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Doctoral Design Course
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KEYWORDS:
Design Education
Basic Design
Virtual Reality
Methodology

research group UX.Project[On] - User Experience Design Research, UNIDCOM/IADE

Basic Design meets Virtual Reality: A tentative methodology

abstract

Basic Design remains an unexplored field regarding the input of the new technologies (e.g., Virtual Reality - VR) in teaching-learning process. The present study aims to assess the contribution of Virtual Reality in the learning of Basic Design topics. A quasi-experimental methodology, with a mixed design is being used, with two conditions: a conventional teaching method (i.e., verbal and static pictures) and a hybrid method (i.e., verbal and VR-based tool). A sample of 60 students, from "Laboratório de Design 3D" curricular unit, at IADE-U, split in two groups (i.e., two classes), are assigned to one condition. Besides being mesured for performance, groups are asked to rate their creativity and motivation, as well as their perceptions of barriers to personal creativity. Currently we are running a pilot study in order to test the tools and the questionnaires for data collection. We expect to conduct the experiment next semester.

DEVELOPMENT

Basic Design discipline was born at Bauhaus School (1919-33) and despite the many changes occurred since then, it is internationally implemented and adapted to the present times (Findeli, 2001; Boucharenc, 2006; Cetinkaya, 2014). The discipline has a propaedeutic character and addresses the initial formative period of the designer by promoting a holistic, creative and experimental methodology with respect to fundamental principles of design.

Laboratório de Design 3D (Lab D3D) is a discipline lectured at the first year design course, at IADE-U. Systematized by Fernandes (2011), Lab D3D is rooted on Basic Design an introduces students to the 3D morphogenetic process. Three exercises are developed which apply a learning by doing process within the creation of abstract, hand scale and manually crafted structures.

Virtual Reality (VR) involves the use of 3D synthetic worlds (i.e., virtual environments - VEs) that can allow the users to experience the artificial phenomenon with the quality and intensity once thought to be unique of real life.

VR enables some of today's most innovative pedagogical approaches (Schank, 2011). In this context is continually reinforced the importance of VR for learning and specifically for design education it was stressed its inevitability (Colucci, 2011).

