VetMed Biology Learning Games and Animations

Final Report

Team

Product Owner

Prajwal Das

Scrum Master

FNU Nimisha

Developers

Shubham Gupta

guptashubham1798@tamu.edu

Apurva Purushotama

apurvap011@tamu.edu

Sai Harini Voruganti

saiharini@tamu.edu

FNU Nimisha

nimisha@tamu.edu

Prajwal Das

prajwaldas95@tamu.edu

CSCE 606 - Software Engineering

Instructor: Dr. Philip Ritchey

Spring 2022

Important Links:

Pivotal Tracker	https://www.pivotaltracker.com/n/projects/2556976
GitHub Repo	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations
Deployment Status Sheet	https://docs.google.com/spreadsheets/d/10NGrOZEGldePJ_KSnpPO_ENLpEQdU_VA3r1yopvTpGY/edit#gid=0
Inventory Sheet	https://docs.google.com/spreadsheets/d/10NGrOZEGldePJ_KSnpPO_ENLpEQdU_VA3r1yopvTpGY/edit#gid=0
VetMed - WordPress and StepStone	https://vetmed.tamu.edu/peer/one-health/
Minutes of Customer Meeting	https://docs.google.com/document/d/1PWrgTHStn2UAxnkCXVrX9yrozLq-MLmipJB-xT5GyT4/edit?usp=sharing
Slack	https://seproject-1oc6126.slack.com
Poster	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/blob/main/DocumentationSpring2022/Fall%202022%20Poster.pptx

Summary

The customer for this project is the Veterinary Medical & Biomedical Sciences Department of Texas A&M University and Dr Walker is our point of contact. The main customer requirement is to develop and integrate interactive animations into the Stepstone learning environment to improve the biology learning experience of middle school students. By embedding interesting animations of the study materials and quizzes, the middle school students can be inspired and immerse into the interactive study environment. In addition, the students can know their learning situation immediately after the quiz. Dr. Walker and the legacy team transferred us the requirement of the customer including 19 slides folders and defined what kind of animation needs to be implemented. Our team mainly focused on Infectious Diseases, Clinical Trials, Ecology and Stress modules where we fixed and added the animations.

In the beginning, we executed all the slides and listed all types of bugs that needed to be fixed. Distributing the tasks followed the type of bugs and each team member took over at least one slide in every iteration. Everyone implemented the animation of slides locally and deployed them to the Stepstone and WordPress environment as per the requirement. Because the customers have already established the Stepstone environment, which is a backend platform, we manually tested our application on the stepstone test environment and serverpress (WordPress test environment). We held weekly meetings with Dr. Walker and the TA to update our progress and obtain feedback. We also had internal team meetings twice every week on Zoom to coordinate and plan the user stories for every sprint. These user stories are added on Pivotal Tracker and it is used to track the progress, it is also shared with the stakeholders so that they can stay current with our developments. The code is pushed on Github for version control. Further, we parameterized our animations so that the code can be reused at multiple places. We deployed them to StepStone and WordPress in the final iteration i.e., Iteration 4. We were able to deploy our animations on the StepStone production environment with the help of StepStone developer Daniel Shuta.

Customer Meeting Summary:

Note: The individual stories that were picked up during each iteration are mentioned in the sections that follow.

In-Detail minutes of the meeting can be found here: Minutes of Customer meeting

Iteration	Meeting Date	Summary
Iteration 0	02/25/2022	Prof. Walker (Point of contact for this project) shared an overview of the project, goals for the project, other points of contact for deployments, some suggestions on the user stories.
Iteration 1	03/18/2022	We went through our inventory sheet consisting of our plan for the entire project. Prof. Walker suggested removing some of the user stories(since they were related to stepstone functionalities that can't be changed). Steps for testing on the StepStone dev environment were discussed.
Iteration 2	03/25/2022	Animations developed in iteration 1 were demonstrated and feedback was given by Dr.Walker with respect to the color scheme and placements of a few animations. The current iteration stories which were partially developed were shown and progress was discussed.
Iteration 3	04/08/2022	Received suggestions to parameterize the code. Discussed mainly about WordPress and stepstone deployment. Dr.Walker suggested parameterization of the code.
Iteration 4	04/22/2022	Demonstrated animations from iterations 3 and 4. The discussion was mainly focused on wrapping up the deployment on StepStone and WordPress. Suggested to check if all the user stories are correctly mapped and production paths are handled correctly.

Getting Started : Understanding the legacy project

The project is structured such that each animation has its own standalone folder which has

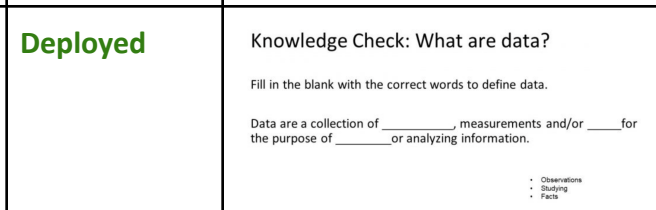
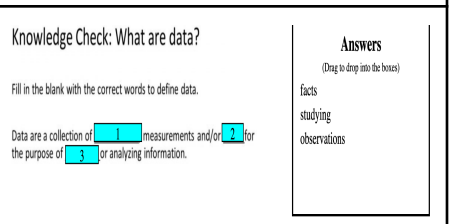
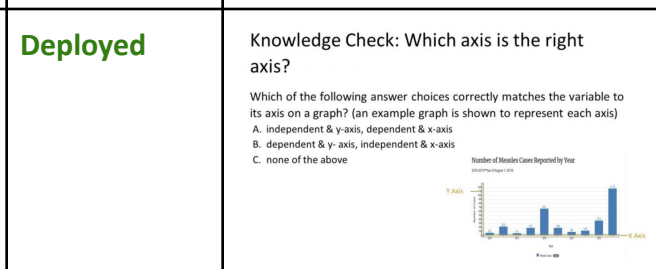
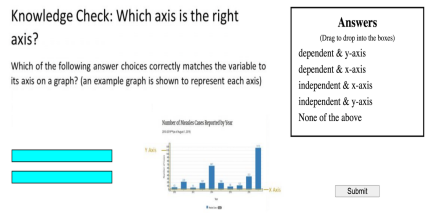
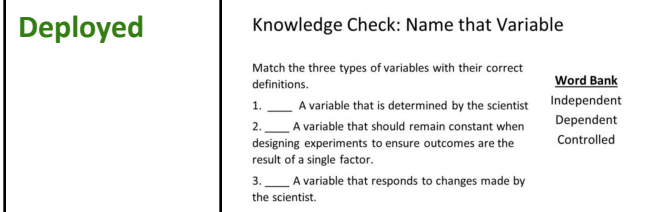
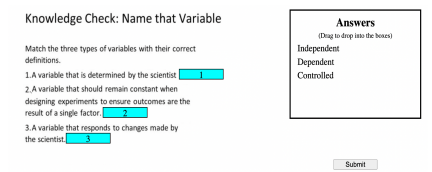
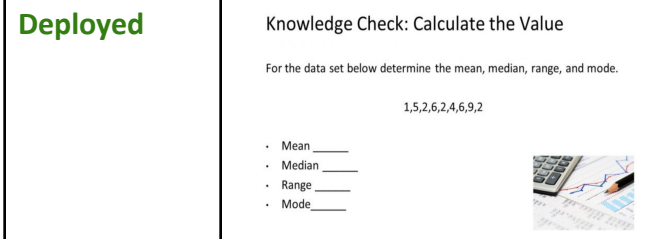
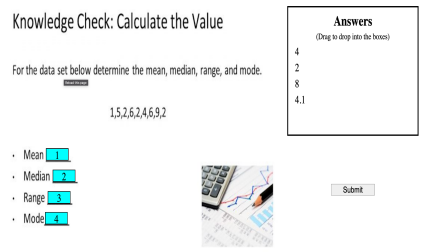
- Index.html
- css/
- img/
- js/

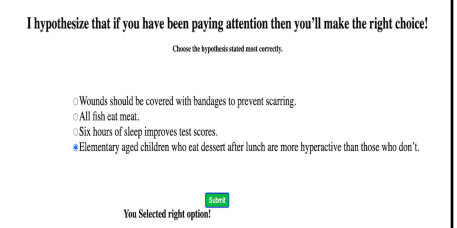
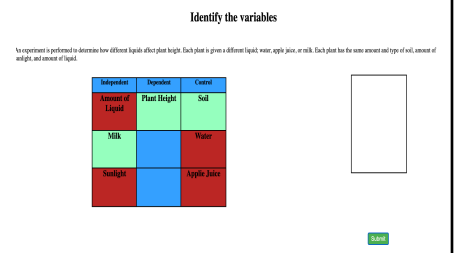
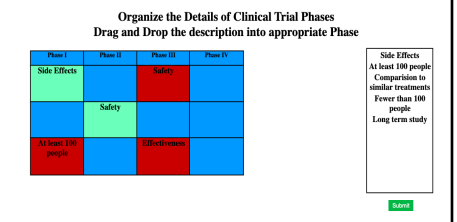
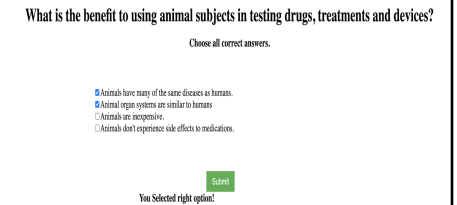
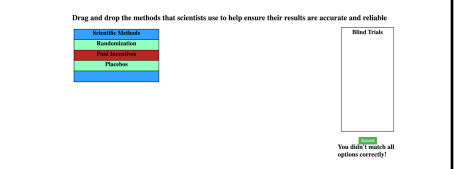
Development is done by making appropriate changes to index.html, css/ js/ and img/ files. Each group has its own set of animations. For example, the ClinicalTrials group contains code for the Clinical Trials Costs module. The standalone folder has names such as HypothesizeKnowledgeCheck, ThinkAboutIt, etc showing the relation to the slide names on StepStone and WordPress. Each module was developed by previous teams and has different Github repositories, because of that there were also no folders present for a few modules in Github.

