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INTRODUCTION

This Guide is conceived to broaden access to innovative teaching resources for educators across Europe taking into account strategies, tools, best practices and case studies for digital museum education. This comprehensive guide supports educators in enhancing their curriculum with museum content and serves as an ongoing professional development tool. Teachers and educators can benefit from this guide to integrate digital museum resources into their teaching and be encouraged to explore new ways of engaging students with historical and cultural heritage.
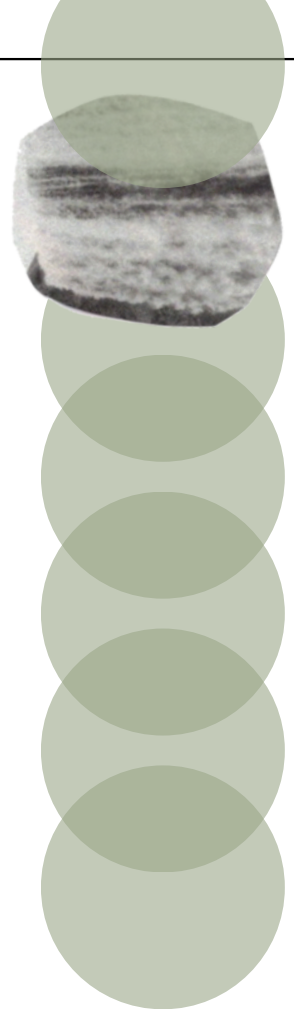
EU statistics indicate a growing digital gap in educational settings, with the 2020 Digital Education Action Plan highlighting that only 38% of students in the EU are taught by digitally confident and supportive teachers. The lack of professional development in the usage of digital tools hinders their ability to adopt new pedagogical practices.

The project Museums Uniting Students and Educators in Digital and Historical Exploration (MUSED) aims to bridge this gap by providing educators with the knowledge and tools to integrate digital content into their teaching through museum-based learning.

Moreover, despite Europe's rich cultural heritage, there is a noticeable decline in younger generations' engagement with their cultural roots, partly due to the digital age's distractions. The Eurobarometer on European Cultural Values (2017) found that a significant portion of EU citizens believe cultural heritage is not sufficiently integrated into educational and cultural policies. The challenge lies in connecting the digital-native generation with their past in a way that resonates with their present and future. So, MUSED seeks to counteract this by using digital platforms to make heritage education more accessible, inclusive and engaging for young learners. This aligns with the EU's emphasis on cultural preservation and education as foundational to sustaining the cultural diversity and historical consciousness of the EU.

This document provides a structured overview of the main approaches, tools, and methodologies related to digital education in museums and school settings. Throughout the chapters, it explores the theoretical foundations of museum education as well as the practical application of digital tools for activity design, learning assessment, and the development of accessible and inclusive initiatives. Digital transformation is presented as an opportunity to reshape educational and cultural processes, with a focus on both formal and non-formal teaching contexts. Practical examples and case studies illustrate how museums and schools can collaborate to foster meaningful learning experiences.

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Description of the Erasmus project and partners

MUSED is a KA220 SCH Erasmus+ project (Cooperation Partnership in School Education) 2024-2026 whose coordinator is Liceo Carlo Troya in Andria (Italy). Its partners are: Insieme per Camminare in Rossano Calabro (Italy), Abdulkerim Bengi Anadolu Lisesi in Tarsus (Turkey), Espacio Rojo in Madrid (Spain), Escola Básica 2,3 Ciclos Dr. Horácio Bento de Gouveia in Funchal (Portugal), Model Vocational High School of Epanomi (Greece), Collegium Balticum- Akademia Nauk Stosowanych z siedzibą w Szczecinie in Szczecin (Poland) and Magyar Nemzeti Muzeum in Budapest (Hungary). The partnership was formed with the strategic intention to bring together a diverse mix of organizations that collectively could cover a wide spectrum of expertise and capabilities necessary for the successful execution of the project. This mix includes educational institutions, cultural organizations and technology specialists, each bringing unique strengths to the projects and its main objectives. Indeed, the High Schools from Italy, Turkey, Greece, Portugal and Poland bring direct experience in secondary education, understanding the needs, challenges and opportunities of integrating innovative teaching methods into curricula. Museum, Art and Digital Education Specialists from Italy, Spain and Hungary, instead, offer expertise in digital pedagogy, museum education methodologies and the development of digital tools and resources. In addition to this, Insieme per Camminare, since it manages a museum with a UNESCO heritage, is specialized in the development of digital tools and platforms for cultural institutions.

