VIRTUAL REALITY AS A NARRATIVE MEDIUM IN ARCHITECTURAL DESIGN LEARNING: SPATIAL SEQUENCE, TEMPORAL VARIATION, AND USER PERSPECTIVE

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INTRODUCTION

Architectural experience emerges through the interaction between the individual and the environment, unfolding as people move through space and encounter different viewpoints and spatial sequences (Zevi, 1993). Time is therefore part of how architecture is perceived, since space is gradually understood through movement (Zevi, 1993; Psarra, 2009). This relationship between movement, sequence, and time provides a basis for understanding architectural experience in narrative terms. In this study, narrative does not refer to a predefined story, but to the way spatial experience is organized through a coherent sequence of situations that unfold over time and from the perspective of the person moving through them (Abbott, 2008; Ryan, 2006; Psarra, 2009). Architectural design, however, is still developed largely through representations that present spatial conditions separately, which can make it more difficult to understand their continuity and temporal dimension (Zevi, 1993). Virtual Reality (VR) offers another way of engaging with architectural models by allowing users to explore them in first person, move freely through space, and control their viewpoint (Psarra, 2009). In this study, VR is examined as a narrative medium in architectural design learning through three dimensions: spatial sequence, temporal variation, and user perspective (Ryan, 2006). The study investigates whether immersive exploration of students' own projects can improve their understanding of spatial dimensions and relationships and reveal aspects that are less apparent in conventional representations. More specifically, it examines the extent to which first-person immersive experience can function as a narrative medium in architectural representation through the interplay of spatial sequence, temporality, continuity of movement, and user perspective, and how this experience may affect students' understanding of their own projects during the design process. Here, VR is not considered a replacement for conventional forms of representation, but a complementary resource that can broaden the possibilities for spatial perception and design analysis.

DEVELOPMENT

The study adopted an exploratory approach, combining descriptive quantitative data with qualitative analysis. It was conducted in three stages. First, a theoretical review examined the relationship between architectural spatial experience, narrative, and immersive media, providing the basis for three analytical dimensions: spatial sequence, temporal variation, and user perspective. Second, the technical workflow (Figure 1) and data collection instruments (Figure 2) were developed and tested. Students' architectural models, originally produced in Revit, were visualized through Enscape and explored using a Meta Quest 3S headset (Figure 1), allowing real-time navigation from an approximately life-size, first-person perspective. The third stage consisted of an experiment with 16 second-year Architecture and Urbanism students, who explored their own design projects through immersive VR walkthroughs. Using participants' own projects allowed the experience to be compared with previous interpretations developed through drawings, renderings, and digital models. Following the walkthrough, participants completed two structured questionnaires: a retrospective assessment of their understanding before VR and a post-experience evaluation. Both included five-point Likert-scale items and open-ended questions addressing the same analytical dimensions. Likert responses were summarized through frequencies and percentages (Figure 2), while qualitative responses were

examined comparatively to identify recurring changes in how participants interpreted spatial sequence, temporal variation, and user perspective.

RESULTS

The results indicate consistent changes in how participants interpreted their projects after the immersive walkthrough. Spatial sequence showed one of the clearest shifts. Before VR, nine participants disagreed that they fully understood circulation and spatial flow, while seven agreed. After the walkthrough, all 16 participants agreed that VR improved their understanding of circulation, including 13 who selected the highest level of agreement. Fifteen also reported identifying aspects of their projects that had not previously been apparent. Open-ended responses similarly described circulation, transitions, and relationships between spaces as becoming clearer through navigation.
Changes were also observed in temporal perception. Before VR, nine participants disagreed that they had clearly perceived temporal variations such as changes in lighting, five were neutral, and two agreed. After the walkthrough, 14 participants agreed that VR supported the perception of these conditions, while two remained neutral. Qualitative responses particularly emphasized changes in lighting and environmental conditions encountered while moving through the project. User perspective and spatial scale followed a similar pattern. Before VR, responses regarding the ability to adopt the perspective of potential users were divided; after the experience, 15 participants strongly agreed that VR brought them closer to this perspective. All 16 participants also agreed that VR improved their understanding of physical dimensions, including 14 who strongly agreed. Several participants reported discrepancies between the scale anticipated through previous representations and the scale perceived during immersion.

