Virtual Reality Crime Scene Class

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Virtual Reality Crime Scene w/ CoSpaces

Unit Description:

Standards:

ISTE STANDARDS

Empowered Learner: Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

LITERACY STANDARDS

Learning Objectives:

Students will do the following:

- Explore virtual reality and the features of Cospaces
- Investigate how forensic science is used in criminal investigations
- Write a crime scene mystery based on the scene outline document.
- Create a crime scene in collaboration with peers using Cospaces.io
- Shoot 360 degree video and photos with a Ricoh Theta Camera
- Merge the real world with virtual reality animations
- Use the scientific process to solve a fictional crime scene created in VR by peers.
- Write a rich, descriptive account based on observations in VR.
- Discuss the P^5BL experience and other applications for this technology.

Materials:

Physical Materials: Charged iPads and/or computers. If using free version, Teacher will need to create one generic login for groups to use. This will limit forgotten un/pw and keep all shareable content in one space. If using Paid EDU version refer to teacher tips below. Virtual Reality Crime Scene Check List. Physical or digitized version of the PBL challenge.

Digital Materials: CoSpaces.io. And Youtube tutorial videos on features of CoSpaces.

CoSpaces Website Breakdown

Teacher Tips: Login and Dashboard (free version)

- CoSpaces has a login and dashboard where your ‘spaces’ are saved.
- You have access to a Gallery of work that has been made public. You can save these spaces to your own space and ‘deconstruct’ them to see the guts of how they are put together.
- Students can log in and work in individual spaces, but it is difficult for multiple students to work in the same space at the same time due to perspective control. Only one student can be in control of the view.
- You can name each space by clicking on the three dots and typing in a suitable name.
- Library, upload, environments, and marketplace options are all available within a newly created project.
- Based on student ability you can have them make simple scenes to tell stories, or do advanced coding of objects. Don’t be afraid to get your feet wet with your students. The biggest breakthroughs in the classroom happened with you are learning beside your students.

Teacher Tips: Login and Dashboard (EDU paid version)

- In addition to the login and dashboard where your ‘spaces’ are saved you have classes.
- You can have multiple classes, and name each class a different section.
- Each class will have a join code that you will share with students. They will create a student account based on the join code by going to login, selecting student, and using the code you provide.
- Students will see the class they just joined. When they click on it they can see any assignments you have assigned the group.
- When you, the teacher, click on the class you can see each assignment you given. When you click on the assignment you will see each student's name and have access to their space.
- To create an assignment you simply click “create an assignment” and type what design project you want students to work on.
- Only the teacher and the student will have access to the space. Currently collaborative work is not available for projects, but you can have a group work within on account.

Web Resources:

https://www.fws.gov/lab/csi_basics.php

http://www.crime-scene-investigator.net/dutydescription.html

Terminology:

CoSpaces-a web based virtual reality creation platform.
Virtual Reality- computer/camera generated simulations of three dimension images or environments that can be interacted with in a seemingly real way by a person using special electronic equipment such a viewer or headset.
Blockly-client-side JavaScript library for creating visual blocks of coding. Uses visual blocks to that link together to make writing code easier.
Plane-a flat two dimensional surface that extends infinitely far. The workspace foundation you will build your Virtual Reality environment on.
Polygon- meaning many sides, it is a shape made up of straight lines that is enclosed.
Sequence-the order in which related events, movements, or things follow each other. For CoSpaces this will reference the sequence of scenes, or code.
3D objects-a mathematical representation of any surface of an object in 3 dimension. In this case, one of the options of shapes you can add to your space.
PNG-Portable Network Graphics, a format for storing photos that typically have a transparent background. In this case, the format extension of photos you want to upload into CoSpaces.
Forensic science-the application of science to criminal and civil laws mainly on the defense side of a criminal investigation.
Suspect-a person thought to be guilty of a crime
360 degree Photo--is a controllable panoramic image that surrounds the original point from which the shot was taken

Tech Setup and Instructions:

iPads and Login Procedures:

Before Class

- (**If using iPads)** Make sure CoSpaces app or CoSpacesEdu app is loaded onto the iPads (CoSpaces updates frequently, so check the night before class or right before/coding not available on app).
- Have a group login and password created and share with students on index cards or have written.

