Chapter 5
The Affordances of 3D Virtual Learning Environments:
Designing for Learners' Interpersonal and Emotional Connections

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ABSTRACT

The purpose of this chapter is to examine participants' perceived affordances of three-dimensional virtual learning environments (3D VLEs) in developing interpersonal emotional connections with their partners during the initial stage of the virtual exchange. To fulfill the purpose, two Japanese and two American students were paired and participated in sessions within two differently designed virtual environments using the same 3D virtual application. The results indicate that the participants tend to find avatars useful as a cue that helps in recalling previous conversations and in avoiding long silences. Additionally, the affordances of the 3D VLEs heightened the experience of co-presence. However, for non-native speakers, this experience also created increased anxiety. Finally, the results show the affordances affected the participants much more strongly during the first several sessions but were mitigated by other factors as the sessions continued.

INTRODUCTION

Globalization has transformed virtually all aspects of modern life, from the way we shop to the way we get our news. Not surprisingly, the waves of globalization have had an impact on foreign language education as well. Coupled with advances in information and communication technology, it is possible for students to have direct contact with different cultures through virtual technology. The Internet provides access to email, text cat, Skype, virtual environments, and other technologies that support prolonged

online intercultural exchanges between groups of students in various institutional settings who might otherwise not have the opportunity to interact (Belz & Thorne, 2006).

3D Virtual Learning Environments (3D VLEs) are relatively new tools in foreign language education, even though they are not a new phenomenon in and of themselves. These platforms have been attracting foreign language educators who are constantly looking for authentic opportunities for their students to interact with others in the target language (Panichi, Deutschmann, & Molka-Danielsen, 2010). Dalgarno and Lee (2010) noted that various unique characteristics of more advanced platforms of virtual environments could be adapted for educational purposes. Given the great variety of such tools that are available, an instructional designer needs a way to evaluate the relative advantages of competing candidates. The discrepancy between a learner's use of an instructional object and the anticipated instructional interaction is often attributed to a weak design and poor implementation of appropriate affordances (Kirschner, Strijbos, Kreijns, & Beers, 2004). When new technology is introduced into educational activities, it is crucial for both instructors and instructional designers to know not only all the possibilities for action that the piece of technology can offer, but also how it could be perceived or used by learners in the environment to utilize the piece of technology in instruction. However, due to the novelty of 3D VLEs, there has been little research done on the learner's perception of the available affordances. The purpose of this chapter, therefore, is to examine the learners' perceptions of the affordance of 3D virtual learning environments.

BACKGROUND

Affordance

The notion of affordances is derived from work in the field of visual perception carried out by Gibson (1979), who focused his work on direct perception, a form of perception that does not require mediation or internal processing by an actor. For Gibson, an affordance is directly perceivable information in an environment that is meaningful to an actor. In his theory, the existence of the affordance is independent of an actor's experiences and culture, whereas the ability to perceive the affordance may be dependent on these.

In contrast, Norman's view of affordance deals with designed objects. He describes an affordance as a design aspect that suggests how the object should be used (Bower, 2008). Norman (1988) noted that in current technologically driven society, many objects do not have accessibility at the core of their design, thereby restricting perceptions of their possibilities. Norman (1993) went on to distinguish between real and perceived affordances, claiming that the latter is more crucial to the design process since an affordance is of no utility to the potential user unless it is perceived. According to Norman, affordances provide strong pointers to the way things operate, and simple things should have their intended purpose strongly signaled in their design and should not require further explanation (Gall & Breeze, 2005). Norman also believed that while perception may be direct, our interpretation of things is based on our past knowledge and experience of our perception of those things; therefore, he places the emphasis on people's knowledge, memory and experience in the realization of affordances (Norman, 1988).

Although Gibson and Norman shared a basic concept of affordance, the distinction between Gibson's and Norman's definitions of affordance is important because it determines whether or not the term affordance encompasses usability or just utility (Kirschner et al., 2004). Gibson focused upon the fundamental characteristics of the object in relation to the user, which is a question of utility, while Norman placed

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