

Evidence of Student Learning: Materials and Lighting

Following is one example of marked improvement during a Materials and Lighting course, related to the competencies “apply traditional paint concepts, tools, and techniques for use in computer animation,” and “apply texture mapping strategies.”

This course focuses on improving skills in analyzing the visual qualities of a variety of real-world surfaces and how light interacts with them, and then applying those ideas to creative 3D projects. This course is handled as the second part of a two-course suite with Intermediate 3D Modeling, and in both courses students focus on hard-surface and organic forms.

Project 1: Hard-surface rendering. In the first project of the quarter, students create materials and lights for the hard-surface model they created in Intermediate 3D Modeling. One student chose to create a steampunk version of a Nintendo Gameboy handheld game controller.



A reference photo of the steampunk Gameboy

The final version of the colored and lit 3D model appears below:



The completed version of the steampunk Gameboy

An analysis of the render reveals several issues. The general metal texture is overly uniform, lacking the detailed patina visible in the reference. What wear-and-tear is implemented on the CG model is relegated to isolated areas and appears to be caused more by random forces than damage from the elements or handling. There is also a noticeable repeat of texture on the circular buttons below and to the right of the gears, something that would not occur naturally. There is also graininess in the render which looks artificial. Generally speaking, there is room for growth in application of texture and control of lighting.

Project 2: Organic rendering

The student's second project of the quarter focused on a cartoony character:



The final render of the student's cartoony character

This render indicates a more successful control of application of texture. Large details such as coloration in the belly and ears make sense given the subject, while secondary details such as the gradual darkening of the browns along the legs and dappling around the face create a subtle complexity to the character. The tufted-fur border between regions of color is also a nice effect, along with economically-placed sculpting of fur details such as above the toes and in the tail. The lighting here is also lacking the grain of the Gameboy render.

These two projects reveal one student's marked improvement over the term, in designing and controlling the application of textural details, surface treatments, and lighting implementation.