***Instructional Design Project***

**Name: Stacy French WKU ID#:** **800010027**

**Date: 20180711 Lesson Grade Level: Grade 13+ or 1st or 2nd year of college**

**Subject: LME 535 Authentic Topic: Analog vs. Digital**

**Lesson Title: Cellphone Technology**

**Objectives/Standards:**

|  |  |
| --- | --- |
| **Objective** | **Standards** |
| Content Objective:After studying about Analog vs. Digital, cell phone features, and cell phone carrier features, students will design a new cell phone and cell phone carrier service, scoring Proficient or higher on the rubric. | HS-ETS1-3 Engineering DesignEvaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.ISTE-3a - 1998 (NETS); 2007 (ISTE) revised; 2015 revised; June 2016 revisedStudents plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.ISTE-5b - 1998 (NETS); 2007 (ISTE) revised; 2015 revised; June 2016 revisedStudents collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making. |
| Technology Objective:After designing a new cell phone and cell phone carrier service, students will create a multimedia presentation to convince the class to vote for their new cell phone, scoring Proficient or higher on the rubric. | ISTE-4b - 1998 (NETS); 2007 (ISTE) revised; 2015 revised; June 2016 revisedStudents select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.ISTE-6b - 1998 (NETS); 2007 (ISTE) revised; 2015 revised; June 2016 revisedStudents create original works or responsibly repurpose or remix digital resources into new creations.ISTE-6c - 1998 (NETS); 2007 (ISTE) revised; 2015 revised; June 2016 revisedStudents communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.ISTE-6d - 1998 (NETS); 2007 (ISTE) revised; 2015 revised; June 2016 revisedStudents publish or present content that customizes the message and medium for their intended audiences. |

