Final Project- Inference Investigators

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Analysis Report - Inference Investigators

Abstract

"Inference Investigators: The Virtual Escape" is a digital escape room project designed for fourth-grade students to enhance their skills in making inferences from fiction and non-fiction texts, as well as identifying and constructing complete sentences. Utilizing a variety of digital tools, this project leverages the principles of gamification to increase student engagement and motivation. Gamification involves incorporating game design elements—such as challenges, rewards, and storytelling—into educational activities to foster a more engaging learning experience. Research indicates that gamified learning environments positively impact student motivation and promote long-term retention, making them ideal for addressing fourth-grade language arts standards. By integrating interactive, problem-solving tasks into the escape room, students will practice inferring meaning from texts as well as correct run-on and fragmented sentences in a social environment that will foster teamwork and communication skills. This project aims to meet educational standards while providing a fun and exciting learning experience tailored to the students' interests and needs. Incorporating technology ensures accessibility, improves collaboration, and caters to a variety of learning styles.

Topic

Inference Investigators: The Virtual Escape

We are creating a digital escape room project for fourth-grade students to learn about and demonstrate their mastery of making inferences about fiction & non-fiction texts, as well as making complete sentences from sentence fragments and run-on sentences. This will be hosted in a Google form for ease of assigning and student access.

Literature Review

Making inferences can be a challenging task for fourth-graders. This is a complex skill that requires critical thinking skills, back-ground knowledge, vocabulary skills, and life experiences. In fact, it is more difficult for students to make inferences from a piece of literature than it is to answer literal comprehension questions. For students reading below grade level, making inferences can be an exceptionally difficult task. However, evidence shows that explicitly teaching the steps to making inferences and offering frequent practice can significantly benefit struggling readers. (Hansen & Pearson, 1983) To make complex skills more accessible and engaging, educators and instructional designers are turning to strategies like gamification to enhance student motivation.

Gamification is a tool that educators can use to increase student motivation and engagement. While games in general are for entertainment purposes, gamification is the process of applying game design elements to lessons and learning activities for educational purposes. More specifically, gamification in academics can be defined as

“the application of game design elements and principles in non-game contexts to motivate and engage users.” (Cloke, 2024)

A number of studies have been conducted about gamification in the classroom as well as the benefits on student motivation and long term learning. One of these studies is Fernando and Premadasa’s (2024) *Use of gamification and game-based learning in educating Generation Alpha,* which suggests that engaging and hands-on physical and virtual learning systems will be necessary to meet the learning needs of today’s young students. Gamification has the potential to provide engaging content in both the physical and virtual classroom. In this study, the authors conclude that gamification elements such as “storylines, narratives, avatars, and rewards played a significant role in enhancing student engagement, motivation, and enjoyment of the learning process.” Levels, points, and feedback have also shown to increase engagement; however, leaderboards during gamification received negative outcomes, especially among struggling learners. (Fernando & Premadasa, 2024).

Another study titled *How Does Gamification Bring Long-Term Sustainable Effects on Children's Learning* (2024) focuses on the long-term benefits of gamification with an emphasis on reading. This study argues that gamification can provide long-term and sustained effects as long as certain conditions are met. In order for gamification in reading instruction to be effective it is important to provide children with a clear task when reading and to establish a presence of a clear goal for learners. Furthermore, effective gamification pedagogies should incorporate high-quality content, address

learners' hierarchy of needs to activate their intrinsic motivation, and should meet learner's needs for social connection. (Li, Yang & Chu, 2024)

A third study titled *Gamification in Education* (2015) acknowledges that students often feel bored with school and that educators struggle to keep their students motivated and engaged. This is important to recognize, especially when designing a reading activity with gamification. The goal of this project is to motivate and engage students as well as reduce boredom during the activity. This study does not provide specific information on gamification benefits for primary education, but it does demonstrate an overall positive view of gamification in the educational setting and states that the "majority of the authors of the reviewed papers share the opinion that gamification has the potential to improve learning if it is well designed and used correctly." (Darina, Dichev, Agre, & Angelova 2015)

Chen and Liang (2022) conducted a study titled *Play hard, study hard? The influence of gamification on students' study engagement* that focuses on increasing student engagement through gamification. They highlight "lack of learning-fun" and students' lack of motivation to stay engaged in classroom activities. Though the majority of the study focuses on higher education, they hypothesize that "young users may be more active in enjoying and accepting gamification education" due to the fact that they get bored faster than older students (Chen & Liang 2022).

Our literature review effectively demonstrates the challenges fourth-graders face when making inferences and highlights the potential of gamification as a valuable instructional strategy. The research supports that gamification can enhance motivation,

engagement, and long-term learning when implemented with clear goals, quality content, and learner-focused elements. By integrating gamification into inference lessons, educators can create a more dynamic and enjoyable learning experience, ultimately helping students develop critical reading comprehension skills.

Needs Analysis

Making inferences is a fourth-grade standard in the state of California. By the end of the school year, fourth-grade students should be able to refer to details in a text to support an inference (California Common Core State Standards RI.4.1 and RL.4.1). The third-grade equivalent standards (RL.3.1 and RI.3.1) state that students should be able to ask and answer questions about a text, using details and information from the text to support those answers. Making an inference takes this further, by requiring students to understand information that they aren't explicitly told in the text. fourth grade is the first year that this is required of students. Using complete sentences as opposed to run-on or fragment sentences is another necessary fourth-grade standard (L.4.1.f). It is expected that students will be able to identify run-on sentences and sentence fragments by the end of the year, as well as write those into complete, proper sentences.

Identifying and using complete sentences is an area of need for the students, as well as an educational standard they should reach this school year. The teacher provided authentic writing samples of students responding to reading comprehension questions. This cross section of student work showed their ability to draw conclusions from a non-fiction text and demonstrated their level of mastery towards using complete sentences and proper mechanics of writing in short form response writing.

The students in this class have a range of reading levels, going from kinder to seventh grade. The majority of the students are reading at a third or fourth grade level. Any text given to this class needs to be accessible to all students, not just the majority. To meet this need, the project will have to include leveled texts and images to support student reading, comprehension, and ability to make inferences. This project will be designed with a Universal Design for Learning (UDL) approach in mind so as to a) best meet the needs of all learners and b) give them all a point of access to the task rather than locking them out due to reading ability.

Based on the needs of the students for building skills to reach state standards, our learning goals are:

1. Students will be able to make inferences from fiction and non-fiction texts, using complete sentences to relay those inferences.
    a. Making inferences is a key part of critical thinking and media literacy. In the current landscape of information being spread faster than it can be verified, it is crucial for students to develop their ability to make inferences.
2. Students will be able to identify complete sentences, sentence fragments, and run-on sentences.
    a. Use of proper grammar and mechanics of writing is essential for students to become clear and strong communicators.
3. Students will be able to correct run-on and fragment sentences to make complete sentences.

a. Use of proper grammar and mechanics of writing is essential for students to become clear and strong communicators.

This class has 1:1 Chromebooks and uses Google Classroom and the Google Suite to interact with educational materials. The students have a basic, age-appropriate level of understanding of using educational technology to learn new information, complete activities and assignments, and to complete assessments. The format of Google Forms and Google Classroom is familiar to the students, so it lowers the bar for entry to the lessons and tasks. As these are available resources, using a Google form to host and give access to the escape room is a reasonable and low-cost way to facilitate it.

Learner Analysis.

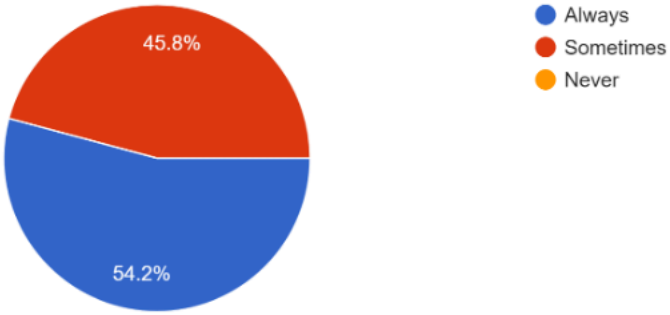
- **Characteristics.**
    - Our target population is between 9 and 10 years old. They are currently attending fourth grade. The project goal is to use gamification to engage the learners in making inferences and making and identifying complete sentences in fiction and nonfiction texts. We obtained information about our target learners directly from their teacher through work samples, survey results, and assessment data.
- **Entry Behaviors.**
    - To be able to complete this digital escape room, students must be able to operate a Chromebook, access Google Classroom, and use the Google Suite of tools: specifically being able to respond to a Google Form.

Students must also be able to work collaboratively with others to think critically about what they have read and notice details. This task requires students to have good comprehension of what they read; i.e., the ability to retain what they have read and make connections between details in a text.

- **Prior Knowledge.**
    - Students have some knowledge about inferences and how to construct complete sentences but they have not mastered either skill. Based on a survey given to the class, slightly more than half of the students know what an inference is. The same amount of students claim to always use complete sentences when they write, while the remaining students state they sometimes use complete sentences. In a question to determine if students could identify a sentence fragment, two-thirds of the class could identify that it was not a complete sentence. Of the remaining third, half of the class was uncertain if the fragment was a complete sentence or not, and half thought it was a complete sentence.

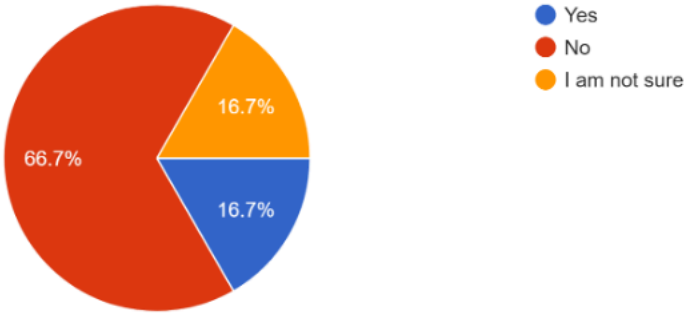
How often do you write using complete sentences with correct grammar, capitalization and punctuation?

24 responses



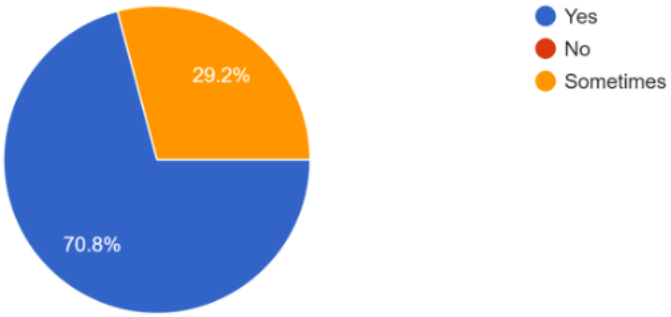
Is this a complete sentence? "My friend Lisa was helping me feed my pet fish when the earthquake."

24 responses



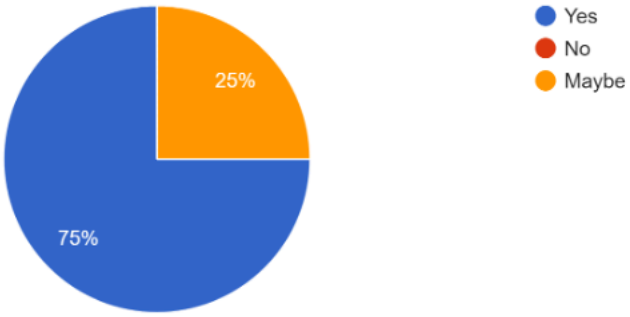
Do you like playing educational games at school?

24 responses



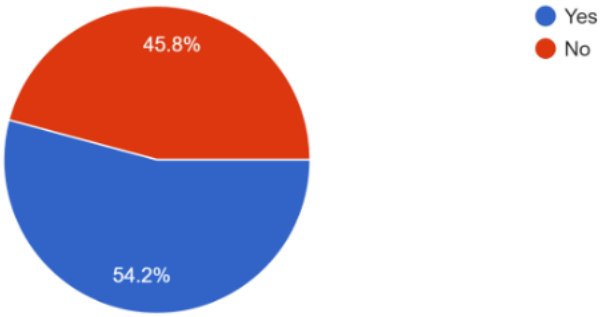
Would you like to participate on an "Escape Room" online game that will require you to find some inferences, sentence fragments, and respond using complete sentences?

24 responses



Do you know what is an inference?

24 responses



- **Attitudes.**

- The learners are very eager to try this new strategy. They are of a generation that is constantly surrounded by technology, so being able to use it in the classroom is very natural to them. The learners are interested in the idea of their input being used to design an escape room learning experience for them. This information was obtained informally from their teacher sharing with them what the project goal would be and asking them to answer surveys showing their level of knowledge, level of interest, and overall personal interests so that the escape room would be catered to them.

- **Motivation.**
  - The skill of making an inference is interesting to fourth-grade students when it is presented to them as a way to understand when something isn't directly said. The format of the lesson will greatly increase student interest and give further context to what an inference is and how it can be used to gain insights or clues about a topic. Gamification is engaging to students, as is stated by Erümit & Yılmaz (2021), "...the implementation of gamification positively affected students' motivation and engagement in the course."
  - The target class is also motivated by their own investment in the project. Students were surveyed for their interests and abilities. When they heard about the project, students expressed interest and have been asking about the progress and timeline. Continuing to ask for their opinions in the

design and development of the escape room will serve to not only improve and shape the project, but also build interest and excitement for the final product.

- **Educational/Ability Levels.**
    - The students in this class range in reading level, from a kindergarten reading level to seventh grade reading level. Ten total students are reading under grade level, eight of whom are reading at a third grade level. Thirteen students are reading at a fourth grade level. Two are reading above grade level, at a fifth and seventh grade level. It is reasonable to expect that the majority of students will be able to access the text to make inferences based on their reading. To support students reading below grade level, some of the tasks will involve images to make inferences from. The text will also be leveled, so that there are different levels of challenge for students who are reading at, below, and above grade level. This will ensure that all students are able to have interaction with the text in a manner that is engaging and appropriate for their abilities.
    - It is reasonable to expect that they will be able to formulate inferences and identify complete sentences as those skills are part of the fourth grade framework. The framework of the California Common Core Standards states that by the end of fourth grade, students should be able to “Refer to details and examples in a text when explaining what the text says explicitly

and when drawing inferences from the text" (California Department of Education, 2013).

- **Learning Preferences.**
    - The teacher provided information about the class, including student learning preferences. The learners prefer to work in small groups. This allows them to analyze, discuss, and collaborate during classroom activities. The students are comfortable working on computers as well as using physical media, such as pencil and paper. However, the class self reported that a quarter of them prefer to type their writing as opposed to handwriting it. Software and programs such as the Google Suite has been in use in the targeted classroom since the beginning of the school year, and students had exposure to it in previous years as well.
    - The teacher reports that the students have a class culture of kindness and supporting each other in learning goals. Students are accustomed to having roles assigned to them when working in literature circles, so this strategy will be used in creating groups for students to work on solving the escape room.

Instructional/Task Analysis.

In the context of this escape room, students will be able to use inference skills, sentence structure skills, and critical thinking skills.

1. Inference skills: Based on the survey from Learners Analysis, nearly half of the students do not know what an inference is. This is a good opportunity to help learners adopt inference skills in textual analysis. Learners will be able to make guesses about what the text is saying, even if it's not directly stated. They will do this for both stories and real-life information. They will find clues in the text, use background information, and think carefully to make logical conclusions based on hidden information.
2. Sentence structure skills: Based on the survey from the Learners Analysis, only half of the students can confidently use correct grammar to write complete sentences. In this escape room task, learners will learn how to find and fix sentence fragments or run on sentences. They will practice forming complete sentences with proper punctuation and good grammar.
3. Critical thinking skills: Learners will work together with their classmates to solve puzzles based on texts. They will make guesses, figure things out, and improve sentences while working as a team. They will use problem-solving skills to accomplish this.

The performance context for the digital escape room will be an interactive and virtual environment. Fourth grade students will find this format engaging. Learners will have the chance to apply their skills in various ways, reading both fiction and nonfiction passages. From these readings, they will identify clues and make inferences to solve different challenges. Additionally, they will encounter sentences that need correction. In these cases, students must find and fix sentence fragments, as well as run-on

sentences. Some of these will be in the form of examples of inferences that can be made from a given text. Students will work together in small groups, using problem-solving strategies to move forward. These strategies will help them unlock new stages of the escape room. The digital platform will also require them to use navigation skills. As they interact with the virtual environment, they will select answers, edit sentences, and continue progressing through the escape room's various tasks.

While completing this escape room, students will have digital and physical tools available to them. These tools will be interactive, requiring students to apply them in different ways, sometimes in combination; e.g., the key to a physical decoder wheel may be hidden as an inference in the digital space. The tools that are being considered to be used are:

1. Digital Tools:
    - Google Forms: These can be used to create puzzles and quizzes. They can be made to be branching, allowing students to learn from mistakes instead of waiting for teacher feedback to let them know what they did wrong. In the Form, students will need to make inferences based off of the clues they find in texts and images. They will also have to write complete sentences to give their answers.
    - Escape Room Platforms (such as Breakout EDU): These platforms provide templates and interactive tools that help create digital escape rooms. In these rooms, students are given clues and tasks to solve.

- Kahoot or Quizizz: These are interactive quiz platforms. Students answer questions based on the inferences they make from the clues they get in the escape room.
- Padlet or Canva whiteboard: These are digital boards where students can write, discuss, and organize the clues they find. This helps them work together to make inferences.