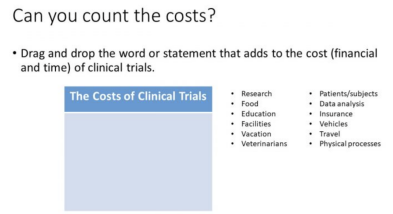
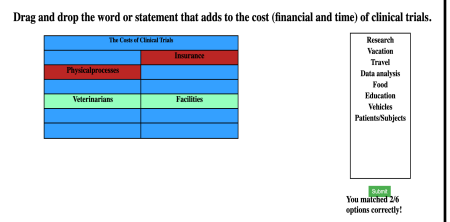
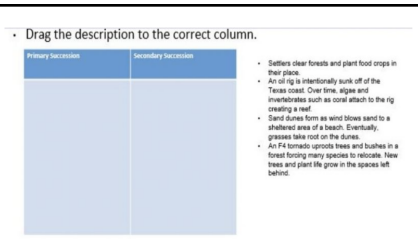
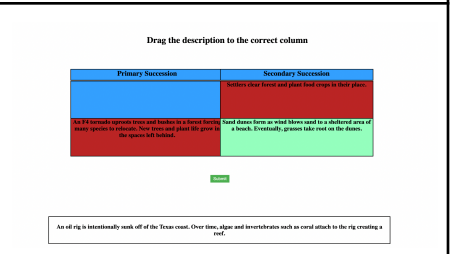
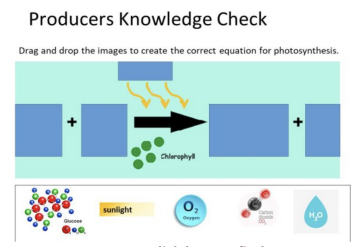
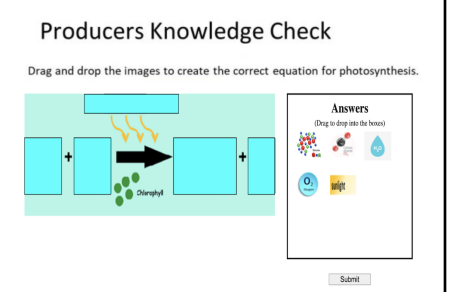
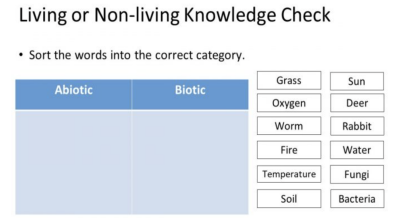
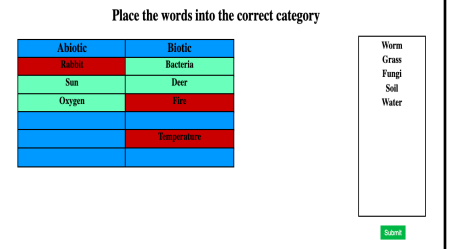
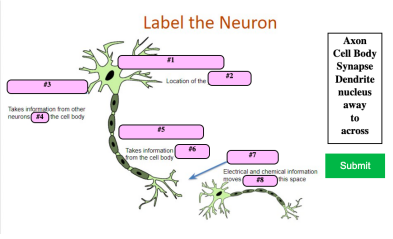
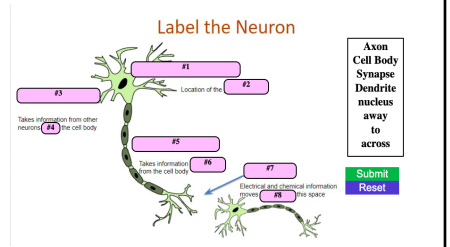
Testing on the deployment(Stepstone) environment is done with help of a dummy activity area in Stepstone. However, the json file “draggybox40” needs to be updated to launch and test the deployment of the specific slide/game and test for bugs/issues. The deployment is not straightforward. Two persons should be contacted for the deployment - Samiksha Marne for WordPress and Daniel Shuta for StepStone. For WordPress deployment we followed Tutorial 5 - Setting up WordPress locally, for testing locally and then sent an email to Samiksha with the Github URL of the user story. Following the steps in Tutorial 1 and Tutorial 2 we tested the development on the Stepstone test environment. After successful testing, we followed tutorial 3 for setting up the correct production path and sent an email to Daniel with the required details.

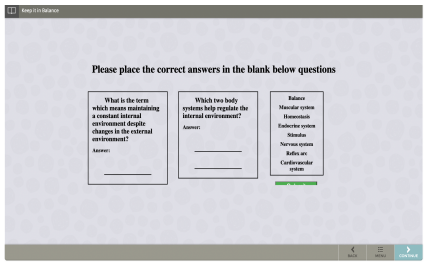
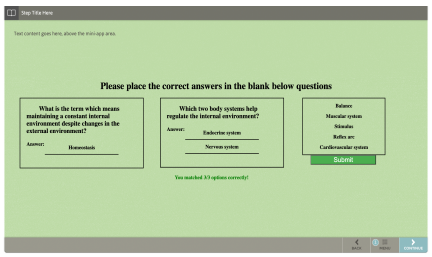
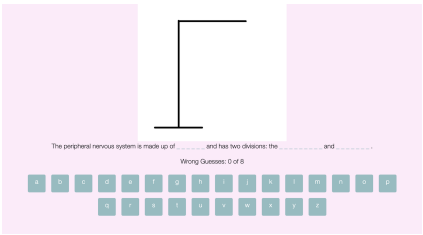
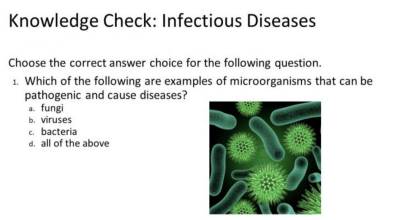
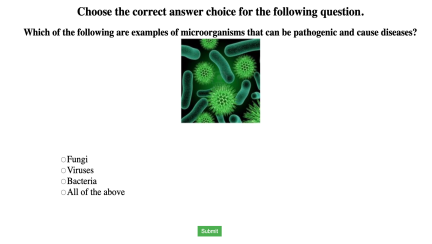
Note: Tutorials can be found under the Tutorials Section at the end of this document.

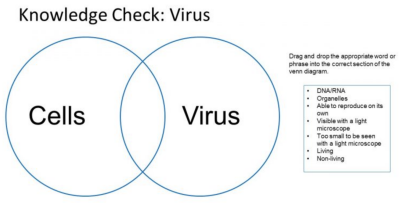
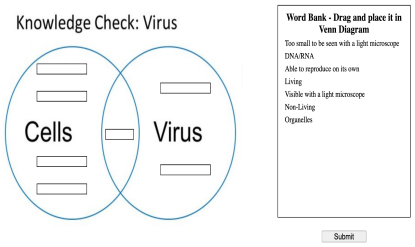
User Story Summary:

User Stories	Status	Before	After
1. Infectious diseases module - Knowledge Check: What are the data?	**Deployed**		
2. Infectious diseases module - Knowledge Check: Which axis is the right?	**Deployed**		
3. Infectious diseases module - Knowledge Check: Name that variable	**Deployed**		
4. Infectious diseases module - Knowledge Check: Calculate the Value	**Deployed**		
5. Testing of Sprint 1 user stories locally and on Stepstone testing environment	**Completed**	**Not Applicable**	**Not Applicable**

