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ORIGINAL RESEARCH ARTICLE

Perceived educational usefulness of a virtual-reality work situation depends on the spatial human-environment relation

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Virtual reality (VR) may be useful for situating school-based vocational education in work-life by simulating a work situation such that learners viewing this VR work situation are located inside it. The reason for this assumption is that VR can fully spatially include its viewer. Research on the utility of viewer-including VR work situations for learners has, therefore, already started. However, no study has yet investigated their utility for teachers. This is particularly relevant for work situations involving environmental planning, as VR is expected to facilitate such a task. We, therefore, asked horticultural teachers to assess the educational usefulness of a VR work situation when they were located outside and inside it. For this purpose, we enabled them to plan a basic garden in the VR work situation when its environment was spatially excluding them and when it was including them. We found the teachers to perceive the viewer-including VR work situation as more useful for their teaching than its viewer-excluding version. This suggests that the perceived educational usefulness of a VR work situation depends on the spatial relation of its viewer and environment, that is, the spatial human-environment relation it involves.

Keywords: vocational education; situated education; virtual reality; perceived usefulness

Introduction

A common educational goal is to prepare learners for their work lives, which can be achieved by asking them to accomplish learning tasks based on examples of real-life situations (Bransford, Brown, and Cocking 2000; Lave and Wenger 1991). In vocational education, such situation-based didactics may be accomplished by using examples of work situations (Boldrini, Ghisla, and Bausch 2014; Dobricki, Evi-Colombo, and Cattaneo 2020). For this purpose, the affordance of digital technologies (Bower 2008) can be exploited (Schwendimann *et al.* 2015). One digital technology that may serve situation-based vocational education particularly well is virtual reality (VR) (Allcoat and von Mühlenen 2018; Dede 2009; Schott and Marshall 2018). The reason for this assumption is that VR can serve for the naturalistic and thereby practice-oriented

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simulation of work situations inside a classroom. Research on virtual learning environments (Concannon, Esmail, and Roduta Roberts 2019; Jensen and Konradsen 2018; Mikropoulos and Natsis 2011; Radianti *et al.* 2020) has accordingly already begun investigating the educational utility of VR work situations (Babu *et al.* 2018; Bharathi and Tucker 2015; Hafsia, Monacelli, and Martin 2018; Schild *et al.* 2018; Smith *et al.* 2018). Some studies have examined the utility of VR work situations for learners (Babu *et al.* 2018; Bharathi and Tucker 2015; Butt, Kardong-Edgren, and Ellertson 2018; Sacks, Perlman, and Barak 2013; Smith *et al.* 2018; Stone, Watts, and Zhong 2011), but none have investigated their utility for teachers. Because it is for teaching in vocational schools that VR work situations may serve best, it is necessary to start exploring the utility of VR work situations from the perspective