

**Role of virtual reality 3D Ocean immersive
experience in technology enhanced learning**

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Virtual reality (VR) has been widely used in the gaming sector and it has potential to be used in the education sector to deliver teaching materials in an effective learning environment. We have designed a virtual Ocean field trip in which a learner will make a journey from a research vessel to the ocean's depth. The dive locations are selected based on specific objectives, driven by key oceanic processes in the modern ocean, and a series of prompts will be given to evaluate physical, biological and chemical changes through an immersive experience. We have utilised existing oceanographic database relevant to the dive location to give an opportunity to visualise and learn through experiment using the real dataset. We will discuss constraints and potential of the VR in producing learning materials compared to other traditional media material (animations, videos etc.).

In designing credible learning opportunities in the VR, we are having to balance real world simulation and virtual immersion factors. One challenge we are facing is in terms of how to make learners experience the data gathered in the physical environment during the immersive experience. It is extremely challenging to embed proactive understandings of how and why obtained data affects the physical environment. Therefore, we believe that the overall theoretical understanding of the oceanic processes are necessary before utilising the VR experience to fully appreciate the real data through a screen to link the knowledge with practical experience. It is imperative that prior subject knowledge will strengthen the VR experience in understanding the data and make the experience not only enjoyable, even unrealistically so, but extremely rewarding through added value in the learning journey. The overall mission/objectives are designed to take a student from theoretical understanding to applied understanding.