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Unit 2 - Intro to Modeling with Blender

Lesson #3 - Subdivision, Extrusion and Loop Cuts

CG Cookie Videos in this Lesson

Videos for this unit are available within the Mesh Modeling Fundamentals Download, or Included within the Educator Blender Bundle.

- The Subdivide Tool   6 min
- The Extrude Tool   5 min
- Loop, Cut and Slide   8 Min

Key Training

- Using the Subdivide tool to divide selected objects.
- Using the Extrude tool to extrude vertices, edges and faces.
- Using the Loop, Cut and Slide tool to divide objects and add more faces for modeling.
- Increasing modeling skills by working with the Subdivide, Extrude and Loop, Cut and Slide tools to change simple objects into complex objects.

Instructor Focus and Tips

- It is important as an instructor get comfortable using a Subdivide and Extrude. When introducing this subject remind students that they can extrude vertices, edges and faces then transform them with grab, rotate and scale.
- When the students are using the subdivide tool, they can run into some problems when they subdivide a face of an object where a connecting face has already been subdivided. Be aware of this when students are practicing with this command.

Pro tip: At the end of the Extrude video, the instructor comments on being careful not to extrude and escape out of the command, as it will create duplicate objects. Some students will create duplicate vertices and not realize it. Later when the go to manipulate the object the commands will not work because of these duplicate vertices. Be ready to help student get the objects right by using the Remove Doubles command.

Student Activities and Assignments

- Have the students watch and practice with **the Subdivide Tool**, **Extrude Tool** and **Loop-cuts** videos. After the students are done have them practice using these three tools to create simple block objects. Pick a simple blocky object in

the classroom and have the students reproduce the only using these three tools. Some examples would be a chair or a desk.

- **Assignment** - Have the students open a new Blender Project. Have the students create 3 Cubes.
    - o On Cube 1 have the students subdivide the cube once then extrude some of the faces.
    - o On Cube 2 have the students subdivide the cube twice then extrude some of the faces.
    - o On Cube 3 have the students subdivide the cube three times then extrude some of the faces.
- **Assignment -** Have the students open a new Blender Project. Have the students create 3 Cubes.
    - o On Cube 1 have the students loop, cut and slide the cube once then extrude some of the faces.
    - o On Cube 2 have the students loop, cut and slide the cube twice then extrude some of the faces.
    - o On Cube 3 have the students loop, cut and slide the cube three times then extrude some of the faces.

Blender Terminology, Commands and Hotkeys Introduced
- Subdivide Tool (In the Transform Menu)
- Extrude Tool (Hotkey: E while in edit mode)
- Loop Cut and Slide (Hotkey: Ctrl+R while in edit mode)

BellRInger Prompts and Ideas
- What is your definition of subdivided?

Exit Ticket Prompts and Ideas
- How comfortable are you subdividing and extruding faces?
- Describe what is the difference between subdividing and loop cuts?

Learning Targets
- Student can use the Subdivide tool to divide selected entities.
- Student can use the Extrude tool to extrude vertices, edges and faces.
- Student can use the Loop, Cut and Slide to add cuts an object.

Extended Learning Activity

- Introduce the subdivision modifier at the end of the lesson by showing the Subdivision Surfaces Modifier. The combination of the Subdivision Surfaces Modifier and the tools from this lesson can quickly create some advanced objects.

Rubric

	Beginning	**Developing**	**Accomplished**	**Exemplary**
Subdivision	Student has received a demonstration on subdivision mesh surfaces.	Student demonstrates use of subdivision with assistance.	Student demonstrates use of subdivision without assistance.	Student demonstrates use of subdivision without assistance and can explain to others.
Extruding	Student has received a demonstration on Extruding mesh surfaces.	Student demonstrates use of Extruding Mesh surfaces with assistance.	Student demonstrates use of Extruding Mesh surfaces without assistance.	Student demonstrates use of on Extruding Mesh Surfaces without assistance and can explain to others.
Loop Cut and Slide	Student has received a demonstration on Loop Cut and Slide.	Student demonstrates use of Loop Cut and Slide with assistance.	Student demonstrates use of Loop Cut and Slide without assistance.	Student demonstrates use of Loop Cut and Slide without assistance and can explain to others.

Aligned Standards

Standard 2: Modeling 3D Objects

- **Objective 1: Use and manipulate 3D graphics and primitives**
    - o Indicator 1: Use 3D primitives
    - o Indicator 2: Manipulate 3D models and primitives
- **Objective 2: Create, use and manipulate shapes**
    - o Indicator 1: Create 3D Shapes
    - o Indicator 2: Use 3D Shapes
    - o Indicator 3: Manipulate 3D shapes
- **Objective 3: Edit Models**
    - o Indicator 1: Modify edges, faces, vertices
    - o Indicator 2: Edit an object after its been created
    - o Indicator 3: Subdivide a model
    - o Indicator 4: Extrude edges, faces, vertices