- Print first day letters home granting access at home and explaining the platform and objectives.
- **(If using iPads)** Pre Assign students iPads and have them sign off receiving. They will work on this particular iPad for the duration of class.

Beginning of Class

- Prior to distributing iPads, go over your pitch for Virtual Reality and technology expectations.
- Introduce the Problem based narrative to the class and the learning objectives.
- Hand out iPads (or have them sign into computers) and logins.
- If using computers, make sure computers are powered on, and have the website written so students can see.
- Project CoSpaces on board, and give them a tour of how to use the site. Have them follow along.
- Let them explore the website.

Troubleshooting:

If for some reason the internet does not work on one or two of the ipads, it is acceptable for students to pair up the first day. If the internet is down completely, have them brainstorm on paper, or in the notes app of what kind of crime scene they can create in CoSpaces.

Additional Tips:

To prevent loss of instructional time due to technology problems, check iPad connectivity prior to class starting.

Pitch/Plot (5-7 minutes)

Backstory:

Congratulations! ! You have just been hired by CSI: STEAMPunksEdu as part of the forensic science team, and will be using Virtual Reality to help bring justice to the world! First you must learn how to use the CSI Crime Scene Preservation System: CoSpaces. In order to build a virtual case file you must visit the crime scene, gather information from witnesses, create a victim profile, collect evidence, and then build a Crime Scene profile in VR in hopes that the suspect will be apprehended and your VR Case File will persuade a jury! Good luck young STEAMPunk!

Teacher Script: Welcome to the first day of Virtual Reality Crime Scene Investigator! We will be using Cospaces, a virtual reality platform to create our own Virtual Reality environments. In the case of this specific class we will be using CoSpaces to recreate crime scenes and launch our own investigations. You will be working in groups to write a scenario, create a crime, evidence, witness testimony, suspects, and lab results all within the platform of CoSpaces. To do this, you

will need to learn how to use all of the features, including Blockly or Script Coding. We will be going over these features each week and adding new skills to our tool belt. Feel free to go ahead and explore the tutorial videos that are on youtube and made by STEAMPunksEdu to help guide your investigation formation.

With Virtual Reality being one of the 14 grand challenges as outlined by the NAE, it is important to be introduced to this technology and learn the various ways it can be used to solve problems.

Can anyone identify ways VR has or could be used to solve problems today or in the future? Students will probably respond with medical field, gaming, simulations, fears, exercise, etc.

Getting back to the topic of a crime scene, how can this technology help detectives? (give students a moment to answer then show the following videos that explore the use of VR in actual crime scenes and how it works). How can it prevent the damaging of evidence?

VR in CSI Video Hook

https://www.youtube.com/watch?v=A0Dk1rqTdbA

https://www.youtube.com/watch?v=Yj9g2FU9IdE

(For teacher if interested in making a personalized video--Video clip that can be added as a video background for a teacher created video telling the story and establishing the Problem and Objectives.
http://www.youtube.comv=T2KwbhQwTRQ)

*Teacher Script: Now I'm going to give you guys your assignment! Goodluck aspiring investigators...*Video Plot for Assignment

