

3D Printers

Lesson Plan for Grade 8-9, Robotics Summer Camp

Prepared by Maddie Mathews

OVERVIEW & PURPOSE

Incoming 8th and 9th graders will learn the basics around 3d printers as well as see examples of how they can be used.

OBJECTIVES

1. Incoming 8th and 9th graders will learn about different 3d printing filaments and their unique uses.
2. Incoming 8th and 9th graders will be able to print something that they created in CAD earlier that week. (We also let them make something new quickly and it worked fine.)
3. Incoming 8th and 9th graders will be able to use Cura to edit 3d printing settings. (I wasn't clear enough and they had print temperature set incorrectly sometimes.)
4. Incoming 8th and 9th graders will know how to prepare a 3d printer to print.

MATERIALS NEEDED

1. 3d Printers
2. Variety of 3d printed objects for incoming 8th and 9th graders to look at (different filaments)
3. Rubbing alcohol
4. Paper towels
5. Computers with mice
6. Tv computer
7. Make sure you have more than 1 teacher there, it was really hard to handle with just me (Jason was doing other things)

VERIFICATION

Incoming 8th and 9th graders will have prepared the thing they created in CAD for printing

ACTIVITY and TIMELINE

1. Have incoming 8th and 9th graders gather around a table and go over a basic overview of 3d printers. They are used to..., we used them during the season for..., there are different filaments that can be used, ext. (10 minutes)
2. Pass around different 3d printed objects. Point out the ones that are unique filaments and infills. (10 minutes)
3. Have incoming 8th and 9th graders get out computer and mice, then tell them to open what they created in fusion. Provide help if needed. (You will want to be logged in to the tv computer if possible). (10 minutes) If they have extra time in this portion they can make a new design.
4. Have incoming 8th and 9th graders 45 their screen and direct their attention to the screen. Go through the process of preparing something to print. Answer questions if there is any at the end. (10 minutes)
5. Have incoming 8th and 9th graders complete what you have just done for what they created in CAD. Answer questions as they come up. (15 minutes)
6. After they finish, have everyone gather around the 3d printers. Show them how to clean the bed while it is heating up. If 3d printers are available you can show how to change filaments. (10 minutes) There were only one or two working printers at any given time, so we didn't really have time for this.
7. If there is extra time you can show incoming 8th and 9th graders Thingiverse. I showed them this and some people even printed more off of it.

Reflection

Having only two working 3D printers for the majority of the time was challenging. Campers wanted to print more than one thing or things that took more time than we had. Except for a couple of kids, no one got to actually see how the 3D printer worked.

One of the main reasons that we had too much time was that we did not have them printed their whistles. Instead, we saved them on a removable drive so we could do

it ourselves. Since that was the plan to do in class, we jumped to the last step. This ultimately resulted in only a couple of campers staying engaged. We needed to give most of the kids reminders to stay off computer games.