2. Physical Tools:
    - Locks and Boxes: These can be used to hide clues. Students need to figure out the right combinations by solving puzzles that require them to make inferences.
    - Clue Cards or Printed Puzzles: These are physical cards that contain clues. Students must use these clues to infer the correct answers and then write them down in complete sentences.
    - Puzzle Pieces: Students will need to solve physical puzzles. Each piece might contain part of a sentence or clue. These clues require students to make inferences.
    - Task Cards: These tools give students scenarios. From these scenarios, students have to make inferences and then practice writing full sentences.
    - Whiteboards or Flipcharts: These are used by groups of students to brainstorm ideas. They can solve clues together and write their inferences on the board.

- Post-It Notes or Index Cards: These can be used to write clues, inferences, or other key ideas. Students can use them to practice forming correct sentences based on what they learn.

3. Interactive Tools:
    - Scavenger Hunt Apps (like GooseChase): Teachers can create a digital or hybrid scavenger hunt. Students must gather clues during the hunt and make inferences from them. They will also write their answers in complete sentences.

Main Task:
Make an evidence based inference from a text.

Step 1:
Read the text.

Step 2:
Make an observation about what you have read.

Example:
Noticing a character hanging up a raincoat and taking off boots when they come inside.

Step 3:
Make an inference. What can you assume is true because of the details you observed?

Example:
It must be rainy outside in the story, or it was raining earlier.

Step 4:
Check for other supporting details. Are there other details that help prove your inference?

Example:
The character talks about how sad they felt when they couldn't see the sun.

Step 5:
Write your inference out. Tell what details made you think it could be correct.

Pro-Tip:
Try using sentence starters like,
"The text stated..."
"I noticed that the characters said..."
"Some evidence I found is..."

Step 6:
Check your writing for capitals, punctuation, and completeness. Do you have a subject and a predicate in your sentences to make them complete? Did you use run on sentences, or did you use periods to separate ideas?

Learning Outcome(s)

SWBAT make inferences from fiction and non-fiction texts, using complete sentences to relay those inferences.

- Students will make and list 6 (six) inferences from fiction and non-fiction texts.
- Students will be able to identify key clues to make logical inferences based on the texts in 5 (five) times out of 6 (six), where 1 question is 1 trial.
- Students will be able to explain their inferences by citing specific clues or details from the game or story 5 (five) times out of 6 (six).

SWBAT identify complete sentences, sentence fragments, and run-on sentences.

- Students will correctly identify and label 3 (three) complete sentences, 3 (three) sentence fragments, and 3 (three) run-on sentences from a provided list or text.
- Students will write 2 (two) clear and grammatically correct complete sentences when responding to prompts or questions.

SWBAT correct run-on and fragment sentences to make complete sentences.

- Given a task with 6 (six) sentence fragments and run-ons, students will rewrite each phrase to create complete sentences, achieving at least 5 (five) out of 6 (six) sentences correctly rewritten.

The online escape room will motivate students to apply their understanding of inferences and complete sentences in an interactive, engaging way.

Summary.

Our analysis concluded that this class of fourth graders is in need of engaging instruction in making inferences and using complete sentences. The learners are

interested in learning through play and would be well suited to learning through an escape room hosted through Google Suites, particularly Google Forms. Forms was chosen due to its ease of use and familiarity for the students. They will not have to learn how to navigate and use a new platform.

The idea of using gamification for student learning ensures that students are practicing key skills in a fun, application-based setting. However, it must be applied in a meaningful manner for students to experience long term benefits. To assess that a digital escape room would be beneficial, students were surveyed about their interests. This project was carefully considered to best fit the interests of students. They were surveyed about what themes they would like to experience in the escape room, so that the environment would be most engaging and relevant to their interests. Students overwhelmingly chose to have the escape room to be Roblox themed. This online game creation and sharing platform is very popular with children, so it is not surprising that they would choose this theme.

The reading levels of the students was another key factor to take into account. The fiction and non-fiction texts needed to be appropriately leveled to allow students to comprehend what they are reading. An inference can be made from first grade leveled texts all the way through college level texts, so the texts do not have to be explicitly fourth grade level to have students meet the goals of this project. Students should make deductions from a text that they can comprehend, so as to best make accurate inferences.

The technological skills required for this task are not very challenging, but do require students to have computer skills such as recording and editing video. Technology used in this task must have the correct level of challenge for students to feel engaged, but not so difficult that they are a roadblock to students reaching the learning goals of the task. To achieve this, the escape room will be hosted in formats that are familiar to students and that have clear ease of use. Padlet, Google Forms, and Kahoot are very easy to use and are commonly used in elementary settings.

Research indicates that students need gamified learning experiences that are meaningful as well as fun for what they have learned to be retained long term. To meet that goal and to help all students feel engaged and to enhance the feeling of immersion, this task will not exclusively use digital tools. Physical media will also be used in the form of Post-It notes, whiteboards, locks and boxes, and physical clues and decoders. This will allow all students to feel engaged, as students do not have to have strong reading comprehension skills to be included in solving challenges and making connections with images and physical objects.

Students will be grouped heterogeneously so that students can serve as supports to each other. They will also be assigned roles in their groups so that everyone has a purpose in their learning, and everyone feels that they are making meaningful contributions to their team. This is building on the existing classroom culture of kindness, respect, and mutual support, and on the established norm of students being accountable for their own learning by serving a role in their team.

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Design Document Worksheet

REVISION
Comments on revisions made since your Analysis Report.

CLUSTER	Outcomes	Alignment
1	Given a task with 4 (four) sentence fragments and run-ons, students will rewrite each phrase to create complete sentences, achieving at least 3 (three) out of 4 (four) sentences correctly rewritten.	
2	Given a short grade level appropriate text, students will make and list 3 (three) inferences from fiction and non-fiction texts, achieving 3 (three) out of 3 (three) accurate inferences.	
3	When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.	

PREINSTRUCTIONAL ACTIVITIES
Motivation: • Engage learners with an introduction video to orient learners to the theme of the escape room and its objectives, as well as how inferences can be used to draw conclusions and solve mysteries and puzzles. • Play detective themed background music during the escape room game. • Play a quick round of "I Spy" with a twist; instead of describing an object giving indirect clues that force students to make inferences. • Play a quick round of Complete the Sentence. Students can write their sentences on their whiteboards.

Objectives:

- Given a task with 4 (four) sentence fragments and run-ons, students will rewrite each phrase to create complete sentences, achieving at least 3 (three) out of 4 (four) sentences correctly rewritten.
- Given a text with sentence fragments and run-on sentences, students will correctly identify complete, run-on, and fragment sentences in 3 (three) out of 4 (four) attempts where 1 (one) sentence is 1 (one) attempt.
- Given a short grade level appropriate text, students will make and list 3 (three) inferences from fiction and non-fiction texts, achieving 3 (three) out of 3 (three) accurate inferences.
- Given images related to the Deep Ocean theme of the escape room, students will make and list 3 inferences, achieving 3 (three) out of 3 (three) accurate inferences.
- When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.

ASSESSMENT (Attach Assessment Instruments)

Pretest:

- In Part 1, students will look through a set of text/text features and make an inference about what the situation in the text/text feature provided is. In Part 2, students will identify complete sentences and sentence fragments.
    - Format: Google Forms

Posttest:

- EdPuzzle
    - Complete Sentences
    - Inferences: Making an Inference

FOLLOW-THROUGH ACTIVITIES

Memory Aids:

- Students will have graphic organizers to record details they noticed in each section of text.
- Each student will be given a bookmark outlining how to connect their own background knowledge with what was stated in the text to make an inference.
- Anchor charts will be posted in the room to remind students of correct conjunction usage and components of a sentence.

Transfer:

- To debrief after the escape room, the teacher will facilitate a discussion about how inferences can be helpful in situations outside of school/outside of reading literature.

Content Presentation and Student Participation

Instructional content structure.
Practice activities with feedback strategies.
Media selection: What media and methods are most effective? Describe development tools and media to be selected.

STEP 1: Tutorial	
5 minutes	
OBJECTIVE: ● Given images related to the Deep Ocean theme of the escape room, students will make and list 3 inferences, achieving 3 (three) out of 3 (three) accurate inferences. ● When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.	1
CONTENT PRESENTATION	
Content: Teacher presents a quick introduction video (45 sec) to set the scene of the escape room & give students their task. Teacher will project 3 images for students to view, all images will be matching the Deep Ocean Roblox theme. Students will infer about the images with their group using provided sentence starters on paper. The slides will be projected for the class to see and also available on the Google Classroom as slides so that students may view each image at their own pace to make reasonable inferences. Students record their inferences on the "quest log" before presenting it to the teacher for feedback.	
Examples: ● Sentence frames: ○ These clues tell me that ___. ○ I can see ___ and it makes me think that ____.	
Media Selection: ● Google Slides ● video	
STUDENT PARTICIPATION	
Practice Items: ● Make an Inference from a visual clue: ○ In the first 3 encounters (projected slide images), students will be given an image related to the theme of the escape room and a sentence starter to prompt them to make an inference. These will be warm up exercises for the students and acclimate them to the format of the game. Students learning through a digital escape room demonstrated improved attitudes across all areas of learning, including game-like experiences, teamwork, and motivation. This approach led to higher engagement and collaboration, enhancing the overall learning experience. (Vidergor, 2021)	

Feedback:

- Students will show the inferences to the teacher to verify that they have made a reasonable inference. After reading the inferences, the teacher will either give the group their clue and allow them to move to the next phase of the game, or will give guidance on correcting the inaccurate inferences.

Media Selection:

- Google Slides to project the images for students to infer from. After the slides have been shown to the whole class, the slides will be on Google Classroom for groups to infer from at their own pace and in whichever order they choose.

STEP 2: Introduction to Complete Sentence	
8 minutes	
OBJECTIVE: ● Given a text with sentence fragments and run-on sentences, students will correctly identify complete, run-on, and fragment sentences in 3 (three) out of 4 (four) attempts where 1 (one) sentence is 1 (one) attempt. ● When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.	2
CONTENT PRESENTATION	
Content: Students access Step 2 through the Escape Room topic in Google Classroom. Their clue from the tutorial will lead them to find directions for identifying complete sentences. "A complete sentence has a subject and a predicate. It tells a complete idea of who or what the focus is on and what they are doing, or what is being done to them." After reading the directions, students will move onto the Quizizz. Students have a short narrative text with sentence fragments and run on sentences throughout. Students must read through carefully to identify the incorrect sentences. Using Quizizz live test to exhibit sentences (like examples, could be text with visual aids) with four options including "Complete sentence", "Sentence fragment", "Run-on sentence" and "no idea" for students to choose in ten seconds. Research suggests that "If Quizizz is used by the teacher in learning, it will increase student attention and motivation." (Suwarni Suwarni et al., 2023)	
Examples: Complete sentence: "The dog ran across the yard." Sentence fragment: "Running across the yard." Run-on sentence: "The dog ran across the yard it was chasing a cat."	
Media Selection: ● Quizizz live for instant feedback.	
STUDENT PARTICIPATION	
Practice Items: ● Quizizz	
Feedback: In the Quizizz, students will receive feedback from	
Media Selection: Quizizz live for instant feedback. Students earn a clue for correctly completing the challenge.	

STEP 3: Assembling a Message in a Bottle	
20 minutes	
OBJECTIVE: ● Given a task with 4 (four) sentence fragments and run-ons, students will rewrite each phrase to create complete sentences, achieving at least 3 (three) out of 4 (four) sentences correctly rewritten. ● When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.	3
CONTENT PRESENTATION	
Content: ● Sentence Repair Workshop: ○ Each team will have an envelope with fragmented or run-on sentences on individual slips of paper. The group must correct the sentences together. Each corrected sentence earns a combination code to open a lock.	
Examples: ● Sentence: We have to follow that shark, it's getting away! Corrected to: We have to follow that shark. It's getting away! ● Sentence: I think I saw. Corrected to: I think I saw a submarine. ● Complex sentences: ○ As the ship sailed into the open ocean, the crew braced themselves for the strong winds that began to whip across the deck. ○ The diver hesitated before entering the underwater cave, knowing that mysterious creatures might be lurking in the shadows. ○ Although the sky was dark with storm clouds, the captain steered the ship confidently, trusting his instincts to guide them to safety.	
STUDENT PARTICIPATION	
Practice Items: ● Each team will have an envelope with fragmented or run-on sentences on individual slips of paper. The group must correct the sentences together. Each corrected sentence earns a combination code to open a lock.	
Feedback: Students will check their work by looking in the "answers" envelope. Each answer will be in a separate envelope so that students can check one answer at a time and have an opportunity to learn from and correct the work before checking the next sentences.	
Media Selection: Sentence strips in envelopes. This task will be primarily done with physical materials.	

STEP 4: Villain Mode: Making Inferences from a Text	
20 minutes	
OBJECTIVE: ● Given a short grade level appropriate text, students will make and list 3 (three) inferences from fiction and non-fiction texts, achieving 3 (three) out of 3 (three) accurate inferences. ● When working in a small group of 6 (six), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.	4

CONTENT PRESENTATION

Content:
Students will read portions of a short mystery story. At selected intervals of the story, students will be tasked to answer inference-based questions and present their answers with a complete sentence on their quest log. Students should record the clue(s) they found in the text, background information that was helpful, and what their final inference is. After discussing and recording in the log, the group will answer in Google Forms. Correct answers will allow them to move forward and discover their final escape room clue.

Examples:
Game Play: "Storm Chasers"

Students will read a story related to the Deep Ocean theme in a Google Form. "One rainy afternoon, dark clouds covered the sky..." At this point, they must answer an inference question, such as: "What do you think will happen next?" then select the most reasonable inference.

STUDENT PARTICIPATION

Practice Items:
Students will answer inference-based questions at the stories intervals, discussing with their group what their inference is and how they reached that conclusion. Students should record their clues and background knowledge briefly on their quest log before answering. The quest log will be turned in to the teacher at the end of the game.

Feedback:
Students will receive immediate feedback from Google Forms after each response, indicating if their inferences are correct and guiding them toward the next step in solving the mystery in the fiction and non-fiction text.These features allow instructors to efficiently monitor performance and make quick adjustments to instruction based on real-time student responses. (Nguyen et al., 2018)

SUMMARY

This escape room project consists of 4 main tasks for students to complete in groups. In the groups of 6, students will each have a role to fulfill so that everyone is engaged and can have a feeling of success and participation. Washington University in St. Louis suggested providing support structures, such as group roles, for collaborative learning experiences. Our support structure will allow students to all be engaged and to have an access point to the task. Even students who do not feel confident in their reading or writing can still be an active learner and participant by having a specific role to fill in their group. Student roles will be: recorder, reader, time manager, questioner, checker, and director.

The escape room tasks will each be linked to happen one after another, guiding students through a story themed around the Roblox Deep Ocean game. Each task will be discrete, happening in its own format and linked to through the escape room's digital home base, Google Classroom. Some elements of the escape room will be done on paper or through other physical means, so those game elements will have directions in the Google Classroom instead of having a link. After each task is successfully completed, students will receive a clue to open the final chest. When all of the clues have been assembled, the groups will find their key to the chest. All groups will need to find their key for the chest to be opened and the whole class to be successful.

As a posttest, students will be completing 2 Edpuzzle activities. Librarians and instructors, especially those teaching online, can use Edpuzzle to boost student engagement with educational videos. Its user-friendly interface, detailed analytics, and free access make it a valuable tool for educators to enhance their virtual teaching strategies. (Ware., 2021)

Each task is cognitively demanding and may be exhausting for students to attempt to complete in one setting. Several tasks may take a longer amount of time for students to complete than anticipated. It may be in the best interest of student success and feelings of competence to split the escape room over 2 days/sessions.

Timeline for Development (Modify If Necessary)		
Date	Tasks	Preparation for the Tasks
10/9/24	• Create storyboard • Finish objectives 3-4, including deciding format of each step (e.g., edpuzzle, g forms…)	Review items 1-4 and resources used
10/14/24	• Team meeting. Review needed items and plan development of puzzles. • Complete storyboard.	Completing design document and storyboard. Last minute edits and adjustments.
10/16/24	• Begin creating tasks in their respective formats.	Create the Quizizz; Google Form(s); Message in a Bottle Sentences; Find 3 photos for inference & create Slides for tutorial
10/18/24	• Team meeting. Check in on task progress. • Prepare materials for client review & feedback.	Send out materials to be beta-tested with clients and with testers. Full script for the ER
10/23/24	• Turn in development!	

References

Nguyen, H., Stehr, E. M., Eisenreich, H., & An, T. (2018). Using Google Forms to inform teaching practices. *Proceedings of the Interdisciplinary STEM Teaching and Learning Conference*, *2*, 74–79. https://doi.org/10.20429/stem.2018.020110

Suwarni, S., Lubna, L., Aimang, H. A., Cakranegara, P. A., & Pratama, D. (2023). Quizizz gamification of student learning attention and motivation. *Al-Ishlah: Jurna Pendidikan, 15(2),* 1369–1376. https://doi.org/10.35445/alishlah.v15i2.3215

Vidergor, H. E. (2021). Effects of digital escape room on gameful experience, collaboration, and motivation of elementary school students. *Computers & Education, 166,* N.PAG. https://doi-org.libproxy.lib.csusb.edu/10.1016/j.compedu.2021.104156

Washington University in St. Louis. (2022, August 10). *Using roles in group work*. Center for Teaching and Learning. https://ctl.wustl.edu/resources/using-roles-in-group-work/

Ware, E. (2021). Edpuzzle. *Journal of the Medical Library Association, 109(2),* 349–350. https://doi-org.libproxy.lib.csusb.edu/10.5195/jmla.2021.1202

Zhang, Z., & Crawford, J. (2024). EFL learners' motivation in a gamified formative assessment: The case of Quizizz. *Education and Information Technologies, 29(5)*, 6217–6239. https://doi.org/10.1007/s10639-023-12034-7

Assessment Instruments

Pretest:

- Google Form requiring students to make an inference from images.

