Before and After AR/VR: Empowering Paradigm Shifts in Education

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ABSTRACT

The development and potential of Virtual Reality (VR) and Augmented Reality (AR) technologies have already begun to transform classrooms and teaching in ways unimaginable just ten years ago. The increasing integration of these tools and experiences into educational environments has ushered in the possibility of profound changes in the way we think, learn and communicate. Applications for and in education are at the forefront of these changes. AR/VR can enhance the way teachers teach and students learn on all levels from primary school to post graduate education and in all content areas. This new way of experiencing and understanding the world can bring about great opportunities to improve teaching environments and support teachers in their mission to improve the skills and experiences of their students. AR and VR devices now available have made these experiences more affordable, interfaces for uses in education have improved enormously, and people from countries far and wide are able to contribute and connect in ways never available before. When teachers are able to design content that is delivered using AR or VR environments, and students can explore knowledge in a completely different context, opportunities emerge that allow for unique and exciting learning experiments. This panel brings together international experts in industry and education who are making significant contributions to education using these technologies. The panelists will present their newest and ongoing education initiatives, creative and innovative projects, and their plans and predictions for the future. They will discuss the broader ramifications of the dissemination of these new tools.

CCS CONCEPTS

• **Computing methodologies** → **Animation**; **Virtual reality**; • **Applied computing** → **Education**;

KEYWORDS

Animation, Education, AR, VR

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1 PANELISTS

Nishant Dani worked at Microsoft for 11 years, in diverse roles in technology, general management and strategy. He was the divisional architect for the internet group with oversight for multiple initiatives across Bing search, ads and MSN. He has experience in cloud services, helping architect and lead the build out of the ABCH backend for messenger, and leading the design team on CloudDB as the SQL store for Microsoft Azure. He also led the design effort to reinvent the ad pricing and auction model to allow more directly incentive user participation. While at Microsoft, he lead the pioneering Catwalk project to realistically model 3D apparel on moving figures using numerical optimization techniques. Enthused by the learnings gained on the Catwalk project, and convinced that the compute growth on small devices will lead to explosion in 3D, VR and AR, he left Microsoft inspired to build out tech for classrooms. Today as founder of Loudscoop Inc, he works with local schools to build out models for how AR instruction will be delivered, as a foundation for personalized learning.

Lionel Chok has had successful career in media, design, technology and creation for eighteen years. In 2012 he decided to trade in his work life to take on a student role when he tried on the Oculus DK2 for the first time. Researching deeply about Virtual Reality during that period, Lionel realized this emerging technology could be the game-changer for media and content, and uprooted himself to pursue a postgraduate degree in Creative Technology; specializing in Augmented and Virtual Reality in London. There, he a 360 Dance (possibly London's first) staged at Middlesex University and also Singapore Inside out (London). This VR experience (www.sgiolondon.com) accompanied the exhibition arranged by the Singapore Tourism Board. After completing and achieving distinction in his postgraduate studies, he returned to Singapore and launched his startup iMMERSiVELY. He is a much sought after consultant and speaker in the field of Virtual Reality.

David Hunt is the Lead Technical Artist at Unity Technologies in Copenhagen. Prior to joining Unity he lead the Rigging Tech Art department at Bungie for 12 years where he contributed to the development of Destiny and games from the Halo series. David earned his BA in Interdisciplinary Visual Art at the University of Washington in 2000. David has a passion for teaching and has been a Lecturer at the Animation Capstone program at UW since 2007. David taught an Autodesk Masterclass in 2008 and he has presented at the GDC Game Developers Conference in 2009 and 2015 about his work in Rigging and Tech Art. David is currently pursuing a Masters in Education in Game-Based Environments at Drexel University Online where he is developing educational content in VR. He enjoys experimenting with new ways of making

real-time animation using gesture-based motion controllers as the artist name, Anatomecha. He recently performed live, music driven animation artwork at TEDx in Aarhus, Denmark.

Natalie Burke is a Lead Tech Artist for Unity Technologies Seattle and has worked for years on building and improving workflows for both technical and non-technical users. One of her central objectives at Unity is removing technical barriers that hold back the democratization of content creation. Before starting at Unity, she worked at the VR software developer Limitless Ltd. At Limitless she shipped two VR animated shorts, Gary the Gull and Reaping Rewards, while also working as lead developer for The Limitless Creative Environment, a collection of content creation tools designed to enable story building directly in VR. In her off time she teaches courses on technical art at local universities. She has a BS in Digital Arts and Sciences from the University of Florida and an MS in Interactive Entertainment from the University of Central Florida.

Cindy Ball is the Program Manager for Oculus Education. She is passionate about technology's potential to reshape how we learn and work together, better understand one another, and inspire individuals and communities to do great things! In her current role she focuses on educational research to better understand how AR/VR can uniquely and positively impact learning. She also works to provide equitable access to these technologies, to inspire and support a diverse next-generation of creators. Prior to joining Oculus, Cindy was at Microsoft for five years, where she led engineering teams to design and implement online learning platforms and programs, and developed AR experiences and services for Microsoft Hololens. Earlier in her career, Cindy worked on TV animation technologies at Hanna-Barbera Productions, studied computer graphics at Caltech, co-founded the animation studio Tooned In, and built a children's online game division at Flying Lab Software. She has a M.S. in Computer Science from Caltech, with a focus on computer graphics, and lives in the Seattle area with her family, and a managerie of pets.

2 MODERATOR

Barbara Mones is a faculty member in the Paul G. Allen School of Computer Science & Engineering at the University of Washington. Since 1999 she has Directed the animation production program in CSE, part of the Animation Research Labs (ARL) and serves on the Program Committee of the SIGGRAPH Asia 2017 Symposium on Education. Her background is in computer graphics and animation. She worked in the animation industry, (including ILM and Dreamworks SKG), and, to date, she has directed more than twenty animated short films. She has published her work in both conferences and books, such as SIGGRAPH, ACCV, NCGA, and Springer Verlag and her films have been screened all over the world. She heads a facial expression research group (FERG) For the past five years she has been experimenting with real-time software and hardware options for the creation of animated stories using game engines and is now focused her efforts on developing stories for AR and VR. Her mission is to continue to bring AR and VR into her classroom and to bring interdisciplinary communities of educators, researchers, students, and representatives of the AR/VR industry together so that they can share what they know and help each other continue to investigate the enormous potential of AR/VR for and in education.