6. Clinical Trial module - Hypothesize Knowledge Check	**Deployed**	I hypothesize that if you have been paying attention then you'll make the right choice! Choose the hypothesis stated most correctly. A. All fish eat meat. B. Elementary aged children who eat dessert after lunch are more hyperactive than those who don't. C. Six hours of sleep improves test scores. D. Wounds should be covered with bandages to prevent scarring.	
7. Clinical Trial module - Identify the Variables	**Deployed**	Identify The Variables An experiment is performed to determine how different liquids affect plant height. Each plant is given a different liquid; water, apple juice, or milk. Each plant has the same amount and type of soil, amount of sunlight, and amount of liquid. Drag and drop the experiment's variables into the correct column. Independent | Dependent | Control Variables • Soil • Water • Plant height • Sunlight • Apple juice • Amount of liquid • Milk	
8. Clinical Trial module - Prove that you are a scientific method expert!	**Deployed**	Prove You Are a Scientific Method Expert! Correctly order these research steps according to the scientific method. 1. Send your complete laboratory report to a national magazine for peer review. 2. Place an equal number of alligator eggs in incubators set at 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36 degrees Celsius. 3. What incubation temperatures will produce a female alligator to hatch from an alligator egg? 4. Plot alligator gender versus temperature results in a graphic format. 5. Conduct research on alligator reproduction and development. A. 3, 5, 2, 4, 1 B. 2, 3, 1, 5, 4 C. 5, 3, 4, 2, 1 D. 3, 2, 1, 4, 5	
9. Clinical Trial module - Organize the Details of Clinical Trial Phases	**Deployed**	Organize the Details of Clinical Trial Phases Drag and drop the descriptions into the appropriate phase. Some descriptions my be used multiple times. Phase I | Phase II | Phase III | Phase IV • Safety • Fewer than 100 people • Long-term study • Comparison to similar treatments • At least 100 people • Side effects • Several hundred people or more • Large groups of people • Effectiveness	
10. Clinical Trial module - Think about it	**Deployed**	Think about it: What is the benefit to using animal subjects in testing drugs, treatments and devices? Choose all correct answers. A. Animals are inexpensive. B. Animal organ systems are similar to humans. C. Animals have many of the same diseases as humans. D. Animals don't experience side effects to medications.	
11. Clinical Trial module - Did you grasp the concepts?	**Deployed**	Did you grasp the concepts? What methods do scientists **NOT** use to help ensure that their results are accurate and reliable? A. Randomization B. Paid incentives C. Blind trials D. Placebos	

12. Clinical Trial module - Can you count the costs?	**Deployed**		
13. Ecology module - Ecological Succession Knowledge Check	**Deployed**		
14. Ecology module - Producers Knowledge Check	**Deployed**		
15. Ecology module - Living or Non-Living Knowledge Check	**Deployed**		
16. Stress module - Label the Neuron	**Deployed**		

17. Stress module - Keep it in Balance	**Deployed**		
18. Stress module - Can You Sense the Answers	**Deployed**		
19. Inventory Check: Mapping existing animations which have bugs and need to be fixed	**Completed**	**Not Applicable**	**Not Applicable**
20. Inventory Check: Mapping new animations to be developed	**Completed**	**Not Applicable**	**Not Applicable**
21. Infectious Diseases module: Knowledge Check: Infectious diseases	**Completed**		

22. Infectious Diseases module: Knowledge Check: Virus	**Completed**		

ITERATION 1:

Story points completed : 15

User Stories

1. **[Prajwal: 3 pts] Feature:** Develop Infectious diseases module - Knowledge Check : Calculate the Value

   As an Instructor

   I want the students to use interactive animations for the Infectious diseases module - Knowledge Check : Calculate the Value slide

   So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

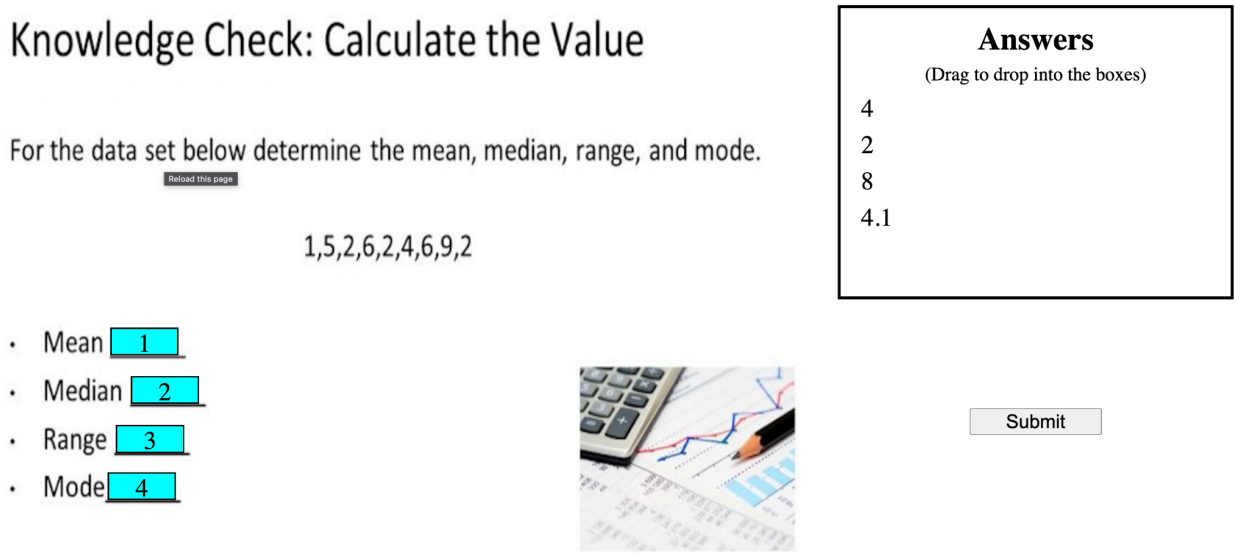
Design diagram:

Knowledge Check: Calculate the Value

For the data set below determine the mean, median, range, and mode.

1,5,2,6,2,4,6,9,2

- Mean _____
- Median _____
- Range _____
- Mode_____



Explanation:

We have developed a drag and drag animation for the slide ''Knowledge Check : Calculate the Value'' from the Infectious diseases module. The Student has to drag the answers from the ''Answers'' box and place them onto the correct boxes corresponding to “Mean”, “Median”, “Range” and “Mode” and click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

2. **[FNU Nimisha: 3 pts] Feature:** Develop Infectious diseases module - Knowledge Check : Which axis is the right?

   As an Instructor

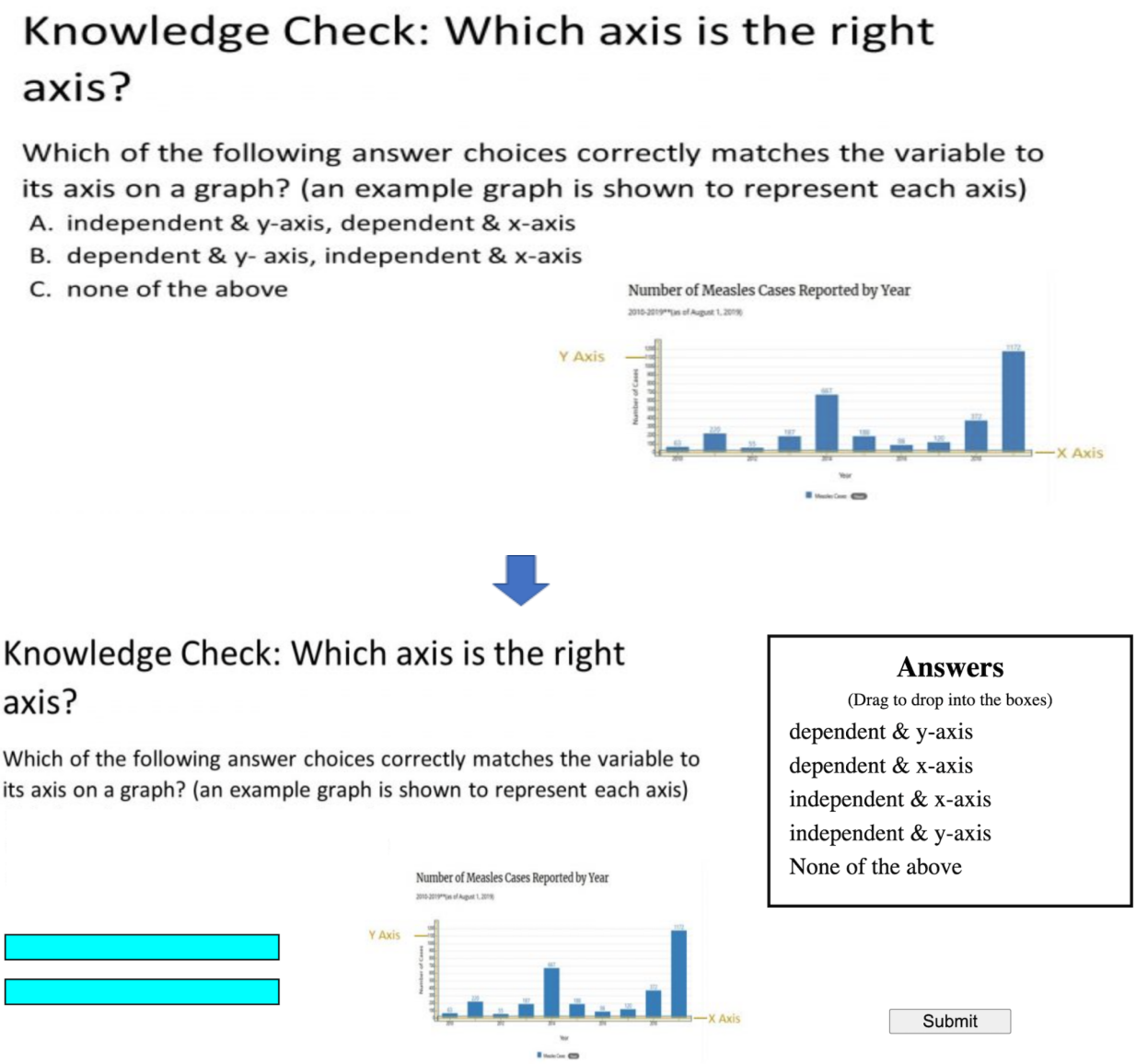
   I want the students to use interactive animations for the Infectious diseases module - Knowledge Check : Which axis is the right?

