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## Impact - Educational Cases

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## Editorial

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Over the last decade, research on virtual worlds and immersive environments in the field of education has increasingly engaged with a wide variety of stakeholders and beneficiaries across many disciplines and fields, from healthcare to the military. In many respects, this concern with the ‘extra-academic’ implications of educational research is a consequence of the so-called ‘impact turn’ in academic research that was first formalized by the Research Excellence Framework (REF) in UK higher education in 2014. At its heart are questions about the usefulness of research, who the main beneficiaries of academic research are, what real-world problems research addresses, and how the quality of research activity can be measured, if at all.

While study and research, for their own sake, have long been core components of many disciplines in what we might call the ‘traditional’ conception of the university, particularly in the Humanities and Social Sciences, it is clear that the focus on impact derives, in no small part, from the consolidation of neoliberal values, underpinned as they are by questions about the practical application of academic research, how it is held to account, and its influence on - and relationship with - society.

The UK 2014 Research Excellence Framework adapted this approach to impact to help measure the real-world application of research and to place fresh emphasis on academics’ abilities to communicate more widely with the public through community engagement initiatives, particularly with respect to so-called ‘big’ research agendas in, for example, health, the economy, society and culture. While impact has attracted much criticism and debate, it has been consolidated in the intervening period and with REF2021, the next UK Government exercise aimed at evaluating research excellence in higher education. Impact, now defined as an activity that can take place both internal and external to universities, has increased its weighting in the exercise. While the impact agenda has been influential in higher education in the UK, we now find other governments and research councils around the world adopting similar definitions, most notably in Australia and Hong Kong.

In the context of educational research, definitions of “impact” have proliferated alongside critiques of its efficacy and appropriateness, and it is important to consider the applicability of the

term, as well as to reflect on how it can be shaped and defined. In terms of the REF exercises, impact is defined in relation to “reach (the extent and/or diversity of the organizations, communities and/or individuals who have benefited from the impact) and significance (the degree to which the impact enriched, influenced, informed or changed the policies, practices, and understanding or awareness of organizations, communities or organizations)” (REF, 2012, p. 93). In this sense, impact does not merely relate to measuring dissemination activity, e.g., how many people read a book, or visited an exhibition in an art gallery, or followed your latest research findings on social media. Rather, it relates to what measurable influence the research has had on its beneficiaries as a result of activities in such a way that a discernible ‘step-change’ is evident.

In order to address these issues of increasing importance and relevance in virtual and immersive environments, this special edition of *The Journal of Virtual Worlds Research* brings together four articles to consider these questions in the specific field of education. Indeed, it is a timely intervention into these debates in the context of educational technology and seeks to develop productive and critical perspectives on impact, discussing in what ways, over what time periods, and to what extent, impact can be a valuable concept in the field.

In the first article, “**Project:Filter - Using Applied Games to Engage Secondary Schoolchildren with Public Policy,**” Reid analyses the results of a pan-European research project called noPILLS which aimed to influence policymakers in the area of environmental pollution. Using applied game-based learning, the project specifically identified methods to reduce micropollution within the wastewater treatment process. The research paper evaluates the game called “Project:Filter” that was developed to raise public consciousness of the challenges associated with pollution. Specifically, the game targeted secondary school children in Scotland aged 11 to 16 as part of theme-based classroom activities on the topic of environmental protection. Drawing on interpretative phenomenological analysis, the schoolchildren’s depth of understanding of game experience and content were examined, and suggested methods of intervention were identified. Through its exploration of game-based learning allied to the impact agenda of environmentalism, the paper suggests how 3D game environments can be used for public engagement on serious topics of widespread concern at the policy level, and how phenomenological research approaches can play a key role in analyzing playful approaches to learning in formal educational contexts.

In “**Their Memory: Exploring Veterans’ Voices, Virtual Reality, and Collective Memory,**” Donald and Scott-Brown analyze the use of game-based and immersive environments to enhance existing historical research and enrich narratives to bring expansive experiences to hard-to-reach audiences. Arising from an Arts and Humanities Research Council (AHRC) project entitled, “Their Memory,” the researchers worked directly with the military veterans’ charity, Poppy Scotland, to create an environment and experience that would resonate with new audiences, and explore documentary and storytelling techniques for the commemoration of war and conflict. The paper evaluates the development and findings arising from the game environment on young people (14-35 demographic) with respect to the narratives of veterans in Scotland. Using a co-design approach, veterans and young people explored how virtual reality was used to connect different generations and enable them to experience the narratives and conflicts faced by the veterans. The paper concludes with a summative evaluation of events conducted with the schoolchildren to evaluate the project and examines how the project evidences impact upon the audiences involved.

In “**Could the Virtual Dinosaur See You? Understanding Children’s Perceptions of Presence and Reality Distinction in Virtual Reality Environments,**” Liao, Jennings, Dell, and Collins aim to fill several gaps in empirical research that examine virtual reality and children. Based on a qualitative approach (observation and interviews) involving 29 children aged 6 to 8 years, participants’ behavior in VR environments with respect to social presence was explored through the

use of digital video. The findings have important implications for virtual reality designers in the educational and commercial sectors and for our understanding of children's virtual experience.

In the final paper in the special edition, "**A Hybrid Model of Experiential Learning within the Social Virtual World of Second Life**," Knutzen continues several of the education-related themes of the three earlier papers. Drawing on innovative structural equation modeling (SEM), the study explores how multi-user virtual worlds can enhance learning by extending and refining a prior VR-based model. Findings suggest that VR features were found to indirectly impact on the learning outcomes, mediated by the perception of usability and the learning experience. The learning experience was measured by seven individual psychological factors, and these factors mediated the learning outcomes. The research includes valuable reflections on methodologies to produce educational impact and will lead to future research into enhanced learning within a social virtual world that may influence educational policymakers in curriculum design.

In considering the important topic of impact in the context of current educational research, the papers in this special edition aim to act as an initial mapping of the terrain. With respect to the work being done in virtual worlds, it is hoped that further editions of the journal will continue to explore the wider significance of the impact agenda across numerous fields and disciplines not limited purely to education. Impact in this respect may relate in future to how virtual worlds and immersive environments have influenced changes in people, tools, policy, problems, and disciplines. Going forward from this basis, the editors welcome future efforts to define and problematize "impact" as a category for evaluating research, and articles that seek to promote transdisciplinary research on immersive and virtual worlds, nationally and internationally.

## References

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