structured around competence clusters rather than isolated curricula. Digital learning is most effective when embedded within preservation logic and documentation ethics rather than treated as a purely technical skillset. Finally, universities can function as bridging institutions that partially reconcile the gap between education outputs and governance requirements, thereby contributing to more sustainable expert-capacity formation within the heritage sector.

6. Structural Deficits Revisited: Competence Standards, Fragmentation and Professional Instability

The National Model Produces A Set Of Persistent Structural Deficits:

6.1. Absence of a Shared Competence Standard

Regulation demands complex expertise, yet there is no explicit, shared competence standard that defines what a “heritage expert” should know and be able to do across institutional contexts. Different organisations operate with different implicit expectations, producing inconsistency in professional criteria.

6.2. Fragmented Educational Trajectories

Training remains organised primarily along disciplinary lines, without an integrating framework oriented toward the composite functions of heritage governance. “Partial profiles” enter institutions and must be integrated later through practice-based compensation.

6.3. Unstable Professional Identity

Professionals are expected to switch among roles: researcher, administrator, procedural expert, project coordinator, mediator among stakeholders. Without structured training pathways that anticipate these composite roles, professional identity is formed through ad hoc adaptation rather than coherent competence development.

6.4. Weak Structural Linkage among Education, Research and Practice

Collaboration among universities, research and institutions often remains episodic, project-dependent or driven by individual initiatives rather than institutionalised mechanisms. As a result, practical problems do not consistently feed into curricula and research agendas, and research outputs do not systematically update professional training.
Digital learning amplifies each of these deficits, because digital environments extend competence expectations while the integrating framework remains weak.

7. Practical Consequences for Heritage Preservation and Governance

These structural deficits translate directly into practice:

- Inconsistent expert decision-making. Similar procedures may yield divergent approaches and justifications, reflecting different educational biographies and uneven competence completion.
- Project implementation risks. Heritage projects require combined scientific, technical, procedural and coordination capacities; fragmented profiles increase coordination costs and the risk of formally compliant but conceptually weak outcomes.
- Procedural extremes. Underprepared professionals may resort to mechanical rule-following or overly flexible interpretation – both of which undermine trust in the system.
- Reactive site management. Without competence in long-term planning, stakeholder engagement and policy integration, management becomes reactive, dependent on individual actors rather than stable institutional capacity.

Overall, the system operates in a compensatory mode – learning in practice and individual effort compensate for the lack of coherent competence formation.

8. Towards a Workable Model: Coordination, Competence Framework, and Digital Learning Pathways

A systemic improvement cannot be achieved solely through partial curriculum changes. It requires coordinated governance linking cultural policy, educational policy and institutional practice.
Key directions include:

- Institutionalised coordination between cultural and educational governance. Sustainable competence formation requires a stable framework aligning policy expectations with training outputs.
- A recognised competence framework for heritage professional profiles. This does not mean bureaucratic uniformity. It means defining baseline competences and pathways for specialisation, including digital learning competences.
- Structured continuing professional development. Postgraduate and continuing education should be linked to institutional needs and digital transformation realities.
- Embedding digital learning as competence environment. Digitisation, 3D, VR and virtual reconstruction should be integrated as learning environments connected to preservation logic, documentation standards, and professional judgement.
- Universities as bridging institutions. Practice-based and digital training clusters – such as those illustrated by ULSIT – can reduce the systemic reliance on ad hoc institutional compensation.

9. Conclusions

The analysis demonstrates that the challenges of cultural heritage preservation in Bulgaria cannot be explained solely by isolated administrative decisions or the performance of individual institutions and specialists. They derive from a deeper structural mismatch among regulatory expectations, the disciplinary organisation of higher education, and the composite competence demands of institutional practice. The “Bulgarian model” functions as a de facto assemblage rather than as a coordinated system: regulation presupposes integrated expertise, education produces partial disciplinary profiles, and institutions complete professional competences through compensatory learning-by-doing mechanisms.

Digital learning and technology-driven heritage work intensify these tensions by expanding competence requirements and accelerating institutional expectations. In this context, the quality and sustainability of heritage preservation practices depend on coordinated competence formation that links cultural and educational governance and integrates digital learning into coherent professional pathways.

The case study of ULSIT demonstrates how practice-based training (fieldwork in archives, libraries, museums and archaeological contexts), laboratory-based learning (conservation, restoration, identification and authentication) and digital heritage laboratories (digitisation, 3D imaging, VR and virtual reconstruction) can be integrated – especially at master’s level – into an education model aligned with contemporary heritage governance needs. While such institutional examples do not replace the need for system-wide coordination, they provide realistic, transferable principles for capacity building. Ultimately, reform in heritage preservation cannot be separated from reform in how professional capacity is formed, sustained and developed – particularly under digital transformation conditions.

Acknowledgment

This paper was developed within the framework of the research project *“New Scientific Paradigm: Model for Academic Cooperation in the Field of Science, Strategic Planning and Innovation for Cultural Identity Preservation and Capacity Building”*, funded by the Bulgarian National Science Fund, Contract No. KP-06-N85/5 / 05.12.2024.

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