The flowchart of this study reveals that two VR-based tools are used to provide students the opportunity to interact with 3D structures (Figure 1) for introducing Exercise 2 (Figure 2), and during Exercise 3, to facilitate the visualization of the abstract structures integrated into diverse contexts (Figure 3).
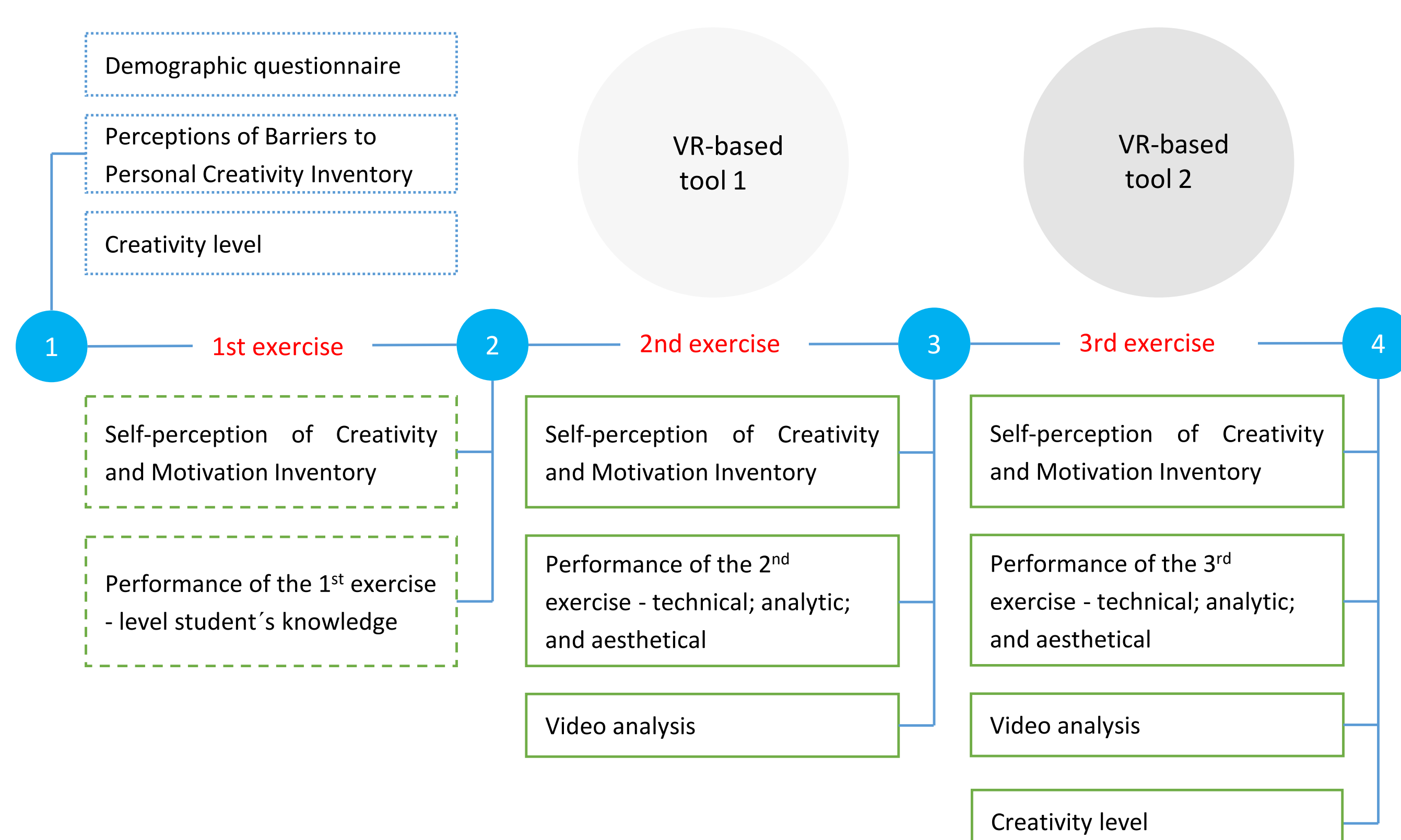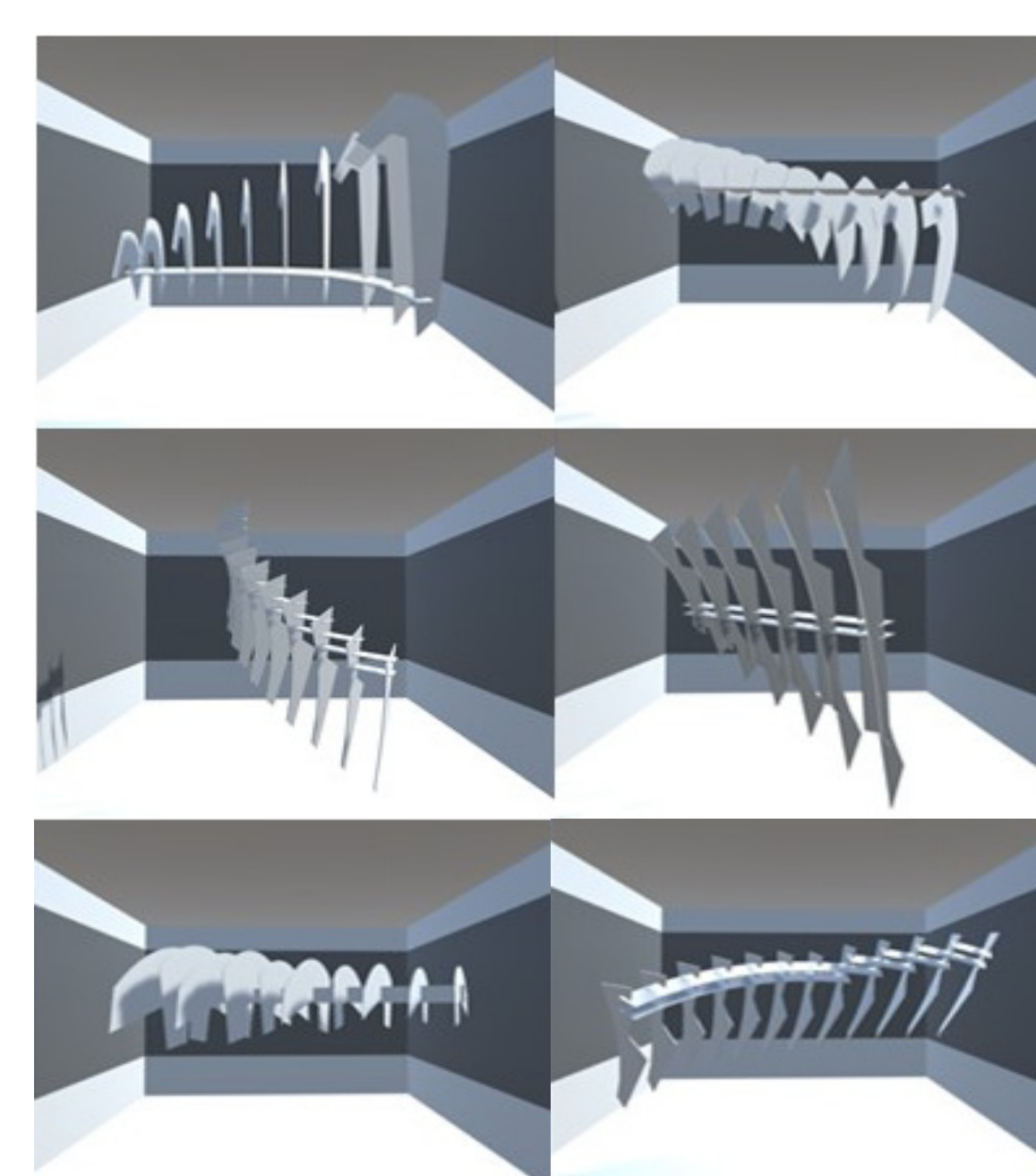