So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:



Explanation:

We have developed a drag and drag animation for the slide "Knowledge Check : Which axis is the right?" from the Infectious diseases module. The Student has to drag the answers from the

''Answers'' box and place them onto the correct boxes for Y-axis and X-axis respectively and click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

3. **[Sai Harini Voruganti: 3 pts] Feature:** Develop Infectious diseases module - Knowledge check: What are data?

   As an Instructor

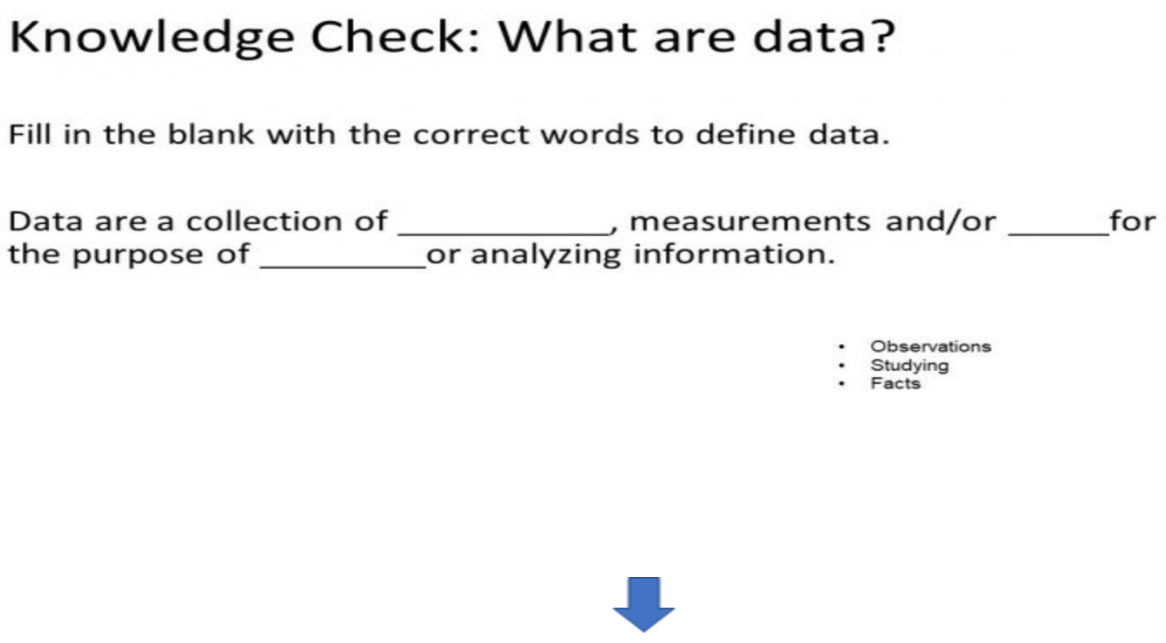
   I want the students to use interactive animations for the Infectious diseases module - Knowledge Check : What are data

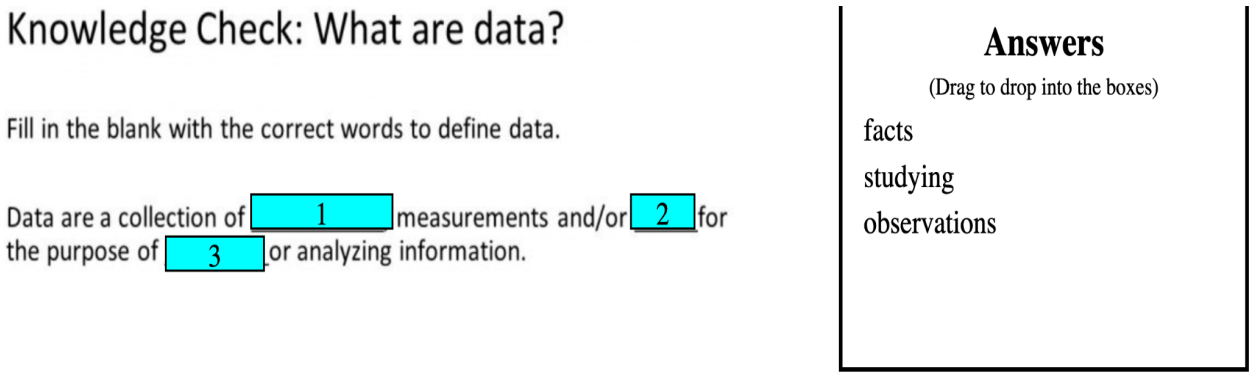
   So that the students can understand the concepts better.

Progress: Deployed on StepStone, Wordpress

Story Points: 3

Design diagram:





Explanation:

We have developed a drag and drag animation for the slide "Knowledge Check : What are Data" from the Infectious diseases module. The Student has to drag the answers from the "Answers" box and place them onto the correct boxes and click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

4. **[Apurva Purushotama: 3 pts] Feature:** Develop Infectious diseases module - Knowledge Check : Name that Variable

   As an Instructor

   I want the students to use interactive animations for the Infectious diseases module - Knowledge Check : Name that variable slide

   So that the students can understand the concepts better.

Progress: Deployed on StepStone

Design diagram:

Knowledge Check: Name that Variable

Match the three types of variables with their correct definitions.

1. ____ A variable that is determined by the scientist

2. ____ A variable that should remain constant when designing experiments to ensure outcomes are the result of a single factor.

3. ____ A variable that responds to changes made by the scientist.

Word Bank

Independent

Dependent

Controlled

Knowledge Check: Name that Variable

Match the three types of variables with their correct definitions.

1. A variable that is determined by the scientist [1]

2. A variable that should remain constant when designing experiments to ensure outcomes are the result of a single factor. [2]

3. A variable that responds to changes made by the scientist. [3]

Answers

(Drag to drop into the boxes)

Independent

Dependent

Controlled

Submit

Explanation:

We have developed a drag and drag animation for the slide “Knowledge Check : Name that Variable” from the Infectious diseases module: Data Collection and Organization. The Student has to drag the answers from the “Answers” box and place them onto the correct boxes to answer the questions listed on the left hand side. The student has to click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

5. **[Shubham Gupta: 3 pts] Testing:** Testing of Sprint 1 user stories locally and on Stepstone testing environment

   As an Instructor

   I want the students interaction without any bugs

   So that the students can have a smooth user experience.

Progress: Completed

ITERATION 2:

Story points completed : 15

User Stories

1. **[Prajwal: 3 pts] Feature** - *UserStory No. 15*: Develop Ecology module - Living or Non-Living Knowledge Check?

    As an Instructor

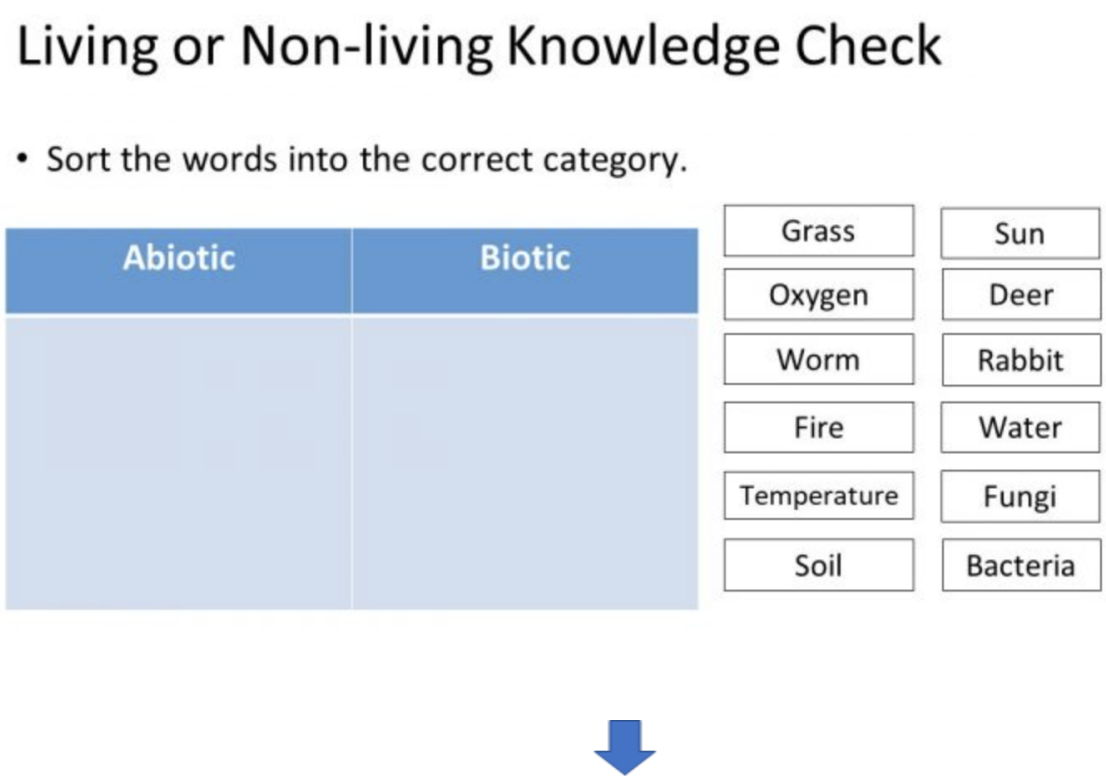
    I want the students to use interactive animations for the Ecology module - Living or Non-Living Knowledge Check?

