Abstract—As distance education rapidly appears on the horizon, distance learning technologies are becoming more important in delivering contents and allowing collaboration between students and teachers in globally disparate environments. One of the recent innovative technologies to be explored in distance learning field is immersive environments and sense of presence that offers. The primary purpose of this research is to study the sense of presence—the sense of “being there”—using an immersive environment. While this is a work-in-progress, the authors provide preliminary results and conclusions.

Keywords—Distance Learning-VR-, Sense of Presence

I. INTRODUCTION

There are different aspects that make immersive environments (also known as virtual reality) feel as “real” as possible. One well-known aspect of an immersive environment is “the sense of presence” in the environment. It is often thought of as the sense of “being there.” In the 1990’s, a few theoretical research articles were published in the journal of Presence, Teleoperators and Virtual Environments, published by the Massachusetts Institute of Technology (MIT). In the 2000’s, researchers increasingly have been exploring the topic of sense of presence and using the knowledge gained from various immersive environments studies to further their applications.

II. SENSE OF PRESENCE

How is the presence defined? In this research paper, the main definition of presence that will be used is the awareness or state of the mind of being in an environment, either real or virtual [1, 2]. Experiencing a sense of presence can happen whenever a person mentally feels that he or she is present in a situation. For example, when reading a book, some people may feel what the characters are feeling and become wrapped up in the book—they may feel as though they are watching a movie, or have an even deeper connection with the text.

III. IMMERSIVE ENVIRONMENT EXPERIMENT

Participants: Thirty-five volunteers participated in this part of the study.

Apparatus: The device used for this part of the experiment was the Immersive Visualization Environment, also known as a dome-shaped system (see figure 1). This state-of-the-art equipment enhances the 3-D virtual environment imaging with four digital projectors and an 8’x10’ cylindrical screen.

Procedure: Each participant was seated in a chair placed a specific distance away from the screen, providing the individual with a fully-immersed environment, and cancelling out any outer disturbances. Though the environment was controlled, the participant had the ability to freely move his/her body without the restrictions of a helmet or hand-held device. A survey was administered to each participant which attempted to measure their sense of presence (the sense of being there in the specified environment), with 10 indicating the highest presence and 0 indicating the lowest. One of the major questions asked was, “Rate your sense of presence in the virtual world during the experiment.” A graph of the results for this question is shown in Figure 2.

Figure 1. This figure depicts several subjects are engaged in an Immersive Visualization Environment (Distance Learning)

Figure 2. Rating of the sense of presence in the virtual world during the experiment in the immersive environment.

IV. PRELIMINARY RESULTS AND CONCLUSIONS

A strong sense of presence of the virtual world in the immersive environment was experienced by a majority of participants. Specifically, 86% of the participants—30 participants—responded with a rating between 7 and 9, indicating that the participants felt a high sense presence in the virtual environment. This single finding raises several possibilities for future research.

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REFERENCES