MUSED consortium aims at innovating digital museum learning and enhancing cultural heritage education, fostering digital literacy among educators and students. By integrating digital tools with museum resources, it seeks to make cultural heritage accessible and engaging, promoting a deeper understanding and appreciation across Europe. The goal is to strengthen educational practices, encourage cross-cultural exchange and support the development of creativity in learners, ensuring a lasting impact on education.

The institution cooperation will be responsible for creating a digital museum learning and engagement guide and a toolkit to create virtual museums or exhibitions, two learning activities on digital museology and virtual museum creation, a virtual museum of European Heritages and finally an eTwinning Project to foster cross-cultural collaboration.

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Photography of Hungarian National Museum

The importance of digital tools for museums and schools

Integrating digital tools into museums and schools revolutionizes education by enhancing accessibility, engagement, and interdisciplinary learning. Digitized collections remove physical barriers, allowing students worldwide to explore cultural heritage through high-resolution images, 3D models, and virtual tours. These platforms provide an inclusive gateway for learners facing economic or logistical challenges.

Beyond accessibility, digital tools cultivate global awareness by exposing students to diverse cultural resources and enabling cross-border collaboration. Immersive technologies deepen engagement, making abstract concepts more tangible and memorable. Additionally, digitization preserves fragile artifacts while promoting sustainable education by reducing reliance on physical materials and travel.

By embracing digital tools, museums and schools bridge the gap between cultural heritage and education, fostering lifelong appreciation and innovative learning experiences.

1. Augmented Reality is an interactive experience that combines the real world and computer-generated 3D content. The content can span multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory.
2. Virtual Reality is a simulated experience that employs 3D near-eye displays and pose tracking to give the user an immersive feel of a virtual world.

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Suggestions for Implementation in Educational Practices

To maximize the guide's impact, it is recommended to approach it as both a reference and a practical manual:

- Identify Relevant Sections: Begin by reviewing the chapters most aligned with your educational goals or institutional needs. For example, educators seeking tools to engage students might focus on Chapter 2, while those designing lesson plans may benefit from Chapter 3.

- Incorporate Best Practices: Use the case studies in Chapter 6 as models to adapt and implement in your context. These examples provide insights into overcoming challenges and achieving success in diverse educational settings.

- Customize to Your Audience: Adapt the strategies and tools suggested in the guide to fit the specific needs of your students or visitors. For example, tailor digital content to different age groups, learning styles, or cultural backgrounds to ensure inclusivity and relevance.

- Foster Collaboration: Engage with colleagues, museum educators and cultural organizations to co-develop activities and share resources. Collaborative efforts often lead to more innovative and impactful educational experiences.

- Evaluate and Evolve: Regularly assess the effectiveness of the implemented strategies using the evaluation methods outlined in Chapter 5. Collect feedback from students, educators and stakeholders to refine and improve your practices.

- Integrate Gradually: Start with small-scale applications of the guide's recommendations, such as piloting a digital tool in one lesson or activity. Gradually expand your use of digital resources as you become more familiar with their potential.

This guide is both a roadmap and a toolkit, designed to support the integration of digital technologies into education in meaningful and sustainable ways. By applying its principles and strategies, educators and museum professionals can unlock the transformative potential of cultural heritage in the digital age.