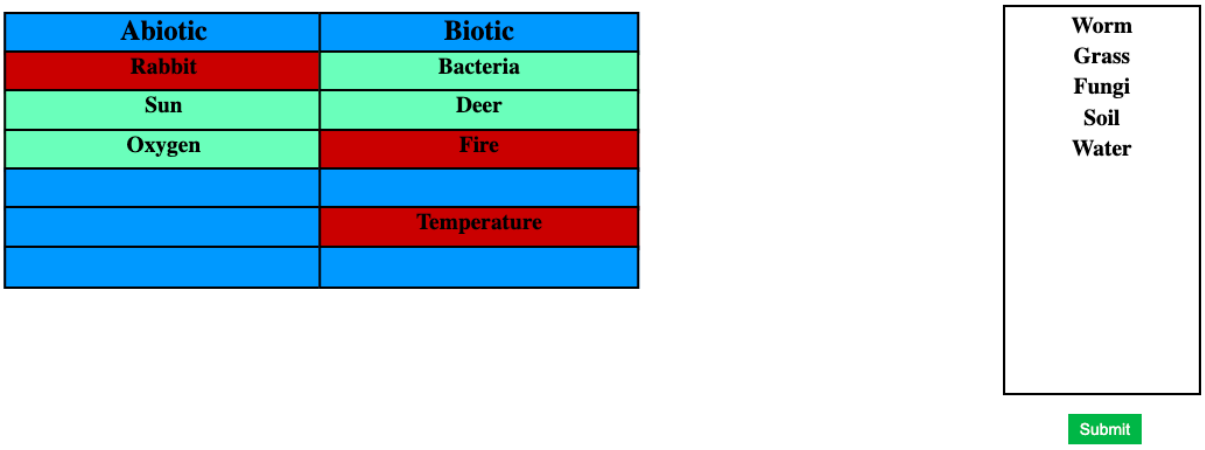
    So that the students can understand the concepts better.

Progress: Deployed on Wordpress, Stepstone

Story Points: 3

Design diagram:





Explanation:

We have developed a drag and drag animation for the slide ''Living or Non-Living Knowledge Check?'' from the Ecology module. The Student has to drag the answers from the ''Answers'' box and place them onto the correct boxes corresponding to Biotic and Abiotic.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

2. **[FNU Nimisha: 3 pts] Feature** - *UserStory No. 14*: Develop Ecology module - Producers Knowledge Check

   As an Instructor

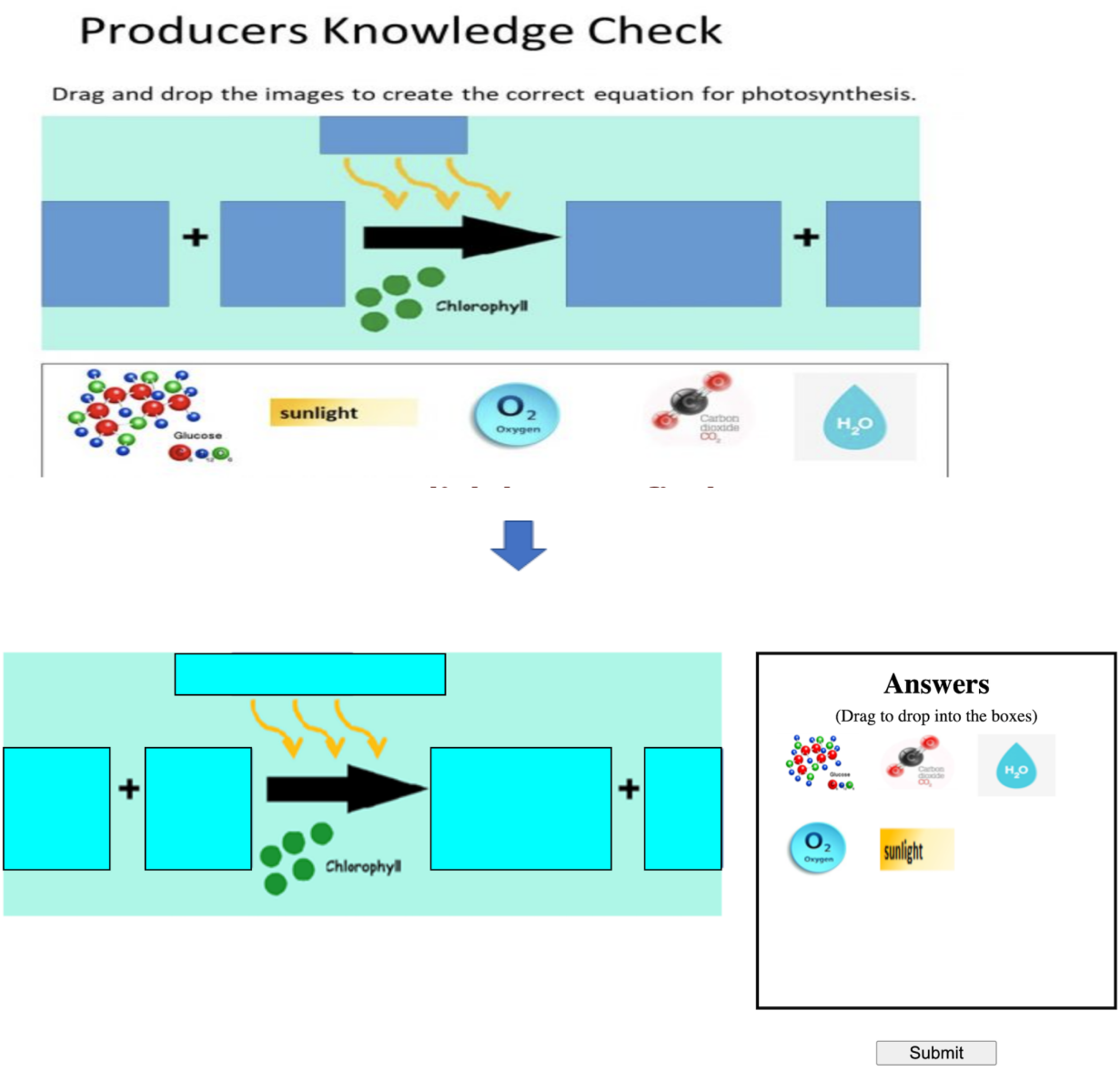
   I want the students to use interactive animations for the Ecology module - Producers Knowledge Check

   So that the students can understand the concepts better.

Progress: Deployed on StepStone, Wordpress

Story Points: 3

Design diagram:



Explanation:

We have developed a drag and drag animation for the slide “Producers Knowledge Check” from the Ecology module. The Student has to drag the answer images from the ''Answers'' box and place them onto the correct boxes for the photosynthesis process in the plants.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

3. **[Sai Harini Voruganti: 3 pts] Feature -** *UserStory No. 12***:** Develop Clinical Trial module - Can you count the costs?

    As an Instructor

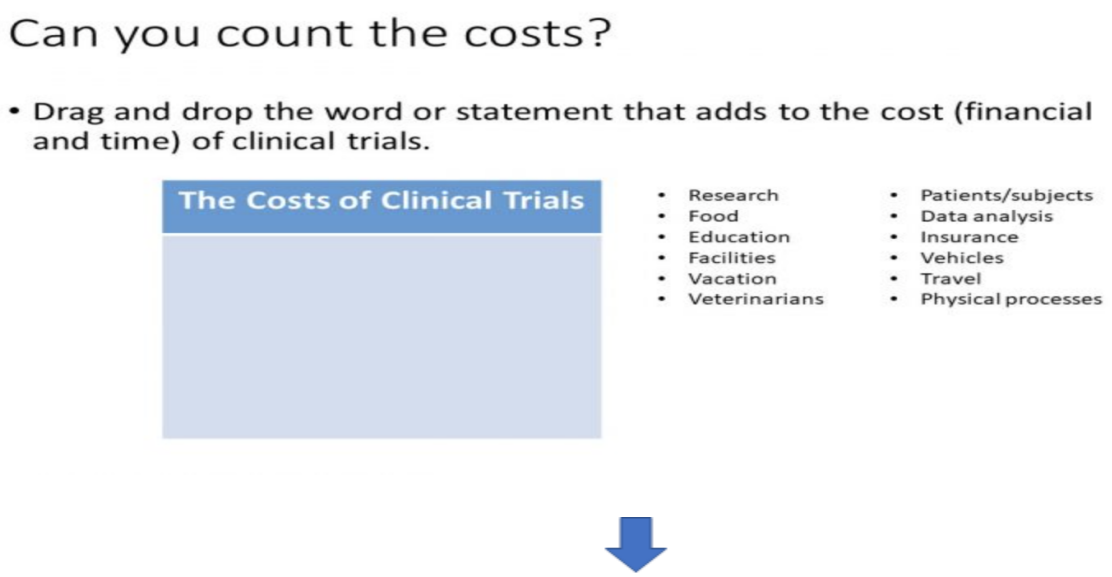
    I want the students to use interactive animations for the Clinical Trial module - Can you count the costs?

