

To Catch a (Food) Thief

Learning Topic/Concept:

"To Catch a (Food) Thief" is part of a pre-lab assignment for introductory Biology students to complete before they perform an electrophoresis lab in person. Prior to game assignment they will have read through the preparatory lab materials, and have a basic understanding of the process of electrophoresis and its role in Biological study.

Learning Objective:

1. *Upon the completion of this game, introductory Biology students will be able to...*
 - A. *explain all steps needed to complete gel electrophoresis*
 - B. *differentiate between correct and incorrect lab procedures for electrophoresis*

Intended Audience:

Introductory Biology students at the high school level, who have completed an electrophoresis pre-lab.

Twine Prototype URL:

https://eaweaver.github.io/Twine_Project/To_Catch_a_Food_Thief.html

Plot Summary:

The game "To Catch a (Food) Thief" takes place in a scientific laboratory. Players are introduced to Biologist, Dr. Gene, and assume the role of her newly hired lab assistant. The story begins with a tragic scenario. Dr. Gene's lunch has been stolen from the laboratory's staff fridge on numerous occasions! The doctor invites the player to help solve the mystery by analyzing evidence she has found at the scene of the crime.

Three suspects are revealed and players are told that a saliva sample has been collected from each one. The players will then attempt to walk through the process of successfully "performing" electrophoresis on the suspect's DNA samples. Each scene

will take the player through different stages of the lab process and force them to make decisions about how to proceed. Players will face a variety of choices including, what procedures they'd like to perform, how they want to prepare their samples, and how they'd like to set up and run the electrophoresis machine. Each incorrect decision will either force them backwards in the process to repeat a step, or will result in inconclusive results. Each correct decision will lead the player one step closer to solving the mystery and catching the dastardly thief! Upon successfully "performing" electrophoresis, players will be presented with the results of their work. The player must then interpret those results to identify the thief. If the player is able to successfully identify the thief, they are rewarded by Dr. Gene and have "won" the game.

Map the Story Progression:

| Exposition | Conflict | Rising Action | Climax | Falling Action | Resolution |
|---|--|--|--|--|---|
| Introduction of the setting, Dr. Gene, and the role of the player as a new lab assistant. | Dr. Gene's lunch is stolen numerous times each week! | Evidence is presented and the player makes decisions on how to successfully "perform" electrophoresis. | The player receives the results from the electrophoresis procedure "performed" | The player analyzes the results of the lab test to choose their culprit. | The player has successfully identified the thief and is rewarded. |

Branching Storyboard:

[To catch a \(food\) thief.pdf](#)

Game Design and Problem Solving:

The design of this game enables problem-solving in several ways. First, the game requires the player to “assume the role” of a lab assistant. The story immediately immerses the user into a situation that is very similar to the real life scenario (authentic environment) they will face when performing an actual electrolysis procedure in a lab. The game provides a safe place for the users to practice skills and make mistakes. The game is also replayable with different results so players can learn from their mistakes as they play.

Another way this game teaches problem solving is by allowing users to control variables. While there are no coded variables used in this Twine game, there are a few “variables” that players can manipulate depending on their choices. For instance, players may choose to get rid of the buffer solution in their electrophoresis chamber or keep it. The negative effects of getting rid of the solution are not immediately known. The player is able to continue with the next step and, only after running their machine, discovers that this decision caused a failure in the process. In this way, their decision in one scene is “stored” as a variable that affects a later scene.

Game Sources: (In Order of Appearance)

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