

# Element of Surprise Design Proof

Alberto Arriola  
Annette Robinson  
Mandy Shang  
Yesenia Olivares

EME 6613 Develop of Tech-Based Inst  
Dr. Yiping Lou

# Overview of Design Proof (1)

Access at: <http://artificebox.com/M7-Prototype/story.html>

Topic	Learning Objectives	Core Mechanic	Interaction	Process and Scoring	Goal achievement	Assessment
<b>Welcome Screen</b>	N/A	Facilitate student engagement	START button- start the game	N/A	N/A	N/A
<b>Animated Introduction</b>	The student will have basic concept of element		Skip button- skip animation to learning goals Continue button- to learning goals	N/A	N/A	Successfully complete this game
<b>Learning Goals</b>	Learn learning goals in this game		Continue button – to next animated intro I AM READY button- to L1. instruction	N/A	N/A	N/A

# Overview of Design Proof (2)

Topic	Learning Objectives	Core Mechanic	Interaction	Process and Scoring	Goal achievement	Assessment
<b>Level 1: Element Instruction</b>	The student will be able to identify an element model as a single type of atom.	Decision making – The student should make a series of correct decisions to reach the goal of the game, such as docking or jumping to attain or avoid elements.	START GAME button – start game	N/A	N/A	The student will observe what a single element model looks like. At the end of Level 1, the student will demonstrate their knowledge by collecting carbon models and dismissing other models.
<b>Level 1: Element activity</b>			Up arrow key- Jump Down arrow key- Dock Continue button- to next L2. Instruction	Riding in the mine cart, jump to gain Carbon, dock to avoid Silver and Gold. 1 point for each Carbon gained	Fill the bowl with 6 Carbon atoms to proceed to the next level.	

# Overview of Design Proof (3)

Topic	Learning Objectives	Core Mechanic	Interaction	Process and Scoring	Goal achievement	Assessment
<b>Level 2: Compound Instruction</b>	The student will be able to construct a compound as a single type of molecule)	Problem solving – Throughout the game, the student will need to be able to solve problems correctly. For example, in this activity they will figure out how to position the cannon appropriately to create water molecules.	Replay button – replay animation  I AM READY button – Go to instruction  START GAME- start L2	N/A	N/A	The student will observe what molecules of compounds look like and understand how they are formed from single element models. The student will demonstrate this knowledge at the end of Level 2 by completing an activity to form molecules of water from hydrogen and oxygen models.
<b>Level 2: Compound Activity</b>			Left/ Right arrow keys- moving Space key- shoot Continue button- to L3 instruction	Use the cannon to shoot Hydrogen at the Oxygen atoms. 1 point for each Water molecule created	Fill up the water jar with 6 water molecules to proceed to the next level.	

# Overview of Design Proof (4)

Topic	Learning Objectives	Core Mechanic	Interaction	Process and Scoring	Goal achievement	Assessment
<b>Level 3: Mixture Instruction</b>	The student will be able to formulate a mixture, as a result of combining substances	Decision making: The student should make a series of correct decisions to reach the goal of the game such as drag and drop necessary substances to the bowl.	Right arrow button- continue the intro Continue button- L3 instruction	N/A	N/A	The student will observe how a mixture is made with two or more substances. At the end of Level 3, the student will demonstrate their knowledge by putting two substances together to create a mixture.  This learning objective will be assessed by an activity in which the student will organize models of single elements, compounds, and mixtures by dragging and dropping those elements into their designated containers.
<b>Level 3: Mixture Activity</b>	The student will be able to compare and distinguish between a pure substance (element and compound) and mixture at a basic molecular level.		Mouse- drag and drop Continue button- submit the answer (correct> restored Challa animation) Continue button- Knowledge check	Drag and drop containers to the bowl processing to the restored animation. Carbon and Water result in a correct score. Potassium is incorrect.	Successfully mix Carbon and Water, two components of the human body, resulting in Challa's restoration.	

# Overview of Design Proof (5)

Topic	Learning Objectives	Core Mechanic	Interaction	Process and Scoring	Goal achievement	Assessment
<b>Knowledge Checks 1 and 2</b>	The student will be able to define the concepts learned in this lesson by completing two knowledge checks. The first knowledge is a pairing activity and the second one is a drag and drop activity.	Logical thinking – By arranging a deck of cards with models, the student will be able to use logical thinking by sorting them into the right category.	<p>Mouse- drag and drop pairing definition and concept Submit button-submit answer.</p> <p>Mouse - Drag and Drop from a stack of cards into the correct category.</p>	<p>Feedback on Level Pass or Fail. Pair all 3 concepts with the correct definitions</p> <p>Feedback on Level Pass or Fail. Drag and drop 6 cards into the correct categories</p>	<p>Successful completion of both knowledge checks means Shuri has passed on the knowledge to her brother, to keep him safe.</p>	<p>For this learning objective, a reinforcement activity will allow the student to pair concepts to their correct definitions.</p> <p>For this learning objective, a reinforcement activity will allow the student to drag and drop images to the correct category.</p>
<b>What's Next?</b>	Further students' interest		Mouse- click the gems to relevant resources			

# Screenshot of Design Proof – Welcome Screen

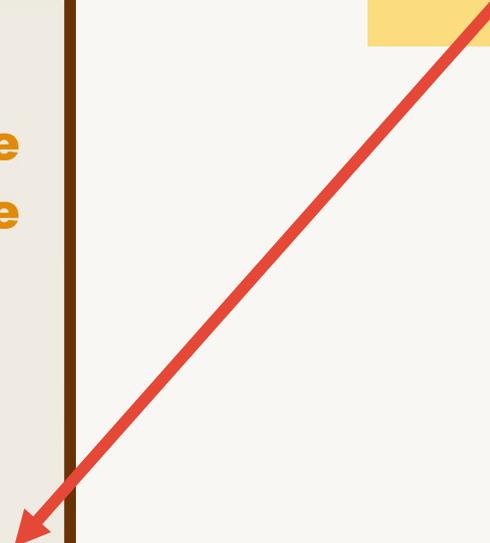
**Continue button-** continue to next scene (Animated introduction)

