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| NECC_NETS_small | **Lesson Plan for Implementing NETS•S—Template I*(More Directed Learning Activities)*** |
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| Teacher(s) Name | Julia Hotchkiss |
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| Grade Level(s) | 5th Grade |
| Content Area | Math/Science |
| Time line | 3 days |

**Standards** (What do you want students to know and be able to do? What knowledge, skills, and strategies do you expect students to gain? Are there connections to other curriculum areas and subject area benchmarks? ) Please put a summary of the standards you will be addressing rather than abbreviations and numbers that indicate which standards were addressed.

In math, my students have been taught this lesson without technology and did well. At the end of the year we often revisit standards that may need to be remediated and order of operations is usually in that category. I’m expecting students to be able to correctly use the order of operations to solve a multi-step word problem. I also expect them to gain general technology skills to use with Animoto, GoogleDocs and Audacity. While this specific lesson is centered on this math content standard, the technology can be generalized to be used in all content areas and grades.

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| Content Standards | Math- order of operations (parenthesis, exponents, multiply/divide, add/subtract) |
| NETS\*S Standards: | Students will demonstrate creative thinking, communicate and collaborate with partners, evaluate information, problem solve, practice safe digital citizenship, and use applications effectively.  |

**Overview** (a short summary of the lesson or unit including assignment or expected or possible products)

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| In the math class, my students worked in groups to solve problems like, “Andy has $1,500 and he invested in stock. In one day, his money was doubled. The next day he got a profit of $165 and later loss of $238. Write an expression for this and determine his present amount.” They created a step-by-step video of the correct order of operations to solve the problem. After making their video, each group collaborated on a GoogleDoc to make a script and create a podcast with Audacity to identify any possible problems (think tips for other students) and “challenge” a new group with a new problem. |

**Essential Questions** (What **essential question** or learning are you addressing? What would students care or want to know about the topic? What are some questions to get students thinking about the topic or generate interest about the topic? Additionally, what questions can you ask students to help them focus on important aspects of the topic? (Guiding questions) What background or prior knowledge will you expect students to bring to this topic and build on?) Remember, essential questions are meant to guide the lesson by provoking inquiry. They should not be answered with a simple “yes” or “no” and should have many acceptable answers.

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| \*What is the order of operations? \*How can a word problem be translated to an expression?\*How can you teach another student how to solve multi-step problems?\*How can we make a real-world multi-step problem? |

**Assessment** (What will students do or produce to illustrate their learning? What can students do to generate new knowledge? How will you assess how students are progressing (*formative assessment*)? How will you assess what they produce or do? How will you differentiate products?) You must attach copies of your assessment and/or rubrics. Include these in your presentation as well.

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| Students will produce a video to show how to solve the multi-step word problem. They will then assess their own learning by telling others what potential mistakes can happen on their own podcast, and will “challenge” other students by creating a new real-world problem for them to solve. Students will be asked daily to tell the order of operations. As students are solving their problems (before making the video) I will monitor their progress and make sure that each group has solved the problem correctly. When they have solved their problem correctly, the students will work together to make a video of their steps, using Animoto. Students will be given a rubric to help them guide their video. Lower level students will be given a guided worksheet for their video, that is broken up in to the order of operations. After creating the video, students will be asked to collaborate on a GoogleDoc to make a script for their podcast. In their podcast, they will tell about possible problems when solving multi-step problems, and will challenge other students to solve a real-world problem of their making. Students’ videos and podcasts will be graded using the rubric attached that covers: follows correct order of operations, includes all steps in video, creates script for podcast, includes at least 1 possible problem, and makes a real-world problem that has 3 or more steps.  |

**Resources** (How does technology support student learning? What digital tools, and resources—online student tools, research sites, student handouts, tools, tutorials, templates, assessment rubrics, etc—help elucidate or explain the content or allow students to interact with the content? What previous technology skills should students have to complete this project?)

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| The Animoto video helps my students see step-by-step how to solve multi-step problems correctly, and the podcast helps my students assess their own learning and create new problems.All of mystudents will have previous experience with GoogleDocs, but not with the other applications. I will have a few that already have used Animoto and Audacity, and can help peers or group members when needed. |

**Instructional Plan**

**Preparation** (What student **needs, interests, and prior learning** provide a foundation for this lesson? How can you find out if students have this foundation? What difficulties might students have?)

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| Students prior learning is pretty extensive. They have been taught the order of operations and should have memorized the steps (Please Excuse My Dear Aunt Sally mnemonic). They also have general knowledge of how to operate the Chromebook and GoogleDocs. Students may have difficulties with using the new programs, Audacity and Animoto.  |

**Management** Describe the classroom management strategies will you use to manage your students and the use of digital tools and resources. How and where will your students work? (Small groups, whole group, individuals, classroom, lab, etc.) What strategies will you use to achieve equitable access to the Internet while completing this lesson? Describe what technical issues might arise during the Internet lesson and explain how you will resolve or **trouble-shoot** them? Please note: Trouble-shooting should occur prior to implementing the lesson as well as throughout the process. Be sure to indicate how you prepared for problems and work through the issues that occurred as you implemented and even after the lesson was completed.

