Chapter 2
Analyzing the Effects of a 3D Online Virtual Museum in Visitors' Discourse, Attitudes, Preferences, and Knowledge Acquisition

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EXECUTIVE SUMMARY

This chapter presents the results of a study conducted in Mexico in 2011 with a group of undergraduate students. It examines the effectiveness of an online three-dimensional learning environment and its effects in visitors' discourse, attitudes, preferences, and knowledge acquisition during and after a real museum visit. Primary results show that: a) participants who used the virtual museum previous to the museum visit showed an increase in discourse, enjoyment, and knowledge about the exhibition, and b) using a three dimensional previsualization can enhance and influence the learning experience in educational settings in a positive way.

INTRODUCTION

In 2010, a research team sponsored by the University of North Texas and the Autonomous University of the state of Mexico conducted a study in Toluca, Mexico. This study analyzed, compared, and measured usability, visitor attitudes, satisfaction, preferences, and knowledge acquisition between two groups of undergraduate students during a museum tour, one of which had used a virtual online Three Dimensional (3D) representation of the same museum located in the State of Mexico (Jones & D'Alba, 2012).

Although it was not the main focus of the project, the researchers noticed a difference between the discourse presented at the museum tour by students who previously had used a virtual representation and those who did not have the virtual experience.

While the students who had not previously used the virtual environment showed no engagement and almost no participation during the museum tour, the ones who had had the previous experience with the virtual environment were more involved, participative, and during a personal interview, all of them declared they were able to enjoy more the visit to the museum because they already knew what they were going to find. This situation required a new research to measure the impact that a virtual environment can have in the discourse, attitudes and engagement that visitors show in a certain museum exhibition, and to analyze if visitors that experience a virtual museum tour could have the same knowledge acquisition than the ones visiting the museum.

In 2011, one of the members of the research team traveled back to Mexico to conduct a second study, using a slightly higher number of participants, which also had similar demographic characteristics to the ones that took part in the first study.

The purpose of this new mixed methods study was to explore and to analyze visitors' overall experience while they attended a museum exhibition, and to examine how this experience was affected by previously using a virtual online 3D representation of the museum itself. The study's intention was to advocate for the use of self-guided virtual tours having more people accessing the information contained in the museums, encountering fewer barriers such as time, money, or distance required to travel to these sites. The following research questions drove the mix-method research:

- In what ways does a pre-visualization of a virtual museum affect the museum experience?
- In what ways visitors discourse is affected by previously experiencing a self-guided virtual tour of the same exhibition?
- Can users of a self-guided virtual tour show gains in knowledge acquisition?

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