https://www.youtube.com/watch?v=74TNzRkdeGc

Video Plot with Questions

https://www.playposit.com/listcode/622527/n4cce6

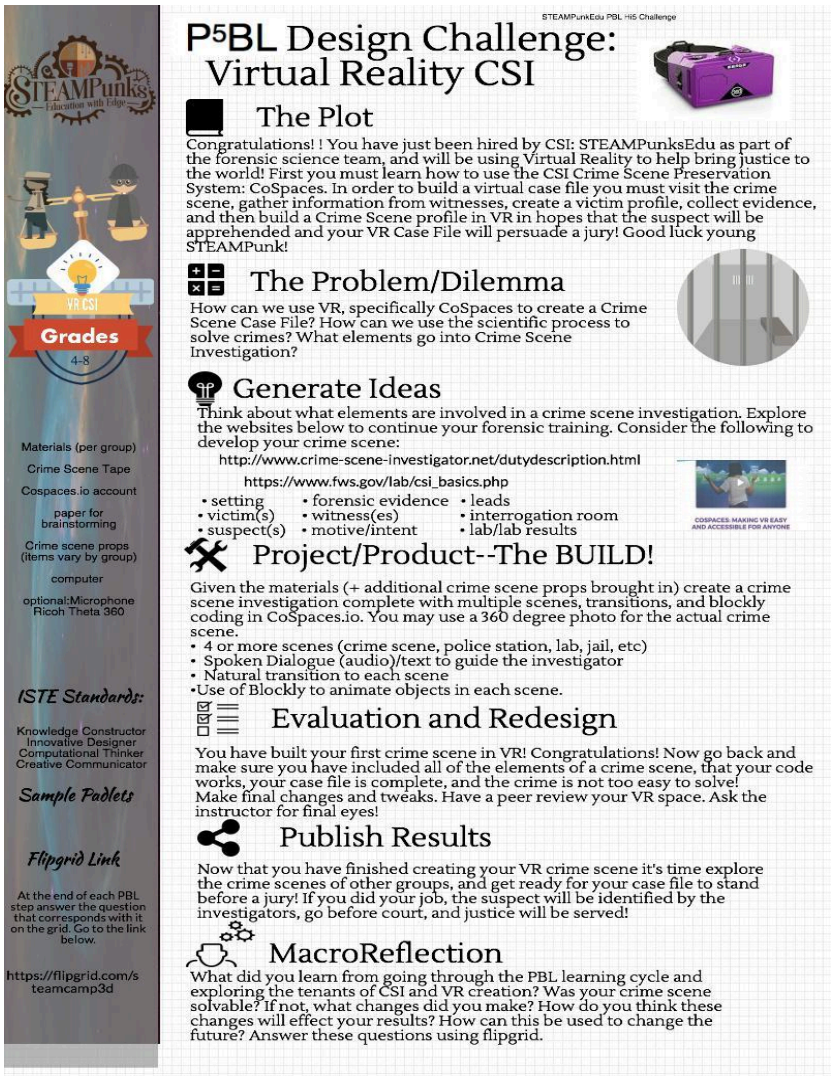
Teacher Note: *When creating your contextualized plot video summary of the assignment, you may opt to use an active watching video platform like playpostit, or Edpuzzle. Embedding questions about the upcoming assignment prompts students to reflect on what it is you asking them to do, and helps keep them engaged with the video while highlighting expectations.*

[Script for Video](#)--Feel free to customize it with your own name.

Share the P^{5}BL Design Challenge Guide on Virtual Reality CSI either digitally or print with students as an assignment overview.

[Link to PBL document](#)

P5BL Design Challenge: Virtual Reality CSI Handout



Questions to ask:

- What elements revolve around a criminal investigation and a crime scene?

  (forensic evidence--testimonial evidence/physical evidence, impressions, fingerprints, dna, weapon, etc., suspects, witnesses, crime scene itself, body or person wounded...

- What is the job description of a crime scene investigator?

  (The Bureau provides support services in the form of crime scene processing, fingerprint identification, and forensic imaging to department entities and other agencies. The goals and objectives of the Crime Scene Investigations units are the collection, preservation, packaging, transportation, and documentation of physical evidence left at the crime scene. Reference: http://www.crime-scene-investigator.net/dutydescription.html).

- How do we document a crime scene?

With this knowledge, and your objectives in mind you're ready to move on and begin exploring the design challenge and CoSpaces!

Problem Scenario/Design Challenge

You will be creating a crime scene scenario based on your research of what it entails to be a crime scene investigator. You will design a crime, a criminal, suspects, witnesses, & evidence that a CSI will use to determine who the criminal is, and then write a plan for creating this crime mystery in Virtual Reality. You don't want to give away all of the information in the beginning. Make it challenging for another team of your peers to solve the crime. In addition to using the objects in the Cospaces library you will also use a 360 camera, blockly code, and multiple scenes to progress your storyline.

Generate Ideas

How can we use VR, specifically CoSpaces to create a Crime Scene Case File? How can we use the scientific process to solve crimes? What elements go into Crime Scene Investigation?

