WILOS360 - IMMERSIVE REALITY IN EDUCATION

BEST PRACTICE REPORT

Immersive Reality (IR) applications in Greece

Introduction

Greece is leveraging IR technologies not only for cultural preservation and education but also for economic innovation, particularly in sectors such as tourism and tech startups. With ongoing EU funding and local initiatives, the adoption of IR is set to grow, making it an integral part of Greece's digital transformation.

Best Practices Immersive Reality (IR) applications in Greece

The use of Immersive Reality (IR) technologies in Greece is growing steadily, with applications spanning tourism, education, healthcare, architecture, and entertainment. Here's a summary of the current state in Greece:

- Tourism and Cultural Heritage
    - Acropolis Museum AR/VR Applications: The Acropolis Museum in Athens offers VR and AR experiences that reconstruct ancient sites and artifacts, allowing visitors to visualize how they looked in antiquity
    - Virtual Tour of Santorini: A VR application provides a 360-degree exploration of Santorini's archaeological sites and landscapes, targeting tourists unable to visit physically
    - Knossos Palace Project: An AR application enhances the visitor experience at the Palace of Knossos in Crete by overlaying digital reconstructions of Minoan architecture on physical ruins
    - Foundation for Research and Studies ‘Eleftherios K. Venizelos’ in Greece, Crete: Immersive VR Experiences on the Assassination Attempts against Eleftherios K. Venizelos. In an endeavor to enrich visitors’ experiences, the museum seeks to implement a cutting-edge virtual reality (VR) application.[1]

    - Kazantzakis Museum in Greece, Crete: Through a groundbreaking blend of Artificial Intelligence and Virtual Reality, users inhabit a meticulously recreated 3D office in Antibes, France. This is the very space where Kazantzakis once lived and worked, offering an authentic glimpse into his world.[2]
    - Amvrakikos: Application for smart mobile devices which aims to enhance the visitor experience by providing additional multimedia information about the displayed physical or digital exhibits. The application has two thematic sections 1) Birdlife and 2) Aquatic fauna, and provides the following functionality.[3]
    - University of the Aegean, Ephorate of Antiquities of Lesvos: OLIVE: A representation of the timeless olive oil production techniques in Lesvos, using Virtual and Augmented Reality technologies [4]
- Education
    - University of Athens VR Labs: The university integrates VR into educational programs, particularly in STEM fields, to create virtual laboratories where students can conduct experiments safely and interactively
    - NOESIS and the Laboratory of Digital Analysis and Design of Learning Tools of the Department of Primary Education (PTDE) of the Aristotle University of Thessaloniki have developed an intervention in the subject of Geography, which is based on Virtual Reality (VR), which creates a virtual flight over Greece in selected areas of Greece such as the Vikos Gorge, Lake Polyphytos, Mount Olympus, etc. [5]
    - Historical Immersion for Students: Greek schools are adopting VR to teach history by immersing students in interactive simulations of ancient Greek life, such as a day in Athens during the classical period
    - “Battle of Samos”: Application that contains information about the Historical Naval Battle of Samos of 1824, both from a historical and cultural perspective. The Augmented Reality (AR) that is integrated into the application gives the user, in the most representative way, the sense of the landscape, the events and the vessels during the Historical Naval Battle. [6]

- Healthcare
    - Pain Management in Hospitals: Greek hospitals are using VR for pain distraction therapy in patients undergoing treatments, especially in pediatrics
    - Virtual reality technology VR "POWER": Six hospitals in Greece aim to enhance the emotional well-being of cancer patients, reduce psychological symptoms related to cancer, and improve the patients' treatment experience. During their visit, patients view a nature-inspired virtual reality simulation or game while receiving their treatment. [7]
    - Mental Health Therapy: VR-based cognitive behavioral therapy is applied to treat phobias and anxiety disorders, offering controlled, immersive exposure to anxiety-inducing scenarios
    - OramaVR has created an innovative VR platform that helps train surgeon trainees through simulations. Essentially, OramaVR's platform, which was developed in collaboration with surgeons, creates representations of procedures and places users "inside" them. [8]
- Architecture and Real Estate
    - 3D Building Simulations: Greek architectural firms utilize VR for creating interactive walkthroughs of buildings during the design phase, helping clients visualize projects before construction begins
    - 3D Architectural Visualization in Real Time: This Interactive Android/iOS app gives architects and designers control over the interaction with the visualization experience. Users enter a place and freely navigate to observe every nook. [9]
- Entertainment and Gaming
    - Greek Mythology in Gaming: Local developers create VR games rooted in Greek mythology, blending entertainment with educational narratives, such as adventures set in Olympus or the Labyrinth of Crete
    - Vrplanet: The Basement is a VR escape room game for the HTC Vive and Oculus Rift+Touch. It is inspired by real-life escape games, makes full use of the room-scale virtual reality of the Vive and Oculus+Touch, and offers challenging puzzles you have to solve to escape the room.[10]

- Cultural Innovation
    - Digital Twins of Archaeological Sites: Using IoT and AR, digital twins of ancient monuments like Delphi are being developed for preservation and global virtual accessibility
    - Mr. Kolokythas' DTMH created a VR online store on behalf of Samsung and Vodafone, which was the first in the world. [11]

Best Practices in School Education

The use of Immersive Reality (IR) in schools across Greece is growing, driven by initiatives aimed at modernizing education and enhancing engagement. Several projects and practices highlight the current situation:

- Greece is actively participating in European Projects, which focuses on developing low-cost AR and VR modules for secondary education, such as the ARIES PROJECT. These projects aim to enhance curricula by incorporating interactive and engaging teaching methods, such as virtual simulations for biology, history, and geography. Teachers are trained to integrate these technologies into lessons to boost student participation and learning outcomes. [14]
- AR is increasingly being used to provide students with immersive experiences in subjects like geography, art, and environmental science. For instance, students can explore ecosystems virtually or analyze historical artifacts in detail. Such tools encourage critical thinking and make abstract concepts more tangible
- While IR is being adopted, its integration is uneven. Urban schools tend to have better access to necessary hardware and software, whereas rural areas face challenges such as limited resources and training for teachers.
- There is significant promise in expanding IR use. Greek educators and policymakers are exploring ways to integrate these technologies further, supported by EU funding and collaborations with tech companies. The aim is to make IR a staple of interactive education across the country, preparing students for a tech-driven future

Conclusion

The adoption of Immersive Reality (IR) technologies in Greece has been steadily expanding across sectors such as tourism, education, healthcare, architecture, and entertainment.

Recent years have seen a notable rise in IR applications, particularly in enhancing cultural and educational experiences. However, significant gaps remain in making these technologies accessible to a broader audience.

In education, the use of IR is primarily observed during school visits to archaeological sites, with limited integration into regular classroom activities. Although its adoption in schools is still in the early stages, initiatives such as EU-funded projects and targeted classroom implementations indicate a growing recognition of its potential to enrich learning environments. To scale these efforts nationwide, continued investment in infrastructure, teacher training, and the development of accessible IR tools will be crucial.

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