

Lesson Case Study: 3D Video in Unreal Engine 5

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Abstract

Overview of a lesson that demonstrated the efficacy of UE5 for learning 3D animation.

Unreal Engine 5 — released in 2022 — has been a galvanizing force in 3D simulation and rendering. Of particular importance is its ability to render large numbers of fully-textured 3D models in real-time. While developed as a game engine, Unreal Engine has clear applications in 3D animation and video.

For students, that functionality can be a game-changer. One of the biggest issues students face in studying narrative video is that freedom requires temporal, financial, and social resources. Video students often face being locked into subjects that are readily available to them as opposed to subjects they would choose on their own.

Unreal Engine offers an idealized video production setup. It allows students to make decisions about lighting, camera movement, textures, and character movement without the commitment of dozens of other people. And vitally, it allows students to change their mind.

This lesson was taught in the context of a 3D modeling course across two semesters. Students were asked to create a short narrative video in Unreal Engine. They independently created the protagonist of the narrative using techniques learned earlier in the course. One semester this project was given about three weeks for completion (outside of class); another semester, students completed the animation during a single day of class, while creating the character outside of class.

The pipeline used was to sculpt the character in ZBrush; texture it in Substance Painter; and rig it using Mixamo. Students animated the characters on their own, with the option to use a Kinect to capture motion. Some students chose to assemble footage in a video editor.

Bridging 3D modeling and video narrative is an extraordinary educational opportunity. It affords students the opportunity to understand visual narrative in a way that has hitherto been impossible. Students demonstrated commitment in completing the assignment through in-depth questions and time spent on the assignment outside of class.

Students reported I had no idea it was possible to create these kinds of visuals this way and that it changed the way they look at 3D animation.



Figure 1: Still from student video animated and rendered with Unreal Engine 5



Figure 2: Still from student video animated and rendered with Unreal Engine 5