Use the following websites to explore various elements that are part of a CSI investigation to be better informed on how to write your own. Start brainstorming what kind of crime scene you would like to build, and who your criminal will be.

1. **Duty of a Crime Scene Investigator**

http://www.crime-scene-investigator.net/dutydescription.html

2. **Documentation of a Crime Scene Investigator**

http://www.crime-scene-investigator.net/document.html

3. **Basics of CSI**

https://www.fws.gov/lab/csi_basics.php

Assignment #1:

Brainstorm

Individually post to the community knowledge building padlet. Use the following link:
Post several ideas for a crime, a crime scene, and how you could possibly build out 1-3 scenes using CoSpaces.

Assignment #2:

Cospaces Sandbox

Have students join Cospaces EDU with the join code for the class. Create an assignment ahead of time called “Cospaces Sandbox” and ask students to demonstrate knowledge of the following features:

- Change the environment
- Change the time of day
- Add objects to the design plane
- Manipulate the size/rotation of an object
- Tag an object
- Change the color of an object
- Explore the Blockly/script code feature

**list the CoSpaces youtube channel as an additional resource to watch if students get stuck or want to learn how to do something and go ahead of the class. Float around and make sure all students can complete the listed tasks.

Cospaces + Explore Resources

Using the previous websites to inform your knowledge of crime scene investigations, it is now time to start planning out your CSI in full detail. Use the Crime Scene Blueprint Handout to develop your project. Use google to help resolve any knowledge gaps.

Assignment #3

Crime Scene Blueprint Handout

Additional Scaffolding: For students struggling to write an original scenario**,** provide an image of a crime scene, or an already written crime scenario to reproduce in VR.

Cospaces + Project/Build

Now it's time for students to take their crime scene bluprint and apply it to the Cospaces platform. Use the VR Storyboard to help students plan out their projects before they begin building in Cospaces.

Assignment #4

Use the VR Storyboard to begin planning each scene in your crime scene investigation. The evidence should be spread throughout all the scenes, with the final scene asking for the viewer to solve the crime scene. Use the following guidelines:

Given the materials (+ additional crime scene props brought in) create a crime scene investigation complete with multiple scenes, transitions, and blockly coding in CoSpaces.io. You may use a 360 degree photo for the actual crime scene.

- 4 or more scenes (crime scene, police station, lab, jail, etc)
- Spoken Dialogue (audio)/text to guide the investigator
- Natural transition to each scene
- Use of Blockly to animate objects in each scene.

CoSpaces VR Storyboard

Additional Tips:

For students that are struggling with translating their stories into VR, hand them a storyboard with already labeled with what each scene should be (ex--crime scene, forensic lab, witness testimony, suspect line up, ending scene with criminal revealed.)
Suggest which scenes to put the various types of evidence.

Evaluation/Redesign

Students have finished their first drafts of their crime scenes in Cospaces. Have students in the group take turns walking through the project with a VR headset and device. Did they include all of the elements?

Assignment #5

Peer/Self Review

You have built your first crime scene in VR! Congratulations! Now go back and make sure you have included all of the elements of a crime scene, that your code works, your case file is complete, and the crime is not too easy to solve!
Make final changes and tweaks. Have a peer review your VR space. Ask the instructor for final eyes!

Publish Results

Students have finished final tweaks, and you have reviewed and offered feedback on changes to make for the final publication. Now it's time to share with the class, parents, and other community showcase forums! Post the links to the cospace spaces or create QR codes for parents and groups to scan.

Assignment #6

Crime Scene Investigation Walk Through in VR

Now that you have finished creating your VR crime scene it's time explore the crime scenes of other groups, and get ready for your case file to stand before a jury! If you did your job, the suspect will be identified by the investigators, go before court, and justice will be served! As you walk through keep a observation journal to write down facts, collect evidence, and record witness and suspect interviews. This will be turned in and count as part of project completion.

Have students explore this website prior to going through each other's crime scenes.
http://www.crime-scene-investigator.net/document.html

MacroReflection

What did you learn from going through the PBL learning cycle and exploring the tenants of CSI and VR creation? Was your crime scene solvable? If not, what changes did you make? How do you think these changes will affect your results? How can this be used to change the future? Answer these questions using flipgrid..