## Element of Surprise Prototype

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**Continue**



# Screenshot of Design Proof – Animated Intro (1)



Start Game button

Jungle sounds audio

# Screenshot of Design Proof – Animated Intro (2)



Skip button

Jungle sounds audio; voiceover of Shuri and Brother

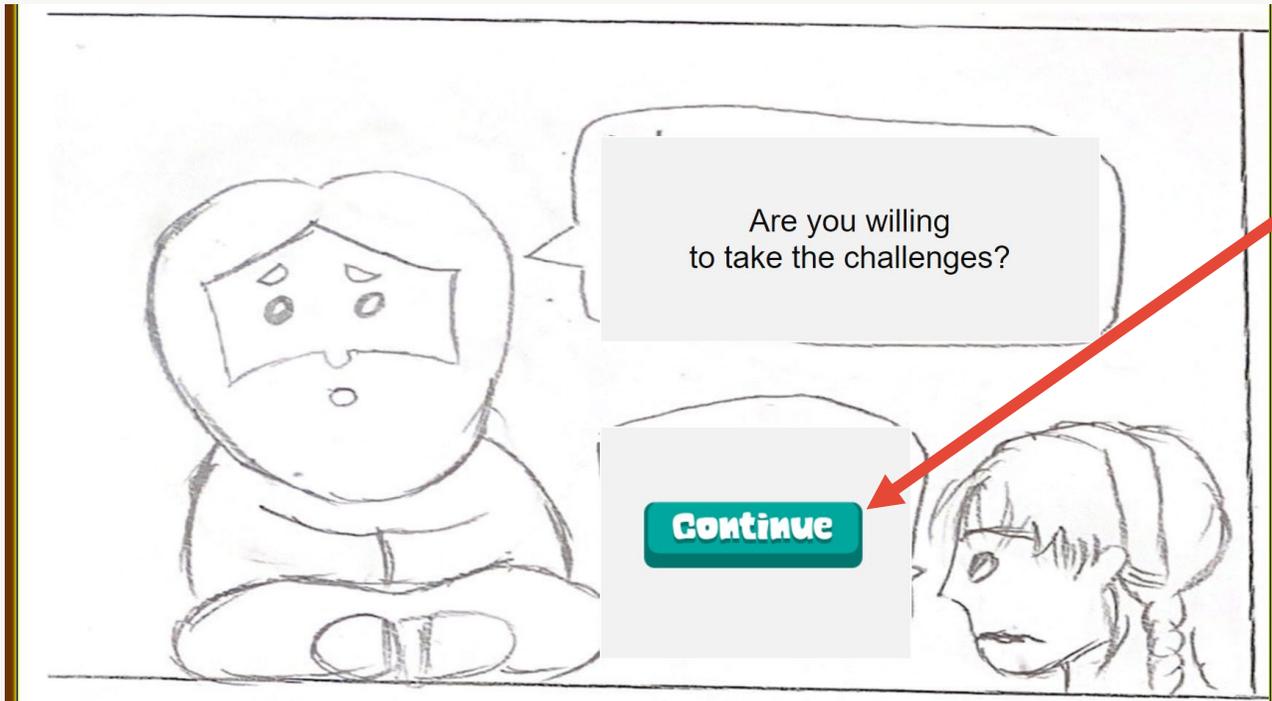
# Screenshot of Design Proof – Animated Intro (3)



Skip button

Jungle sounds audio

# Screenshot of Design Proof – Animated Intro (4) – Placeholder slides



**Continue button-** continue to next scene (topic 1)

Jungle sounds audio

# Screenshot of Design Proof – Topic 1: Elements (1)

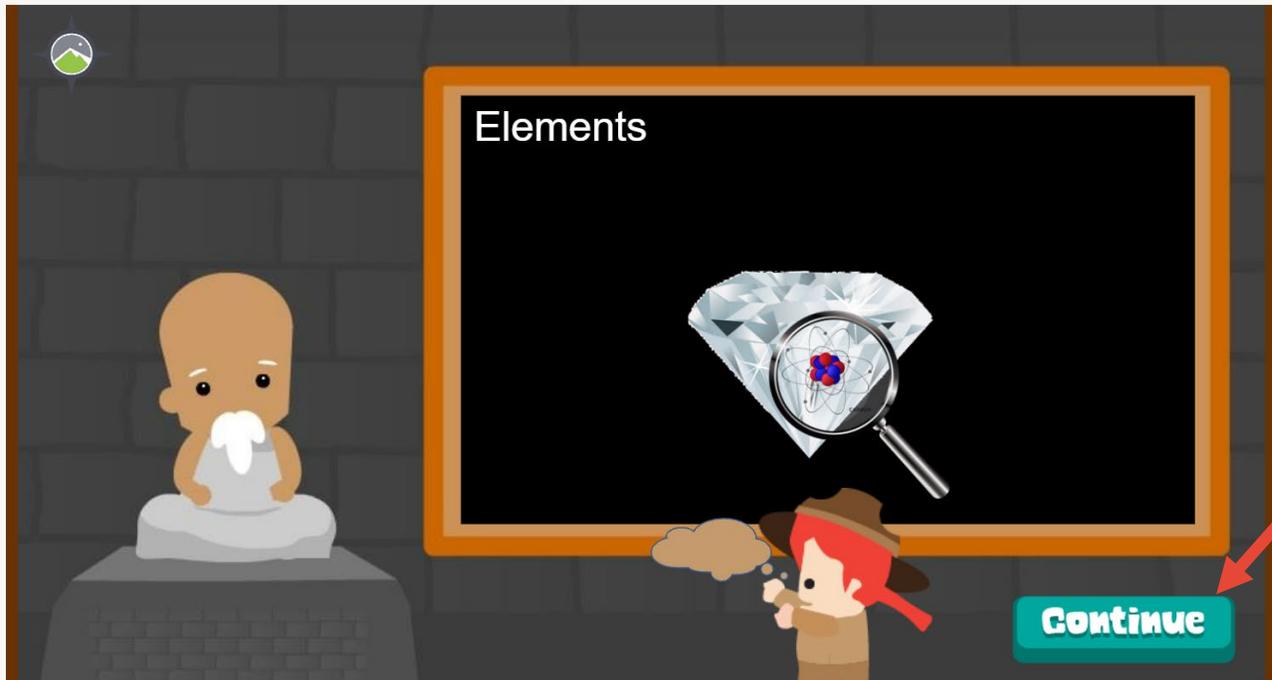
**Continue button-** continue to next slide of topic 1