Memory Aides

- Google Form Pre assessment for both inferences and sentences
- Graphic Organizer & 2 Inference Posters

Memory Aid for Inferencing

- Bookmark

Names: Kaiwen Wang, Laura Ruvalcaba, Kara Lainer, Cordelia Cullen

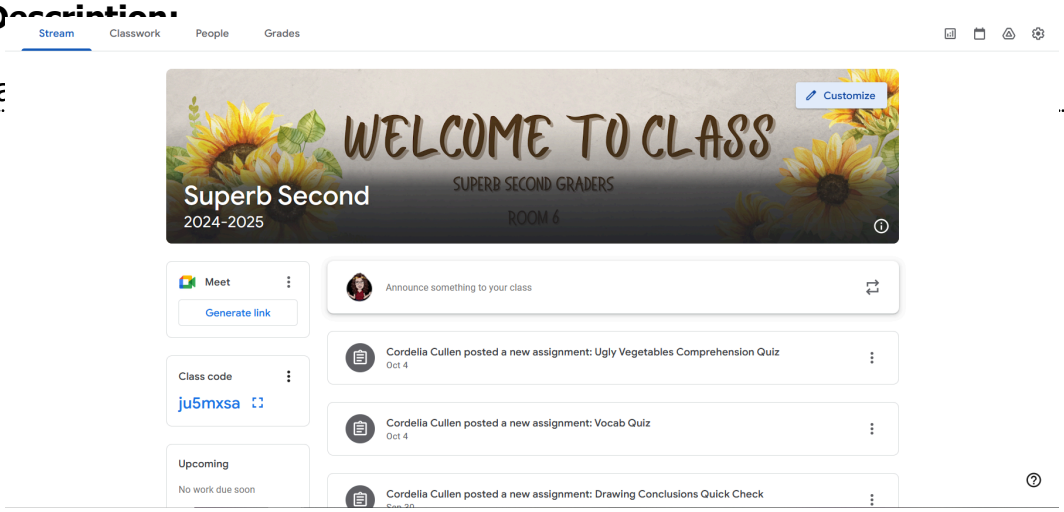
Multimedia Flowchart

Project: Inference Investigators **Screen:** 1 **of** 16
Date:

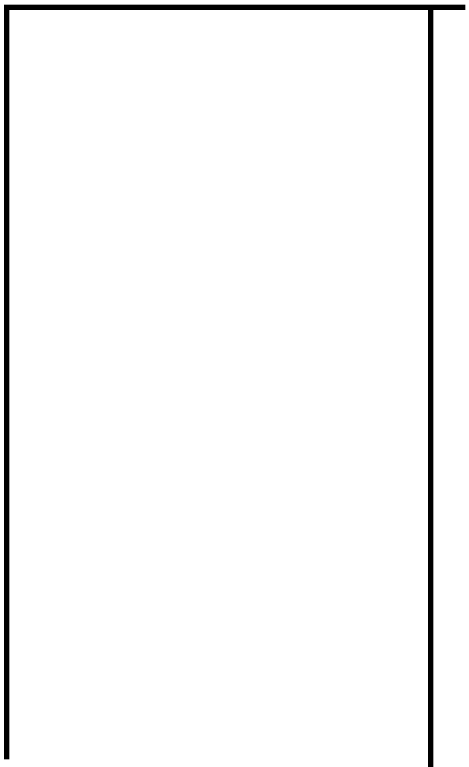
Multimedia Storyboard

Screen Description:

Google cla



Screen Layout:



Text Attributes:	Students will be able to see the topics in the Google Classroom. The escape room topic will have each step of the project labeled as different assignments: Challenge 1, Challenge 2, Challenge 3, Challenge 4. Some assignments will be linked in, such as linked to Quizizz, while others will be directions for students to follow.

Project: Inference Investigators **Screen:** 2 **of** 16
Date:

Multimedia Storyboard

Screen Description:

Video Introduction to the storyline of the game. This video will set the mood and theme of the game and present the main conflict and challenge.

Screen Layout:

VIDEO

Title: Welcome to the Deep Ocean

Video of Roblox characters diving and searching a sunken ship while narration plays.

Enter Button

Narrator: Ahoy, young adventurers! Prepare to plunge into the mysterious ocean depths, where treasures await and secrets slumber within a sunken ship! Ye be more than mere students; ye are valiant deep-sea divers on an epic quest for glory!

Your mission, should ye choose to accept it, is to uncover the clues that'll lead ye to the fabled lost treasure! But beware—time be not on yer side! The air in yer tanks is limited, and ye must work together to solve puzzles and unlock the mysteries of the deep before ye run out of breath!

As ye navigate through the shadowy waters, keep yer eyes peeled for hints and hidden treasures! Remember, teamwork be the key to success! Use yer wits, think creatively, and communicate with yer fellow divers!

The ocean be full of surprises, and every clue brings ye closer to the treasure ye seek! So, are ye ready to embark on this unforgettable adventure? Let's dive in, me hearties! 🏴‍☠️

Narration text will scroll at the bottom of the video. After students watch the video students will click ENTER to move to the next screen.

Project: Inference Investigators **Screen:** 3 **of** 16
Date:

Multimedia Storyboard

Screen Description: Review Video: What Are Inferences? How Do I Make Them? Pause the video. Review what inferences are and how to make inferences. After that, play the rest of the video.

Screen Layout:

[Scene: The screen comes alive with swirling ocean waves, setting the stage for a grand adventure.]

Narrator: Ahoy, brave adventurers! Ye stand on the cusp of a grand journey into the mysterious depths of the ocean! So lend me yer ears, for the challenges ahead will test yer wits and sharpen yer minds!

[Sound of a distant ship's horn and seagulls calling.]

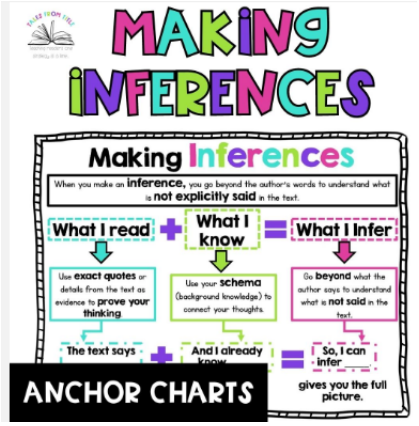
Narrator: To navigate this under-sea treasure hunt, ye must uncover the secrets hidden within the pages of both tales of adventure and the true stories of the sea! But beware—ye'll need to unlock these secrets and clues by makin' mighty inferences!

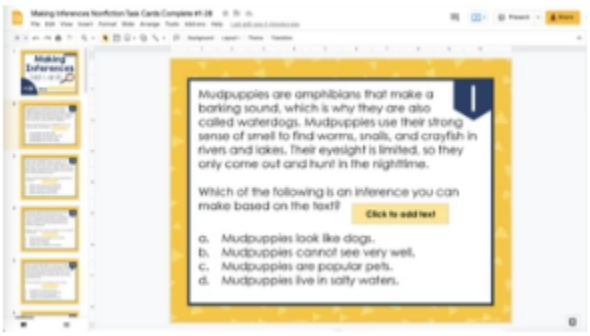
[Dramatic pause, the sound of bubbling water.]

Narrator: Now, ye may be wonderin', what be an inference, ye ask? Fear not! Let's dust off those inference detective skills and get ready to solve the mysteries that lie ahead!

Students press a PLAY button on the image. Video will play with the above narration with narration text on the screen. After watching the video, press NEXT to be taken to the bumper page. Select the google slides presentation for review with the teacher.

Students will participate in a brief review of making inferences with a google slides presentation. Classroom teacher will facilitate the review. (We will create our own unique charts-the following charts below are samples only)





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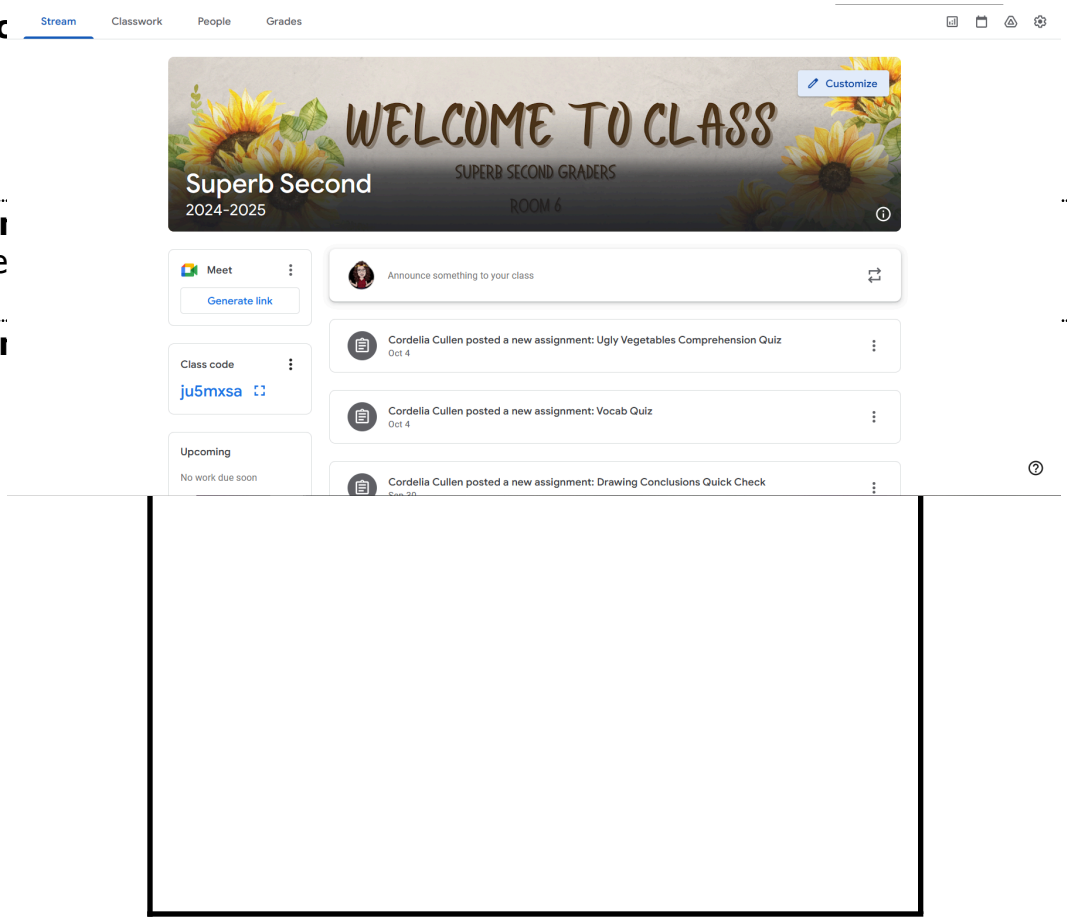


Text Attributes: Students will be able to see the topics in the Google Classroom. The escape room topic will have each step of the project labeled as different assignments: Challenge 1, Challenge 2, Challenge 3, Challenge 4. Some assignments will be linked in, such as linked to Quizizz, while others will be directions for students to follow.

Project: Inference Investigators **Screen:** 5 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Tutorial: Step 1 of the Escape Room.

Screen Layout:

Challenge 1

[Scene: The screen lights up with vibrant underwater colors as our brave investigators prepare to dive.]

Narrator: Ahoy, Inference Investigators! Prepare yer diving gear, for we're about to plunge deep into the ocean blue in search of a fabled sunken ship! A treasure beyond yer wildest dreams awaits us, just waiting to be discovered! But hold fast—this be no ordinary treasure hunt! We must be sharp and clever!

[Sound of water splashing and a distant ship bell ringing.]

Narrator: Our first mission, brave crew, is to locate a hidden compartment aboard this ship and crack the mysterious code that seals it!

[Dramatic pause.]

Narrator: Listen well, me hearties! The code be a three-digit combination. But beware—if we fumble, that compartment shall remain sealed... forever! Can ye imagine a treasure locked away, forever out of reach? We can't let that happen!

[Sound of a ticking clock for added tension.]

Narrator: So, let's think like the clever detectives we are! What clues lie in wait for us? To complete our first challenge, we must work together, using our keen powers of inference to uncover the code!

[Instructions appear on screen.]

Narrator: Here be the rules of the challenge:

1. Locate the 3 photo clues
2. Make inferences based on yer discoveries
3. Reveal the three-digit code with correct answers.
4. Once ye think ye've cracked it, input the code and see if the compartment opens!

[Exciting music begins to play.]

Narrator: Come on, team! Let's put our heads together and unlock that compartment! Adventure awaits, and I can almost hear the gold calling us! Onward to glory, me fellow adventurers!

Project: Inference Investigators **Screen:** 6 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Clue #1: You completed the tutorial!

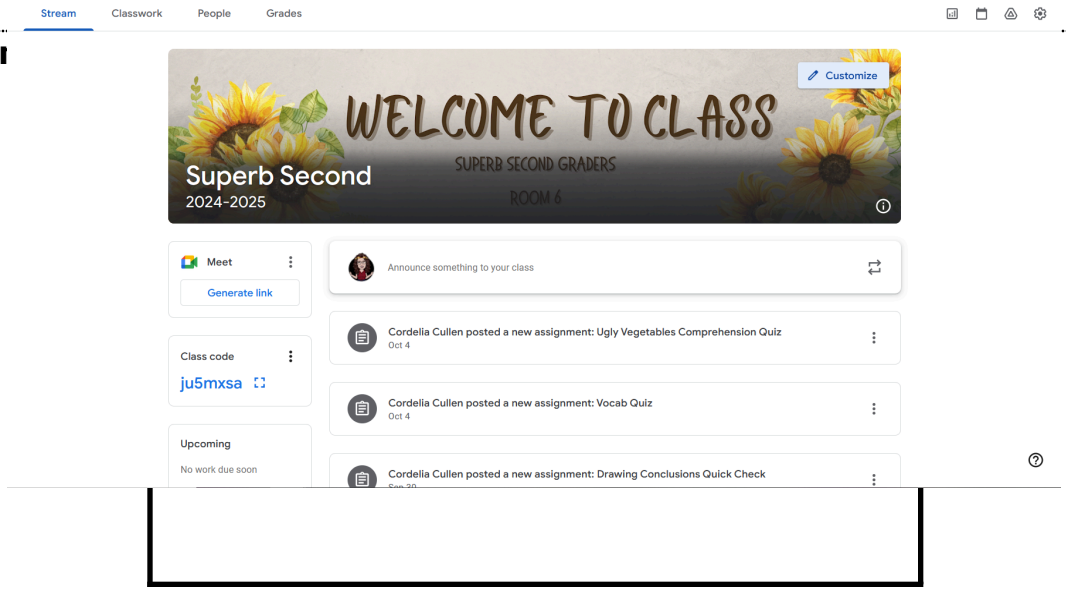
Screen Layout:

Project: Inference Investigators **Screen:** 7 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Google Classroom Transition Bumper: Going to Step 2

Screen



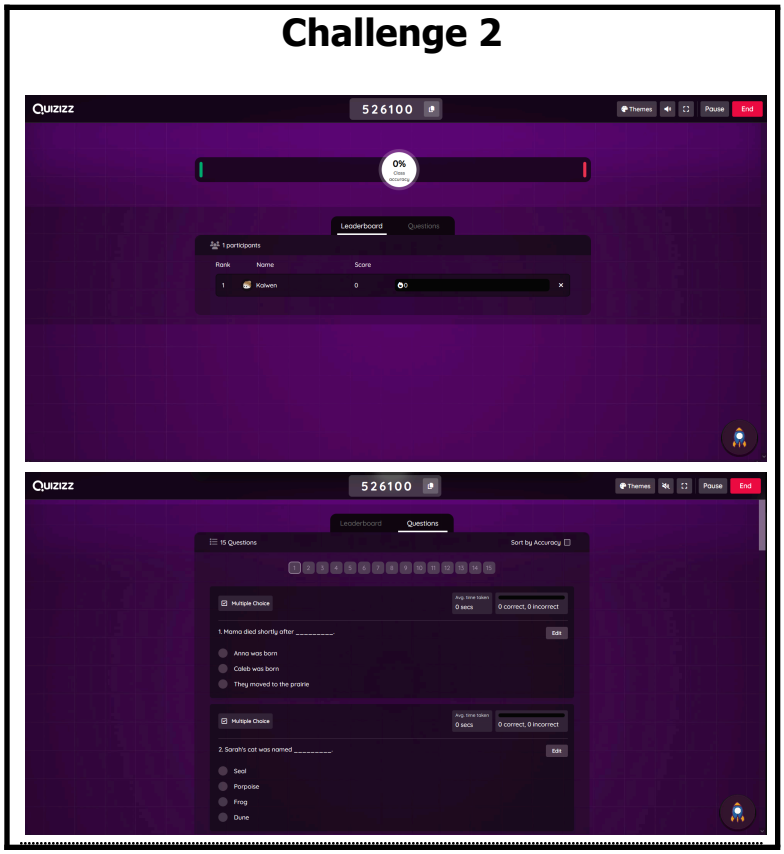
Text Attributes: Students will be able to see the topics in the Google Classroom. The escape room topic will have each step of the project labeled as different assignments: Challenge 1, Challenge 2, Challenge 3, Challenge 4. Some assignments will be linked in, such as linked to Quizizz, while others will be directions for students to follow.