**Connections:**

|  |
| --- |
| **How does your lesson address the following?** |
| 1. Revised Bloom’s Level
 | 6.2 Planning: Students are going to design a new cell phone and cell phone carrier |
| 1. Cognitive Complexity
 | C Level 1 Knowing: Teacher directs student’s interaction with the content or standard (Analyzing the information, finding the differences, producing a result)Justification: Students have been tasked with researching cell phone technologies, comparing the technologies and producing a product.C Level 2 Practicing: Teacher directs student interaction with content or standard at Bloom’s Understanding levelJustification: (Students are tasked with becoming familiar with different cell phone types. This task should involve getting into groups and allowing others to use their device. Using online simulators can work as well).C Level 3 Investigating: Teacher directs student interaction with the content or standard at Bloom’s Analyze levelJustification: (Students are tasked with comparing their findings with other students on the use of different cell phone devices).C Level 4 Integrating: Students generate questions or projects with the content or stand at Bloom’s Analyze levelJustification: (Students are tasked with taking their results from their investigating and determining, as a group, what aspects of the devices that they prefer).C Level 5 Specializing: Students generate questions or projects with the content or standard at Bloom’s Create levelJustification: (Students are tasked with generating their own questions and sharing these questions in their group to get more ideas for their project). |
| 1. Real World learning
 | R Level 1 Knowing: Learning focuses on non-relevant problems using textbooks or worksheets Justification: (Should schools provide free cell phones to all students).R Level 2 Practicing: Learning provides some application to the real world using real objects or topicsJustification: (How would you go about fixing a smart phone with a cracked screen).R Level 3 : Investigating: Learning simulates the real world (such as learning to be a fry cook at a restaurant)Justification: Students will be investigating how cell phones work, both analog and digital.R Level 4 Integrating: Learning emphasizes and impacts the classroom, school, or community AND Learning is integrated across subject areasJustification: (Students will use cell phone technology to complete their assignments).R Level 5 Specializing: Learning has a positive impact on a national or global issue or problem AND Students collaborate with experts in a field or disciplineJustification: (Students will interview at least 3 different professionals about how cell phones help or hinder them in their current position). |
| 1. Engaged learning
 | E Level 1 Knowing: Teacher lectures or questions and students take notes AND One correct answer is expectedJustification: (Teacher will ask each students to name 3 non-gaming apps on their devices and how each app is used).E Level 2 Practicing: Students are engaged in a task directed by the teacher AND Multiple solutions for one task are acceptedJustification: Students are tasked with completing task on their cellphones. It can be any task except for playing a game; sending an email to the teacher, writing a post on blackboard, creating a video, etc.).E Level 3 Investigating: Students have choice for tasks AND Tasks are differentiated by content, process, or product (such as choosing which technologies to use)Justification: Students can choose from the three available cellphone technologies, a) analog, b) digital or c) phone with both and two different forms of technologies to present their project.E Level 4 Integrating: Students partner with the teacher to define the content, process, or product AND There is a student Inquiry-based approach AND Students collaborate with other studentsJustification: (Students are divided into groups and are tasked with researching 3 different cellphone models and determining which model is favored and why)E Level 5 Specializing: Students initiate their own Inquiry-based learning through projects; thorough immersion and full implementation from topic to solution occurs AND Students initiate appropriate collaborations pertaining to their projectJustification: Students are tasked with creating their own cellphone device (on paper) and students will also collaborate with other classmates to compare ideas and determine what other classmates would want or need in a cellphone). |
| 1. Technology integration
 | T Level: Knowing: Teacher use technology for demonstration or lectureJustification: (Teacher will provide video tutorials and other technologies during the lecture)T Level 2 Practicing: Students use technology for gathering informationJustification: (Students will watch [How To Google Like A Pro! Top 10 Google Search Tips & Tricks](https://www.youtube.com/watch?v=R0DQfwc72PM) and then do their own research for the class project).T Level 3 Investigating: Technology use appears to be an add-on or alternative-not essential for task completion AND Students use technology for Bloom’s Analyze levelJustification: (This project cannot be completed without the use of technology).T Level 4 Integrating: Students use technology for Analyzing, Evaluating or CreatingJustification: Students will be using 1 of 2 technologies to present their idea for a new cell phone and new carrier. This one is all technology.T Level 5 Specializing: Student-directed technology use: Is seamlessly integrated in content at Bloom’s Create level AND Has several technologies AND Includes collaboration with field experts or global organizations to find solutions to an in-depth “real” problemJustification: (Students will be creating a new cellphone technology and using ideas from other students, as well as their own ideas, and ideas that they learn from their interviews with other professionals).  |
| 1. How will you *collaborate* with other professionals in this lesson?
 | I will meet with other classmates in this course and discuss my ideas with them and ask them to share their ideas with me. Since most, if not all of them are already teaching in schools, I would ask for their input and suggestions and also provide any technical support to my fellow classmates, if needed or wanted. |

**Resources:**

* Copy the text from [Here](#WorkSheet) (or scroll to page that begins with Wordsheet), copy content, create a new Word document, and paste into new Word document and use for this project or you can cut/copy pages 6-10 of this file and paste the pages into a new Word file.
* The most obvious of resources and is required are access to a Computer, internet and Office 2013 or later.
* [YouTube](http://www.you.tube.com/) is a valuable resource for tutorials. But use your time wisely as you can get distracted from your actual goal. Also, be mindful of the tutorials you do watch. Not all video tutorials are created equal.
* [Create Excellent Resources](http://create-excellence.com/resources/) is a good resource for creating multimedia presentations. You are not required to use any of these, [Discovery Education tools](http://web2014.discoveryeducation.com/web20tools.cfm), [Cool Tools for Schools](http://cooltoolsforschools.wikispaces.com/), [www.slideshare.net](http://www.slideshare.net/meganpoore/creative-use-of-technology-in-education), or [CogDogRoo](http://cogdogroo.wikispaces.com/). These are just different tools that are available to you. However, you must get approval of any tool or tools that you decide to use.
* [How To Google Like A Pro! Top 10 Google Search Tips & Tricks](https://www.youtube.com/watch?v=R0DQfwc72PM) is an excellent tutorial to watch before beginning any research. This video will teach you how to actually do selective searches and limit the results that are actually relevant.
* [Cell Phone Simulation](https://see.systemsbiology.net/resources/cell-phone-simulation/) is a tool that will help you visualize how cell phone towers actually work. This is just a simulation. Make sure that java and flash player are up to date as well. (In order to view the simulation, you need to have java updated. You also need to uninstall any [previous versions of java](https://www.java.com/en/download/help/uninstall_java.xml).)
* This site [Ninite](http://www.ninite.com) will allow you to update many applications that will be necessary for this project. Just select the programs you want to install or update and then click Get My Ninite.
* <https://www.java.com/en/>
* <https://get.adobe.com/reader/>
* <https://get.adobe.com/flashplayer/>
* <https://get.adobe.com/air/>
* <https://helpx.adobe.com/shockwave/kb/shockwave-player-64-bit-windows.html>

