How Do You Teach 3D Imaging to Beginners in a Hurry

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Bemidji State University has been exploring many different curriculum strategies to streamline the learning curve for our Design Technology students involved in Exhibit Design, 3D Animation and Graphic Design for Packaging. Our students are very creative and want to know everything related to 3D very quickly so they can see on the computer what is inside their heads. **form·Z** is the 3D software we are using to allow the students to create quality production in a short amount of time.

Our 3D Computer Imaging I course requires 3 major productions in 15 weeks with each assignment due at equal intervals throughout the semester. Each completed assignment must include:

1. Hand sketches of orthographic dimensioned views created during the ideation process.

2. Photographic references of related objects and materials from magazines, books, or the internet that could be used as references during production.

3. A production log that recorded the time involved during each step of production.

4. High resolution renderings in a promotional/functional layout and a "photo album page" showing the structure of the 3D object or environment.

5. A specific type of advertising or informational animation of the 3D object or environment.

6. A written summary of how each component/object was created.

Because of the student's sketches and references, the student has a clearer understanding of what they want to create in **form·Z** before they begin and the instructor has a clearer "picture" of what the student wants to produce which leads to more productive dialogs when answering questions related to production. The production log allows the student to gain a better understanding of how their production time is being used, to analyze how they could improve their productivity and better plan a more effect production schedule for future 3D imaging assignments. The written summary can be used by the student as a reference for similar 3D production in case they cannot remember how they produced the first production.

The first assignment, which is due in the 6th week of the semester, is to produce 3 small objects that can be found in their dorm room or apartment using only simple object construction. In addition to the basic mesh construction methods, the instruction also includes simple lighting, basic surface/material construction and mapping, decals, and **RenderZone** full-buffer rendering controls. The basics of camera animation are also covered. The objective of the assignment is to allow the student experience in working in the 3D views and to gain an understanding of basic steps in production and their control standards (See assignment 1 examples).
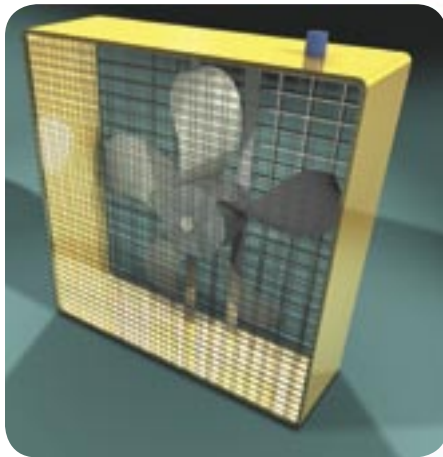

ASSIGNMENT 1: PAUL FLEISCHMAN
FALL 2005

ASSIGNMENT 1: TIFFANY MCCRACKEN
FALL 2005

The second assignment requires the students to select an object that has internal working parts or a character with multiple sectional parts and produce it for print and animation.

Mesh construction instruction for the assignment includes advanced revolutions construction: helixes, sweeps and skinning; metaforms; advanced derivative objects; trimming and stitching; attachments

ASSIGNMENT 1: ANDREA KROLL
FALL 2005

ASSIGNMENT 2: PAT LEOPOLD
FALL 2005

ASSIGNMENT 2: ANDREA KROLL
FALL 2005

ASSIGNMENT 2:
TIFFANY MCCRACKEN
FALL 2005

ASSIGNMENT 2: PAUL FLEISCHMAN
FALL 2005

ASSIGNMENT 2: TOM PISKOR
FALL 2005

and insertions; rotation, sizing and mirroring objects and meshes/nurbs/patches. In each 2 hour mesh instruction session the students are creating simple objects using the combination of tools. Assignment 2 instruction also covers control and customizing of materials and decals. Advanced instruction in lighting control and advanced animation techniques are demonstrated to create transitions, building the object from the individual parts in the final animation (see assignment 2 examples).

In the third and final assignment, students work in teams of 2 or 3 to create a public environment for a real or fictitious company/organization in which to greet, interact and/or possibly sell to their clients/customers. Structure of the environment must be modeled by team. Interior objects can be existing objects they modeled in

assignment 1 or 2. Students are also allowed to use existing wire frames available as free downloads on the internet for interior objects which are placed in a library for distribution/placement in the structure. The environment must have a coordinated décor that reflects the company/organization's marketing strategy. Suggested environment could be, but not limited to, a lobby of an office or company building; tradeshow exhibit; retail store space or a museum interior exhibition area. The instruction for the assignment includes stairs; insertions; deletions; attachments; symbols and instances; arraying and alignment; importing file formats and the related controls; advanced lighting controls for environments including Radiosity controls and the controls for rendering Quicktime VR (see past Joint Study Reports for environment examples).

On average, each production involves about 25 to 35 hours outside of class "homework" to produce the assignments shown. We stress high quality lighting, surface materials, and rendering. Students are in the "computer lab" on average 12-16 hours a week including 6 hours a week class time. After 5 years of experimenting with the instructional path and the assignments, we feel that the student outcomes are finally coming closer to where we would like them to be.

If anyone else would like to share how they are structuring their beginning 3D classes, I would be happy to start a dialog and share whatever I have. I know how hard it is to keep up with the technology and work on curriculum at the same time. Just contact me at *bhanus@bemidjistate.edu.* I am looking forward to hearing from you.

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