Project: Inference Investigators **Screen:** 8 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Step 2: Identifying Complete Sentences, Sentence Fragments, and Run On Sentences

Screen Layout:



Text Attributes:

Quizizz screen: Students can see each question for the Quizizz on complete sentences. Each question has 3 possible answers: complete sentence, run-on sentence, sentence fragment.

[Sound of paper unfurling.]

Narrator: Unroll that scroll, me hearties! Aye, it be a treasure map, filled with riddles and clues that'll lead ye to untold riches! But beware! The air in yer tanks be runnin' low, so time be of the essence!

[Transition sound: a pirate horn plays in the background.]

Narrator: Gather 'round and look closely! This map marks the spots where X marks the treasure. But to claim yer prize, ye must solve the next challenge! This clue ye uncover will bring ye closer to the hidden treasure. Once ye solve it, ye'll unlock the next clue on yer adventure. Remember, time be tickin'—let's dive deep and find that treasure before ye run out of air!

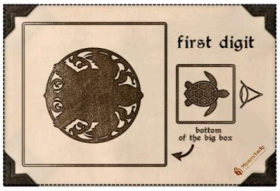
[Mystery music plays softly in the background.]

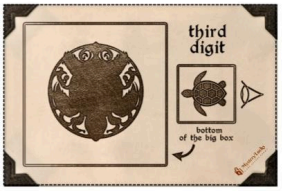
Narrator: The adventure awaits, inference investigators! Onward, to glory and treasure!

Images that will be presented in the video:


TREASURE MAP
Long River
Gold Beach
Hot Island
Big Hills
SOUTHERN SEA
Little Islands
Death Island
Big Mountains
Blue Lake
Fire Tomb
Snake Island
CARIBBEAN SEA


THIE
OREG
NEEH
XIST


first digit
bottom
of the big box


third
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I
IV
III
II
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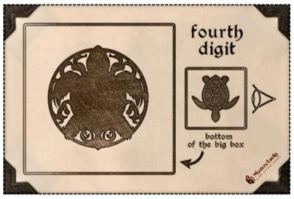
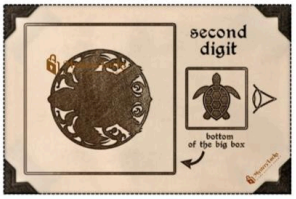
1 8 6 2
7 3 4 9
4 1 8 5


fourth digit
bottom of the big box


second digit
bottom of the big box

Project: Inference Investigators **Screen:** 9 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Clue #2: You Completed Step 2!

Screen Layout:

Text Attributes:

Narrator: Ahoy there, valiant inference investigators! A round of hearty cheers for ye, for ye have successfully conquered the treasure map challenge! Ye identified complete sentences, sentence fragments, and those tricky run-on sentences like true wordsmiths!

[Sound of clapping and ocean waves crashing.]

Narrator: As a reward for yer keen minds, ye've discovered the magic turtle, a creature of legend who holds the next clue to our treasure! Look closely at the ancient markings on its shell, for they be whisperin' secrets from long ago!

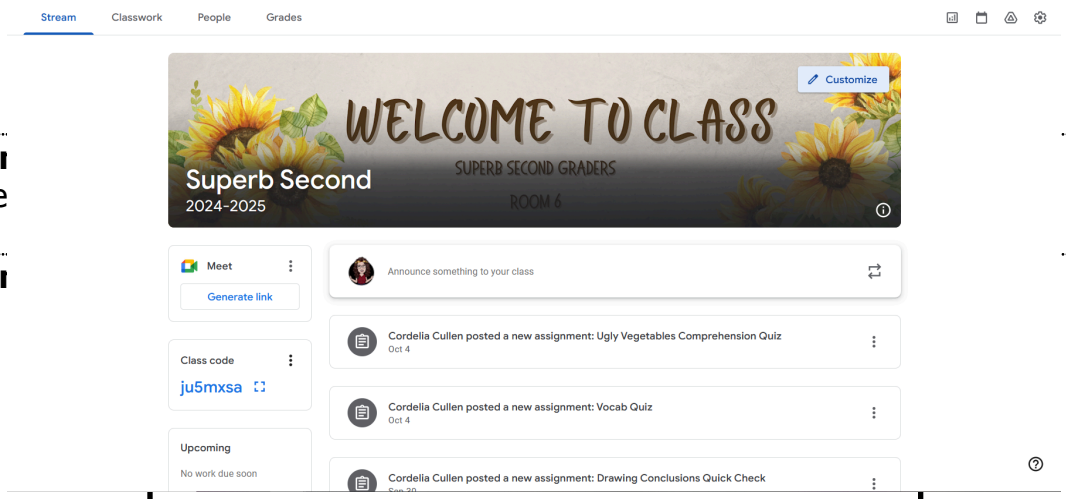
Narrator: Now, remember, the ocean be full of wonders and challenges! Work together, stay sharp, and let yer creativity flow like the tides! Onward, brave crew—let's unlock the next mystery and sail closer to the treasure that awaits us!

Project: Inference Investigators **Screen:** 10 **of** 16

Date:

Screen
Google

Screen



Text Attributes: Students will be able to see the topics in the Google Classroom. The escape room topic will have each step of the project labeled as different assignments: Challenge 1, Challenge 2, Challenge 3, Challenge 4. Some assignments will be linked in, such as linked to Quizizz, while others will be directions for students to follow.

Project: Inference Investigators **Screen:** 11 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Step 3: Assembling a Message in a Bottle
(Correcting Sentence Fragments & Run Ons, Creating Complete Sentences)

Screen Layout:

Narrator: Ahoy, inference investigators! Ye've plunged into the heart of the ship's navigation room, where countless sea journeys were charted! Here lies yer next challenge—hidden within a message in a bottle!

[Sound of bubbling water and a bottle clinking against wood.]

Narrator: As ye gather 'round, spot that bottle bobbing in the corner! Inside, ye'll find a jumbled collection of words, fragments, and run-on sentences that need yer sharp eyes and clever minds to untangle!

[Exciting music begins to build.]

Narrator: Work in yer teams, me hearties! Ye must fix these fragmented thoughts and run-on sentences to reveal the next clue! Each correction ye make brings ye closer to unlocking the secrets of the sea and the treasure that lies ahead!

[Dramatic pause as the sound of a distant thunder rumbles.]

Narrator: Remember, the fate of yer treasure hunt rests in yer hands! Communicate with each other, think like true sailors, and piece together the message that the ocean has delivered to ye. The tide waits for no one, so let's get to work!

[Encouraging music swells as the adventure continues.]

Narrator: Once ye've deciphered the message, the path to the next clue shall be revealed! Onward, brave crew! Let the winds of fortune guide ye on this thrilling quest! 🏴‍☠️

Project: Inference Investigators **Screen:** 12 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Clue #3: You Completed Step 3

Screen Layout:

Text Attributes:

Narrator: Ahoy, inference investigators! A round of hearty congratulations to ye! Ye've triumphed over the message in a bottle challenge, skillfully untangling those tricky sentences like seasoned sailors!

[Sound of cheerful parrot squawking.]

Narrator: And what fortune awaits ye! Ye've uncovered a clue that has led ye to a most extraordinary sight—the talking parrot, guardian of the ship's secrets! This feathery friend holds a special message that will guide ye to yer next challenge!

[Sound of the parrot flapping its wings.]

Narrator: Gather ‘round and listen closely, for the parrot is ready to squawk out the treasure’s next hint! What wisdom does this charming creature have to share?

[Dramatic pause with the sound of waves crashing softly.]

Narrator: Remember, the ocean rewards those who listen and observe! Pay heed to the parrot’s words, for they will lead ye further on yer quest for glory and treasure!

[Exciting music builds as the adventure continues.]

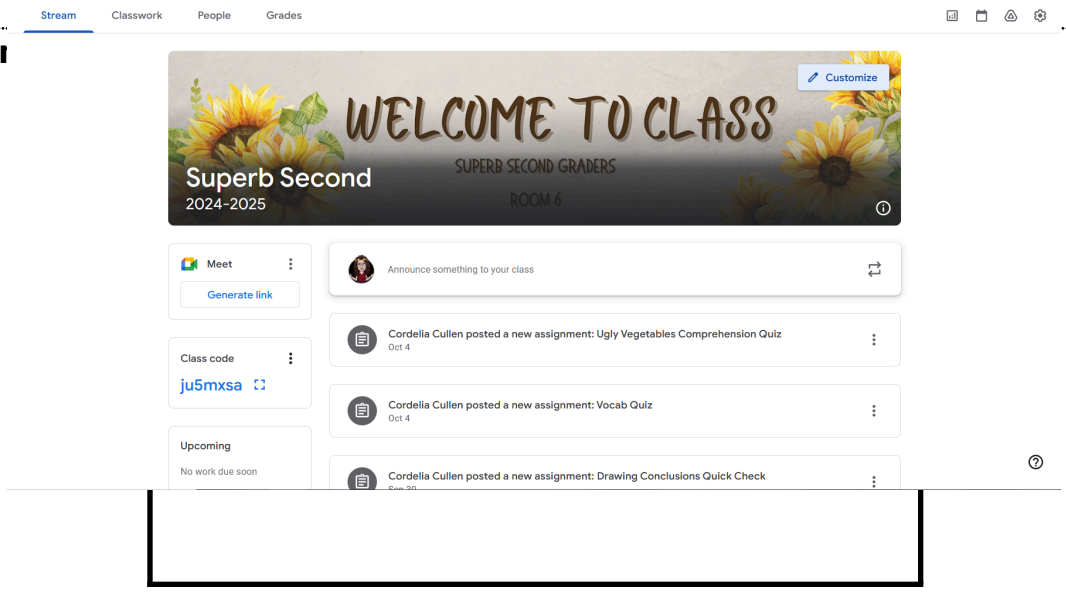
Narrator: Onward, brave crew! Let the parrot’s secret message steer ye toward the next challenge! Adventure awaits, and every clue brings ye closer to the treasure of a lifetime! 🏴‍☠️

Project: Inference Investigators **Screen:** 14 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Google Classroom Transition Bumper: Going to Step 4

Screen



Project: Inference Investigators **Screen:** 15 **of** 16
Date:

Multimedia Storyboard

Screen Description:
Step 4: Villain Mode: Making Inferences from a Text

Screen Layout:

In the Google Form, students will see each segment of the story as its own section of the form, followed by a question. The form will match the Deep Ocean theme, above is an example of Google Forms used as a story based escape room.


5376
4692
6347
3974
2471
3724


7
2
9
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5
3
1

Project: Inference Investigators **Screen:** 15 **of** 16
Date:

Multimedia Storyboard

Screen Description:
You completed challenge 4!

Screen Layout:

Video and narration congratulating the students on finding the key to open the treasure chest.

Project: Inference Investigators **Screen:** 16 **of** 16
Date:

Multimedia Storyboard

Screen Description:
X Marks the Spot: Unlocking the Box

Screen Layout:

Each team will be invited to the front of the class to use their key to open one of the locks on the treasure chest.

DEVELOPMENT

Abstract

Project Overview:

- Objective: To enhance students' ability to make inferences and construct complete sentences through a gamified learning experience themed around the Deep Ocean escape room in Roblox.
- Tools Used: Quizizz for gamified assessments, Google Slides and Canva for visual presentations, EdPuzzle for interactive video content, and Google Classroom as a hub for organizing materials.
- Structure: The lesson is structured around pre-instructional, formative, and summative assessments, alongside follow-through activities that ensure the retention of skills.

Technical Aspects:

- This activity emphasizes the use of digital platforms to provide an engaging, interactive learning environment that fosters collaboration and immediate feedback.
- This activity employs gamification and differentiated materials to cater to varied learning needs and preferences.

Instructional Design Theories:

- Cognitive Load Theory: The activity is divided into manageable sections, reducing overload by focusing on one skill or task at a time.
- Motivation Theory: We utilized game-like elements and team challenges to motivate learners through engaging scenarios and interactive tasks.
- Constructivist Learning Theory: The activity promotes active learning through collaborative tasks, allowing students to build knowledge through interaction and discussion.

Access and Inclusivity:

- This activity ensures digital accessibility by considering colorblindness and providing materials in various formats.
- We applied universal design for learning principles to offer multiple means of engagement, representation, and expression.

Visual Design Principles:

- This activity maintains alignment with learning objectives through carefully selected visuals and structured presentations.
- We used hierarchy and contrast to organize information, facilitating easier comprehension and focus on essential content.

Product Links

Google Site: Inference Investigators

Canva Link to Quest Log

Step 1 Tutorial Canva-updated

Step 1 Tutorial Completion Canva-updated

Step 2 Sentence Crusade Intro Canva-updated

Step 2 Sentence Crusade Completion-updated

Step 3 Message in a Bottle Tutorial-updated

Step 3 Message in a Bottle Completion-updated

Step 4 Tales from an Old Sea Dog Canva Tutorial Canva

Step 4 Tales from an Old Sea Dog Completion

Step 4: Tales From an Old Sea Dog Google Form

Step 4: Tales From an Old Sea Dog Printable Version

Complete Sentence Crusade Quizizz

Message in a Bottle

Videos in the order that they occur in the activity:

Game Intro Video Youtube link

Before we get started video-Inference Review

Challenge 1 photo inference intro and rules

You Cracked the Code

Challenge 2 Sentence Crusade

Congratulations on Completing Challenge 2

Challenge 3 Message in a Bottle Challenge

Congratulations on Completing Challenge 3

Challenge 4 Tales From an Old Sea Dog

Congratulations on Completing Challenge 4

Open the Treasure Chest

Technical Aspects

1. Quizizz: the use of Quizizz provides instant feedback during assessments. This feedback helps to keep students motivated and makes learning more interactive. The tests are used to check students' understanding of sentence structure and have a game-like format. Students have to choose one answer from several options. The Quizizz official website provides the basic instructions on how to design, and we are also looking for instruction from multimedia platforms like Youtube. Zhang states that gamified formative assessments support elementary-level EFL internalization, leading to increased student engagement and improved language proficiency.
2. Google Slides/Canva: Google Slides/Canva are used to show images related to the Deep Ocean theme. Students use these images to make inferences. The images are projected for the entire class to see. They are also uploaded to Google Classroom. In this way, students can interact with materials at their own pace. Google Slides/Canva helped create a visually engaging experience. It also enables students to focus better on group tasks. We discussed the details of the design in detail during the previous two weeks of group discussions so that the content of the images, copyrights, student participation, and many other elements of the final product would be presented in an appropriate manner.
3. EdPuzzle: EdPuzzle was used in the post-test phase. It assessed students' understanding of inferences and complete sentences. EdPuzzle allowed students to engage with video content. As they watched, they received guided questions that reinforced their learning. Its user-friendly interface, detailed analytics, and free access make it a valuable tool for educators to enhance their virtual teaching strategies. (Ware., 2021)

4. Google Classroom: Google Classroom was the digital home base for organizing and linking tasks. It provided a central platform for students to access content, instructions, and learning materials. This platform made it easier for students to find what they needed in one place. It also allowed for smooth integration of different parts of the escape room. These parts included both digital and physical components.

Structure / Navigation.

The structure of this lesson is designed so students can successfully rewrite sentence fragments to form complete sentences. They should be able to make inferences from fiction and non-fiction texts. They should also be able to collaborate effectively in a group setting with minimal prompts to stay on task.

Pre Instructional Activities.

- These activities will require learner-instructor interaction.
- Materials needed to navigate through these activities include: teacher computer or LFD (Large Format Display), speakers or a sound bar, and the "I Spy" mini-lesson.
- Structure: Teacher will have detective instrumental music playing in the background when introducing this lesson. Teacher will play a simple and short game of "I Spy" to activate prior knowledge.
- Navigation: After that, the instructor will show a video that will peak the learners' interest about the theme and the purpose of the escape room. The learners will also recognize that inferences will help them solve fun and engaging puzzles that will lead them to solve the mysteries. These activities aim to build anticipation for the escape room challenge while introducing the core learning themes, like making inferences.

Assessment

- The assessments will require learner-technology and learner-instructor interaction.
- Materials needed to navigate through the assessments include: Google Classroom, Google Forms. Students and instructor are very familiar with these platforms. Assessments already created and ready to be implemented.
- Structure: It will include a pretest, formative assessments, and a summative assessment..
    - Pretest: Students complete a task making inferences and using complete sentences from a set of images. This information will provide valuable data to help inform and differentiate the instruction of this lesson. (via Google Forms).
    - Formative assessments: The instructor will provide quick feedback to each group throughout the lesson to inform students about their progress and performance. Each group will have a Task Progress worksheet to record their puzzle answers. They will have to check in with the instructor at certain points in this activity to help redirect and clarify any misunderstandings ensuring that all students stay on task and gain a sense of accomplishment.
    - Summative Assessment: Includes a similar test as the pretest to assess the mastery of the key concepts related to sentence structure and inference-making. (via Google Forms).
- Navigation: Learners will move with ease through their Google Forms created assessments that are aligned with the learning objectives.

Follow-Through Activities

- The follow through activities will include learner-learner and learner-environment interaction.
- Materials needed to navigate through these activities: paper graphic organizers, differentiated texts printed on paper, and paper bookmarks. Materials already prepped by the teacher.

- Structure: Students use tools like graphic organizers and bookmarks to record observations and remind them of important concepts such as dependent and independent clauses and making inferences. Transfer: Connects inferences made in the escape room to real-life situations, fostering deeper understanding and retention.
- Navigation: The tasks are thematically tied to the Roblox Deep Ocean escape room and are connected through Google Classroom, with both digital and physical elements. Students can after this lesson keep using their paper bookmarks to help them figure out inferences in future lessons.

Content Presentation and Student Participation

- Step-by-Step Instruction: Breaks down the escape room challenge into four discrete steps, each with its own instructional content and practice activities.