    So that the students can understand the concepts better.

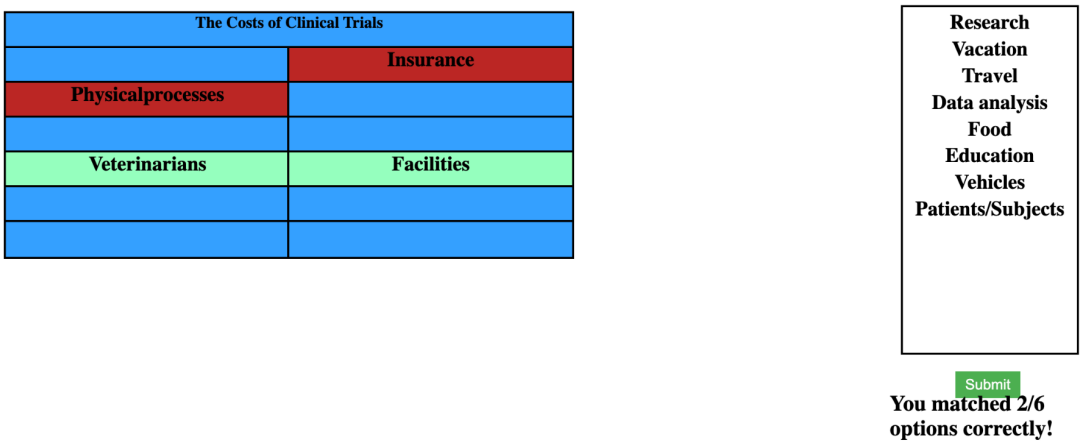
    Progress: Deployed on StepStone, Wordpress

    Story Points: 3

    Design diagram:



Drag and drop the word or statement that adds to the cost (financial and time) of clinical trials.



Explanation:

We have developed a drag and drop animation for the slide “Can you count the costs?” from the Clinical Trial module. The Student has to drag the answers from the “Answers” box and place them onto the correct boxes and click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

4. **[Apurva Purushotama: 3 pts] Feature** - *UserStory No. 13*: Develop Ecology module - Ecological Succession Knowledge Check

    As an Instructor

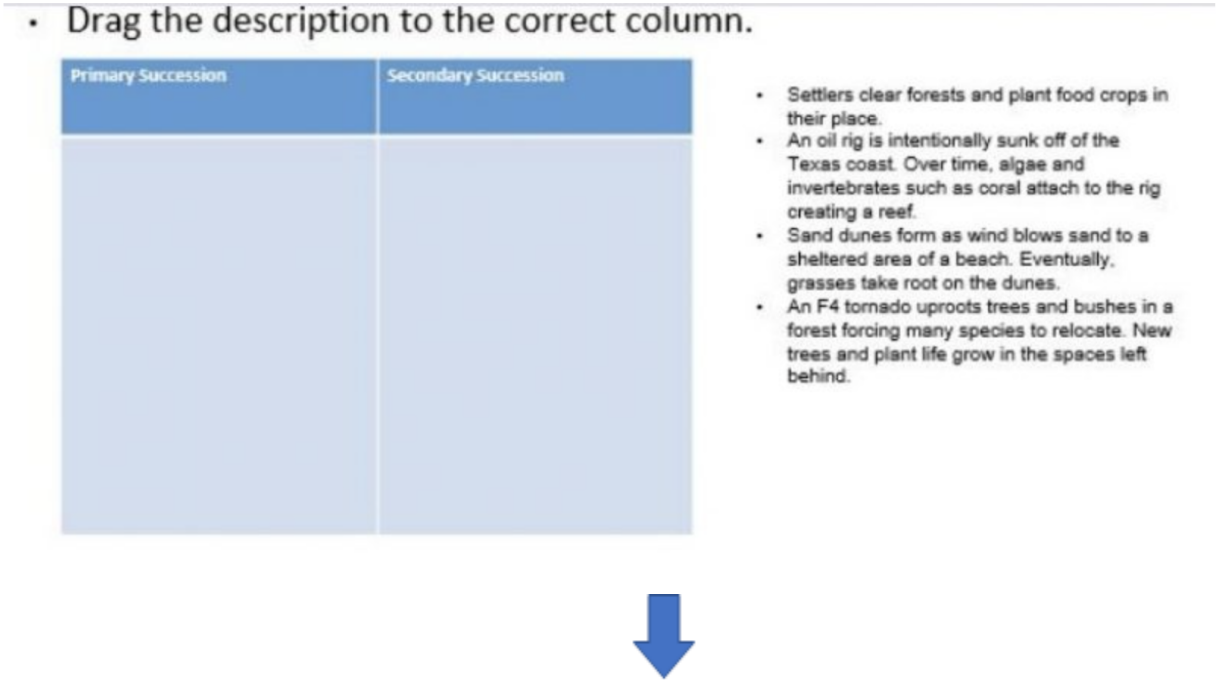
    I want the students to use interactive animations for the Ecology module - Ecological Succession Knowledge Check

    So that the students can understand the concepts better.

Progress: Deployed on StepStone, Wordpress

Story Points: 3

Design diagram:



Drag the description to the correct column

Primary Succession	Secondary Succession
	Settlers clear forest and plant food crops in their place.
An F4 tornado uproots trees and bushes in a forest forcing many species to relocate. New trees and plant life grow in the spaces left behind.	Sand dunes form as wind blows sand to a sheltered area of a beach. Eventually, grasses take root on the dunes.

Submit

An oil rig is intentionally sunk off of the Texas coast. Over time, algae and invertebrates such as coral attach to the rig creating a reef.

Explanation:

We have developed a drag and drag animation for the slide “Ecological Succession Knowledge Check” from the Ecology module. The Student has to drag the answers from the “Answers” box and place them onto the correct boxes to answer the questions listed on the left hand side. The student has to click on the submit button to check their answers. The answer box resizes when answers are dragged and dropped into the question containers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

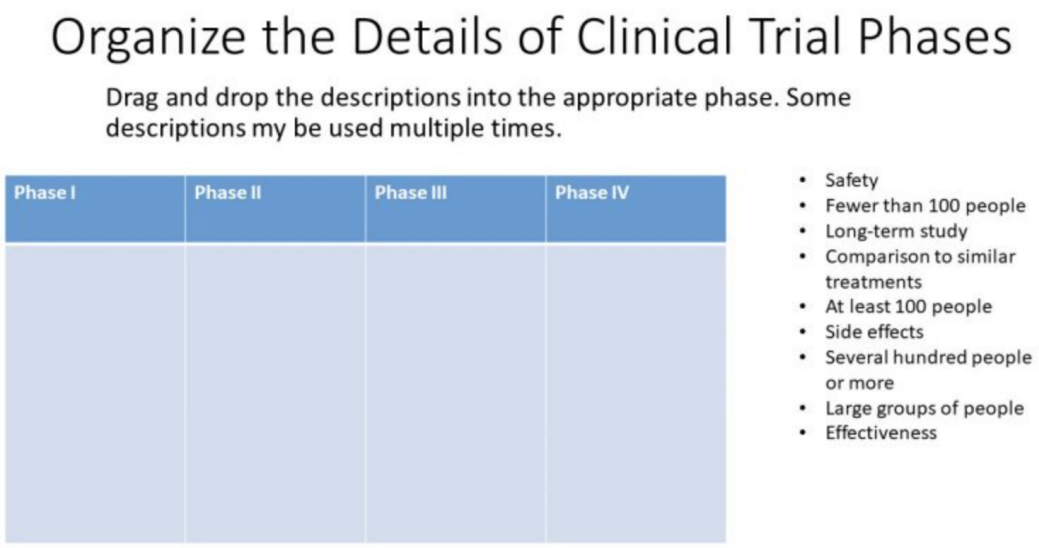
The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

