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Rejuvenation Island: Enriching the Learning Journey through Immersion in Virtual Restorative Environments

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Immersive natural environments provide a means of restoration for adults and may present benefits for pre-service teachers who are unfamiliar with the natural world. The use of restorative virtual environments could be extended to schools in urban areas in particular, allowing pupils and their teachers to undertake field trips, and to relax in a calming and restorative context. This paper reports on a project that investigates the potential restorative benefits of immersion in simulated natural environments in virtual worlds. A cohort of pre-service teachers were taken into the simulated environment and reported that the island produced strong positive feelings in respondents, akin to being in a natural environment. However, it was also clear that a lack of familiarity with virtual environments diminishes the beneficial impacts of this immersion.

Keywords: restorative environments, virtual worlds, teacher education, biophilia, effects of nature, restorative therapy, stress management, Second Life

Benefits of Immersion in Natural and Natural-seeming Virtual Environments

This study seeks to evaluate the restorative impact of pre-service teachers' online engagement in a simulated natural virtual world environment. Measures of subjective wellbeing and attention focus were taken before and after the immersion experience with groups taking a survey online. The findings are in accord with emerging research in this field, and consistent with studies by Valtchanov, Barton and Ellard (2010), and Depledge, Stone and Bird (2011), which indicate that immersion in virtual environments has restorative qualities.

Context of the Study

These findings have broader implications in the context where education for creativity and sustainability is noted as a priority (MCEETYA, 2008) for human and environmental health in 21st century Australia. A growing body of international research indicates that engagement in natural environments has positive benefits for children's physical and emotional development (Jones, 2006; Kirkby, 1989) and psychological wellbeing (White, 2004; Wilson, 2008), and the restorative benefits of natural environments upon adult attention span, perceptions of creativity and wellbeing have been reported by Jones and Moodie (2012; 2012) in pilot projects for this study, and by Depledge, Stone and Bird (2011) who documented enhanced recovery of "attentional capacity and cognitive function following intense mental activity" (p. 4660) as a result of immersion in virtual environments.

Conduct of the Study

Participants: 56 participants in total undertook the study. The majority of participants were undergraduate pre-service teachers. A small number (n=3) were postgraduate students undertaking Masters level study in education. Group 1 (n=9) undertook the survey and immersion experience in an on-campus computer studio. Group 2 (n=47) undertook the same experience online and at a distance from the campus. The survey tool: A SurveyMonkey quiz included 8 questions for which participants selected answers on a 5 point Likert scale. After question 1 and 2 participants spent 30 minutes on Rejuvenation Island in Second Life. On their return to the survey, participants responded to questions 3 and 4. These were identical to questions 1 and 2 and allowed a comparison of responses (Figure 1 and 2). A group of 9 participants took the survey and engaged in a Second Life environment in the first group and 47 in the second (n=56). Ethics clearance for the study was granted, and

all participants gave informed consent.

Rejuvenation Island

The island (http://maps.secondlife.com/secondlife/RejuveNation/76/197/22) includes simulated flora, fauna and sounds of an Australian bush and beach environment. Sounds of crickets and birds, and the waves washing onto a beach re-create a feeling of being in a real environment. Rivers host native catfish, the beach is inhabited by turtles, and a mixture of rocky and arid and rich eucalypt and grassland offer a range of experiences.

The Findings

As shown in figure 1 and 2, participants indicated that the immersive experience had led to enhanced feelings of wellbeing: "The beach and waves were really calming". Responses indicated that the island produced strong positive feelings in respondents, akin to being in a natural environment: "The experience allowed an escape from stresses of real life. Had a calming influence and I forgot about day to day worries while in the virtual world." These observations are consistent with the findings in Figure 1.

However, other feedback made it clear that a lack of familiarity with virtual environments presents an obstacle and diminishes the beneficial impacts of immersion, with one participant noting: "I found it frustrating and very unrelaxing. For students who are familiar with this type of experience it may be restorative". A third response indicated another layer of complexity: that the experience of exploring and feeling alone in a strange place may bring to the surface anxieties related to perceived 'real world dangers' "…at first I felt relaxed with the sounds and everything but soon afterward (10mins) I became very anxious, I didn't want to explore."

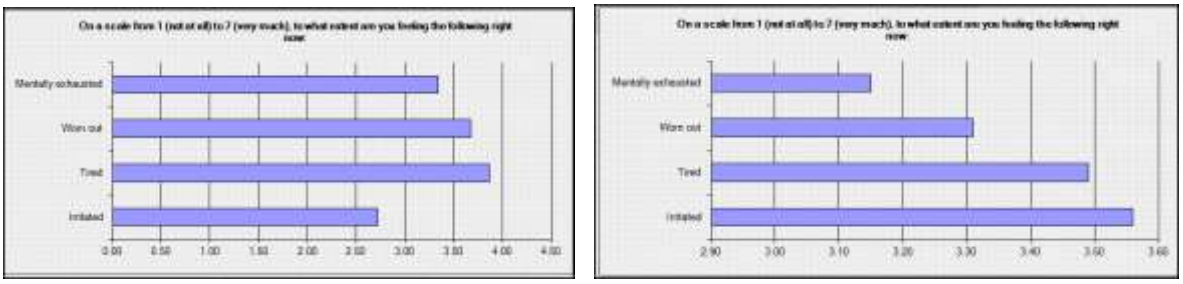

Figure 2: Affective Dimensions Prior to Immersion (Figure 1) and Post- Immersion

The figures give rise to an anomaly: post immersion (Figure 2), the level of reported mental and emotional exhaustion is lower, showing that the experience of immersion had led to a beneficial outcome. However, the reported level of irritation is higher post immersion. Respondents' written and statistical responses signal that a lack of familiarity with the environment may have been the cause for this.

Conclusions

Immersive natural environments provide a means of restoration for adults and may present benefits for pre-service teachers who are unfamiliar with the natural world. The use of restorative virtual environments could be extended to schools in urban areas in particular, allowing pupils and their teachers to undertake field trips, and to relax in a calming and restorative context. In today's classrooms where pupils with autism or attention difficulties find the classroom context disturbing, a Second Life retreat may offer a calming and restorative respite. For an immersive experience to be untrammeled by the impact of the unfamiliar, and by the transfer of 'real world' anxieties about being alone in a strange place, it is recommended that visitors be accompanied on their first visit, and supported until they become familiar with the navigation and interface of Second Life.

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