Step 1: Tutorial

- OBJECTIVE:
    - Given images related to the Deep Ocean theme of the escape room, students will make and list 3 inferences, achieving 3 (three) out of 3 (three) accurate inferences.
    - When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.
- The tutorial will include 3 different kinds of interactions: learner-instructor, learner-content, and learner to learner interactions.
- Materials needed to navigate through Step 1: Teacher computer or LFD, 3 images taken from the Escape Room, and Quest Logs (graphic organizers) so groups can keep track of their progress.
- Students will be divided into 4 collaborative groups. Group roles are assigned to ensure equitable participation (e.g., recorder, reader, time manager). The roles of the students will be rotated after each puzzle is solved. This will give each student the opportunity to experience a different responsibility. Washington

University in St. Louis suggested providing support structures, such as group roles, for collaborative learning experiences.Our support structure will allow students to all be engaged and to have an access point to the task. Even students who do not feel confident in their reading or writing can still be an active learner and participant by having a specific role to fill in their group.

The instructor will provide a quick introduction with images for inference-making.

- Structure: Students work in small groups to infer from images using sentence starters.
- Navigation: Learners interact with the material through group work. They will receive immediate feedback, allowing them to correct mistakes and reinforce their understanding. Their Quest log will guide them into the next activity after they have figured out the 3 digit code.

Step 2: Introduction to Complete Sentences

- OBJECTIVE:
    - Given a text with sentence fragments and run-on sentences, students will correctly identify complete, run-on, and fragment sentences in 3 (three) out of 4 (four) attempts where 1 (one) sentence is 1 (one) attempt.
    - When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.
- The introduction to complete sentences will include mostly learner-technology and learner-learner interactions. It will have some learner-instructor interaction.
- Materials needed to navigate through Step 2: Google Classroom, the Escape Room with a Quizizz that is already assigned in GC.
- Structure: This is an opportunity for students to apply what they have been practicing: making inferences that can be substantiated with text evidence and responding using grammatically correct sentences.

- Navigation: Students will be prompted by their Quest log to open their Chromebooks to access the escape room through the topic/tab with the same title. Students are given a short narrative text containing sentence fragments and run-on sentences. They need to carefully read through the text to identify the incorrect sentences. Using a Quizizz live test, sentences (including visual aids or examples) will be displayed with four answer choices: "Complete sentence," "Sentence fragment," "Run-on sentence," and "No idea." Students will have ten seconds to select the correct option. Immediate feedback ensures understanding. Research suggests that “If Quizizz is used by the teacher in learning, it will increase student attention and motivation.” (Suwarni Suwarni et al., 2023)

Step 3: Assembling a Message in a Bottle

- OBJECTIVE:
    - Given a task with 4 (four) sentence fragments and run-ons, students will rewrite each phrase to create complete sentences, achieving at least 3 (three) out of 4 (four) sentences correctly rewritten.
    - When working in a small group of 4 (four), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.
- The Message in a Bottle activity will include student-student and student-content interactions.
- Materials needed to navigate through Step 3: Sentence Strips with fragments, independent and dependent clauses that students will use to form grammatically correct sentences. This will help them find the clue to solve this puzzle. Answers will be in envelopes to help them check each sentence at a time. Teacher will be assisting throughout the room making sure everyone is engaged and answering questions.
- Structure: Sentence correction task using slips of paper and locks as a gamified element. Each correct sentence opens a new "lock" in the game.

- Navigation: After completing step 2, students will be prompted by their Quest Log to close their Chromebooks and to open their Message in a Bottle that contains strips of paper with fragments. They will follow the directions in their logs to help them solve this puzzle. When this task is successfully completed, the Quest log will guide them into their next adventure.

Step 4: Tales From an Old Sea Dog (Inference from Text)

- OBJECTIVE:
    - Given a short grade level appropriate text, students will make and list 3 (three) inferences from fiction and non-fiction texts, achieving 3 (three) out of 3 (three) accurate inferences.
    - When working in a small group of 6 (six), students will collaborate and follow small-group expectations requiring only 2 (two) prompts or less to stay on task.
- This task will include student-technology and student-student interactions.
- Materials needed to navigate through Step 4: Google Classroom, Escape Room already assigned in GC, Quest Log (graphic organizer), printed text in 3 different levels.
- Structure: Students answer inference-based questions from a mystery story, which propels them through the game. They will be able to read the differentiated versions of the dame story online or get a paper copy to annotate and highlight. Then, they will be encouraged to use the graphic organizer provided in the Quest Log to record their thinking and to make connections. This will help activate their schema so they can infer more effectively. Their answers will be recorded on a Google Form. Students will receive immediate feedback from Google Forms after each response, indicating if their inferences are correct and guiding them toward the next step in solving the mystery in the fiction and non-fiction text.These features allow instructors to efficiently monitor performance and make quick adjustments to instruction based on real-time student responses. (Nguyen et al., 2018)

- Navigation: Students will be promoted after completing the previous puzzle to open their Chromebooks again to continue their sea adventure by reading some mystery stories. This approach led to higher engagement and collaboration, enhancing the overall learning experience. (Vidergor, 2021). Paper versions of the stories will be available for those who prefer a hard copy of the text for students to be able to annotate or choose which level of complexity they would like to use.
- To debrief after the escape room, the teacher will facilitate a discussion about how inferences can be helpful in situations outside of school/outside of reading literature.

UDL, Digital Accessibility, and Copyright.

When looking at the needs of this class of fourth graders, our team had to consider the abilities of the students in reading and writing, their language proficiencies, and the standards and expectations that would need to be addressed. A large part of our analysis was looking through student data to understand how to best address these needs.

Engagement

Student engagement was immediately thought of in this project. The team had already determined that we wanted to use gamification with students to teach and assess. After deciding on creating an escape room, we surveyed student interest to design the theme. Students provided their personal tastes and expectations, and based off of that the team decided to create a Roblox Deep Ocean theme. This addresses the principle of giving access to engagement by welcoming learner interests. The format of an escape room also fostered engagement by creating an expectation of collaborative learning. Students would be working in a team to learn and solve problems, relying on

each other rather than having one person dominate the task. To support this goal of collaboration and interdependence, students are also assigned roles in their groups. When everyone has a task, everyone can be engaged and be an active learner.

Representation

Our goal for multiple means of representation was to give students multiple opportunities to experience inferences, interacting with complete sentences, and to demonstrate their learning. In the formative pre-test and at the beginning of the escape room experience, students are inferring from images. This gives everyone a visual access point to the skill rather than relying on students' having to read a text that is too challenging or too simple for them. As the game progresses, students are expected to start inferring from text, but the text is available to them in multiple formats and in different complexities. The final text that students are inferring from will be printed in their Quest Log and will be part of the final Google Form. The text on the form will be a fourth grade level text, but the text in the quest log will be leveled. Having a printed version of the text will make annotating easier. This will also better engage the whole team, as they will not have to struggle to see one Chromebook screen, but can instead use their own page as they talk with their team and make inferences.

Another way that our team is supporting multiple means of representation is by not relying solely on use of Chromebooks to have students complete their tasks for the escape room. Along with the Quest Log, one of the planned tasks is almost completely physical. Students will be working with sentence strips in envelopes to construct proper sentences. This physical interactivity will engage students differently than using

computers. Even when students are engaged in activities like discussions with classmates, they're usually still sitting. Research shows that physical activity and the brain are connected—keeping the body active can help keep the mind active too. (Leung, 2020) This sentence puzzle activity will also have different levels of complexity. Two of the sentences will be simple, and two will have conjunctions or dependent clauses. As the point of the task is to construct complete sentences, students may choose if they will support their team with simple sentences or if they will take on the challenge of a more complex sentence.

The escape room format also gives opportunities for language support through visuals. Each part of the tasks can be accompanied by images that support student understanding of fragment sentences and text for students to infer from. For academic vocabulary, students will also have anchor charts and bookmarks meant to serve as memory aids. This will help students to remember how to make an inference and to remember key pieces of a properly structured sentence.

Action & Expression

When thinking about how to have students express their learning, the team again returned to the needs and abilities of our target students. The classroom has learners of various ability levels, so it's important that the requirements for demonstrating learning reflect that. As part of our strategy development, we tried to plan for challenges and possible ways that the escape room might be unclear or overly complicated. We decided that the best way to give organization and clear directions would be to provide all students with a Quest Log. The Log will have step by step directions including what

tools will be needed and where to find the next step in the escape room. As the Quest Log is a physical printed material, it will have pictures and icons along with the text to provide clarity and access to all learners.

The choice to have some of the steps be physical puzzles was also made with the thought in mind of opening up multiple modalities of expressing learning. The UDL guidelines suggest having multiple media for communication and multiple tools for construction and composition. By using the sentence strips for sentence building and the physical Quest Log for directions, next steps, and recording of progress in addition to digit formats, we aimed to meet students' needs in numerous ways.

Copyright

In thinking about copyright, the team wanted to make this large project as budget friendly as possible. Some materials purchased from the site Teachers Pay Teachers were used for anchor charts and as part of the students' Quest Log. Materials from Teachers Pay Teachers come with copyright notices and usage guidelines. They state that the materials are intended for classroom use and may not be reproduced or redistributed. As these materials were purchased with the intention of being used directly in the classroom with students, these materials are being used in a way that meets the copyright permissions and requirements of the Teachers Pay Teachers creators.

Of a more uncertain standpoint is the use of certain AI images used in the development of the escape room. As students were interested in having a Roblox themed learning experience, our team used AI software to produce Roblox style images

of characters in the ocean. Roblox is an online gaming platform for children and teenagers launched in 2004. It would be questionably within fair use for us to include images from Roblox in our escape room as our usage can be argued to be transformative: we are not using the images to play Roblox or a computer based game similar to Roblox; we are not reselling the images; and we are using the images as set dressing for a larger learning experience. As the Roblox images are not the focus of the escape room and relatively few images with a Roblox type character are being used, it should be reasonably within fair use for the team to include the images.

When creating videos, the Google Form, and the Quest Log, various media was used. One team member bought a subscription to Shutterstock and Creative Fabrica for use of images and fonts. Some images were sourced from Pexels and Unsplash with attribution given to the photographers. Team members also used paid Canva Pro accounts to create professional slides and the Quest Log. The paid materials allow for use in commercial and educational settings, and the free materials were properly attributed in the escape room elements they are attached to.

Digital Accessibility

The biggest accommodation needed to take into account beyond the need for academic differentiation was the color-blindness of one student. The student is red-green colorblind. The team discussed how this might be a problem for accessibility and what steps could be taken to overcome any roadblocks our design might face. It was decided that we needed to have clear contrast between background and text whenever and wherever possible. Further, as students are expected to infer from

pictures, the images chosen for the purpose of inferring must be clearly defined; i.e., images should have bold color & detail that makes the context of the images clear or else be black and white. All videos created for the escape room have captions to support accessibility for audio processing and Deaf or hard of hearing learners. In places where the color of an image was important to the task, the color of relevant items in the images was labeled directly under the item; e.g. images of birds were labeled “red”, “blue”, “green”, and “yellow”.

Instructional Design Theories.

Theories:

1. Cognitive Load Theory:

This theory aims to lower unnecessary mental effort in order to improve learning. Our team followed this by breaking information into smaller, more manageable parts. For example, instead of giving all the tasks at once, students went through the escape room step by step. Each task, such as "Making an Inference from a Visual Clue" and "Assembling a Message in a Bottle," provided support, allowing students to focus on one part of the learning objective at a time. Using sentence starters and quest logs also helped students concentrate on smaller parts of the task, which made it easier for them and lowered their mental load.

2. Motivation Theory:

We try to keep learners interested by creating a game-like learning environment. This was done by using a detective theme in an escape room setting. Our team added music and interactive tasks to make the experience more engaging. The use of game elements, like clues, locks, and teamwork, together with digital tools such as Quizizz and Google Forms, helped to increase the students' motivation. The motivational factors in the game-based learning method were also supported by research mentioned in the document, which shows that these types of activities can improve student engagement and teamwork.

3. Constructivist Learning Theory:

The constructivist approach was used by letting students work together in small groups. Through tasks like identifying sentence fragments and making inferences, students built their own understanding. As described in the "Villain Mode" activity, students made inferences from texts, relied on what they already knew, and discussed their answers in groups. This method is in line with constructivist theory, where students learn best when they actively interact with both the material and their peers to create their own meaning.

Visual design principles:

1. Alignment:

We are going to ensure that everything—both the media and tasks—is in line with the learning objectives. For instance, the visuals used in Google Slides and the sentence starters were directly related to the goal of helping students make inferences or rewrite sentences correctly. This careful matching of visuals with learning goals helped students focus on the most important aspects of the task without being distracted by unrelated information.

2. Hierarchy and Contrast:

Visual hierarchy was applied by organizing the information in Google Slides and escape room tasks in a step-by-step process. This way, students were able to focus on one task or piece of information at a time. For example, the images for making inferences were shown one after another, which helped guide the students' focus. We also pay attention to use contrast effectively, particularly in the "Complete Sentence" section. By clearly showing the differences between correct and incorrect sentences, students could easily identify key elements and understand what to look for in their answers.

Conclusion

As we wrap up our group project, we reflect on the significant journey we undertook in developing our escape room concept. Throughout this process, we faced various challenges, particularly in ensuring that all elements of the project were cohesive and

thematically aligned. Cordelia noted the difficulty of entrusting aspects of the project to teammates, as it required a shift from wanting to control every detail to embracing collaboration. This transition was pivotal, allowing us to trust one another's contributions while tackling the task of constructing a complex instructional game that transitions between different formats.

Our team was dedicated to making the project accessible for all learners, which we discussed extensively. Kaiwen highlighted the importance of Universal Design for Learning (UDL), ensuring that the materials we developed were appropriate for everyone—especially considering color-blind students, and students reading below grade level. We balanced the need for engaging gamified components with a focus on effective learning, while tackling the challenge of managing the amount of information provided without overwhelming our students.

Laura shared her personal learning curve, emphasizing that her usual practice of overseeing all aspects of design shifted as we collaborated on this project. She had to revisit our design document to clarify the structure and navigation of the escape room, enhancing our initial draft following feedback from our classmates. This included detailing the various interactions students would experience as they transitioned from e-learning to paper mode. Our team especially appreciates Cordelia’s exceptional work on the graphic organizer and Quest Log that will facilitate the pen to paper learning.

Kara tackled the media portion of the project and ran into many challenges that come with using new programs. She learned how to create and edit basic videos while utilizing AI to create a character voice for the game narrator as well as images that fit the Roblox theme of the game. Her biggest challenge came at the end of the project, just when time was running out, as she finally figured out how to use the editing tools that had been confusing at the start. Will she have time to go back and redo some of the videos or slides? We shall see!

Combining our efforts and the feedback we received allowed us to refine our project significantly. We created a user-friendly experience that involved making the Quest Log visually appealing and accessible, creating easy to follow google slides, and embedding videos into the google site so students don’t get directed to youtube. We also ensured that our references were correctly cited throughout the document.

In the end, what emerged from our collaboration was a dynamic and thoughtful project that prioritized learner needs while effectively engaging students in a unique learning endeavor.

As we conclude, we are proud of what we have accomplished together—not only in overcoming our challenges but in growing as a team dedicated to delivering a comprehensive, educational experience for our learners.

Individual thoughts on the project:

Cordelia- During the development stage of this project, one of the biggest challenges was making the various pieces of the escape room match each other in theming and in overall cohesion. I definitely am the type of person to want to take control of a project, but that would be an inefficient use of time and majorly unfair to my teammates! Trusting that everything would come together and not always being able to check my work against my teammate's contributions was difficult for me. Once I had moved past that mental block of wanting to see every piece of the project coming together, the largest challenge was to build my tasks effectively and professionally. The Google Form for the final step was challenging to build, because it had to be structured to proceed to different segments based on various responses. It also took some sourcing and creation of images and texts to build the content of the Form. Since we had decided to make the texts that students had to infer from leveled, once the Form was created there was the additional challenge of creating printable materials to allow the learners to choose which level of text they would like to interact with and infer from. Stepping the texts up in difficulty was surprisingly easier than stepping them down. One final challenge for me was the creation of the Quest Log. It had to be visually appealing, small enough to not feel daunting, and made with ease of learner access in mind (i.e., no fluff & clear directions). The choice to make it a booklet was easy for me, but then I had to mentally rotate each page in my mind to accommodate double sided printing and multiple pages. Making the log black & white was another easy choice, both for the accommodation of a color blind student and for ease of printing. Ultimately, I'm proud of how the Quest Log came together, however I would not want to do it again in a hurry!

Kaiwen: We need to think about making it accessible for all types of learners. For example, UDL differentiated tasks for one color blind student, ensuring no student is left behind. Plus, getting all the digital tools and activities to work together smoothly might be a bit of a juggling act. Keeping the gamified parts fun but still focused on learning is another key point. Also, balancing how much information students get at one (without overwhelming them) is crucial. And in terms of copyright especially with any AI-made visuals.

Laura - One of my challenges was that it took me a while to understand the process. I am more used to designing instruction for my students so I am in charge of everything. This was a learning experience. Since I was in charge of explaining the Structure/Navigation of our project. I had to go back and analyze all of the content from our design document step by step. This allowed me to deeply understand the complexity of our design. In the first draft of our development, I briefly explained the structure and navigation. After reading the feedback offered by our classmates, I went back and added more information such as stating clearly the different types of interactions there will be at each stage in our design. Also, I further clarified the navigation part when students were going to be moving from e-learning to paper mode. Cordellia worked very hard on the graphic organizer (Quest Log) our learners will be using to record their progress and she did an amazing job at explaining clearly when students will be switching from Google Classroom to using their paper worksheets. My last challenge was to transfer all our citations from our design document and insert them at the appropriate places throughout our development document.