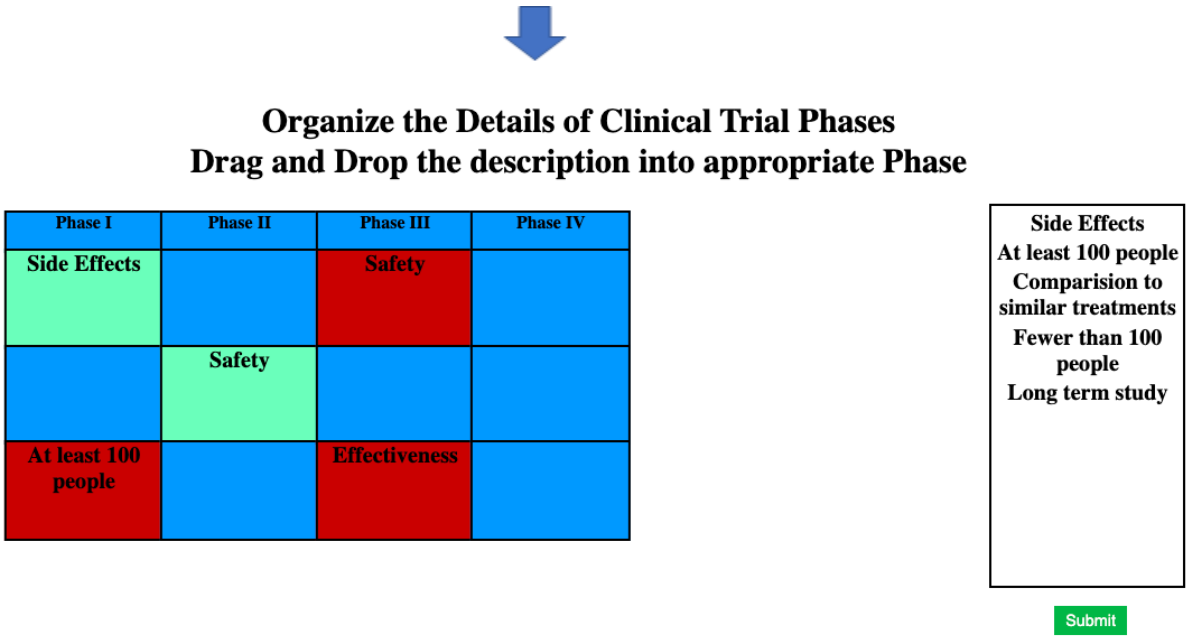
5. **[Shubham Gupta: 3 pts] Feature** - *UserStory No. 9*: Develop Clinical Trial module - Organize the Details of Clinical Trial Phases

   As an Instructor

   I want the students to use interactive animations for the Clinical Trial module - Organize the Details of Clinical Trial Phases

   So that the students can understand the concepts better.





Progress: Deployed on StepStone, Wordpress

Design diagram:

Story Points: 3

Explanation:

We have developed a drag and drag animation for the slide “Organize the Details of Clinical Trial Phases” from the Clinical Trial module. The Student has to drag the answers from the “Answers” box and place them onto the correct boxes to answer the questions listed on the left hand side. The student has to click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

ITERATION 3:

Story points completed : 15

User Stories

1. **[Prajwal: 3 pts] Feature -** *UserStory No. 6*: Develop Ecology - Living or Non-Living Knowledge Check

    As an Instructor

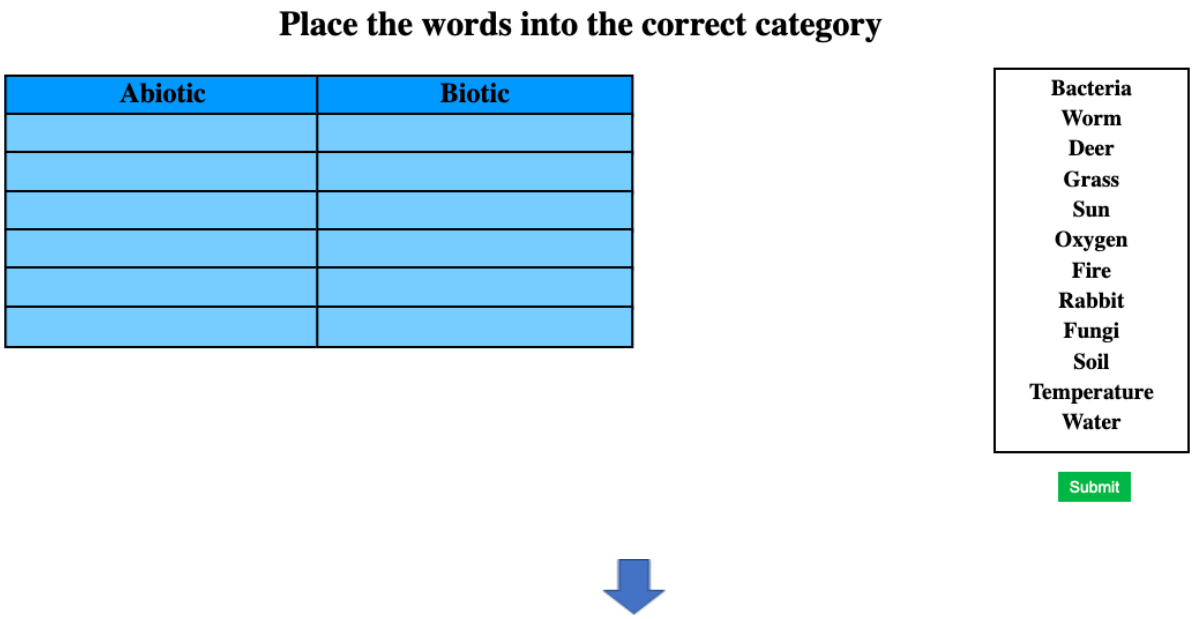
    I want the students to use interactive animations for the Ecology - Living or Non-Living Knowledge Check

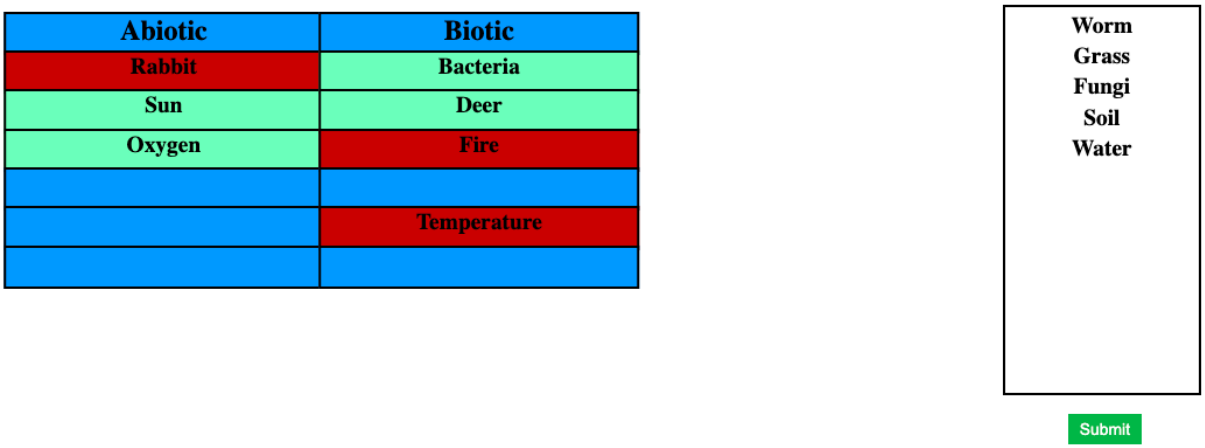
    So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:





Explanation:

We have developed a drag and drag animation for the slide ''Living or Non-Living Knowledge Check?'' from the Ecology module. The Student has to drag the answers from the ''Answers'' box and place them onto the correct boxes corresponding to Biotic and Abiotic.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

2. **[Apurva: 3 pts] Feature -** *UserStory No. 8*: Develop Clinical Trial module - Prove that you are a scientific method expert!

    As an Instructor

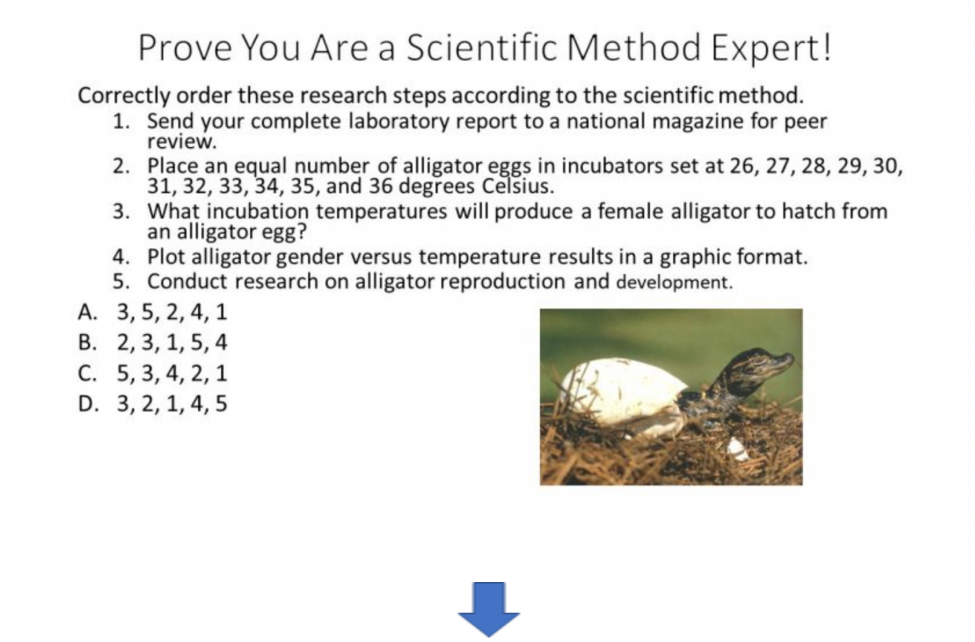
    I want the students to use interactive animations for the Clinical Trial module - Prove that you are a scientific method expert!

