Lesson Title:	Subject:	Grade(s):
Blender - Additional Advanced 3D Blender Tools (Part 2)	Digital Media / Graphic Design (ADST)	8-12
Name:	**Date:**	**Lesson #**
		3.2

Rationale:
(lesson context and reasons why lesson matters)
These lessons are intended to provide a basic understanding of the Blender software, enabling students to use these basic understandings to allow them to develop greater skills and 3D modelling in future projects.

Curriculum Connections : https://curriculum.gov.bc.ca
Core Competency
Creative Thinking
Curricular Competency
Identify appropriate tools, technologies, materials, processes, and time needed for production. Construct prototypes, making changes to tools, materials and procedures as needed Identify and assess skills needed for design interests, and develop specific plans to learn or refine them over time.
Content:
Methods and principles of 3D Graphic Design 2D, 3D, Audio, and video digital media editing tolls, including paid, freeware, open source, and cloud-based solutions. Tools and techniques for image manipulation

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Learning Intentions	Activity	Assessment
Students Will be able to:		
Learn advanced blender tools to create various shapes within Blender outside of the imported Mesh objects	Students will be guided through various edit tools and explore and test them for themselves. Students will be tasked to create a house with a chimney!	Formative: Teacher will evaluate student progress based on their progress with the tools being taught Summative: A completion mark will be provided to those who submit their completed houses into the LMS. This is simply to gauge the detail, and understanding of each student so far.

Prerequisite Concepts and Skills:
For student success
Basic understanding of Blender and the UI The basic understanding of various Blender Tools

Materials and Resources with References/Sources:	
For Teacher	For Students
Computer Projector Blender (Free Software)	Computer Blender (Free Software)

Differentiated Instruction (DI):
Accommodations
Students may be able to create shapes or play with the program at their own pace. This is still introductory advanced work, so for students that work a bit slower, it may be advised that they can learn / follow along using an instruction sheet as the class runs at a different pace. (Instructions on various tools provided)

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Organizational/Management Strategies:
Anything special to consider?
It is highly recommended to have a projector in a spot where all students are able to view and see the content easily. It is strongly suggested that teachers familiarize themselves with Blender prior to teaching any lesson to reduce teacher frustration / confusion. Teacher should create succinct steps when discussing new programs such as Blender Concrete plans or instructions should be considered beforehand.

Possible Aboriginal Connections / First Peoples Principles of Learning
http://www.bced.gov.bc.ca/abed/principles_of_learning.pdf https://curriculum.gov.bc.ca/sites/curriculum.gov.bc.ca/files/pdf/aboriginal_education_bc.pdf
Learning takes patience and time.

Lesson Activities		
Teacher Activities	Student Activities	Pacing
Introduction		
Teacher prepares Blender Software and projector to begin class. Once students are settled, take attendance making note of who is not available for this introductory lesson.	Students take their seat and log into their computers. Students will raise hand / provide attendance. *Teachers may have students complete daily tasks / activity to settle the class prior to or during attendance.*	5-10 mins
Body		

Teacher will quickly go over some of the more advanced tools from the previous day as a reminder (or for those who perhaps missed this class):
- Edit Mode
  - Vertex
  - Edge
	Students will listen and be refreshed as to what was discussed the previous day.	<10 mins

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- Faces - Extrude - Subdivide - Loop - Bevel - Insert Teacher will grab students attention and inform them of what the focus of the day is: - Joining & Separating - Removing Doubles - Fill Tool - Bridge Edge Loops - Merging Vertices - Snapping and Merging - Mini Task + Submission Teacher will ask students to open a new Blender project with just a cube being visible. **Joining and Separating** Teacher will ask students to add an additional cube to their 3D Viewport. Teacher will demonstrate how to join these objects (Alt+J). Teacher will also demonstrate how to separate these objects. **Removing Doubles** Teacher will not ask students to create anything additional, instead, they're to create a cube and make an accidental double selection (typically done by pressing the right button instead of the left button). Teacher will demonstrate how to resolve:	Students will listen and understand what it is they're going to be working on for this lesson. Students will open Blender, and prepare a cube. Students will listen and understand how to Join and Separate UV Meshes while learning on their computers as well as they walk themselves through the process. Students will listen and understand how to remove doubles.	<5 mins 10 mins 5 mins

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- Mesh Cleanup → Merge by Distance - A successful cleanup will show an indication in the bottom status bar. **Fill Tool** Teacher will ask students to take on of their cubes, and go into Edit Mode. They will be asked to select a single face of the cube, and delete it. Once done, Teacher will demonstrate how to Fill that face: - Edge Tool → Select all edges surrounding hole → Alt + F (or simply, 'F' - Teacher will teach both Alt + F and Grid Fill options, including Pro's & Con's of each **Bridge Edge Loops** Teacher will demonstrate and walk students through making a coffee cup with a "handle". *Note: For faster timing, a 'Coffee Mug' Blender file is available for use.* Teacher will demonstrate how to set up, and create a bridge edge loops to finish the handle. Teacher may decide to stop, and circulate to assist at this time, as some may become a bit frazzled with this process. **Merging Vertices** Teacher will demonstrate how to merge vertices using two planes. **Snapping and Merging**	Students will follow the teacher's direction and demonstration, understanding how to best utilize the fill tool, and for what situations. Students will create a coffee mug based off the teachers blender file. Students will raise their hand and ask for help if they get stuck, or need further direction to complete the Bridge Edge Loops / Coffee Mug Creation. Students will listen and understand how to Merge Vertices.	10 mins 20-30 mins 10-15 mins

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Teacher will get students to remove their mug, add in a mesh cube, and subdivide it into 6 parts. Once subdivided, using the 'Circular Select' button, teacher will select a part of their cube, and delete those faces. *Note: Must be in 'Edit Mode' for this to happen!* Teacher will demonstrate how to fix / complete this task. **Mini Task + Submission** Students will now be tasked to create a small, basic house. This house will have four windows, a door, roof and chimney. Using the tools they've learned over the past few days, students are going to want to create this house to the best of their ability! They're reminded that once they're done, they're to simply save their Blender File and submit it to the LMS (ex. Google Classroom) for submission, or raise their hand to have the teacher review it. During this time, the teacher is to circulate the classroom, assisting students or working one-on-one with students who may need additional assistance. Before the end of class, the teacher will remind students to save any progress they may want to save regarding their Blender projects.	Students will get rid of their Coffee Mug, and add a cube, subdividing it 6 ways. They will watch, understand and then go forth with their own demonstration of the Snapping / Merging of their mesh cube. Students will create their own house, based on the criteria set forth by the teacher. They will be sure to ask questions and seek help from their peers or the teacher if they require it. Students will submit their completed houses into the LMS for evaluation / completion. Students will save their houses, or any other additional work they may wish to, to work on it another day.	40-50 mins

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Closure		
Teacher will ask students to log off their computers, push in their chairs and prepare for the next lesson.	Students will log off their computers, and prepare for their next class.	<5 mins

Post Lesson Reflections:

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