Kara: I had no idea that creating the videos would be so challenging. I used multiple tools such as Canva, Shutterstock, Creative Fabria, Chatgtp, Aitubo, and VideoGen to bring it all together. When I created the Canva slides, I put links to the videos in the slides so that they would play at the click of a button. At the end of the project, I discovered that when the slides were imported into the Google site, the videos would not play and there was no option to have them play from the slides. I had to go back and

change each Canva slide presentation with directions to watch the videos, rather than click and play them. I uploaded each video to a YouTube channel so the videos could be embedded into the project. I ran into one last challenge at the end. I have yet to figure out how to get my downloaded Canva slides from my Google Drive to open into Google Slides. Once I figure this out, our project will be complete.

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Text #1 (Easy)

I was seeing my family in Florida when it happened. My cousin Harry wanted to ride bikes, so we went outside. That's when I saw the huge black clouds covering the sky. I ran for cover as the hard and cold rain soaked the ground. The wind was so strong it broke windows and knocked down trees. Before I knew it, a giant wave appeared and flooded the streets! We got inside and went upstairs. The power went out after a few minutes.

Text #2 (Easy)

Even though snorkeling may seem hard, these directions can make it easy and fun. When you look for a place to snorkel, find a place where the water is clear, calm, and has coral reefs. You need to take your swimsuit, and some other gear. A mask or swim goggles, a snorkel tube, and fins are important tools you should not forget. The most important piece of equipment is your mask or swim goggles! You need to make sure they fit your head well and do not leak.

Text #3 (Easy)

It had been three days. Donnie thought that he'd be used to the feeling by now, but he wasn't. There wasn't any real big rocking side to side so far. It was the constant small movements that did it. He went back and forth, back and forth. Being here was like this all day and all night. Donnie's brain picked it up and had to deal with it, fixing his balance again and again. That's why Donnie had been sick to his stomach for three full days. He was sad to know there were still four more days left.

Text #1 (Medium)

I was visiting my family in Florida when it happened. My cousin Harry wanted to spend some time in the sun, so we went outside. That's when I saw a storm coming in. Huge black clouds covered the sky. I ran for shelter as the driving rain soaked the ground. The wind was so strong it smashed windows and knocked down trees. Before I knew it, a giant wave came out of nowhere and flooded the streets! We got inside and went upstairs, but the power went out after a few minutes.

Text #2 (Medium)

Although snorkeling may seem difficult, these guidelines can make it easy and fun. When you look for a place to snorkel, you need to make sure the water is clear, fairly calm, and near coral reefs. Besides your swimsuit, the equipment you'll need for snorkeling includes a mask or swim goggles, a snorkel tube, and fins. The most important piece of equipment though is your mask or swim goggles! You'll want to make sure they fit well and do not leak.

Text #3 (Medium)

It had been three whole days. Donnie thought that he'd be used to it by now. However, he wasn't. There wasn't any really big rocking side to side so far. No, it was the constant small movements that did it. He went back and forth, back and forth. It was like this constantly. It was almost too small to notice, but it was always there. His brain picked it up and had to deal with it, constantly adjusting his balance. That's why Donnie had been queasy for three full days. There were still four more days left.

Text #1 (Hard)

The scariest thing in my life happened when I was visiting my family in Florida over the summer. My cousin Harry wanted to ride bikes, so we went a few streets away from the house. We had heard on the radio that the weather might be rough later, but Harry and I thought we'd be just fine if we took our jackets. We were on our way back, doing wheelies and making jokes. That's when I noticed the storm coming in. Enormous black clouds covered the sky. I raced for shelter as the driving rain soaked the ground, pelting our faces like rocks. The wind was so strong it smashed windows and knocked down trees. Harry and I got knocked over by the wind. It was pure chance that we were able to get up and start moving again. Before I knew it, a massive wave came out of nowhere and flooded the streets! Later, my aunt told me it was the storm surge. We finally arrived back at Harry's house and went upstairs, just in time for the power blackout a few minutes later.

Text #2 (Hard)

Although snorkeling may seem difficult, these guidelines can make it easy and fun. First of all, you should plan your trip carefully. Know where you're going and what the weather forecast is. When you look for a location to snorkel, you need to ensure that the water is clear, fairly calm, and near coral reefs. Make certain that your gear is ready to go. Double check before leaving that you have what you need. Besides your swimsuit, the equipment you'll need for snorkeling includes a mask or swim goggles, a snorkel tube, and fins. Some snorkelers like to take diving cameras with them as well. The most important piece of equipment, however, is your mask or swim goggles! You'll want to make sure they fit well and do not leak. Test them out before you dive. You should check that the straps are snug against your head, but not so tight that your eyes feel squeezed. Finally, never go snorkeling alone. Always take a buddy and inform others of where you're going.

Text #3 (Hard)

It had been three entire days since the start of this ordeal. Donnie thought that he'd be used to it by now. However, he wasn't. There hadn't been any really large jolting side to side so far, and the up and down motion was limited, too. No, it was the constant small movements that did it. It was worse on the first day, when he realized he could still feel the motion when he laid down or tried to take the stairs. Donnie felt it repeatedly: back and forth, back and forth. It was like this constantly. It was almost too small to notice, but it was always, unendingly there. His brain perceived it and had to negotiate the sensation, constantly adjusting his balance. That's why Donnie had been queasy for three full days. He realized with a horrible lurch in his stomach that there were still four more days left. He didn't know if he could stand it much longer. Next year, he'd ask to spend spring break with his grandparents in their pokey little town instead of having a grand adventure. For now, he was mainly sorry he had eaten a grand breakfast.

Message in a Bottle

Answers

Directions: Copy 4 sets, one for each group. Cut each sentence and put it inside an envelope. Label each envelope: Sentence 1, Sentence 2, Sentence 3, and Sentence 4. Give each group 4 envelopes. Students should check one sentence at a time after they try arranging their paper sentence strips to produce a grammatically correct sentence.

1. We have to follow that shark. It's getting away!

2. As the ship sailed into the open ocean, the crew braced themselves for the strong winds that began to whip across the deck.

3. The diver hesitated before entering the underwater cave, knowing that mysterious creatures might be lurking in the shadows.

4. Although the sky was dark with storm clouds, the captain steered the ship confidently, trusting his instincts to guide them to safety.

Message in a Bottle
Sentence Strips

Directions: Copy 4 sets, one for each group. Cut each sentence strip that makes a complete sentence and put it inside an envelope. Label each envelope: Sentence 1, Sentence 2, Sentence 3, and Sentence 4. Give each group 4 envelopes. After students try arranging their paper sentence strips to produce a grammatically correct sentence, they should check for correctness one sentence at a time.

We have to follow that shark.

It's getting away!

As the ship sailed into the open ocean,

the crew braced themselves for the strong winds that began to whip across the deck.

The diver hesitated before entering the underwater cave,

knowing that mysterious creatures might be lurking in the shadows.

Although the sky was dark with storm clouds,

the captain steered the ship confidently,

trusting his instincts to guide them to safety.

Message in a Bottle
Sentence Strips

Directions: You'll need to use the sentence puzzle pieces in your bottle to build complete sentences carefully. You can record your thoughts and sentences in the Quest Log.

We have to follow that shark.

It's getting away!

As the ship sailed into the open ocean,

the crew braced themselves for the strong winds that began to whip across the deck.

The diver hesitated before entering the underwater cave,

knowing that mysterious creatures might be lurking in the shadows.

Although the sky was dark with storm clouds,

the captain steered the ship confidently,

trusting his instincts to guide them to safety.

Message in a Bottle
Sentence Strips
Challenge

Directions: Copy 4 sets, one for each group. Cut each sentence strip that makes a complete sentence and put it inside an envelope. Label each envelope: Sentence 1, Sentence 2, Sentence 3, and Sentence 4. Give each group 4 envelopes. After students try arranging their paper sentence strips to produce a grammatically correct sentence, they should check for correctness one sentence at a time.

We have to follow that shark.

It's getting away!

As the ship sailed into the open ocean,

the crew braced themselves for the strong winds that began to whip across the deck.

The diver hesitated before entering the underwater cave,

knowing that mysterious creatures might be lurking in the shadows.

Although the sky was dark with storm clouds,

the captain steered the ship confidently,

trusting his instincts to guide them to safety.

IMPLEMENTATION

Abstract

This formative review assesses the readiness of the "Inference Investigators" escape room for instructional use by evaluating feedback from an instructional design graduate student, young learners, and a fourth-grade teacher. The report adheres to the ADDIE instructional design framework, focusing on the critical evaluation phase prior to classroom implementation. Key findings indicate that while the activity was engaging and effectively met learning objectives, challenges emerged related to navigation, clarity of instructions, and technical issues with materials. Expert reviewers identified the necessity for clearer, step-by-step directions, and the need to reorganize content for improved usability. Additionally, time management was a concern, suggesting that activities might benefit from being divided into shorter sessions. This evaluation informs necessary revisions to enhance the escape room's design and increase its efficacy as a learning tool, ultimately promoting a more impactful educational experience for students.

Purpose

The purpose of this formative review of the Inference Investigators escape room is to assess if the escape room is ready to be used in an instructional setting. This report includes several reviews from instructional design students, young learners in the target age group, and several learners from the class this escape room is meant for. In the ADDIE process of instructional design, the final step is evaluation. An instructional course should be evaluated formatively and summatively to ensure that it achieves its intended objectives and properly supports its learners. This formative assessment of the escape room is being conducted before the implementation of the escape room in a classroom setting. The goal of this assessment is to ensure the quality of the escape room, check for playability of the game, and ensure that the created materials meet the expected standards of good instructional design. After receiving feedback from the reviewers, this team will review comments and make necessary changes to improve the escape room before its full implementation.

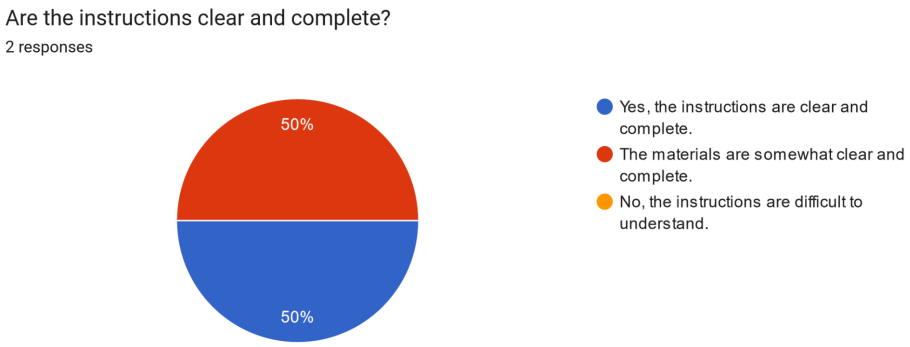
Testing

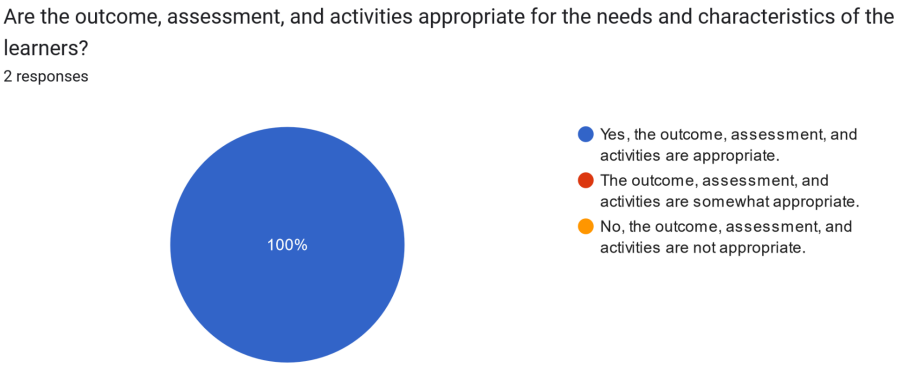
Expert Review

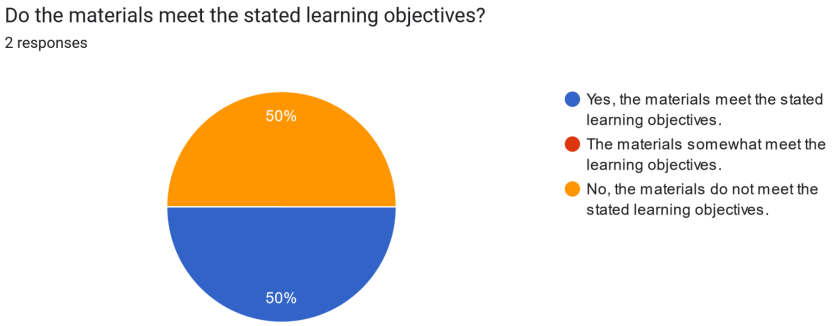
1. ***Participants:***
    a. Jeff Wilson, a student in the Instructional Design & Technology program at CSUSB. He has been an adjunct professor at University of Redlands for over ten years. He is very experienced in computer science, coding, and using multiple learning management systems such as Canvas and Moodle.

b. Sara Guerra, a 4th grade teacher at Bryn Mawr Elementary School. She has been teaching 4th grade for fifteen years in California and is an expert in 4th grade curriculum and standards. She is experienced in using technology in her instruction, both in person and in distance learning formats, and often uses a blended learning model for English language arts and for mathematics.

2. ***How was the testing conducted? Describe all the materials and instruments used to collect data.***
    a. Data was collected in a survey. Reviewers were given the links to a Google Site and a Google Form. The Google Site was the teacher directions for the escape room, and it hosted all of the slides, videos, and documents for the escape room. Reviewers were directed to walk through the Google Site as if they were going to implement the escape room and give feedback on any errors, broken or missing elements, and overall cohesion and effectiveness of the escape room as a learning device.
3. ***Present the results (including tables, charts, raw data) and discuss the data.***







The two experts reviewed the material at different times due to their availability. Mr. Wilson was able to view the site and materials early into the assessment process and his feedback elicited many changes to shore up weaknesses in the presentation and clarity of the material. Ms. Guerra's feedback came closer to the end of the assessment. She was thus able to view the changes made and give feedback on the improved site and its quality. Both reviewers agreed that

the material was appropriate for the targeted fourth grade learners. Mr. Wilson felt that the standards and objectives were initially too unclear to say that they were appropriate and were met by the activities. Once the site had been updated with clearer objectives, both reviewers said they felt the escape room appropriately met the objectives of the lesson.

4. ***Describe the problems identified and revisions made.***

    a. One major problem identified by the reviewers was that the website used to host directions and materials for the escape room did not give clear instructions and was confusing to navigate. To address this, the website was reorganized, with materials arranged to be very sequential and step by step directions were typed at the top of each page. Objectives for each step of the escape room were also included at the top of each respective page to connect the objectives clearly to each activity meant to meet that objective. Some of the slides embedded in the website were also edited to give more clear directions.
    b. Another piece of feedback was that the videos developed for the escape room were not helpful. When checked by team members, this was found to be a problem in the ordering and labeling of the videos on the website. The labeling was fixed and the videos were properly reordered.
    c. One reviewer could not access the Quizizz at all. The team member who created the Quizziz fixed the link and adjusted the quiz to have no close date and be publicly open.
    d. Reviewers were confused by the clues meant to guide students from one step to another. To correct this, it was clarified in the directions that the teacher will be

giving students the clues as a physical object after each step in the escape room is completed.

e. Reviewers gave feedback on formatting of the Google Site and of the directions to ensure clarity of purpose.

One-on-One

Focus on individual learner experience, including clarity, engagement, and navigation (2-3 Learners).

Answer the following:

1. ***Who was involved in the test? Describe characteristics of your participants.***

   Participants:

   a. Niece- Matty Dotter. 4th grade student at River Springs Charter School. Matty loves games and using the computer. She reads at a 5th grade reading level. Matty loves video games and Roblox.

   b. Niece- Ivy Dotter. 4th grade student at River Springs Charter School. Ivy loves reading and writing and reads on grade level. Ivy loves video games, computer games and Roblox.

   * Both Matty and Ivy love escape rooms and have participated in escape rooms for birthday parties. They are “escape room experts”.

2. ***How was the testing conducted? Describe all the materials and instruments used to collect data (Survey, Observation, Interview).***

a. Testing was conducted at the home of Matty and Ivy. Both participants shared a computer to navigate through the slides, videos, and quizzes. They had copies of the quest log, sentence strips, and envelopes with clues. Participants were observed during the activity. After the activity was completed, 1 participant filled out a survey and both participated in a discussion about their experience.