You will need to install the version for your computer. If you have a 64bit operating system, you will need to install the 64bit version. If your operating system is 32bit, you will need to install the 32bit version.

**Cellphone Technology**

Scenario: We recently covered the history of cell phone technologies in class. We covered how much the phones have changed in the last 20 years and how these changes have affected our daily lives. You will create a multimedia presentation wherein you are creating a new cell phone and a carrier for this new phone.

Student Directions:

1. See work sheet in [resources](#Resources) for detailed instructions:
2. Students will research the various type of cellphones over the last several years of cellphone technology. There have been many variations and many cellphones. Students will determine the features that they prefer on these various devices and invent your own or borrow a feature that you would like a cell phone to have.
3. Students will research the various cellphone carriers that have existed over the years and determine the best qualities from each carrier and invent your own carrier with the best qualities and invent your own ideas of what you would like in a carrier.
4. Students will create a multimedia presentation to try and persuade the class to choose your device and carrier over current devices and carriers or the newly invented ones.

The top three persuasive presentations will receive 25 bonus points to be added to the project score.

Essential Questions:

1. Is technology advancing to fast?
2. What are the advantages of analog technology?
3. What are the disadvantages of digital technology?
4. Compare CDMA to GSM? Provide pros and cons
5. Would you, given the chance, go back to digital?
6. Are you, if you have an analog device, content with it?
7. What is the history of analog technology?
8. What are some entities that still run on analog technology?
9. Compare features of 4 cellphones.
10. Compare features and costs of cell carriers.

**Worksheet**

**List at least 10 basic cell phones that are basic in status; identify each device by their style:**

**Flip, Bar,**

**Slider.**

**1. Samsung SCH-R270**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**List 10 different smart phones by manufacturer and by operating system.**

**Android, iphone,**

 **Blackberry**

**1. HTC Aria - Android**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**Select 10 features from the different cell phone types that you would like to include in your cellphone design and list those feature below; why do you want this feature included?**

 **Feature Why?**

**1. Memory Card**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**1. I want external storage**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**List up 10 different cellphone carriers, even ones that may no longer exist. I suggest this because some of the best carriers no longer exist and this is unfortunate as you will see in the pros and cons section.**

**1. Sprint**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**Here we will select 5 from the above listed carriers and make a list of the pro and cons, likes and dislikes, needs vs. wants, etc.**

**Carrier (1)\_Sprint\_\_\_\_\_\_\_**

 **Pros Cons**

**1. Dual band – CDMA/GSM**

**2.**

**3.**

**4.**

**5.**

**1. Customer Service**

**2.**

**3.**

**4.**

**5.**

**Carrier (2)\_\_\_\_\_\_\_\_**

 **Pros Cons**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**Carrier (3)\_\_\_\_\_\_\_\_**

 **Pros Cons**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**Carrier (4)\_\_\_\_\_\_\_\_**

 **Pros Cons**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**Carrier (5)\_\_\_\_\_\_\_\_**

 **Pros Cons**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**Select between 5 and 10 features from the carriers Pros lists and use them to create a carrier with a unique name and present this to the class in a multimedia presentation:1. Coverage Area**