Figure 1 Flowchart of the study

Figure 2 Screen shots of the 3D structures used for introducing Exercise 2
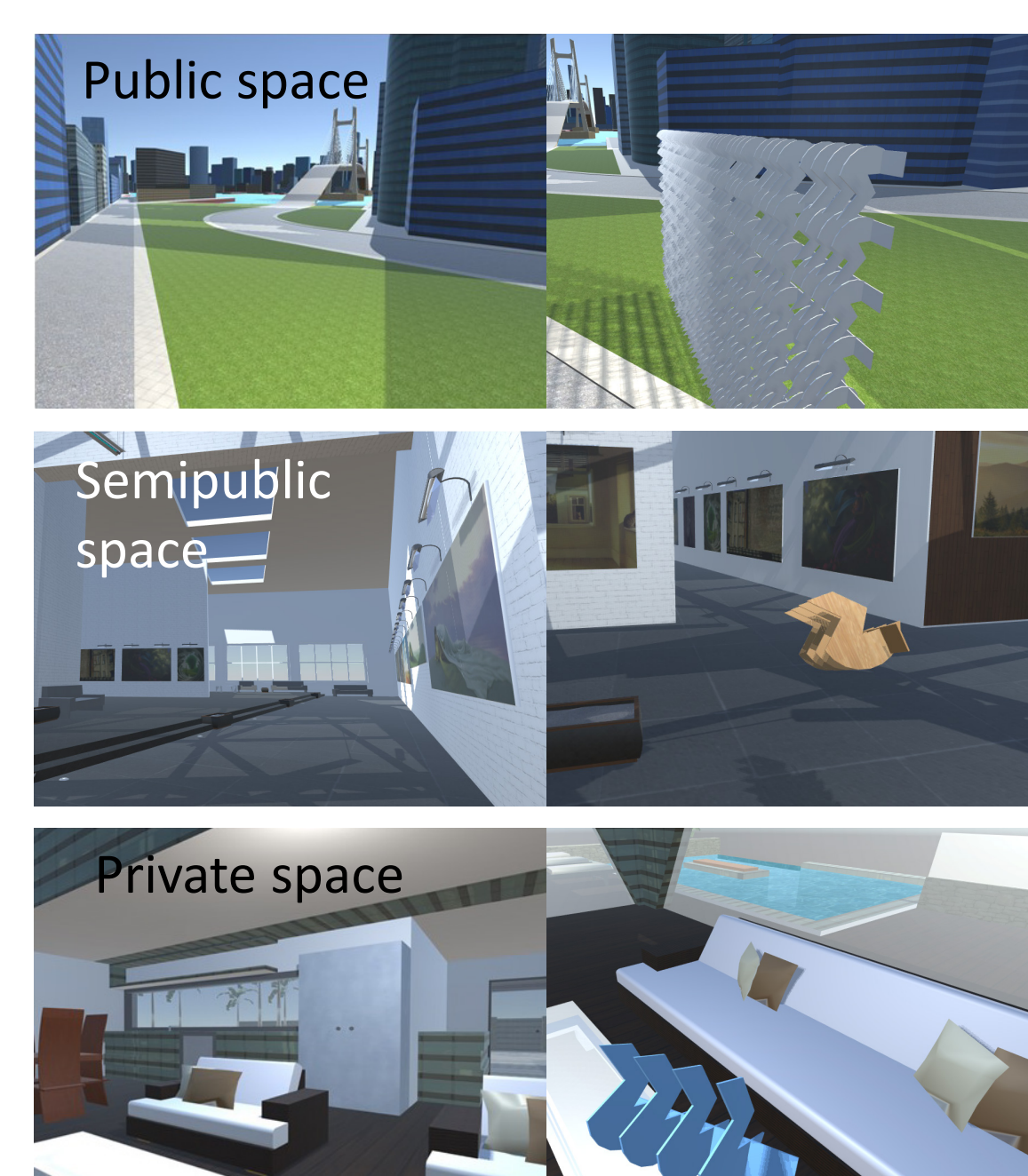
Figure 3 Screen shots of a 3D structure presented in different contexts, during Exercise 3

FINAL REMARKS

• It is expected that the VR-based tools can help overcoming some difficulties reported by the first year design students, such as the low engagement in the manual tasks and the poor emotional connection with the abstract structures.

• Conclusions of the pilot study, by the end of the semester, will allow improving the metrics, scales, tools and procedures for future data collection.

• The use of the VR-based tool can be affected by the students' poor digital literacy, since the assignment requires the use of a 3D modelling software in order to generate the virtual prototypes of the structures previously designed.

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