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| During the lesson, students will work in small groups by dividing up the desks in the classrooms, so that they can work together. We have a classroom set of Chromebooks; so all students will be able to access the internet and applications at the same time. As it will arise, the nature of this project and the applications used will be more beneficial for each group to work it out first on paper and then designate one student to input the information. Groups that are having trouble working well together can have jobs that they are responsible for, but everyone will still contribute to the project. In each group it will help if there is someone experienced with each application (Audacity and Animoto) so that they can assist peers when they come to a question. Also, groups may be modified during instruction if needed.  |

**Instructional Strategies and Learning Activities** – Describe the research-based instructional strategies you will use with this lesson. How will your learning environment support these activities? What is your role? What are the students' roles in the lesson? How can you ensure **higher order thinking at the analysis, evaluation, or creativity levels of Bloom’s Taxonomy**? How can the technology support your teaching? What authentic, relevant, and meaningful learning activities and tasks will your students complete? How will they build knowledge and skills? How will students use digital tools and resources to **communicate and collaborate** with each other and others? How will you facilitate the collaboration?

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| In this lesson, I will incorporate collaboration between students and students as investigators. My students will create a new video per group and explain how to solve multi-step problems. They will work together and analyze what worked for them when solving the problem and how they can help others not to make the same mistakes. They will also use their creativity when making the video and their podcasts. My role in the classroom is a facilitator. I will provide resources for the students and be available when needed, but I will not guide the entire class through the steps to make each of the products.  |

**Differentiation** (How will you differentiate **content and process** to accommodate various learning styles and abilities? How will you help students learn independently and with others? How will you provide extensions and opportunities for enrichment? What assistive technologies will you need to provide?)

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| To differentiate my content and processes, I will provide extra resources to my lower students. For example, during the work time to solve the problem, before the video, the lower students will have access to our anchor chart used when first teaching the order of operations. When working on the video, they will be able to look at guiding steps to help them understand what should be included (Step one: What operation should be used first in this problem? How do you know?). To accelerate, my higher level students will be given a more difficult problem that covers the same standard. They will also be able to explore more of the applications to make a more unique product. |

**Reflection** (Will there be a closing event? Will students be asked to reflect upon their work? Will students be asked to provide feedback on the assignment itself? What will be *your process* for answering the following questions?

**•** Did students find the lesson meaningful and worth completing?

**•** In what ways was this lesson effective?

**•** What went well and why?

**•** What did not go well and why?

**•** How would you teach this lesson differently?)

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| To find out how this lesson went, I will send a GoogleForm to my students to assess the assignment’s worth. Students will help me decide if it is a project to continue using in years to come. As far as in my classroom, when looking at students’ quick summative assessment on order of operations after the assignment is completed, I will be able to see if this helped my students who were having difficulties in this area. I will also be able to tell from the products produced if the lesson was effective and if it went well. In the classroom during the assignment I will be able to gage from the students’ reactions and interactions if there was too great of expectations or if they needed more prior knowledge with the programs to succeed. If I were to teach this again, I would make sure that ALL students had prior experience with the programs and felt confident with them. I would also make sure to group students with a purpose. As it is closer to the end of the year, I have more knowledge on what students work well with each other, and which do not. My groupings did not go well because I grouped them randomly without considering what personalities may be mixed. Finally, I would allow the students to assess themselves and their groups in addition to the rubric their work is assessed on. This would create a more accurate picture on who did what in the groups.  |

**Closure:** Anything else you would like to reflect upon regarding lessons learned and/or your experience with implementing this lesson. What advice would you give others if they were to implement the lesson? Please provide a quality reflection on your experience with this lesson and its implementation.

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| When implementing this lesson, I was very excited to start my students off well on creating videos for the class. I thought that having step by step videos would be an excellent learning and teaching tool for my students to use in the classroom. Even though I have encountered it before, I always take their knowledge (or lack of) for granted. My students had such a difficult time even using the programs that the essential questions were soon forgotten and the applications became the total focus of the class. Now, I know that my students need MUCH more experience with anything we want to use as a tool before it becomes a tool and not the focus. I did enjoy teaching them how to use and enhance videos and audio recordings but didn’t feel as if I accomplished much math-wise. I would suggest for others hoping to implement in their classes, that they provide as much learning experience as possible with Animoto and Audacity prior to the lesson. I would also suggest that they use jobs for the students so that everyone has a focus and isn’t trying to accomplish everything at one time. An exemplar of the project would help students visualize what they are aiming for and serve as something to compare their work to.  |