3. Present the results (including tables, charts, raw data) and discuss the data.

a. Participants were eager to help prepare the activity. They participated in folding the quest log into booklets and cutting out the sentence strips. This helped build excitement for the activity.

b. Discussion and Observation Results

	Matty	**Ivy**
Length of Escape Room Activity	-Wished it was longer and expressed that she could do more steps and keep going until 10:00pm. Observer noted that this may have been due to the participant just not wanting to go to bed.	-Wished it was shorter, but explained that it was later in the evening and she wanted to to accomplish other tasks before bed.
Slides	-Easy to navigate -Easy to read -Doesn't like Roman Numerals	-Easy to navigate -Fun pictures -Fun colors -Wished there was a treasure map to follow all the way through the activity
Videos	-Fun pirate voice -Wished the pirate voice said, "dun, dun, dun…" -Wanted more sound effects	-Videos created an element of suspense -Appreciated the subtitles on the videos
Step 1	-Wanted me to read the slides to her and ask her the questions -Preferred answering the questions out loud and then writing down abbreviated answers in quest log	-Wanted to read the tutorial slides herself -Preferred writing detailed answers in quest log and did not want to discuss her answers

	-Wanted explanation about the girl's outfit in the snorkel photo-I used the opportunity to discuss cultural and religious differences	-Provided many alternative inferences and reasons as to why a person in the ocean would be looking at a watch (checking speed, a timer, directions, distance/mileage, texts on his apple watch)
Step 2	-Short on time in the evening, agreed to complete quiz later -Loved the Quizizz.com format (colors, music, sound effects, and points)	-Short on time in the evening, agreed to complete quiz later -Loved the Quizezz.com format (sound effects, large buttons)
Step 3	-Wanted to work as a team with her sister (Matty invited her younger brother to work on "her team")	-Wanted to complete the activity by herself
Step 4	-Liked that there were 3 levels of the last challenge -Asked for the hard level -Preferred verbally explaining her answers and writing minimal answers in quest log	-Felt that the medium level was better for her -Preferred writing all her thoughts and observations in her quest log
Conclusion	-Wanted a "talking pirate bird" somewhere in the activity -Felt like the activity was on her level of understanding -Recently completed an inference activity at school and was eager to "show off" her skills -During the videos she reacted with many verbal expressions, excitement, and talking back to the narrator- such as "oh no," "oh ya, oh ya," "I'm ready," "let's do this," and "phew…I didn't turn into a squid!"	-Expressed that she hates "boring" worksheets and enjoyed different formats to practice and learn the skills -Eager to show off her results in her quest log -Wants me to return so she can teach the activity to her younger siblings -Did not want to complete the online survey (she needed to practice her piano) -Felt that she learned from the activity

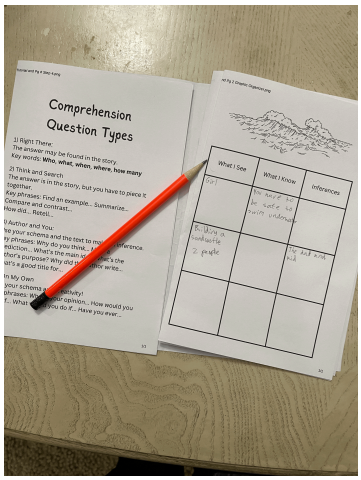
The results from the observations of Matty and Ivy during the Escape Room activity reveal interesting contrasts in their experiences. Matty expressed a desire for a longer activity, possibly because she was reluctant to go to bed. She enjoyed the engaging elements like easy navigation and a fun pirate voice, although she wished for more sound

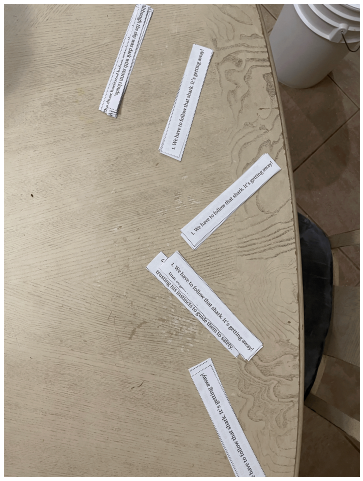
effects. She preferred receiving instructions verbally from me and enjoyed verbally explaining her inferences as opposed to writing down her answers. In contrast, Ivy found the activity to be too long as it was late in the evening, wanting to wrap up to focus on other tasks. She appreciated the use of colors and sound in the Quizizz format and loved the quest log. She opted to work independently on the sentence strips rather than with her sister, despite Matty's invitation for teamwork. Both participants showed enthusiasm and engagement. Matty was eager to verbally showcase her new inference skills and Ivy valued the activity's alignment with her skill level and preference for writing her answers. Ivy was disinterested in completing a follow-up online survey due to prior commitments. Overall, the findings highlight the importance of considering individual preferences and time constraints in engaging students effectively in educational activities.

4. ***Describe the problems identified and revisions made.***

    a. Most of the problems I encountered were due to conducting the activity in the evening rather than during the day. I had to work around my sister's schedule and my work schedule. The only time we could meet was in the evening after my long work day and after both participants got home from a long day at school and gymnastics.
    b. Individual preferences in receiving directions and presenting answers were very different for both participants. I was able to adjust and slightly alter the activity to meet the needs of each participant.
    c. Matty wanted to work in a team while Ivy preferred working independently. This activity was designed to work in a team environment. It is possible that Ivy just did not want to be on a team with her sister and may have been more open to

teamwork in a classroom setting. Allowing Matty to team up with a younger sibling helped move the activity along and avoid arguing between the participants.

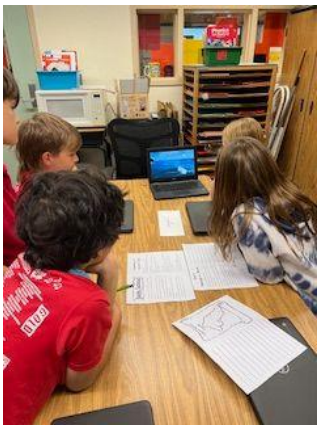




Small Group

1. ***Who was involved in the test? Describe the characteristics of your participants.***
    a. ***The small group will include a heterogeneous group of 4th graders plus a classroom teacher:***
        i. A ten-year-old boy who is performing above grade level.
        ii. A nine-year-old English Learner girl who has an IEP and is performing at two grade levels below average.
        iii. A nine-year-old color blind boy who is performing at grade level.
        iv. A nine-year-old girl who is performing at just below grade level.
        v. A nine-year-old boy with a 504 plan due to his ADHD diagnosis.
        vi. Classroom teacher

2. ***How was the testing conducted? Describe all the materials and instruments used to collect data.***



a. The testing was performed in a small pod between two classrooms. The group of students were sharing a Chromebook. They had a copy of the Quest Log (graphic organizer), envelopes with clues, an envelope with color-coded sentence strips, pencils, and a timer. Students were provided 20 minutes to complete this task.

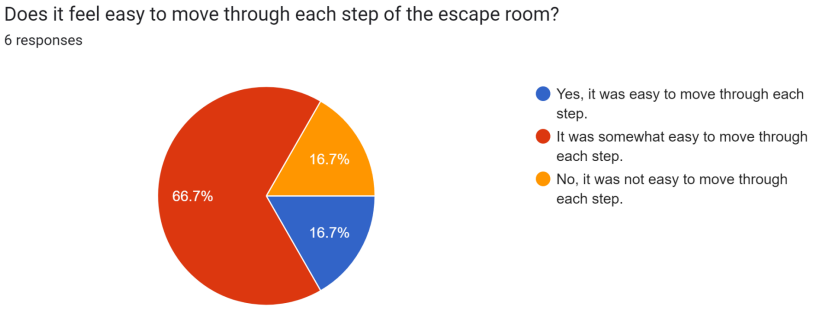
b. Students completed a short survey (Google Forms) after the activity.

c. Teacher was continuously conducting formative assessments through oral questions and the use of "thumbs up/down" strategy.

3. ***Present the results (including tables, charts, raw data) and discuss the data.***

Students:

a. Students shared that it was mostly easy to navigate through the steps of the escape room.



b. The students felt a bit frustrated in the beginning because a few materials were missing and some of the videos were not working properly.

c. Through an open-ended question in our survey, four students shared that they were able to learn more about inferences and 2 shared that they did not learn.

d. Based on teacher observation, the students performed at an average level, according to their instructional needs. None of them displayed or shared any extraordinary difficulty accessing the instructional materials that could be linked to their individualized needs.
e. Even though students were only able to complete the first puzzle, they were very engaged and are looking forward to continuing solving the rest of the Escape Room.

Teacher:

f. The time allocated for each activity was not appropriate. In my expert opinion, this instructional design should be divided into 4-20 minute sessions to allow enough time for students to fully explore and complete each task.
g. I had trouble in the beginning accessing materials from my school district browser. I had to contact my district IT to help me access the resources.
h. Instructors should be clearly aware of all the materials they need to prepare for each activity ahead of time.
i. Including a Key with answers is a great tool for instructors.

4. Describe the problems identified and revisions made

a. One of the problems identified by the small group of students was that the instructions at the beginning were confusing. Instructional designers fixed this problem by adding more specific instruction for each individual step in this activity.
b. Students felt a bit frustrated by their inability to access some materials. Instructional Designers fixed this problem by adding Teacher Preparation

instructions to their design so all the materials would be readily available for each task.

c. Teacher contacted district IT personnel to ask permission to access the instructional materials needed. More testing could be needed to make sure the links will open in all kinds of settings.
d. I feel that more exposure to this instructional design project is needed, regarding this small group, to more accurately assess the attainment of the learning objectives.
e. The length of each task in the design took longer than planned, so the instructional designers decided to break the design into several days.
f. I am currently working on creating a Key (answers) for each activity so the instructor can have quick access to the correct responses and offer feedback to students in a timely manner.

Strengths and Weaknesses

Strengths

1. Engagement: A large number of participants mentioned that the materials held their attention and made them feel interested, especially during group activities. The interactive, hands-on style allowed students to stay focused. It also encouraged teamwork, which many students enjoyed.
2. Achievement of Learning Objectives: According to students, the materials were generally successful in achieving the stated learning objectives. Many students felt they learned the intended concepts, such as how to make inferences and how to use complete sentences.

3. Accessibility: The materials were organized in a way that made them easy to access and understand. This effective organization was especially apparent in later steps, where learners could follow most of the steps smoothly. Although the organization was strong, some reviewers recommended a few adjustments to make it even better.

Weakness:

1. Technical and Navigation Issues: Some reviewers found it hard to navigate the Google Site where the escape room activities were hosted. They had trouble accessing some of the resources, such as videos and documents. There were problems like broken video links and missing items. These issues made it hard for students to follow the activities and disrupted the flow of learning. The design team improved the site by fixing the links, so all resources would be available and easy to find.
2. Clarity of Instructions: In the first few steps of the escape room, instructions were sometimes not clear. This made some students feel confused. For example, students had trouble finding important elements like codes or clues, which they needed to solve the puzzles. This slowed down their progress and made it harder to complete the tasks. To help students, the design team added more detailed instructions. Each step was explained more clearly. This made the goals and steps easier for students to understand, which helped them move through the tasks more smoothly.
3. Time Management and Sequencing: The activities took longer than expected, which created some challenges. Each task required more time than planned. It was suggested that the activities should be divided into shorter sessions, each about 20 minutes. This would allow students enough time to fully complete each task. It indicates that we need to improve the order of videos and resources to make understanding easier. These changes

aimed to help both students and teachers by making the activities easier to follow and manage.

Summary

The “Inference Investigators” escape room formative data gave useful insights into how well the instructional materials worked and what could be improved. The team used evidence-based decision-making throughout the redesign, relying on formative data to guide improvements (Phillips, Klein, Dunne, & Siriwardena, 2019). Both expert reviewers and small group participants found the materials engaging. They noted that the materials helped students work together and interact, which many enjoyed. The materials were successful in meeting the main learning goals. These goals included improving students' skills to make inferences and helping them form complete sentences. However, there were some technical challenges. Reviewers mentioned that it was sometimes difficult to navigate and access the videos. In addition, some instructions were not clear enough, especially at the beginning. This reminds us to add clearer, step-by-step directions. Another problem was with time management. Activities took longer than expected, which became a challenge. To solve this, we should think about breaking up the design into shorter sessions. These changes were made to improve the flow of instruction and to make the materials more user-friendly for both students and teachers.

References

Phillips, J., Klein, J. D., Dunne, E., & Siriwardena, M. (2019). Using Formative Data to Make Evidence-Based Decisions During Re-Design. *Journal of Formative Design in Learning*, *3*(2), 133–145. https://doi.org/10.1007/s41686-019-00036-z

EVALUATION

Abstract

This summative assessment of the Deep Ocean escape room is reflective of the successes and deficiencies of the escape room as a learning tool for students. Students and facilitators reported that the escape room was engaging and fun to participate in. Through pre- and post-test data, it was seen that students did learn, though this escape room was much more effective to teach making inferences than using complete sentences. Reflections are included about how the escape room might be improved in future iterations to better support English learners and better address sentence construction as a learning objective. Finally, a reflective summary is included telling how the overall experience of using ADDIE to plan and design for instruction was impactful for the design team.

Purpose

This summative evaluation of the Inference Investigators Deep Ocean escape room is to determine the overall quality and effectiveness of the escape room. This final step in the ADDIE instructional design process is to fully evaluate the final product after having administered the escape room in a classroom setting. Quality instructional design requires designers to evaluate their work multiple times throughout the design process to ensure that it is properly addressing both the stated objectives and the needs of the learners it is targeted towards. Summative evaluation gives the chance to revise a course, or in this case an escape room, so that it can be as effective as possible and best serve the needs of the teachers and students it is designed for. Gathering feedback is a key qualitative component of this summative evaluation, as learners will give perspective of if they enjoyed the experience and if they feel that they learned from it. Results of the pre- and post-tests will inform the effectiveness of the escape room in a quantitative manner, providing specific data about if the learners met the stated objectives or not. Finally, the entire quantitative and qualitative data set will be summarized and analyzed to determine the overall effectiveness of the escape room and what changes, if any, need to be made before it is implemented again with another class.

Level 1: Reaction

To gauge the effectiveness and quality of the final escape room product, a Google Form was created to be a survey for participants. This survey could also be used for facilitators to give feedback on their opinion of how well the escape room was suited to their setting, objectives, and audience. The survey will gather only qualitative data, but will serve to inform if the escape

room was engaging enough for learners and facilitators to feel that it was successful. The questions used in the survey were as follows:

1. Tell one thing you liked about this escape room (short answer).
2. Tell one thing you would change about this escape room (short answer).
3. What was the most important thing learned from the escape room experience? (short answer).
4. Opinion gathering questions on a four point scale: poor, fair, good, and excellent.
    a. Quality of the slides, videos, and lessons.
    b. Usefulness of the slides, videos, and Quest Log.
    c. The course met the objectives to teach inferencing and using complete sentences.
    d. Your overall impression of the escape room.

Based on the responses to these questions, we can conclude that the escape room felt very engaging to all learners and complete. The instructor saw that all students were engaged and driven to participate in the escape room. Both facilitator and students wished that the slides had more interactivity and animation, such as having chests popping open, but were overall satisfied with the escape room and their experience. The facilitator noted the set up time required is long, however this was seen by the facilitator as being worth it for the engagement and active learning she saw in her students. The reaction to the escape room learning experience was positive and showed that for this class of students, it was a meaningful learning experience.

Level 2: Learning

The subjects evaluated on these pre and post-assessments were a group of twenty five heterogeneous 4th grade students. All of them with a wide range of learning abilities. Their

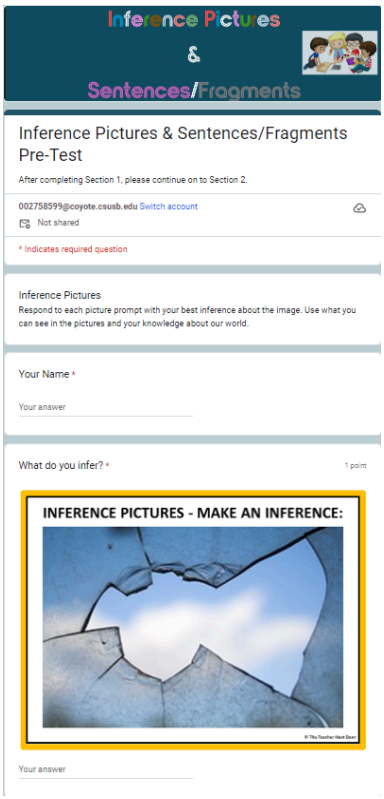
levels of knowledge on the subjects targeted on this instructional design, Making Inferences and Identifying Complete Sentences, also varied.

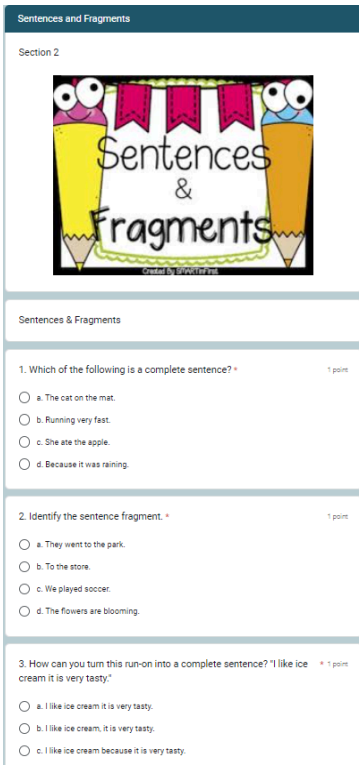
The use of a pre-assessment was needed to identify students' readiness, inform instructional planning, set goals and expectations, differentiate instruction, and measure growth and effectiveness. This assessment was created based on the learning objectives:

- Given a task with 5 (five) sentence fragments and run-ons, students will rewrite each phrase to create complete sentences, achieving at least 4 (four) out of 5 (five) sentences correctly rewritten.
- Given a short grade level appropriate text/text feature, students will make and list 3 (three) inferences from fiction and non-fiction text/text features, achieving 3 (three) out of 3 (three) accurate inferences.