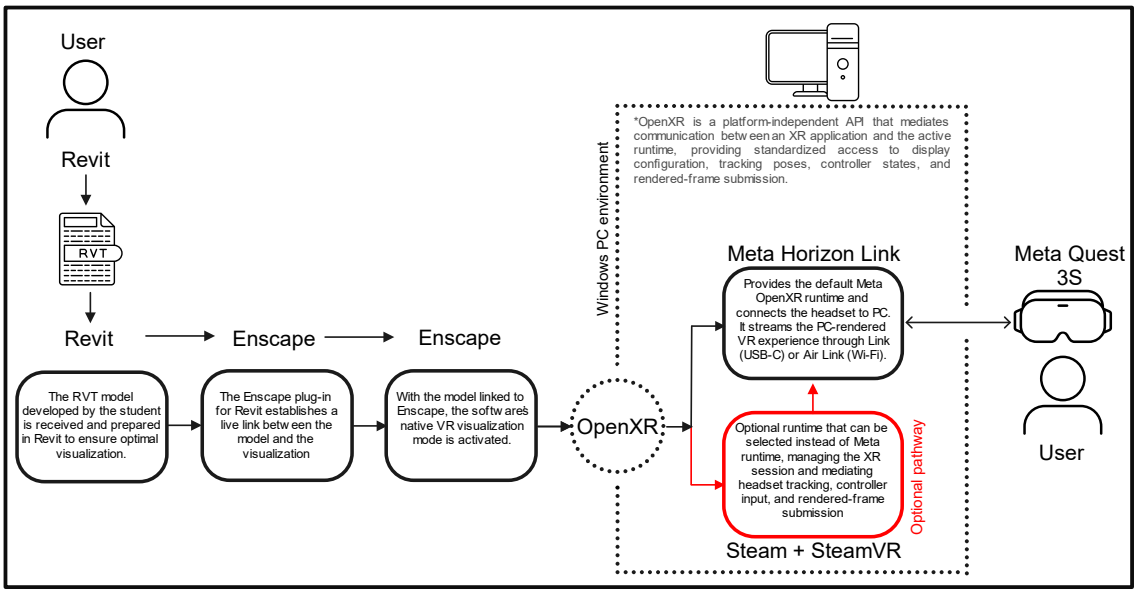
CONSIDERATIONS

Taken together, these findings support the interpretation of VR as a narrative medium for architectural representation. By allowing students to move through their projects, encounter spatial conditions in sequence, and assess spatial relationships from a situated viewpoint, the walkthrough allowed the project to be experienced as a spatial sequence unfolding over time rather than as a collection of isolated representations. This interpretation is consistent with approaches that understand architectural meaning as emerging progressively through movement, sequence, and perception. Spatial sequence, temporal variation, and user perspective can therefore be understood not as separate perceptual variables, but as interrelated dimensions that shape how the project is experienced and interpreted. These findings suggest that VR can complement conventional representational media by providing an experiential way of interpreting architectural space as a sequence of interconnected situations. In this capacity, VR can support design learning not only as a visualization resource, but also as a narrative medium through which students can evaluate spatial experience during the design process. The study remains exploratory and is limited by its small sample size and reliance on self-reported perceptions. Future research should therefore involve a larger participant group and incorporate additional forms of evidence to examine how immersive interpretation may influence subsequent design decisions.

Keywords: virtual reality; architectural design learning; narrative medium; spatial experience; immersive walkthrough.

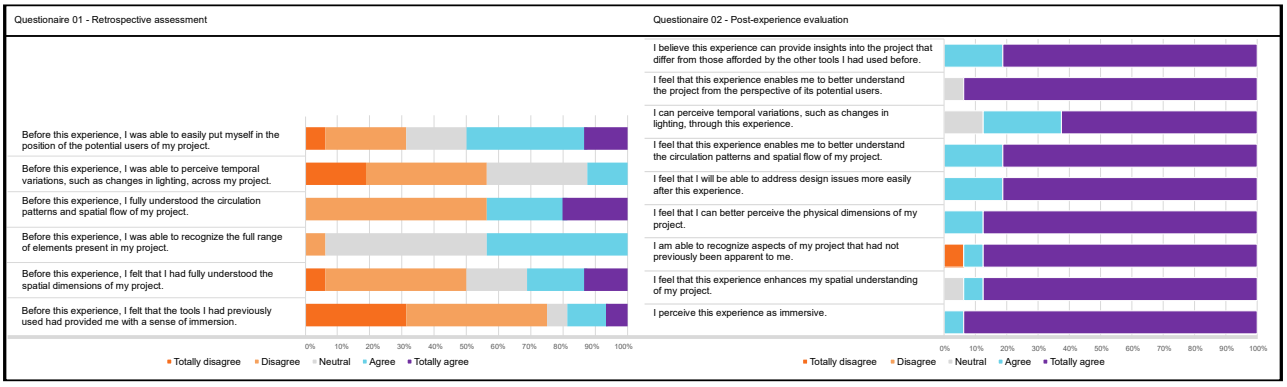
ATTACHMENTS

Figure 1. Revit–Enscape–OpenXR workflow for PC-based immersive VR visualization



Source: Prepared by the authors based on Khronos OpenXR Working Group (n.d.), Meta (n.d.), and Valve Corporation (n.d.).

Figure 2. Distribution of participants' retrospective and post-experience responses regarding project understanding



Source: Prepared by the authors

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