The screenshot shows an educational interface with a dark grey stone wall background. On the left, a cartoon sage with a white beard sits on a rock. In the center, a framed diagram classifies Matter into Pure substance (Element and Compound) and Mixture (Homogeneous mixture and Heterogeneous mixture), each with a corresponding particle diagram. A cartoon character with red hair and a hat stands at the bottom center. A teal 'Continue' button is located at the bottom right of the diagram frame.

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graph TD; Matter --> Pure_substance; Matter --> Mixture; Pure_substance --> Element; Pure_substance --> Compound; Mixture --> Homogeneous_mixture; Mixture --> Heterogeneous_mixture;
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Voiceover of Sage and Shuri

# Screenshot of Design Proof – Topic 1: Elements (2)



**Continue button-** continue to next slide of topic 1

Voiceover of Sage and Shuri

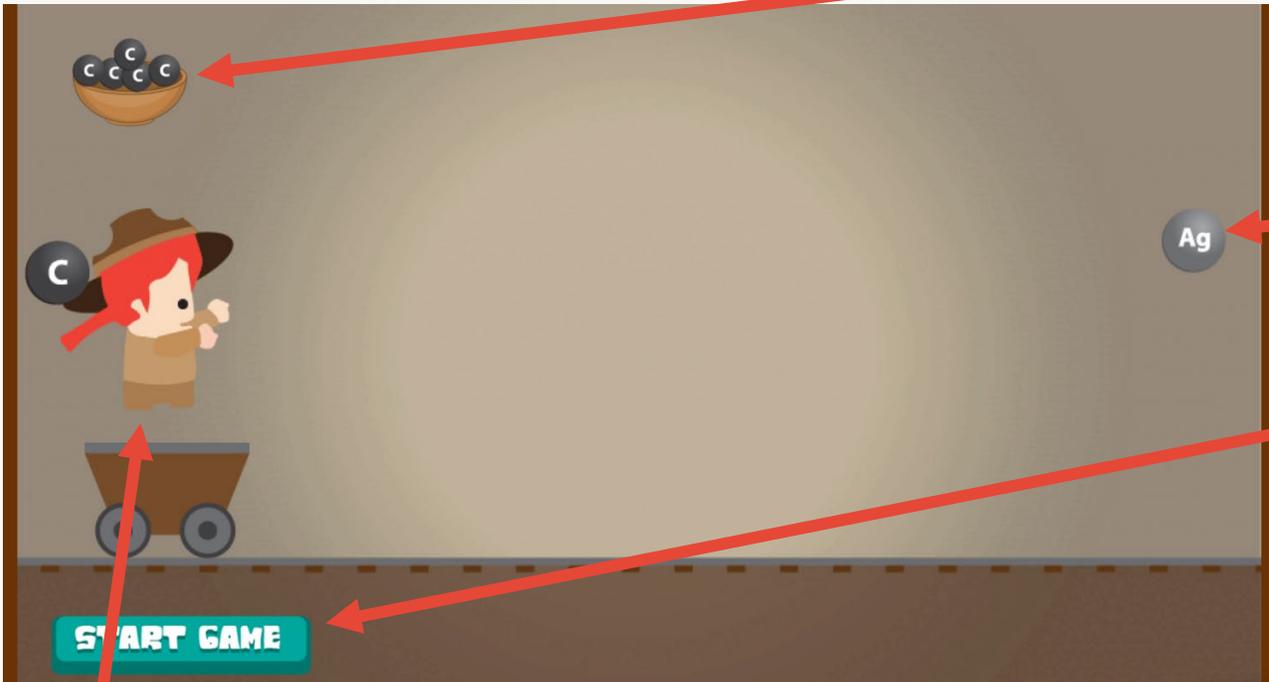
# Screenshot of Design Proof – Topic 1: Elements (3)



Continue button- continue to next slide of topic 1

Voiceover of Sage

# Screenshot of Design Proof – Topic 1: Elements (4)



Automatic jump to a Success screen when character has collected 6 points (Carbon elements)

Character intersects with elements, gains points for Carbon, loses points for Silver and Gold

**Start Game button**

Rail tracks audio; success and fail sound effects when intersecting with the elements