**2.**

**3.**

**4.**

**5.**

**6.**

**7.**

**8.**

**9.**

**10.**

**You can use any media platform except for Power Point for your presentation.**

After studying about Analog vs. Digital, cell phone features, and cell phone carrier features, students will design a new cell phone and cell phone carrier service, scoring Proficient or higher on the rubric.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Content Objective | **1. Indicator Not****Met; Novice** | **2. Indicator Partially Met; Apprentice** | **3. Indicator Met; Proficient** | **4. Exceeds Indicator; Distinguished** |
| Content: | \*Cellphone information was not at all accurate.\*Use of cellphone terminology was elementary at best.\*Images were blurry or distorted.\*Audio was inaudible.\*No serious effort was put into research. | \*Cellphone information was accurate but no background was included.\*Use of terminology was standard.\*Images were easily seen.\*Audio was clear.\*Video use was adequate and standard.\*A little effort was used in research. | \*Knowledge of cellphone history was evident.\*Proper use of cellphone terminology.\*Research was done and properly referenced.Audio was clearly heard and visuals were clear.\*A good effort was put forth into the research.  | \*Extensive knowledge of cellphone technology.\*Outstanding use of the terminology.\*Outstanding research on the history of the cell phone with excellent references formatted correctly.\*Audio and video were well done and presented in a professional manner. |
| Cellphone Design: | \*Design was not appropriate for personal use.\*Idea for cellphone was impractical for daily use.\*Cellphone did not contain any apps other than games.\*Did not include an Operating System. | \*Design was appropriate for personal use, but not for business.\*Idea for personal use was practical, but not implementable.\*Cellphone included a few apps including games.\*Chosen OS was valid. | \*Design was introduced for personal and business use.\*Options for multiple OS was clever, but not practical or doable.\*Plenty of apps, but most for gaming.\*Included the option for a memory card and external storage. | \*Excellent design was introduced for personal and business use.\*Idea design for dual booting the cellphone was clever and may be feasible soon.\*Device had several apps and not many games.\*Included the option for external storage. |
| Cellphone Carrier & Service: | \*Did not introduce a new carrier.\*Did not allow for OTA upgrades.\*Did not introduce a coverage map.\*Did not include options to upgrade or buy the device.\*Did not present a cost for the new device. | \*New carrier was introduced, but not for business purposes.\*OTA upgrades were introduced and available for purchase. Should be free.\*Coverage map was introduced but was not accurate.\*Cost of the device was reasonable. | \*New carrier was introduced for personal and business use.\*OTA upgrades were introduced and free when available.\*Coverage map was accurate, but had dead spots in densely populated areas.\*Cost of the device was free with plan purchase.  | \*New carrier design was excellent with dual band coverage and the potential for zero dropped calls.\*Call handover from GSM to CDMA to expand coverage was clever.\*Coverage map was accurate and realistic.\*Device was free with contract. |

