Lesson Title:	Subject:	Grade(s):
Blender Introduction - Materials Tutorial	Digital Media / Graphic Design (ADST)	8-12
Name:	**Date:**	**Lesson #**
		1.3

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 modeling 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

Learning Intentions	Activity	Assessment
Students Will be able to:		
Understand the basics of Blender, identify the tools necessary to use the program and begin understanding how to add materials to their objects	Students will add in materials, followed by shaders on their already developed UV Meshes.	Formative: Teacher will evaluate student progress through walking around and ensuring students are focused and working on activity.

Prerequisite Concepts and Skills:
For student success
Basic understanding of Blender and the UI Creation of various mesh tools and the ability to alter them

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

Differentiated Instruction (DI):
Accommodations
Students may be able to create shapes or play with the program at their own pace. As this is introductory, much of the Blender program at this stage is exploratory

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 task/activity to settle the class prior to or during attendance.*	5-10 mins
Body		
Teacher will grab students attention and inform them of what the focus of the day is: - Adding Materials and Shaders to the UV Mesh Lineup we created in the last lesson. Teacher will ask students to open Blender and open their lineup of mesh objects they were working on the previous day. Teacher will begin discussing and demonstrating the following:	Students will listen and understand what they're expected to learn for today's lesson.	<5 mins

Discuss and Demonstrate 1) Starting with the cube a) Add New Material b) Change the Colour c) Change Roughness d) Show Viewport Changes (Solid to Rendered to Wireframe…etc.) They're located on the top right corner of 3D Workspace 2) Select Cylinder a) Add material i) Make mention of how to duplicate, and the implications of doing so b) Change the colour c) Make roughness Zero 3) Select Sphere a) Right click and make the sphere smooth (Shade Smooth) b) Create new material c) Add Metallic i) Make note of science of Metallic 4) Select Torus a) Right click and select 'Shade Smooth b) Add new material c) Select a colour of choice (ex. Yellow) d) Change Emission Material from black to white i) Change Emission colour the faded version of the colour you chose e) Change Emission Strength f) Go to Render Properties	Students will work alongside the teacher, asking questions when necessary and asking their peers if they missed out on anything in particular.	30-40 mins

i) Select Bloom ii) May change Threshold setting and radius as well 5) Select Suzanne the Monkey a) Right Click and Shade Smooth b) Add Modifier and select a colour c) Select the 'Wrench' or Modifier Properties' i) Add Modifier ii) Add Subdivision Surface iii) Do not change anything on Subdivision Surface above a '2' d) Go back to Materials, and scroll down until you see Settings e) Blend Mode → Alpha Blend f) Turn on Backface Culling and Screen Space Refraction g) Go back to Render Properties and change Sampling Rate of viewport to 256 All items have now been added, and we're ready to move onto Shading!		
Teacher will let the class take a 5 minute brain break	Students to take a 5 minute Brain Break	5 Mins
After 5 minutes, teacher will continue to discuss and demonstrate the following: **Discuss and Demonstrate:** <u>Split the Screen</u>	Students gather their thoughts and prepare to listen and work together with the teacher on the next section	<2 mins

- Take your cursor to the top right corner of the 3D Viewport until the '+' shows up. Right click and select 'Split Vertical'. - Take your cursor and move it halfway across the 3D Viewport and it will split it into two different 3d viewports. - On the new screen, select the upper right hand icon, and change the viewport to 'Shader Editor' <u>How to mix colours together</u> 1) Don't be intimidated. 2) Select the Cube a) Right Click the Long List and Duplicate it b) Make the second duplicated list a different colour than the first. 3) Press Add at the top of the page a) Select Shader b) Select Mix Shader c) Place the Mix Shader between the Output box and lists. 4) Change the output locations a) Move List 1 to Mix Shader b) Move List 2 to Mix Shader c) Move Mix Shader to Output d) Cube should be a mix colour of both List 1 and 2 <u>How to mix in Textures</u> 1) Select your Plane. 2) Create 2 lists, make them different colours and mix them together using the Mix Shader 3) Click Add a) Select Texture b) Select 'Brick Texture'	Students will work alongside the teacher, asking questions when necessary and asking their peers if they missed out on anything in particular.	30-40 mins

4) Connect the FAC to the output line in the Mix Shader 5) The plane will now be a brick look a) You can alternate the colours by changing the list placement on the Mix Shader Node b) You can alter / change the brick layout in the Brick Node Teacher will provide a small amount of time for students to experiment with the Mix Shader / Texture Teacher goes around the classroom and checks and sees how everyone is doing, answering questions if they arise.	Students will have an opportunity to go back to a section they didn't quite understand, fix or even alter what they've done thus far.	10 Mins
Teacher will get students attention and continue Texture Discussion <u>How to Add Images as Textures</u> 1) Remove any Duplicate Material Properties (Lists), Mix Properties or Brick Properties. 2) Reconnect original list to output 3) Click on Add a) Select Textures b) Select Image Textures 4) Connect the 'Image Texture' to the Base Colour of the 'List'. a) Plane should go Black 5) Download an image pack from https://cc0textures.com 6) Open the Image (colour) from the .zip file a) Discuss that many of the images that come in that .zip folder contain aspects such as roughness, or	Students will stop what they were focusing on to listen and work alongside teacher demonstrations. Students will work alongside the teacher, asking questions when necessary and asking their peers if they missed out on anything in particular.	30 mins

even shading necessary for the "perfect" floor 7) Once opened you have the floor 8) Pack your resources! a) File → External Data → Pack Resources b) This allows everything external in Blender to stay in blender. Students will be provided some time to complete and go back and finish / tweak anything to their mesh objects. Teacher will remind students to save their projects. File → Save (or Save as!)	Students will Pack their Blender Profiles and Save (or Save as) their projects.	5 mins
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: