**Template for learning object**

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**Subject:** Blender3d , Creativity , and Art

**Short description:** Students will learn the basics of 3d coordinates and variables through art. This lesson will use the free, open source Blender3d (<http://www.blender.org>) graphics and animation package to teach students how to create digital pictures and animations. Students will modify pre-made examples to learn about keyframing variables, the x, y, z coordinate system, and digital art.

**Educational Level:** 1st – 6th

**Field trip type:** Lecture

**Educational Outcomes:** Students will be able to:

* Describe the x,y,z coordinate system in their own words.
* Understand the concept of a variable
* Understand how animation works through frames and how to animate a variable through keyframing .

**Content: [Target 50 minutes of material, content, or activity]**

**Content:**

**Notes to instructor:**

The projects are designed as starting points for students to explore the Blender3d software and documentation. Blender3d can do just about anything in regards to digital art ( video editing, video games, sculpting, 2d drawing, compositing – photoshop for animation, and many more features) If you have any extra time left, give the students some free time to explore the features of blender3d – perhaps challenge them to make a monkey, or a smiley face from primitive shapes. Or a light saber using a light saber tutorial.

# Pair Programming – Two Students to Each Computer

The exercise will be done in a computer lab with computers available for at least half of the students. The students will pair up and one student will start out “driving” the computer – the other student should watch and suggest what to do next. After the first project is complete (part 2) , switch drivers.

The instructor should have a computer connected to an overhead projector for demonstration. Blender3d 2.63 or higher should be installed on the computers and scroll wheel mice are strongly suggested. Also, before the trip, ask students to bring a flash drive to save their work.

**LESSON PLAN for Art ,Creativity, and Blender3d session (1 hour 15 minutes)**

## Part 1 [10 Minutes]: Setup, Demo, and Welcome Video

Have you ever wondered, “how did Pixar make those cool movies such as Brave, Toy Story, Finding Nemo, or the Incredibles?” how did Dreamworks create “Kung-Fu panda, and How to Train Your Dragon? “ how did they make the light sabers in star wars glow? “ well , if you ever wondered that, or are currently wondering that, then you are in the right place… the tool that we are about to show you uses some of the very same methods that DreamWorks, ILM (the starwars special effects people) , and Pixar use to create their works.

Let’s get started!

Have students open blender3d Part1.MotionTrackName.Blend [Instructions ]

Tell them they are free to press the

play button ,

shift+a meshes ,

any menu buttons

cntrl+z,

and experiment with the keys R, G, S

 and pressing the left , right and middle mouse buttons

 tell them they can play around with those while the video is playing.

### Problem solving and Teamwork[5 minutes]

**Note to instructor – read over this before applying or saying– this is the help system:**

If the computer you use decides to misbehave and do something unexpected, relax, take a deep breath – come on everyone, take a deep breath – inhale, and then exhale, and don’t worry about it. The point of this class is to explore ! Things like that happen. If you do run into a problem, try to fix it or ask your classmates for help

Let’s practice asking for help. ask the people around you and say, “Hi there, can you help me?” [ wait for them to try it ] …. Good, now let’s try the response.

if someone asks for help, you can say “I can try to help, what is the problem?”, let’s all practice that … turn to your neighbor and say, “ I can try to help, what is the problem?” [wait about 10 seconds ] … good , and if you want more help, ask other teams . Finally, if you still need help, raise your hand and the teacher will point to you to let you know he saw your question and will be with you shortly and then you can put your hand down. Let’s all try it! Everyone raise their hand! .. . [point at the person by making eye contact , smiling, and pointing your index finger at them] – 30 seconds. you can also verbally confirm that you have seen their hand if they aren’t putting it down immediately.

Okay! Now that we have team help system in place, get ready for a fun introduction to art, creativity, and blender3d!

**Introduction to Blender3d**

(dim the lights here if you can)

Open the welcomePart1.mov in VLC media player. Double click to full screen the video. [ instructions]

Video will be of an introduction/getting started movie – should be 5-7 minutes

### The Demo[1-2 minutes]:

Videos of animations - patterns, special effects, some graphics, a light saber effect,

Veggie tales

Mr. Crab.

The Gift – Final animation

A few images from my demo reel

MotionTracking Demo results, - 3d name is on the table (background will be scene that they can use – already tracked)

An animation of a simple character they can animate and render.

(and also take home)

Results of more animations.

### The Mouse

(bolded words are put at the bottom)

[Should be dressed in a red soft collar, A khaki pants, or a green collar shirt ]

Hi there! My name is Rockin’ Robert and you just watched some of the art I made with blender3d.

I’m here with your teachers to talk to you about art, and creativity! If you can draw a stick figure, a circle, and a square, you can learn 3d art on the computer. The computer draws these shapes for you. All you have to do show the computer where you want the shapes you want to go! Let’s get into how to do that [ exit… somehow]

[intro opposite of exit ]

Hold up mouse dangling – this thing here, I like to call Mr. squeaker. Mr. Squeaker is also known as **THE MOUSE**.

Cut to close up of mouse: your mouse has 3 buttons ( Left, Right,and Middle) It also has this slidey thing – it can move up and down .

most people call this a “**SCROLLWHEEL**”, but you can give it nicknames if you want, like the squeaker slider, Mr. Squeaker’s nose, you know... whatever you want to call it .

Transition [ Mouse sqeaking? ]

### The Keyboard

[room with piano – practice rooms?]

This is a keyboard -> (play an electric piano keyboard –about 5 seconds)… but this isn’t the kind of keyboard we are going to use today! [ hop off screen]

 [jag tv room or some other good looking room]

 [hop onto screen (swish sfx) , or come up from bottom ] This is also called a **keyboard , [ hold up computer keyboard, begin to give it a hug or pet it on “nice” ]**  and I’m going to show you an interesting example of how you can use this *nice* keyboard and make fun art with Blender3d!

Over time, with some good work and diligence, you can learn all the shortcuts! Today , we will just go about 7[list them ] they are The are R for Rotate S for Scale and SHIFT+D for duplicate!

 . The more shortcuts you know, the better you will be at Blender3d! If shortcuts are not working, You can also just use (hold up mouse) Mr. Squeaker’s left paw, right paw , and nose. I will show you one shortcut called Grab – and show you how to move things around on the screen. I will show you one called Grab. You notice the G (pointing to the text on the screen) ? that’s the shortcut! Tap G , then X, move it with the mouse, and press enter. Tap G, then Y, then 1, then press enter (it moved it 1 up on the Y axis) Finally, tap G, then Z, then hold control down (that’s this button) with your mouse, you’ll notice that it snaps to different numbers. Press enter or left mouse click to accept.

Mr Squeakers can join in on the fun too! Press this + icon on the right of your 3d view screen, (mark it in red) , and drag these up and down. You can also type in numbers or math things like 1+2-4/2, press enter, and Blender3d will give you the number.

The other way Mr. Squeaker’s can Grab objects is by using the Grab manipulator widget here.

The red is x, the green is Y , and the blue one is z.

In this lesson , you will be learning a template and all the fancy stuff is already worked out for you. If you ever want to learn more about blender3d, ask a parent or teacher for permission to go to

[http://www.blender.org/](http://www.blender.org/education-help/) and click on “education & help” Other resources will be provided after the lecture – such as blendswap.org , CG cookie, and BlenderGuru, so you can download and learn from other people’s blender files.

(play music )

Well, That’s about it from over here! I hope you enjoy this time learning digital art is as much as I enjoyed making these lessons for you! Have fun!

## Introduction for Lecturer!

(sound enthusiastic – like this is a brand new car or something along those lines)

“Hi and welcome to Art, Creativity, and Blender3d ! My name is \_\_\_\_\_\_\_\_\_\_\_\_ and I think art is cool! Digital art and animation is even cooler ! Today you will learn digital art using Blender3d! Blender3d is a free, open source graphics and animation package that you can use for ***anything*** having to do with digital art ! [you can use it for video editing, photoshopping , instagramming pictures, animation, sculpting, creating video game rooms, or even making a desktop background for your computer! ] We only have time for a few lessons, but you can do so much more with Blender3d ! After today, Ask your teachers or parents to help you download blender3d at <http://www.blender3d.org> and learn more about the world of digital art, computer graphics, and animation! Your teacher will have copies of the websites to explore for more learning.

## Part 2 [10 Minutes]: Setup, Demo, and Welcome Video

Load the motion tracking blend (already setup) -

learn about object creation and moving around in the 3d view (and the xyz coordinate system) – place a text object on the scene and add a material. Edit the material color. Learn about quick openGL renders vs. small renders vs. full renders. Learn how to save an image or animation.

[explain what a xyz coordinate system is – a way to tell where something is in space] and explain that what they were doing was the interactive version of math – geometry)

## Part 3 [10 Minutes] variables:

Open up Compositor blur –already setup - change the name to something neat (in 3d view)

Render previews.

 Change color and keyframe it [explain]

[tell them what a variable is and how it was used there]

## Part 4 [10 Minutes]: conclusion

(show video if there is one)

Well, Did you get to see what you could do with blender3d?

Were you inspired to go make something ?

Blender 3d can do particles, hair, etc….

You have just completed those . but that was just a taste of what blender3d can do. Resources on tutorials are with your teacher. If you want some more fun, learn about these things.

It includes tutorials on how to do all the pictures on the poster (or powerpoint )

Just like anything else, Blender3d takes practice, some work, some diligence, and some toying around to make something.

If you want you can