**Up and Down keys** to jump and dock

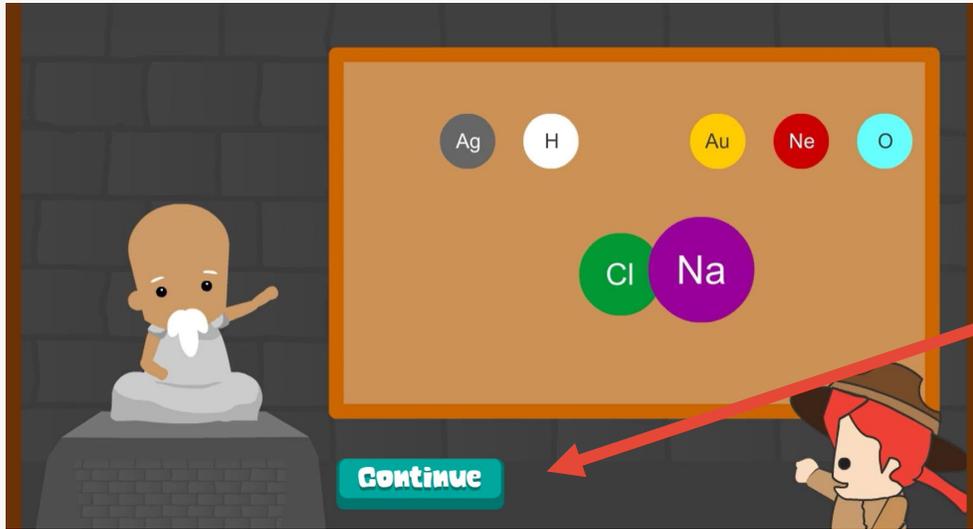
# Screenshot of Design Proof – Topic 1: Elements (5)



**Continue button-** continue to next scene (Topic 2)

Voiceover of Sage

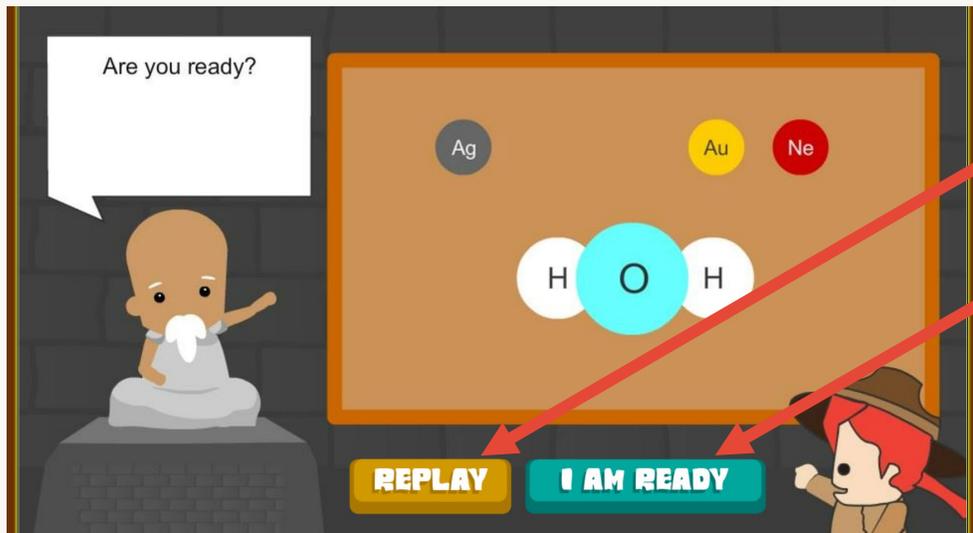
# Screenshot of Design Proof – Topic 2: Compound (1)



**Continue button-** continue to next slide of topic 2

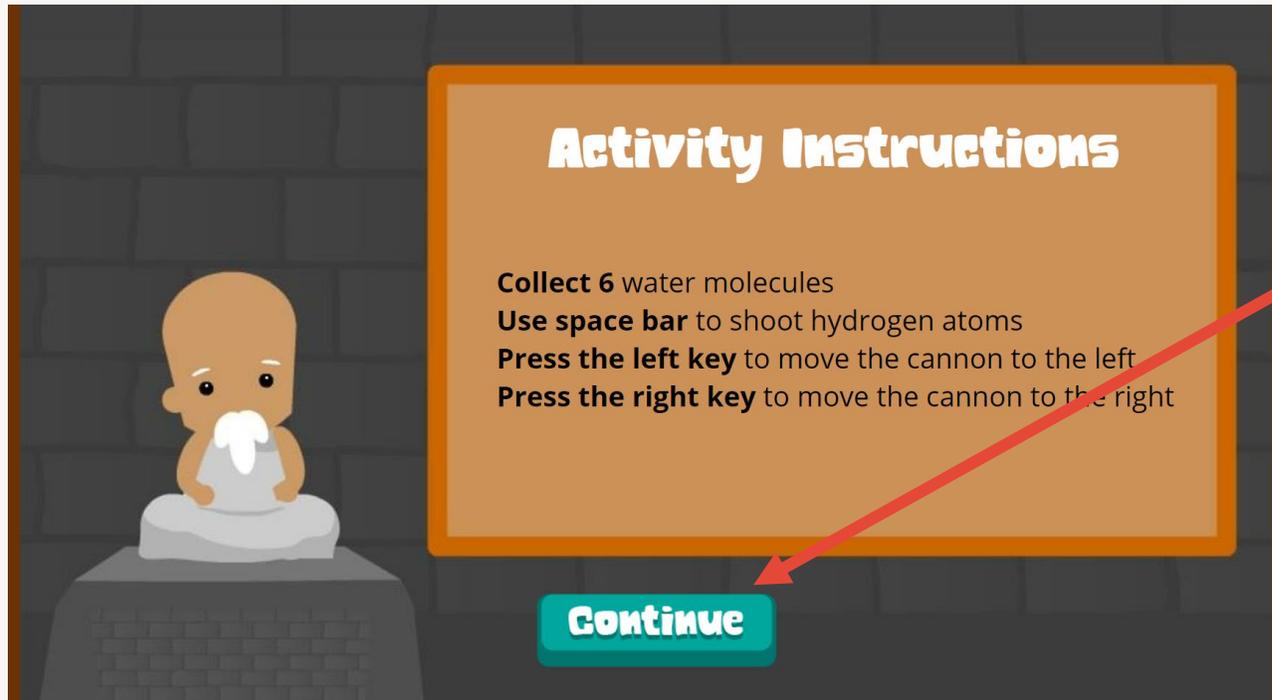
**Replay button-** replay the lesson/scene

