

EPISODE: ONE	TITLE OF LESSON: The New Age Encyclopedia (Google)	
AUDIENCE: 4-12th Grade		DURATION: 60 Minutes
LEARNING OUTCOMES: <ul style="list-style-type: none"> • Find relevant and accurate information to improve practices • Demonstrate proficiency in using the feedback from various sources to improve practices • Persevere in problem-solving and critical thinking 		
LEARNING OVERVIEW: <p>Students begin, at a basic level, persevering through problem solving in order to apply that understanding at a deeper level at the end of the lesson. Students are required to use feedback to improve their practice, reflect on where they experienced challenges, and articulate how they persevere in solving them.</p> <p>This lesson will also utilize concepts drawn from the ISTE Student Standards, specifically standard 1, Empowered Learner.</p>		
IN THIS LESSON: <p>The students will be challenged to use the new concepts and skills they have learned from the episode to help improve their ability to solve the electrical chips puzzle. They will then create an audio recording to share their reflections on where they got stuck and how they overcame these difficulties.</p> <p>Students will also attempt to complete a more difficult version of the electrical chips challenge that they completed earlier in the episode. This version of the challenge will have 5 chips instead of 4 chips. Students must solve this puzzle in the least amount of moves possible.</p>		
FINAL PRODUCT: <p>Students create a Hack-Style Audio recording explaining where they got stuck while trying to complete this challenge.</p>		
FACILITATOR RESOURCES: SLIDES LINK: Instructional Content Video		ADDITIONAL MATERIALS NEEDED: <ul style="list-style-type: none"> - Timer/Stopwatch (or Google Timer) - “Restore The Power” Activity Link - Online Voice Recorder
FLOW OF LESSON: <ul style="list-style-type: none"> - Intro <ul style="list-style-type: none"> - Revisit “Tower of Hanoi” directions and rules - 5 Minutes to attempt the challenge with 5 chips while logging and discussing their struggles <ul style="list-style-type: none"> - Teacher Tip: you will want to try this puzzle yourself before teaching it. Most students will get stuck on messing up the first move which then sets them off. - Teach the information in the lesson Slidedeck - Guide students to the name of the puzzle <ul style="list-style-type: none"> - Questions: Does anyone know what this thing is called and how do we look it up? - How do we look for something if we don't know what the name of it is - What is this thing we are doing? (possible answer: Puzzle) - What are we doing in this puzzle? (possible answer: Stacking) - Guide them into googeling “stacking puzzle” but do not give them the answer directly - Students search for information on the internet to see where they are having trouble, in regards to completing the puzzle in the least amount of moves. 		

- **Students seek feedback from other students in their group as well as the internet**
- **Students then discover a way to execute solving the puzzle effectively and record their success.**
- **Students work together to explain their hack/formula/method for completing the challenge in the most efficient manner (least amount of moves) possible**
- **Key Questions**
 - **What is the pattern for completing this in the least amount of moves?**
 - **Is this the only way to succeed in the least amount of moves?**
 - **If so, why is it the only way? (It is an “algorithm”)**
 - **What did you notice about the “hack”**
- **Then teach them how to generate the recording**
- **Lastly students record their work/progress**
 - **Include struggle areas**
 - **How you accomplished it**
 - **Why you were successful**
- **See activity section of this document for more details**

INTRO:

TELL STUDENTS: You will have 5 minutes to attempt to solve the challenge. This challenge is a 5-Chip version of the challenge you completed in the Episode 1 gameplay. When the timer goes off, stop all attempts & take one minute to jot down where you experienced difficulty.

Allow students that time to attempt to solve the 5 chip challenge & have students jot down where they are experiencing difficulty.

Set the timer for 5 minutes.

Give them a few minutes to share their experiences.

Here are some questions you can ask to help you transition into teaching the google search content

- If you ran into a problem you could not figure out while playing a video game, what would you do?
- What internet sites have helped you solve problems in the past?
- When would you need to use social media to solve a problem VS YouTube?
- Given our current Power Grid challenge, what tools do you think would be most useful?

INSTRUCTION:

ASK STUDENTS: How often do you (or have you seen your parents) look up the answer to something you/they don't know? (there are other questions on the powerpoint slides)

CONTENT on SLIDES.....

Teacher Tip: Some research indicates that the ability to critique other students' projects can be a sign not just of knowledge acquisition, but of transfer to a new circumstance. This activity can also be used as a diagnostic for how well students are synthesizing and applying knowledge.