After designing a new cell phone and cell phone carrier service, students will create a multimedia presentation to convince the class to vote for their new cell phone, scoring Proficient or higher on the rubric.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Technology Objective | 1 = Needs Much Improvement | 2 = Needs Some Improvement | 3 = Good or Acceptable | 4 = Excellent |
| Use of technology | \*Presentation of new cellphone showed no creativity. \*Presentation was presented using power point.\*Presentation of new carrier was not original or unique.\*Very little or no effort was put into an original or unique concept that would be presentable as a new cellphone or cell phone carrier. | \*Presentation of new cellphone was standard without any new ideas. \*Presentation was presented with allowed program and was suitable.\*Presented a new carrier with some new ideas, but lacked information about the original or unique idea.\*Presentation was short in content and imagery and provided little reason to accept the new cellphone or phone carrier. | \*Presentation of new cellphone was unique and had some new ideas for a new cellphone. \*Presentation has good imagery and narration. Knowledge of existing cellphone technology as a comparison was good.\*New cellphone carrier was acceptable and information provided about new carrier was good.\*Video of the new cellphone in conjunction with new carrier was acceptable. Narration during the video was good. | \*Presentation of new cellphone was excellent and provided in depth information on how the new cellphone would work and its usability. \*Imagery and video content was narrated well and was easy to follow along by the audience. Excellent grasp of the technology presented as well as the technology to present.\*New cellphone carrier was a very unique and original idea. Provided excellent information on the new carrier. |

**Sample Student Work**

[History of the PC](https://youtu.be/dhlMPjibCE0)

[Analog Vs. Digital﻿](https://www.thinglink.com/scene/1071188352750845953)

[New Cell Phone Pt1](https://youtu.be/vSAZZ4b-6Dw)

[New Cell Phone Pt2](https://youtu.be/FkC5xKe1WgY)

[Real World Learning Survey](https://www.surveymonkey.com/r/RXGQQZQ)

A Short Example of Real World Learning



References

A brief history of the Hard Drive!!! [Video file] Retrieved from https://www.youtube.com/watch?v=K4sZKXjkwno

This video was used on my thinglink presentation because not only was it a fun video to watch, but it was also informative. It provided historical relevance to where the hard drive is today.

Academic survey was created using https://www.surveymonkey.com

The survey questions I chose were to get an idea or feeling about how different age groups and education levels feel about Real World Learning.

Analog Vs. Digital was created using https://www.thinglink.com

Best of British Humor - My Blackberry Isn't Working! [Video file] Retrieved from https://www.youtube.com/watch?v=ii0PNk4DjQs

This video was used in my thinglink presentation because it showed creativity in that that it used parady props to convey a message and it is a very funny video on troubleshooting.

Dekker, D. L., (1995), Engineering Design, Atlanta, GA Engineering Education for the 21st Century

Evolution of Memory Storage Devices [Video file] Retrieved from https://www.youtube.com/watch?v=M8Ll9bEBdvM

This video was used in the thinglink presentation to provide the background and history of the storage device. It is very important to know the history of technology. I used this video because it was informative.

History of the PC was created using https://www.kizoa.com

Kopplin, J (2002), An Illustrated History of Computers, Computer Science Lab, Retrieved from http://www.computersciencelab.com/ComputerHistory/History.htm

I found this website to be an excellent source of information. I did not use every image from this article, but I did select a few to use in the History of the PC presentation.

Kopplin, J (2002), The original IBM Personal Computer (PC) [Photograph] Retrieved from http://www.computersciencelab.com/ComputerHistory/HtmlHelp/Images2/IBM\_PC.jpg

It is a picture of a desktop pc. You will notice that there are 2-5.25 floppy drive slots. This computer would only work if the floppy was inserted, because the programs were actually on the floppy. No programs were installed on computers.

Laye, S, History of Computers, https://www.sutori.com/stry/history-of-computers-3a72

I found this website to also be an excellent source of information. Most of the images that I used came from this article, I used them in the History of the PC presentation.

Matrix Runs on Windows XP [Video file] Retrieved from https://www.youtube.com/watch?v=yX8yrOAjfKM

This video was used in thinglink. I just recently came across this video. It shows creativity and pretty decent graphics in order to present an idea. And it is pretty funny in making light of a movie and its themes.

