Potential Impact of Augmented Reality Utilization in Cultural Institutions

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The computational power of the smartphone readily available at our fingertips opens the floodgates of possibility for interactive and augmented experiences. In 2020, just 13 years after the 2007 initial release of the iPhone, there were approximately 1.38 billion smartphones sold to end-users worldwide and is expected to continue climbing to 87% of all mobile users owning smartphones by 2025 (O'Dea, 2021). This expanding landscape of digital power and accessibility offers opportunities for technology such as Augmented Reality (AR) to impact the daily habits of engagement for the enormous consumer market.

The rise in personal mobile devices capable of producing AR environments has presented a feasible entry point into digital installations. AR structuring allows for computer-presented material to be directly integrated into the user's real-world settings. This technology has established a presence in a multitude of industries, such as medicine, military, manufacturing, entertainment, visualization, and robotics, and is beginning to expand in newer domains such as education, marketing, geospatial, navigation, tourism, urban planning, and civil engineering (Mekni & Lemieux, 2014). Given the current landscape of the pandemic, experiences dependent on physical attendance, such as arts and culture institutions, have faced an unprecedented challenge of navigating audience engagement in a safe and meaningful way. These circumstances further prove importance to explore the potential of integrating this technology into arts and culture experiences and examine the effectiveness of AR applications.

Museums have encountered financial challenges and have shifted focus to enhancing the visitor experience, with the goal of increasing admission rates (He, Wu, & Li, 2018). To successfully attract and retain customers in a technologically social climate, AR holds potential to be an effective tool to enhance a visitor's engagement and experience with artifacts and art. In the Taxila Museum in Pakistan, which has preserved the Gandhara civilization, researchers

implemented differing styles of guided tours utilizing the computational power of smartphones to create a unique visitor experience (Khan, et al., 2021). This expansion of services integrated technology through AR touring systems, robot guides, and AR 3D reconstructions of archeological sites. The applications focused on providing the audience an enhanced experience with an artifact and it's information through visual and auditory augmentation of multimedia content. When assessing the effectiveness of the applications, the researchers' measurements centered on the audience's perspective of meaningfulness and emotional connection to the exhibit. At the Taxila museum, studies found that the framework of the AR enhanced experience outperformed the traditional guide in emotional connection, meaningful experience, engagement with the artifacts, and more useful overall (Khan, et al., 2021). To attract the attention of future visitors to historic or art institutions, which is vital for the institutions to continue, AR offers an entry point to appeal to younger audiences through the technological enrichment of the "museum experience" by creating a multitude of ways to engage with the exhibit.

Ultimately, AR is an accessible tool for audiences to engage with and is easily integrated into the context of exhibits. As the arts and culture institutions are seeking a revitalization of exhibit culture, there is a need for alternative ways of engagement and exhibitional forms that appeal to younger audiences. Augmented Reality integrated exhibits could address the ongoing issues of audience age gaps by providing a non-invasive and personalized alternative to experiencing exhibits, while not impacting the visitors who prefer the traditional museum-viewing format as it exclusively lives in the digital realm.

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