**CHAD LESSON PLAN TEMPLATE**

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| **Your Name:** | Christopher Sweeney |
| **Subject Area/Department:** | Design |
| **Grade Level:** | 9-12 |
| **Title:** If your lesson has multiple parts, specify which part this represents. (ex: Part 1 of 2) | Chibitronics Sketchbook Lesson |
| **Lesson Time:**  Specify total minutes required to complete classroom activities and homework if needed. (ex: 90 minutes for classroom activities and 60 minutes for homework) | Two 90 minutes periods (at the minimum) time to complete project. |
| **Introduction:**  Provide a brief introduction to your lesson. State the topic/issue you wish to address. Explain the relevance of this lesson to your subject area and curriculum goals.  Describe the design challenge and how the lesson will engage students in the design process. | The students will be signing LED lighting arrangements from the Chibitronics introductory sketchbook.This project will be a mixture of art, design, music, engineering, and math, among other things touched on.This is a relevant design challenge as it has many, many components, and utilizes new media.It will engage them as it has several components that require higher learning and problem solving. |
| **Objectives:**  List what students will be able to do after this lesson. (ex: Students will be able to understand and address the needs of their audience). | The students will be able to use several problem solving skills.They will learn how to work with their hands and connect simple paper circuits utilizing the Chibitronics Sketchbook.They will utilize 21st Century Skills to make completed circuits in order of difficulty to utilizes higher learning and higher cognitive ideas and to have a completed product that works with the electronic component.They also will learn craftsmanship and learn to combine old media and new media. |
| **Standards:**  List all PA Academic Core Curriculum Standards and National Standards covered in your lesson.  List subject area, standard, level, and benchmark.  <https://www.pdesas.org/Standard>  *(Please include each entire standard, not just the code. Cut and paste to save time.)*  *ex:* Standard - CC.1.2.9-10.A  Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. | 9.1.12.B.4 Visual Arts:  9.1.12.B.4.1 Paint/Draw/Design |
| **Resources:**  List resource materials needed such as technology equipment, reading materials (title and author) or internet sites (URL). | [chibitronics.com](http://chibitronics.com) |
| **Materials:**  List materials needed to complete this lesson.  (Ex: handouts, supplies, etc.) | Cardboard, Xacto blades, pencils, paper, ruler copper tape, aluminum foil, hot glue gun and glue, scissors, etc.and too Chibitronics classroom packs. |
| **Vocabulary:**  List and define new words or terms that you will be introducing in this lesson.  <http://www.merriam-webster.com/> | Terminology  1 Sketch: Draw your design first, so you’ll only have to tape once.  2 Single Continuous Copper: Do not tape multiple copper tape pieces together to create electrical connections.  This will not work since the glue on the tape is not conductive.  3 Smooth: Smooth the surface of the copper tape so that it’s shiny, bright and has a solid connection.  If you use a pencil eraser to do so, make sure to clear any eraser bits.  4 Set: Press firmly on the circuit sticker and count to five seconds for a strong bond.  5 Single Use Only! Wash and dry hands prior to using. Our stickers don’t like water, oil, or dirt to come between themselves and a great connection. |
| **Background:**  Include background information the teacher should introduce as part of the lesson. Find some real-world examples as a reference, including photographs or videos. | [chibitronics.com](http://chibitronics.com) |
| **Procedures:**  Give step-by-step directions for the implementation of this lesson.   * Remember to be detailed and precise. * Address and articulate each step of the design process. * Articulate how you are addressing each standard listed above. | 1)Students are shown Cooper Hewitts resources and PDFs on the Design Process at the beginning of my course, which leads in to the MakeyMakey project.Before they start the project, they also do the Cooper Hewitt Designn Challenge that was given to us at a PD session last year.  2)The next day, we continue our discussion of the design process after more Cooper Hewitt visual resources are shared.I then show them MakeyMakey and other JoyLAbz videos (Drawdio),as well as 3D printing introduction resources.  3)After this video session class,I have them view the resources on the MakeyMakey Labz website, which I am an Ambassador, so I have access to more lesson and resources than the average teacher.I also show them guides, lessons, and visual resources they can use to create their designs.  4) After this viewing, we get to the design process by doing four to five quick sketches to flesh out their ideas.They have time ti use my computers, or if they are responsible, use their phones to view videos of projects my former students and others around the country and the world have created.This will take up at least a class period.  5)After the four to five drawings are done in the sketchbook, we work on a finalized drawing to figure out materials, size, shape, and overall design that works with the MakeyMakey interface.There are not a ton of parameters, but they instrument or object should have six to seven at the minimum buttons/keys/strings etc., with a max of eleven.Aestetics are also very important, and lesson examples of both exemaplar and bad and/or sloppy craftsmanship are shown,and discussed why they are and what are the differences.This will take at least a period or more.  6)Now comes the bulk of work and hand building.My student teacher Lindsay was nice enough to create generic prototype examples of how you take a drawing and make a template out of it.She picked a small guitar or ukkelalee.The students will fabricate the designs well as having one portion of it 3d printed, from a knob, down to a decal or lettering.All of this must go in the final example.This quarter I will also be showing them TurtlArt,which last quarter I showed as a stand alone design project, but now can be integrated in to their main MakeyMakey design.I have just written an article on this for Scholastic Arts, a magazine by Davis Publications that I am affiliated with in the past.The students will be working on this handbaglding for several weeks, as well as receiving instruction on Tinkercad tutorials.  & |
| **Discussion Questions:**  List open-ended discussion questions to help students investigate the design challenge, frame/reframe the problem, generate possible solutions, develop ideas, and reflect on their process. | How does your design work with electronic currents?  How is positive and negative diodes important to your design in terms of how it makes your design work?  What is the conductive element that makes your design work? How could you have better implemented in the design process?  What would you fix and/or redesign to make it more user friendly?How did you fail, and how did you succeed with this project?  What was an uncharted territory for you, and what felt comfortable, and what terrifying? |
| **Assessment:**  How will you determine if the student has successfully learned the objectives of the lesson? How will you differentiate instruction? | If the circuit doesn't work with their project.Even if the design is not what I am personally looking for as far as craftsmanship, can they say they grew and learned the major idea being processed.Since I have a big special education population in some classes,I need to level it and work on their growth path. |
| **Enrichment/Extension Activities:**  How might you expand the objectives of the lesson to trigger higher order thinking skills (HOTS), and make connections across the curriculum, with other disciplines, into the home or into the community? | Since Chibitronics is used across disciplines and many, many different ways, it is a no brainer to open up their minds to different ways of thinking, from the music, social studies, especially with .It already triggers HOTS, and other entities. |
| **Place-Based Considerations:**  How might you connect this lesson to the neighborhood around the school or to the school itself? Identify local sites, architecture, organizations, businesses you might be able to work with if you developed this lesson further? | I would love Chibitronics to work with Ozobots and other maker technology to create a design, a living, breathing entity that all of our teachers can use to map our life with students.I would love to use Chibitronics with Makeymakey/Scratch,Morphi,3D printing, and Drawdio. |
| **Attachments:**  Please remember to include any necessary handouts, rubrics, worksheets, PowerPoint presentations or any other additional resources specific to your lesson. | I will be adding the rubric to this document.Most of my information is online. |
| **Teacher Reflection (Post Lesson):**  Note how this lesson could be adjusted after its initial implementation. How successful were the students? What did the assessment demonstrate about the students’ learning? What skills do the students need to revisit? What instructional strategies worked and what made them successful? What will you change the next time you use this lesson? Why? | 1)There was a curve of student’s success,which was mostly on the plus side.As long as they worked on the projects, and gave it their all, there was no failure. |