

Creating Compelling Virtual Reality and Interactive Content for Higher Education: A Case Study with Carnegie Mellon University

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ABSTRACT

This talk proposes a case study of how Carnegie Mellon University's Dietrich College of Humanities sponsored production of its own interactive experiences, including interactive virtual reality, for educational use in the classroom. In 2017, CMU developed plans for a designated technology room on the university's main campus. It aimed to create an interactive space for students and the broad CMU community to engage with subjects ranging from language learning, history and beyond. The inaugural experiences sponsored by the university covered the subject of the Holocaust, in both interactive virtual reality as well as other interactive media. Professor Ralph Vituccio and his team will speak to the challenges they faced during this process, what worked for them in production, and how they anticipate this kind of approach to education growing at the university level as these technologies become more widely accepted.

CCS CONCEPTS

• **Applied computing** → **Interactive learning environments**;

KEYWORDS

Virtual Reality, Higher Education, Project Management, Technology and Education, Interactive VR

ACM Reference Format:

Ralph Vituccio, Jaehee Cho, Tsung-Yu (Jack) Tsai, and Sarabeth Boak. 2018. Creating Compelling Virtual Reality and Interactive Content for Higher Education: A Case Study with Carnegie Mellon University. In *Proceedings of SIGGRAPH '18 Educator's Forum*. Vancouver, BC, Canada, 2 pages. <https://doi.org/10.1145/3215641.3215647>

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SIGGRAPH '18 Educator's Forum, August 12-16, 2018, Vancouver, BC, Canada

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ACM ISBN 978-1-4503-5884-2/18/08.

<https://doi.org/10.1145/3215641.3215647>



Figure 1: Stills from the VR Animated Experience.

1 INTRODUCTION

Professor Ralph Vituccio, led production of the inaugural projects for this initiative, starting with examining Poland and the Holocaust. In partnership with Stitchbridge, Inc., Vituccio and CMU produced immersive experiences that transport the viewer into the physical spaces of the Holocaust. The entire project covering the Holocaust includes:

- (1) An interactive virtual reality narrative using the HTC Vive. The story lets the user experience the physical spaces of concentration camps, from the train, through the shower room, barracks and crematorium as a third person observer, listening to voice over narration from survivors.
- (2) A documentary 360-video that chronicles Poland and the sites of Holocaust tourism today, with context on the historical significance of these spaces.
- (3) An interactive documentary for a touch screen monitor, allowing the viewer to navigate interviews and footage about how visitors process the Holocaust before, after and during their visit to these locations in Poland. (See Fig. 2)

2 PRODUCTION CHALLENGES & PROCESS

Broadly, a significant challenge to producing content in new platforms is making sure the novelty does not overshadow the intention of the platform. In many examples of educational virtual reality, 360-videos and interactive experiences, the content doesn't need to use this technology, and might have been more effective in traditional media. The imperative, therefore, for the production team is to create an experience that leverages the strength of a medium and examine content through this strength. For this project, it meant taking VR's immersion; its ability to communicate first person sense



Figure 2: Howard Chandler, Holocaust Survivor, Interview.

of place, termed presence, in a way that other mediums cannot [Witmer and Singer 1998].

Validating the content's academic quality posed another challenge. For this first project, Professor Vituccio worked closely with his partners at Stitchbridge ranging from story development, and production planning, with regular check-ins at each stage. Having a hand in production throughout ensured that the end experience fit into CMU's vision the future of the room and the content housed within it. In addition, taking time in preproduction to research, collect assets and story development makes an enormous difference in ensuring the quality of the final product.

3 PROJECT LONGEVITY & THE FUTURE OF INTERACTIVE PROJECT IN HIGHER EDUCATION

Looking beyond this project entails factoring production consistency, stakeholder value and conscientious production budgeting. Another aspect important to consider was how these inaugural pieces would fit into the larger story to the CMU community. Plans included using a variety of technology like VR stations, touch screens and voice activated programming. From a content perspective, it planned to use the space to explore a range of topics such as Cuban and French culture, language learning modules as well as other topics that reflect the range of departments in the humanities. Acting as a window to other cultures and experiences, this interactive space will serve as an opportunity for students to embrace the possibilities of innovative technology grappling in range of subjects. The key to the initiative's success is setting the bar for standards and production value for what the school can create, while also opening a door what might come next. In addition to sponsoring projects for students to experience, this interactive programming also gives students the opportunity to make their own projects and integrate these interactive technologies instead of relying on traditional forms of academic terminal works, like capstone papers or dissertations. The power of using a serious topic like the Holocaust as the room's first experience, cements the idea that this is a serious educational endeavor for CMU, and that this technology has a unique ability to improve how we learn moving forward in the university setting [Mones 2017]. One big roadblock to compelling use of technology like VR remains the time commitment and cost to producing compelling educational content. It's natural that higher education will lead in developing work that is consistent with their academic standards. In working with CMU's initiative to create a library of custom, high quality programming,

Prof. Vituccio and his team believe that the future will include a network of university sponsored interactive libraries, filled with experiences that both educate and provide students another outlet to exhibit their own mastery of coursework, in producing their own projects.

4 CONCLUSIONS

This project marks the beginning of an experiment to create original content that both engages students and instructs them to the standard of their traditional courses. Though producing custom educational work will face challenges in development, the future of whether these platforms succeed in higher education will depend on how willing these institutions are to test and invest in making quality programming. Success at CMU provides a roadmap and optimism for such a result.

ACKNOWLEDGMENTS

Dean Richard Scheines, Classrooms without Borders, Kyungkuk Kim, Julian Korzeniowsky, Larry Chang.

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