ACTIVITY:

Overview:

- If your students have just completed the Quest Episode 1 challenge called “Restore Power” then your students have already attempted to solve a complex challenge without technology. As a class (or homework assignment) students will re-attempt a slightly more complicated version of this challenge while keeping track of their score (the amount of moves it takes them to complete the challenge). Students are then given instruction on how to use google search features to locate critical information and must leverage that instruction to discover the most effective way to complete the 4-chip version of the puzzle. The last step of this activity is that students will log their challenges and successes by creating a hack-style audio recording of the process they went through

Objective:

- Students demonstrate their application of feedback and research to create an audio recording detailing their struggles and successes while trying to complete the more complicated version of the puzzle in the most effective way possible

Activity Set Up:

- To begin this activity you will instruct the students to work with their tribes to find the most effective way to solve a more complex version of the problem they (hopefully) solved in episode 1 of their Quest gameplay
- Instruct them that they will have to solve the same power grid challenge using 5 chips on the 3 circuit boards instead of the 4 chips and 3 circuit boards

Activity Step 1:

- Begin this activity by reviewing the “Restoring Power” instructions
- Then allow your students 5 minutes to play around with the 5 tier chip version of the tower of hanoi puzzle

Activity Rules:

- Object of the game is to move all the chips from Tower 1 over to Tower 3.
- But you cannot place a larger disk onto a smaller disk

Activity Step 2:

- Allow the students to use the skills they learned in the instruction phase to try to complete the new challenge and have them ask for feedback from their peers as well as search the internet for key information on how they can complete the 5 chip version of the puzzle in the most efficient way possible (least amount of moves)

Activity Step 3:

- Challenge the students to attempt to complete the 5 chip version of the puzzle in the most efficient way possible (least amount of moves)

Activity Step 4:

- Teach the students how to use the Audio recording application (or any audio recording application you desire for them to use)
- Teach students about Hack-Style audio recording.

Activity Step 5

- Instruct the students to create recordings of their hack-style audio recording. Have them share their content with you and if there is enough time left, allow them to share their results with the class

Activity Discussion Questions:

- What type of puzzle is this?
- How would you like or describe this puzzle?
- What would you search to find information about this puzzle?
- Is there another name to this type of puzzle?
- Where should we go to find information on this kind of puzzle?

- Where are you messing up in the sequence?

Example:

- Click this [link](#) to listen to an example of an audio recording

CONCLUSION:

Students share their audio clips with the class. Depending on how much time is remaining in class, you may just call on a few groups to share their recordings.

Vocabulary

- **Sequence** - A particular order in which related events, movements, or things follow each other.
- **Struggles/ Challenges** - A thing that is difficult to achieve or accomplish
- **Audio Recording** - Audible information recorded and saved into a file
- **Feedback** - Information about a person's performance of a task, etc. which is used as a basis for improvement
- **Hack** - A formula, process or method used to successfully complete a challenge every time it is used

DISCUSSION QUESTIONS: (If time permits)

Here are some discussion questions you could ask to conclude the assignment:

- Why did you use the tools you did to solve the problem?
- Did any of you attempt to solve the challenge using more layers? If so, why?
- What interesting information did you discover while solving this challenge?
- How might this approach of improving your skills by using the internet apply to future problems you face?
- What problems do you face in your personal life today that may be helped with this approach?
- When you were completing the challenge, how did you communicate with team members who were seeing things differently than you?

The goal of some of these questions is to get students thinking about future ways they can use and apply the skills they learned in this lesson.

Differentiation Tips:

The goal of differentiation is to give every student access to understanding or solving a problem. We do not want to take away the opportunity to think through the challenge, but rather give them the scaffolding necessary to reach their own conclusions.

- Guide students in reflecting on what was challenging about solving the problem in the episode. Allow students to go back and revisit the episode as a refresher. Ask students what points were challenging and how they were able to move past them. Highlight those same strategies for this challenge.
- Allow students additional time with the challenge at the beginning of the lesson, and consider a more guided questioning approach through this initial challenge if students appear to be getting stuck. (Too much time spent at this point of the lesson may yield more frustration. The goal is simply to give students an attempt to grapple with the challenge, in order to explore different ways to solve it.)
- If students are struggling with 5 chips on the circuit board, reduce the number of chips for students to reach success, and slowly add an additional chip back in.
- If necessary, partner students together as they search online for different ways to solve the challenge or as they create their audio hacks. If necessary, pull a small group of students aside to guide them step by step through their audio recording.