Maxwell, M, Stobaugh, R, Lynne, J, (2015), REAL-WORLD LEARNING FRAMEWORK FOR ELEMENTARY SCHOOLS: Digital Tools and Practical Strategies for Successful Implementation, Solution Tree Press

NETS, (1998), ISTE-3a - Knowledge Constructor, 2007 (ISTE) revised; 2015 revised; June 2016 revised

NETS, (1998), ISTE-4b - Innovative Designer, 2007 (ISTE) revised; 2015 revised; June 2016 revised

NETS, (1998), ISTE-5b - Computational Thinker, 2007 (ISTE) revised; 2015 revised; June 2016 revised

NETS, (1998), ISTE-6b - Creative Communicator, 2007 (ISTE) revised; 2015 revised; June 2016 revised

NETS, (1998), ISTE-6c - Creative Communicator, 2007 (ISTE) revised; 2015 revised; June 2016 revised

NETS, (1998), ISTE-6d - Creative Communicator, 2007 (ISTE) revised; 2015 revised; June 2016 revised

React Remix - Old Computers, Walkmans, Rotary Phones [Video files] Retrieved from https://www.youtube.com/watch?v=2g6oaB4Deno

This is the last video used in thinglink presentation. I used this video to provide a reference point on attitudes towards old technologies. This video shows that the younger people do not have a firm grasp on technology. However, 1 of the kids in the video did acknowledge that these technologies were important in their day.

Segan, S, (July 11, 2017), CDMA vs. GSM: What's the Difference?, PCMag, https://www.pcmag.com/article2/0,2817,2407896,00.asp

This article was helpful in getting information about the cellphone technologies because this article explained the technology in an easily understood language.

Time Magazine [2008], Deep Blue, 1997, [Photograph], Retrieved from http://img.timeinc.net/time/photoessays/2010/bh\_computers/bh\_computers\_15.jpg

I found this article very fascinating, if not historical. It is just a slide show but it provided several images that I used in my Thinglink and kizoa presentation. Each image represents a stage in technology time. This one is a computer that plays chess. It was designed or build to beat the greatest chess player in the world.

Time Magazine [2008], iPhone, 2007, [Photograph], Retrieved from http://img.timeinc.net/time/photoessays/2010/bh\_computers/bh\_computers\_17.jpg

I found this article very fascinating, if not historical. It is just a slide show but it provided several images that I used in my Thinglink and kizoa presentation. Each image represents a stage in technology time. This one is an image of the iPhone when it first came out. I also have a video of the day it was presented.

Time Magazine [2008], iPad, 2010, [Photograph], Retrieved from http://img.timeinc.net/time/photoessays/2010/bh\_computers/bh\_computers\_18.jpg

I found this article very fascinating, if not historical. It is just a slide show but it provided several images that I used in my Thinglink and kizoa presentation. Each image represents a stage in technology time. And this one is an image of the iPad. I am not sure on the date of this image, but it hasn’t been that long since the iPhone was 1st released.

Woodward, C. (April 2, 2018), Nokia-Cellphone-Hand [Photograph] Retrieved from https://cdn4.explainthatstuff.com/nokia-cellphone-hand.jpg

This image was use in my thinklink presentation.This is an image of a very old cell phone. Not too old as this one is probably from around 2005. The pictured phone is what was called a slider or a slider barphone. It was call a bar phone because it was shaped like a candy bar. This was a common style in 2005. The slider part would open to reveal the keypad. Some of these even supported memory cards for music or moving apps to external storage.

Woodward, C. (April 2, 2018), Smartphone-Dialing-Call [Photograph] Retrieved from https://cdn4.explainthatstuff.com/smartphone-dialing-call.jpg

This is an image of a smartphone. Probably in 2011 to 2013. It looks like an old HTC. That was a great phone. I had one. As you can see it was entirely touch screen. This was probably right after the PDA’s died out. And yes, I had one of those. This image was used in my thinglink presentation.

Zimmerman, K.A., (Sept. 6, 2017), History of Computers: A Brief Timeline, LiveScience, Retrieved from <https://www.livescience.com/20718-computer-history.html>

This website was very useful and even though no images were pulled from this site, the information provided was very useful in preparing my presentations.