**I Am Ready button-** continue to next slide of topic 2



Voiceover of Sage and Shuri

# Screenshot of Design Proof – Topic 2: Compound (2)



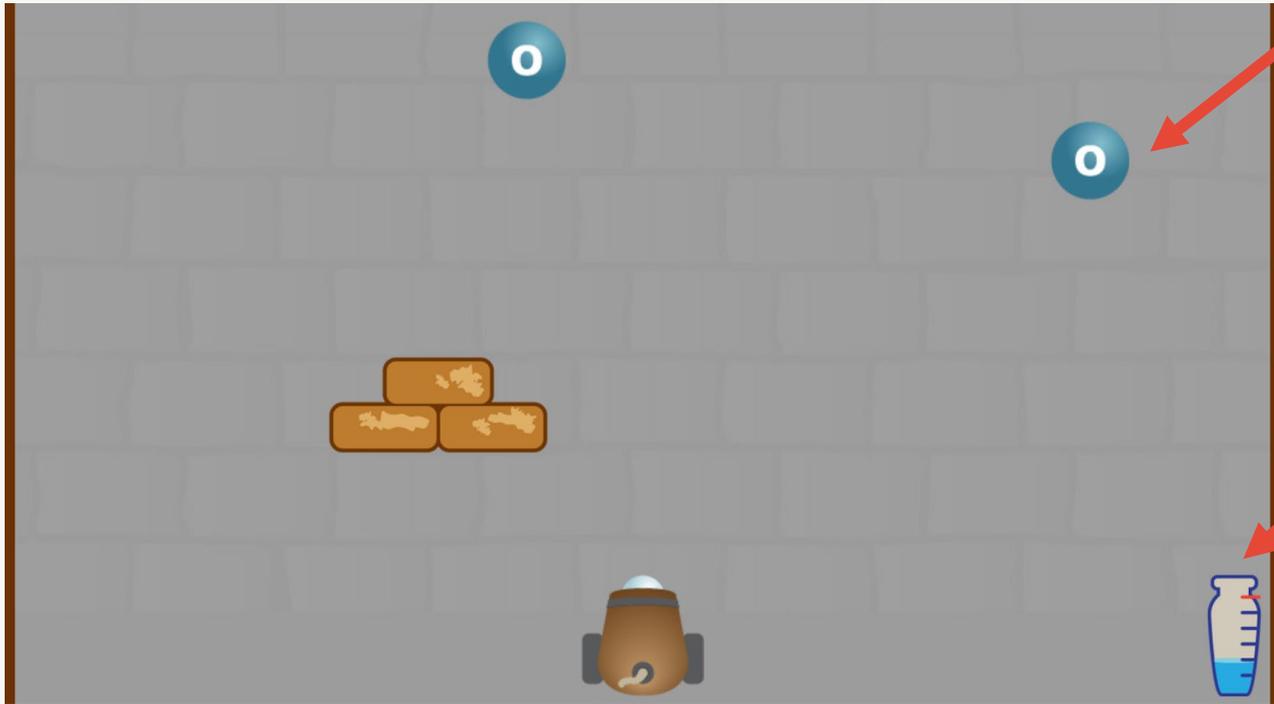
**Continue button-** continue to next slide of topic 2

# Screenshot of Design Proof – Topic 2: Compound (3)

Start Game button



# Screenshot of Design Proof – Topic 2: Compound (4)



Hydrogen elements intersect with Oxygen, player gains a point for each water molecule created

Automatic jump to a Success screen when player has collected 6 points (has made 6 water molecules)