Overall, this pre-assessment helped us offer a more personalized and responsive approach to teaching, benefiting both students and teacher by creating a clearer path to achieving learning objectives. The Pre assessment was divided into 2 sections:

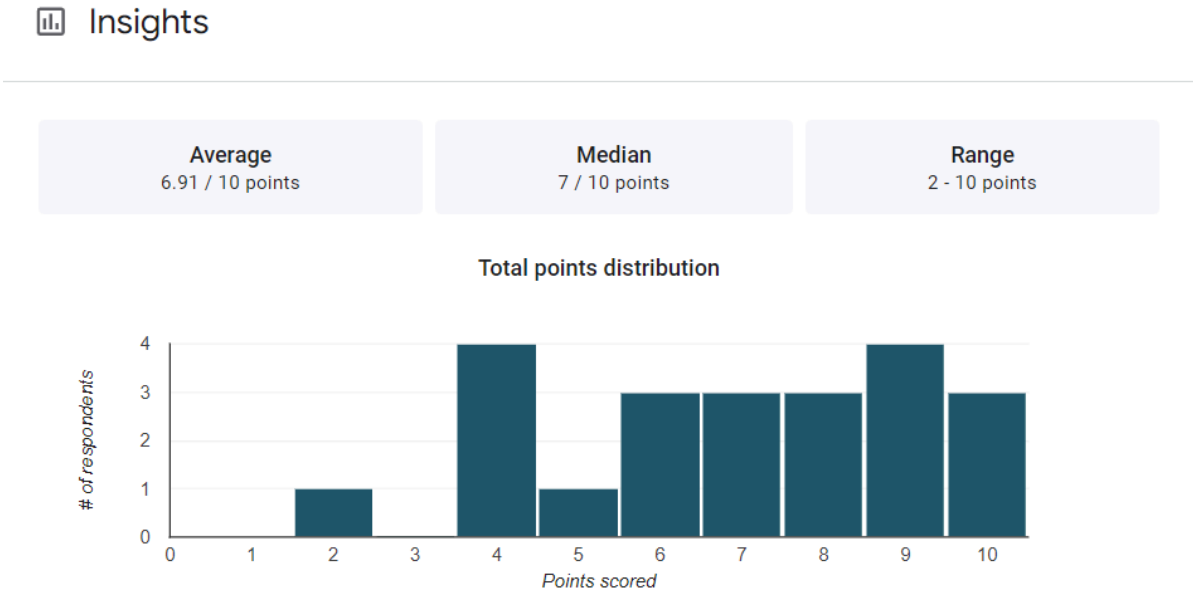
- The first section assessed students' inference mastery. This section includes two types of inferences: based-text inferencing and based-text features (images) inferencing.





The second section assessed students' mastery at identifying complete sentences, sentence fragments, and run-on sentences.. Each section had five questions. Each question was worth one point, for a total of 10 points. We used the scores as percentages to be able to compare them to the sores from the Post assessment.

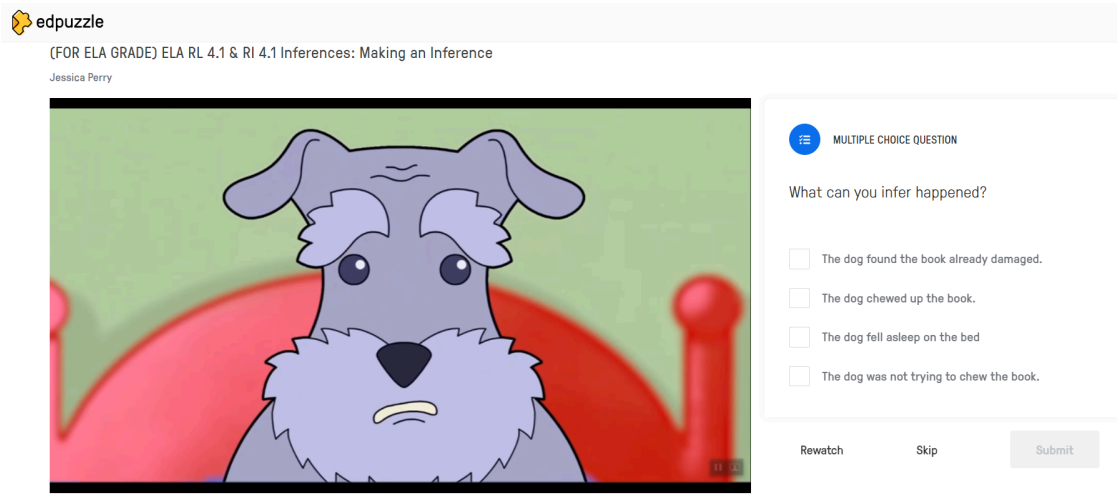
Twenty-two students took the Pre assessment prior to the introduction of the lesson. Three students were absent during this Pre assessment. Three students scored 10 points (100% accuracy), four students scored 9 points (90% accuracy). This means they have already achieved mastery of these objectives and they will require higher thinking materials to help them further expand their knowledge of the objectives. Three students scored 8 points (80 % accuracy). This means they are performing at grade level and have an average understanding of the objectives. Eleven students scored between 7 - 4 points (70% - 40% accuracy). This means that they are performing below grade level and they will require materials appropriate at their learning level. One student scored 2 points (20% accuracy). This means this student is performing two or three grades below grade level. Students performing at this level might need extra support and a lot of scaffolding throughout the learning activity.



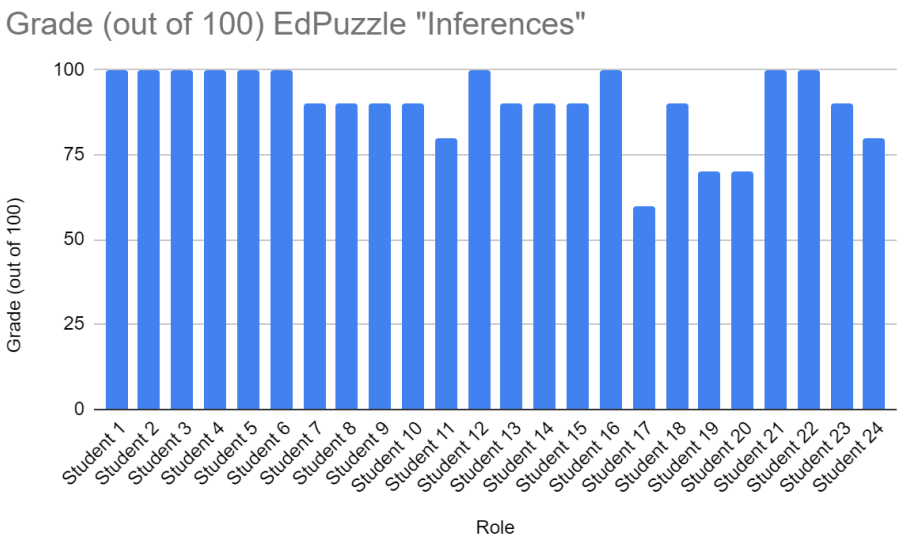
Based on this data, our team decided to offer students differentiated learning opportunities. Differentiated instruction can be implemented in various ways. Teachers who embrace this approach in their classrooms are more likely to select a range of effective learning strategies tailored to the unique needs of diverse learners. (Subuh Anggoro et al., 2024) For example most of the activities throughout the Escape Room have three different levels of difficulty to keep students engaged, motivated, and help them achieve or further develop the learning objectives. The results of these Pre assessments helped with the iteration process of our learning design. Our project has had several modifications based on the data collected throughout the ADDIE process.

The Post assessments were administered using EdPuzzle. These assessments were chosen based on their alignment with the learning objectives of our design. Twenty four students took two short assessments. One student was absent during the Post assessment. The first Post assessment assessed the effectiveness of our learning design on making inferences using text

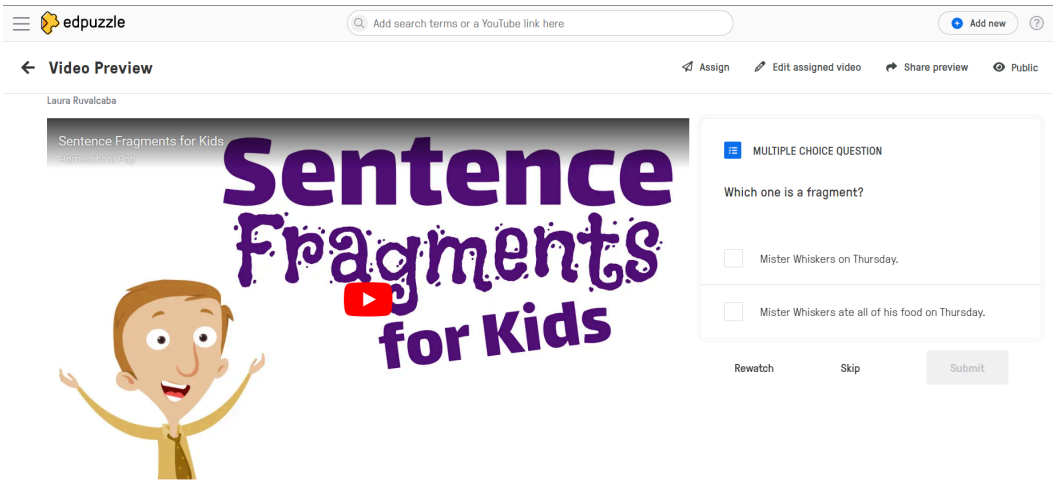
and/or text features such as pictures. The grade given was out of 100.



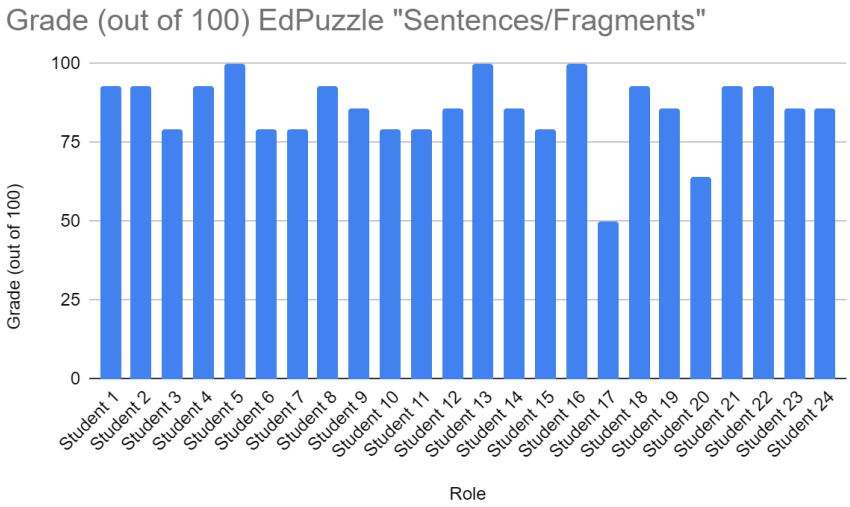
Our team learned that ten students scored at 100% accuracy, nine students scored at 90% accuracy, two students scored at 80% accuracy, two students scored at 70% accuracy, and one student scored at 60% accuracy. Based on this data, we could conclude that this lesson has been designed with effective activities that help students accurately make inferences from a given text and/or text feature. Even the student who scored at 60% accuracy significantly improved 40% from the pre-assessment.



The second post-assessment evaluated the effectiveness of this lesson in regards to identifying complete sentences, sentence fragments, and run-on sentences. The grade given was out of 100.



Our team learned that this concept proved to be a bit more challenging. The data collected indicated that three students scored at 100% accuracy, seven scored at 93% accuracy, six scored at 86% accuracy, six scored at 79% accuracy, one scored at 64% accuracy, and one scored at 50% accuracy. Based on the results of this Post assessment, we can conclude that most of the students demonstrated a significant improvement from the Pre-assessment; however, the next step in the iteration of our design could be to offer more scaffolding materials and possible ELD strategies to further help students who are performing below grade level and/or might be an English Learner achieve the learning objective. Also, we could add some remediation lessons for any students who did not make significant progress in attaining the goals.



Level 3: Behavior

To assess student behavior, understanding, and feelings about how the escape room experience contributed to their learning, a Google Form was developed as a survey for participants. While the survey focuses on collecting qualitative data, it will provide valuable insights into whether the escape room will improve student behavior or ability to make inferences going forward. The survey will include the following questions.

1. Now that you've completed the escape room, how confident do you feel about making inferences?
2. How did the activity help you understand complete sentences better?
3. Did working with your teammates help you learn better?
4. How did your teammates help you?
5. Do you think activities like this help you learn in a fun way?

Who are you? *

- Student in Mrs. Ruvalcaba's classroom
- Aunt Kara's Niece
- Other student

Now that you've completed the escape room, how confident do you feel about making inferences? *

- Very confident
- A little more confident
- Not confident
- I don't know

How did the activity help you learn about making inferences?

Short answer

Short answer text

Answer key (0 points)

Required

How did the activity help you understand complete sentences better? *

Short answer text

Did working with your teammates help you learn better? *

- Yes
- No

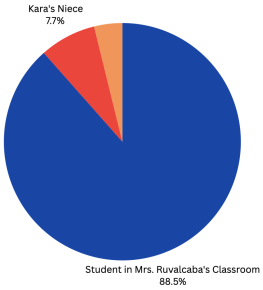
How did your teammates help you? *

Short answer text

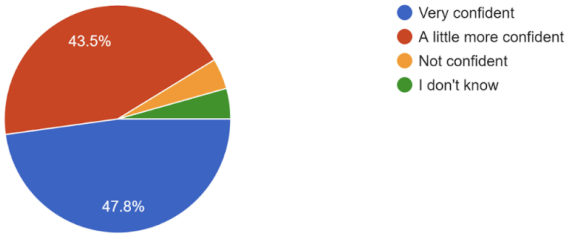
Do you think activities like this help you learn in a fun way?

- Yes
- No

Who are you? 26 participants

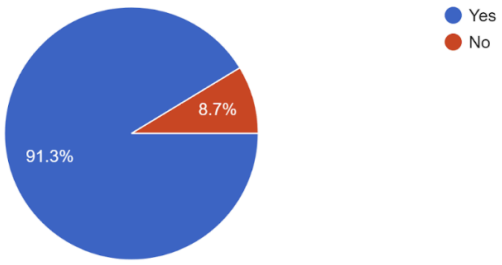


Now that you've completed the escape room, how confident do you feel about making inferences? (23 classroom participants)

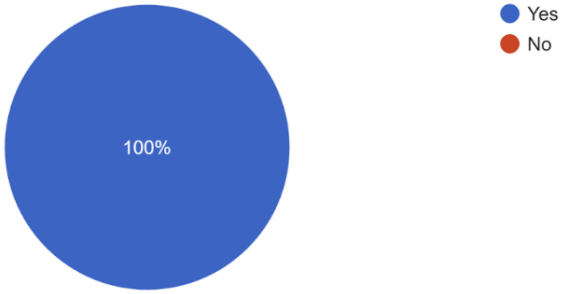


How did the activity help you understand complete sentences better? (23 classroom participants)

Did working with your teammates help you learn better? (23 classroom participants)



Do you think activities like this help you learn in a fun way? (All 26 participants)



Notable Responses from participants: How did your teammates help you?

-By listening and agreeing with each other we got 3rd!

-They helped me solve the problems I did not know how to solve yet.

-By working together with me to find the answer.

-They helped me make good inferences and they shared ideas with me.

Challenge with collecting survey data

Collecting data from classroom participants was conducted on the same day with all the students present. Collecting data from family participants proved a little challenging due to waiting on participants to complete the survey on their own time. Family participants provided information at the last minute and their results arrived too late to be added into the data collection charts.

Data from the survey shows that approximately 90% of students felt like they were either very confident or a little more confident in their ability to make inferences after completing the activity. Over 90% of the participants felt like their teammates helped them learn better and 100% of the participants said that they felt like activities like this help them learn in a fun way.

We believe that the data suggests that the participants were engaged with the activity, that they enjoyed the activity, and that working in a team contributed to the learning experience.

Link to the rest of the data

Level 4: Results

If we had more time, a casual focus group with the following questions would have been helpful. Giving young participants an opportunity to have an open discussion to share their ideas and experience, rather than having to type out their responses, would most likely result in more qualitative data.

1. How did the design help you learn and stay interested in the material? Did it make the content clear and engaging for you?
2. What difficulties did you have when using the instructional design? How were these problems solved, or were there suggestions to fix them?
3. Did you have any technical problems during the learning process? How did these issues affect your experience with the material?
4. How interested and involved did you feel during the activity? What parts of the activity helped you stay interested and focused?
5. Do you have any comments on how the design was organized and how well it flowed? Did the structure make it easier or harder to learn?
6. How well did the design fit your own learning needs and preferences?
7. Did any changes or updates happen based on your feedback?
8. How did the design encourage you to work together with your classmates? Were there specific parts that helped you collaborate more easily?

Reflective Conclusion

Making inferences and recognizing complete sentences are very important skills. These skills help students to improve their ability to read, write, and understand what they learn. We created and used the Deep Ocean escape room carefully planned to match learning these skills. This escape room was planned carefully to match learning goals. It included different activities that could meet the needs of students at different skill levels.

We chose the Escape Room on purpose because it makes learning more fun and exciting. It helps students get more involved in the lessons. To measure how much students learned, we used tools

like Google Forms and EdPuzzle. These tools allowed us to check learning results. They gave us two types of information: numbers that show progress and feedback that tell us how students felt. By including activities at various levels of difficulty, we tried to help all students, no matter how much they already knew. We also encouraged them to improve and reach their learning goals.

This project has helped us learn more about instructional design. It taught us how to review and change our plans step by step by using the ADDIE method. This process showed us how important it is to make lessons clear and interesting. Students gave us helpful feedback, which will help us make our escape room design even better in the future.

References

Subuh Anggoro, Azmi Fitriati, Ng Khar Thoe, Corrienna Abdul Talib, & Mareza, L. (2024). Differentiated instruction based on multiple intelligences as promising joyful and meaningful learning. International Journal of Evaluation and Research in Education, 13(2), 1194–1194. https://doi.org/10.11591/ijere.v13i2.24791

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