UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

Applying AR and VR Technology in Architectural Studies

Title

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Name of Submitter

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Organization

Title: Applying AR and VR Technology in Architectural Studies

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ABSTRACT (250 words or less):

The rapid advancement of augmented reality (AR) and virtual reality (VR) technologies has opened new frontiers in architectural studies, creating immersive and interactive learning experiences. AR overlays computer-generated images onto the real-world environment, enhancing understanding of spatial relationships and design concepts. In conjunction with devices like laptops and smartphones, AR enables the fusion of digital and physical realms, enriching architectural exploration. Conversely, VR immerses users in computer-generated environments through specialized headsets, offering unprecedented opportunities for realistic engagement.

The impact of AR and VR in education is transformative, enabling students to delve into historical events, travel to distant locations, and interact with virtual objects to deepen their comprehension of intricate concepts. Beyond traditional education, VR facilitates hands-on vocational training, empowering individuals with practical experience. These technologies revolutionize communication in architecture, allowing stakeholders to access intricate structural, mechanical, and electrical information in real-time. The elimination of traditional paper drawings conserves resources and provides an immersive walk-through experience for project stakeholders, fostering collaboration and refining designs before construction commences.

AR and VR tools empower architects to visualize and refine 3D models throughout the design process, ensuring alignment with the original concept. Moreover, these technologies streamline architectural design by offering life-like simulations for early-stage project reviews. In architecture education, promoting AR and VR provides students with sensory experiences and a heightened sense of reality, transforming the learning environment into a dynamic playground for exploration, discovery, evaluation, and design improvement. This grant proposal seeks support to implement AR and VR technologies in architectural education, fostering innovation and excellence.

a. Purpose of Grant and Impact to Student Body as a Whole:

The primary purpose of this grant is to revolutionize the architectural studies curriculum by integrating augmented reality (AR) and virtual reality (VR) technologies. In the School of Architecture, incorporating augmented reality (AR) and virtual reality (VR) technologies stands to impact the entire student body profoundly. This grant is strategically designed to elevate the quality and depth of architectural education, fostering a transformative learning environment that extends beyond traditional boundaries.

Firstly, the immersive experiences facilitated by AR and VR will revolutionize the way students engage with architectural concepts. Students can virtually inhabit and manipulate three-dimensional spaces by providing an interactive platform for design exploration. This enhances spatial awareness and allows for a more profound understanding of design principles, creating architects who can conceptualize and communicate ideas with a higher degree of precision.

Moreover, the collaborative nature of AR and VR experiences will promote teamwork and interdisciplinary collaboration within the School of Architecture. Students can work together in virtual spaces, mirroring the collaborative environments found in real-world architectural projects. This prepares them for the professional realm and fosters a sense of community and shared learning within the student body.

The grant's impact extends beyond the classroom, influencing the culture of innovation within the School of Architecture. As students become adept at utilizing cutting-edge technologies, they will contribute to a continuous improvement and exploration culture. The infusion of AR and VR into the curriculum will nurture a generation of architects who are well-versed in traditional design methods and pioneers in leveraging technology for creative expression and problem-solving.

In summary, the grant aims to transform the School of Architecture into a hub of technological innovation, shaping students into forward-thinking architects with the skills, mindset, and collaborative spirit needed for success in the dynamic architectural landscape. The impact on the student body will be comprehensive, creating a legacy of technologically proficient architects who drive the profession's future.

b. Projected Lifetime of Enhancement:

The projected lifetime of the AR and VR enhancement within the School of Architecture anticipates a sustained and far-reaching impact. This transformative initiative is designed to provide a lasting and evolving contribution to the educational landscape. The planned integration acknowledges the dynamic nature of AR and VR technologies. Over the next five years, continuous updates and advancements are expected, ensuring that students experience the latest innovations. This extended timeframe guarantees a comprehensive immersion in current technology and positions the School of Architecture as a pioneer in adapting to emerging trends and industry standards.

The projected lifetime they are allowing students to reap the benefits of AR and VR technologies throughout their time at the School of Architecture. From foundational courses to advanced design studios, the integration will be seamlessly woven into the curriculum,

providing a consistent and progressive enhancement to their learning experience.

Moreover, the extended lifetime of the enhancement aligns with the strategic vision of the School of Architecture. It allows for the development of a sustainable ecosystem where faculty can continuously refine and expand the integration, incorporating student feedback and adapting to the evolving needs of the architectural profession.

Beyond the academic realm, the prolonged impact of AR and VR technologies will contribute to a legacy of innovation within the School of Architecture. As students graduate and enter the professional arena, they will carry with them a deep understanding of architectural principles and fluency in leveraging cutting-edge technologies for creative expression and problem-solving.

In essence, the projected lifetime of this enhancement is not confined to a finite period. Instead, it sets the stage for a continuous and evolving commitment to technological excellence within the School of Architecture. This initiative is poised to shape not only the current student body but also the future generations of architects, positioning the School of Architecture as a beacon of technological innovation in architectural education.

c. Persons Responsible for:

i. Implementation: The implementation will be overseen by the Architecture Department Head, working in collaboration with the IT Department to ensure seamless integration.

ii. Installation: The IT Department will be responsible for the installation of the necessary hardware and software under the guidance of the Architecture Department.

iii. Maintenance: Ongoing maintenance will be a joint responsibility of the IT Department and Architecture Department, with regular check-ups and updates to ensure optimal functionality.

iv. Operation: Principal Investigator within the Architecture Department will manage day-to-day operations, integrating AR/VR tools into the curriculum and providing technical support.

v. Training (with qualifications): Principal Investigator and external experts with expertise in AR/VR technologies will conduct training sessions for students and faculty members. These experts will hold relevant certifications and experience in implementing AR/VR in educational settings.

i. STEP Plan Alignment: This proposal aligns with the institution's Strategic Technology Enhancement Plan (STEP) by embracing innovative technologies to enhance educational outcomes, preparing students for industry demands, and fostering interdisciplinary collaboration.

<u>Budget Proposal</u>

1.   **Equipment**   **2800 $ (Meta Quest 3 – No: 4)**

2.   **Software**   **0 $ (Revit and Enscape)**

3.   **Supplies**   **200 $ (USB cable- No: 4)**

4.   **Maintenance**   **0 $**

5.   **Personnel**   **0 $**

6.   **Other**   **0 $**

TOTAL: **3000$**