Music audio for game

**Left and Right keys** to position the cannon, **Space bar** to shoot Hydrogen at the Oxygen elements

# Screenshot of Design Proof – Topic 2: Compound (5)



**Continue button-** continue to next slide of topic 2

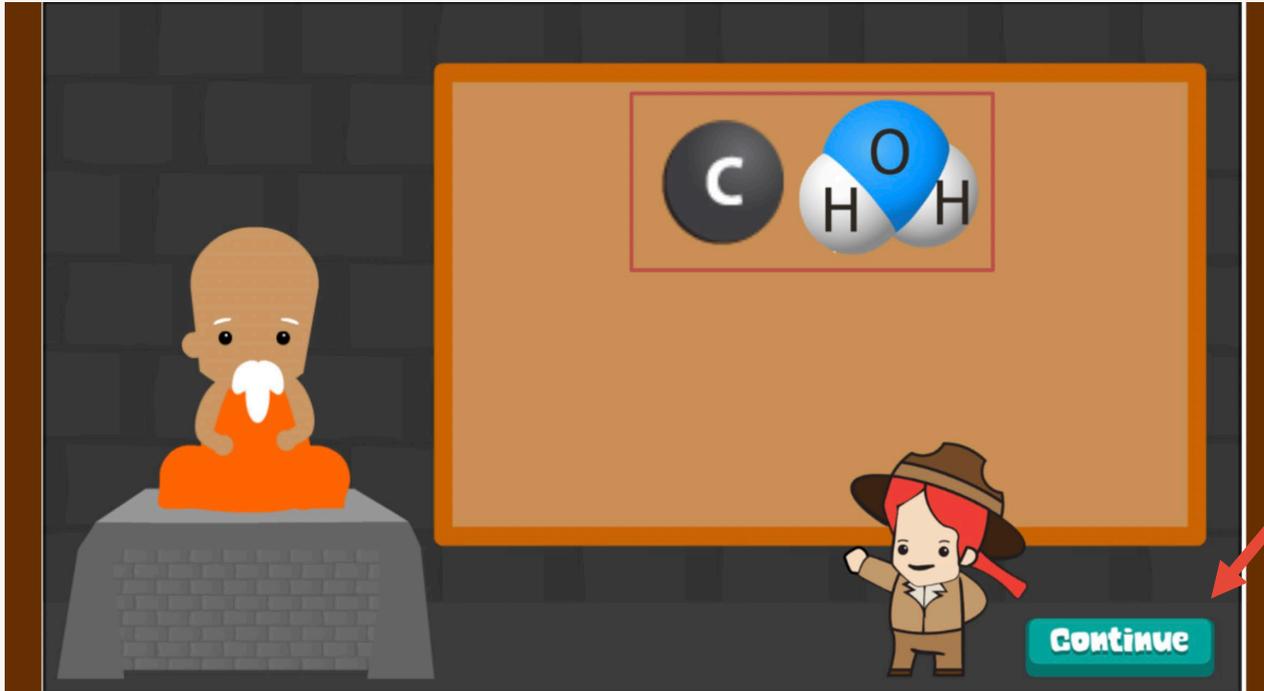
Music audio for game

# Screenshot of Design Proof – Topic 2: Compound (6)



**Continue button-** continue to next scene (Topic 3)

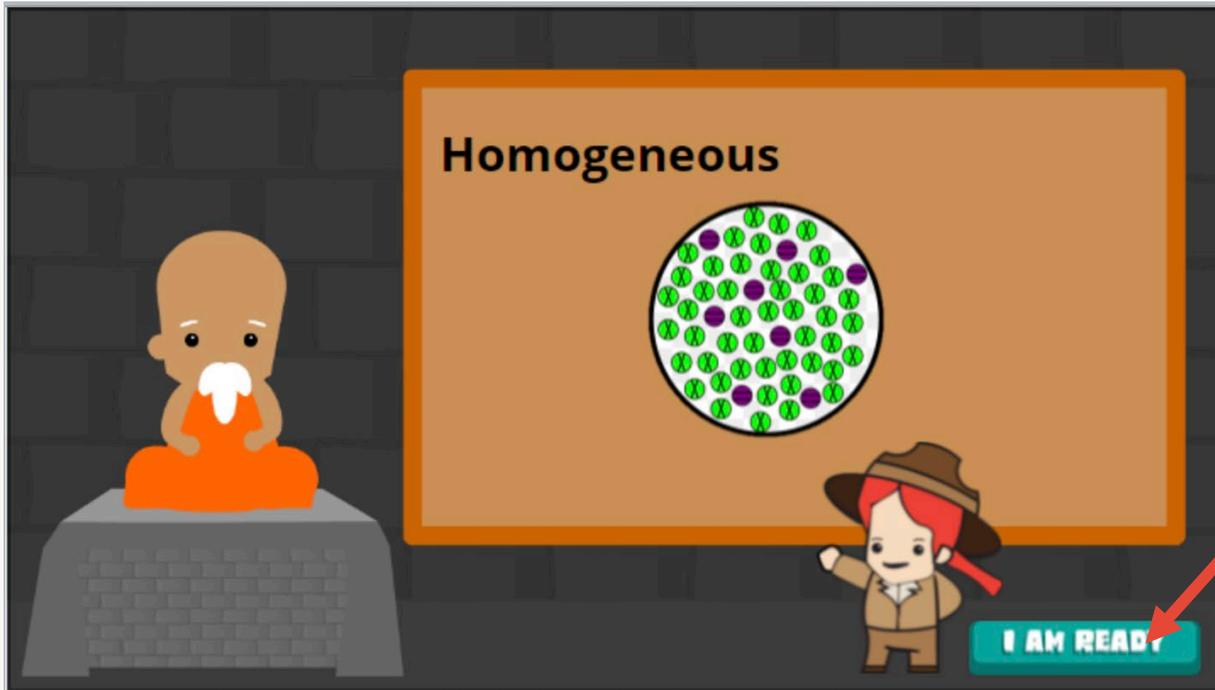
# Screenshot of Design Proof – Topic 3: Mixture (1)



**Continue button-** continue next conversation of intro of topic 3

Voiceover of Sage and Shuri

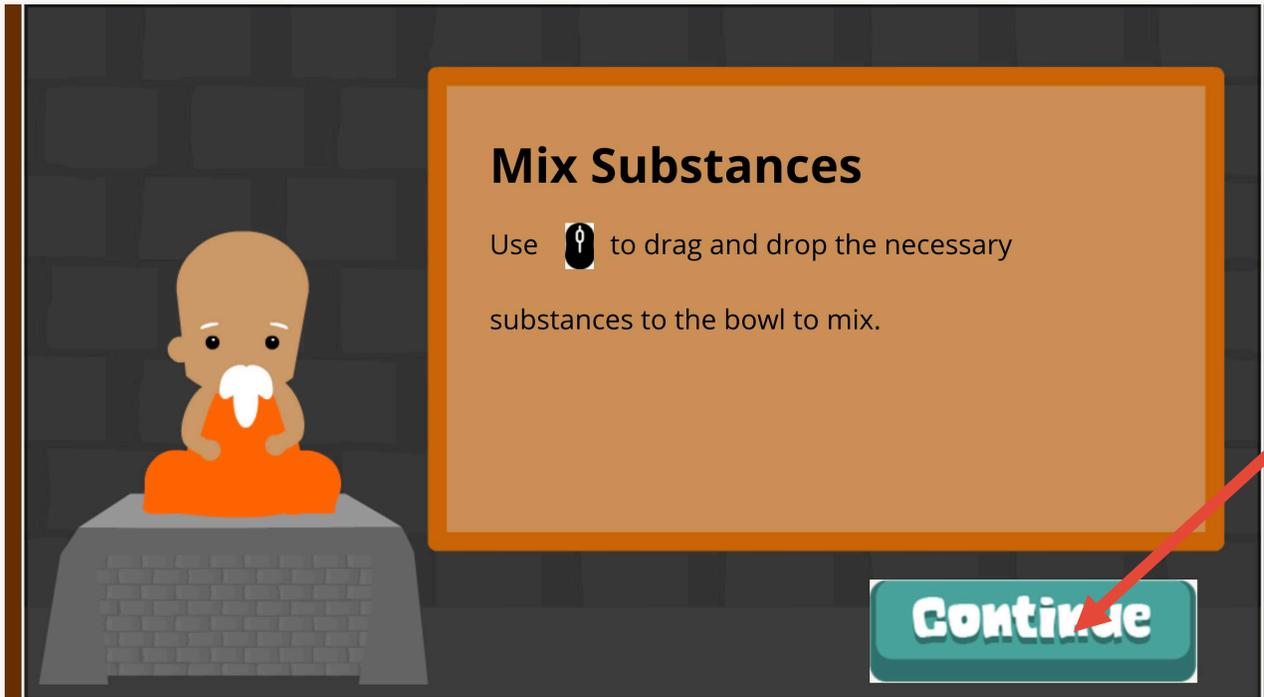
# Screenshot of Design Proof – Topic 3: Mixture (2)



I AM READY button- continue to topic 3 instructions

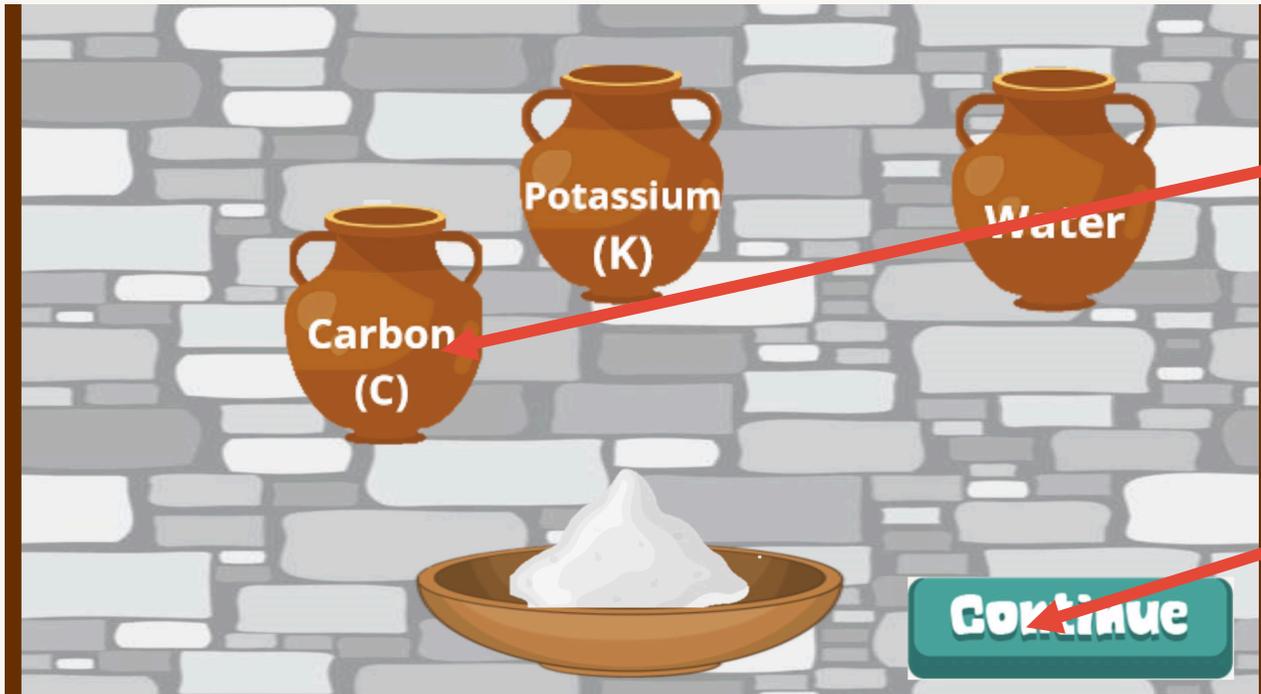
Voiceover: Sage and Shuri

# Screenshot of Design Proof – Topic 3: Mixture (3)



Continue button- continue to topic 3 activity

# Screenshot of Design Proof – Topic 3: Mixture (4)



**Mouse-** Click on the container to drag and drop the containers to the bowl to mix the substances with Challa's powder.

**Continue button-** Submit the answer to restored animation

Background music/ Drag and drop sound effect

# Screenshot of Design Proof – Topic 3: Mixture (5)



Continue button- go to the knowledge check

Background music

# Screenshot of Design Proof – Knowledge Checks (1)



Animation: Ready for Knowledge Check?  
The Sage explains the knowledge check activities.

Voice Over: Sage

# Screenshot of Design Proof – Knowledge Checks (2)



Animation: Ready for Knowledge Check?  
(Continues)

Voice Over: Sage, Challa and Shuri

# Screenshot of Design Proof – Knowledge Checks (3)

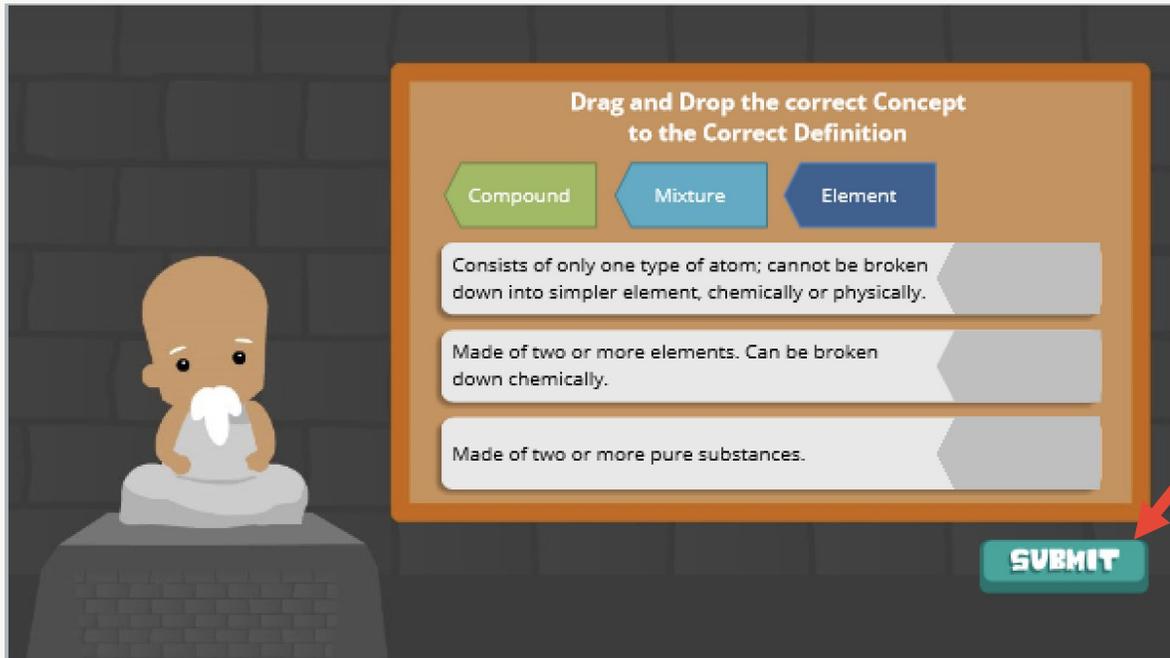


Animation: Ready for Knowledge Check? - ends here.

**Continue button** - to start first knowledge check.

Voice Over: Sage

# Screenshot of Design Proof – Knowledge Checks (4)

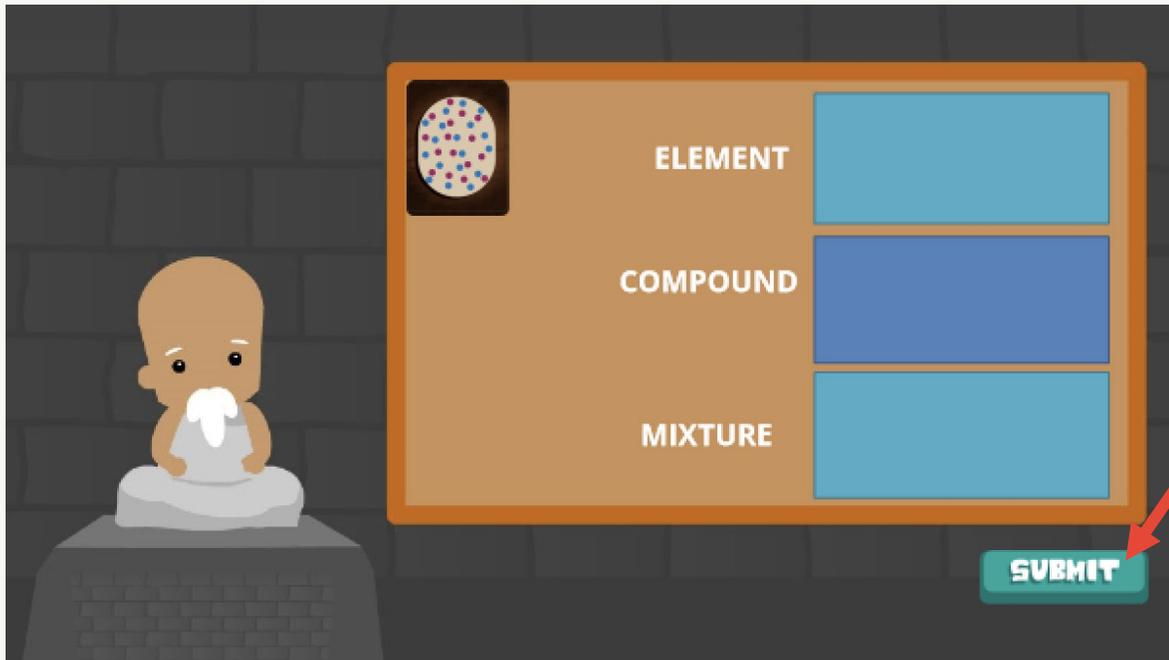


First Knowledge Check: Pairing the correct concept to the correct definition.

**Submit** – for feedback. Feedback: Level Pass or Try again.

To consider: Would it be a good idea to add some background music?

# Screenshot of Design Proof – Knowledge Checks (5)



Second Knowledge Check: Drag and Drop from the deck of cards into the correct category.

**Submit** – for feedback. Feedback: Level Pass or Try again.

Voiceover: Sage (at the beginning introducing the activity).

To consider: Would it be a good idea to add some background music?

# Screenshot of Design Proof – Resources/What's Next



**Click gem images** to reveal useful resources (more resources will be added in the next iteration)

**Click buttons** to review the topics learned