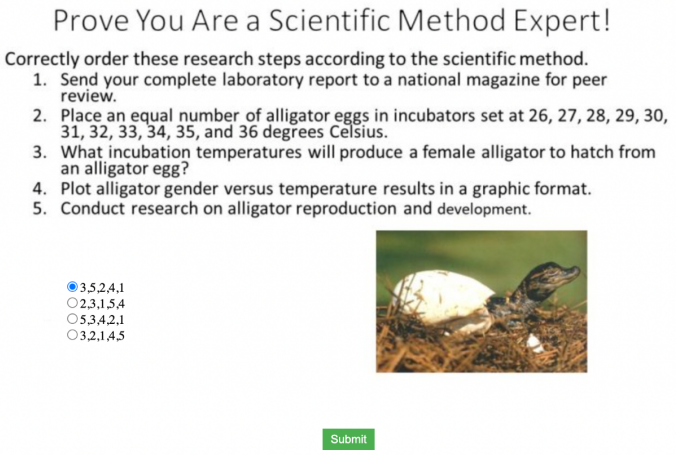
    So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:





Explanation:

We have developed a drag and drag animation for the slide “Prove that you are a scientific method expert!” from the Clinical Trials module. The Student has to select the correct answer which represents the order of research steps. Radio buttons are used for selecting the answer. Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

3. **[Sai Harini Voruganti: 3 pts] Feature** - *UserStory No. 7*: Develop Clinical Trial module - Identify the variables?

    As an Instructor

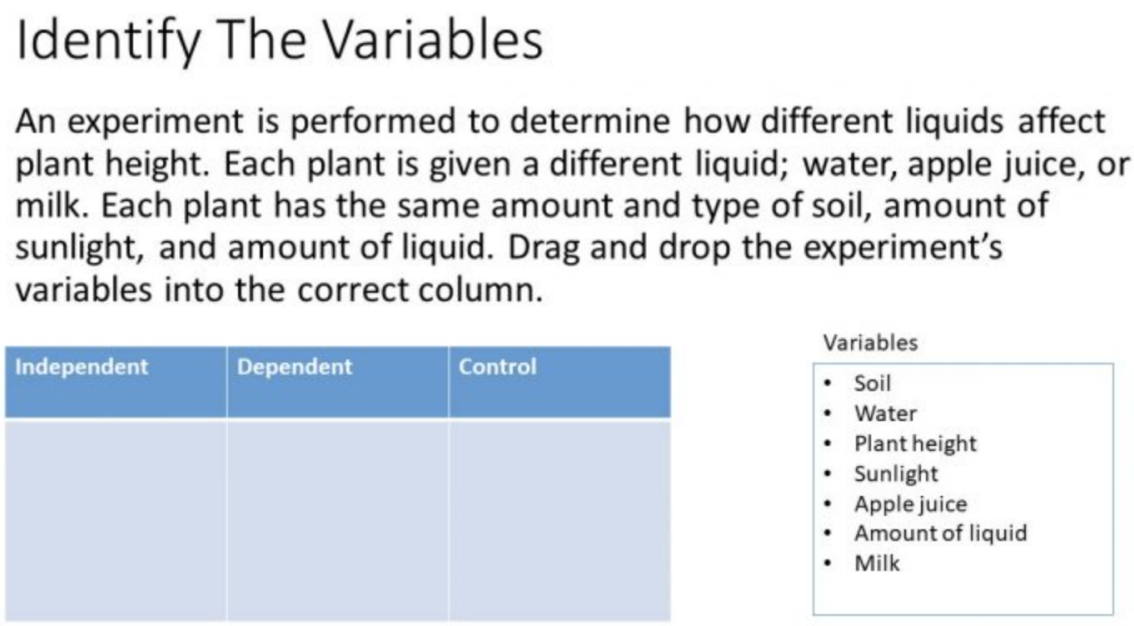
    I want the students to use interactive animations for the Clinical Trial module - Identify the variables?

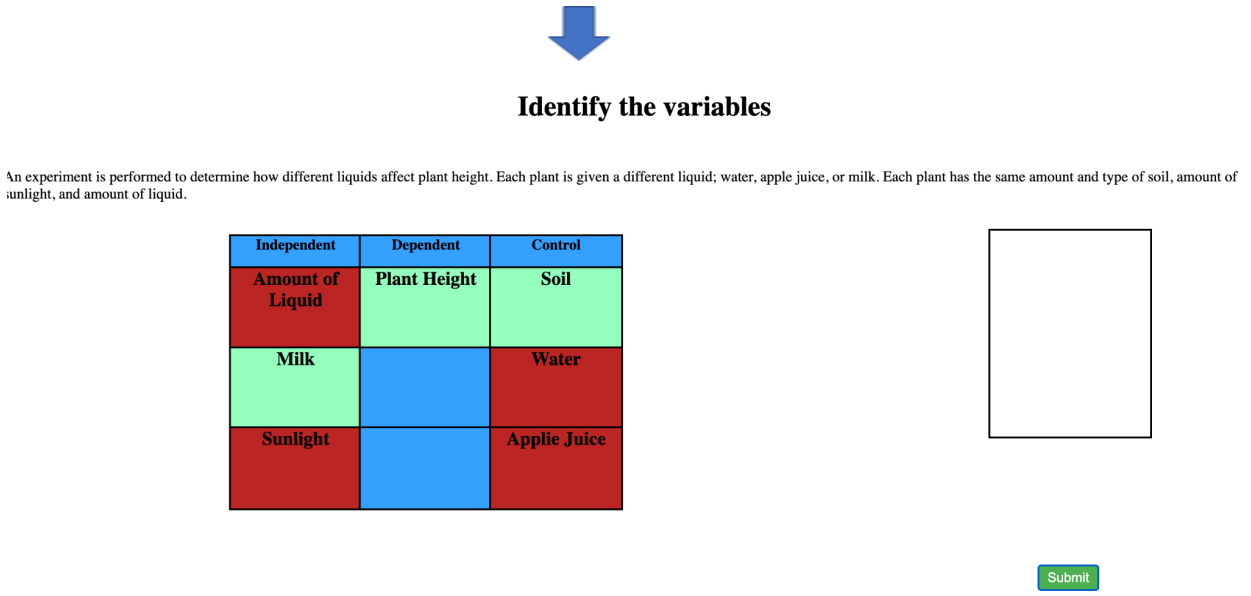
    So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:





Explanation:

We have developed a drag and drop animation for the slide “Identify the variables?” from the Clinical Trial module. The Student has to drag the answers from the “Answers” box and place them onto the correct boxes and click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

4. **[Nimisha: 3 pts] Feature** - *UserStory No. 10*: Develop Clinical Trial module - Think about it

   As an Instructor

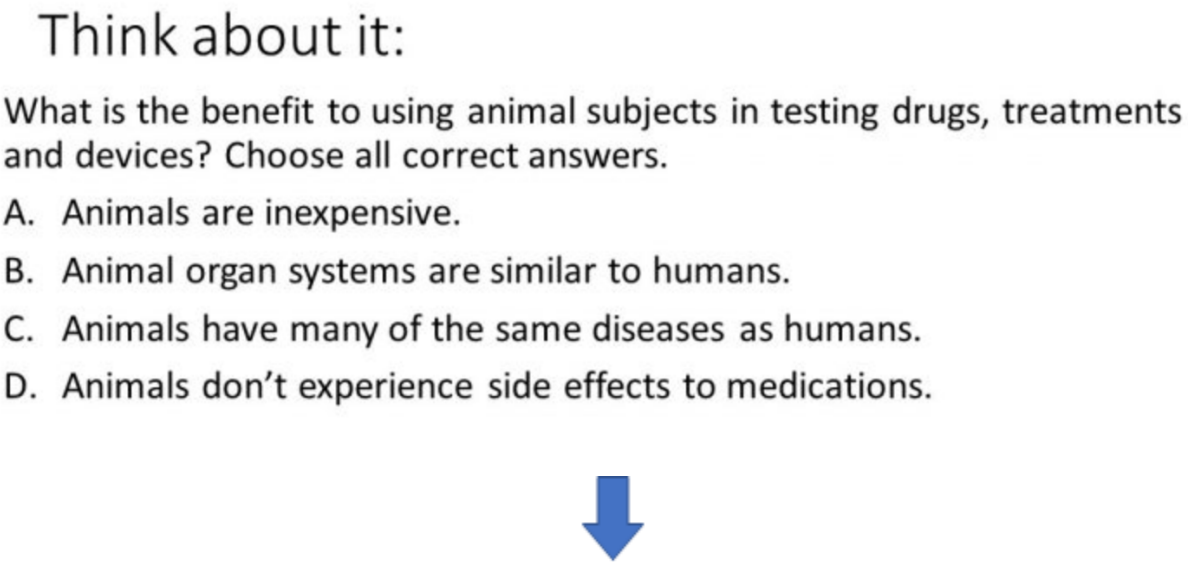
   I want the students to use interactive animations for the Clinical Trial module - Think about it

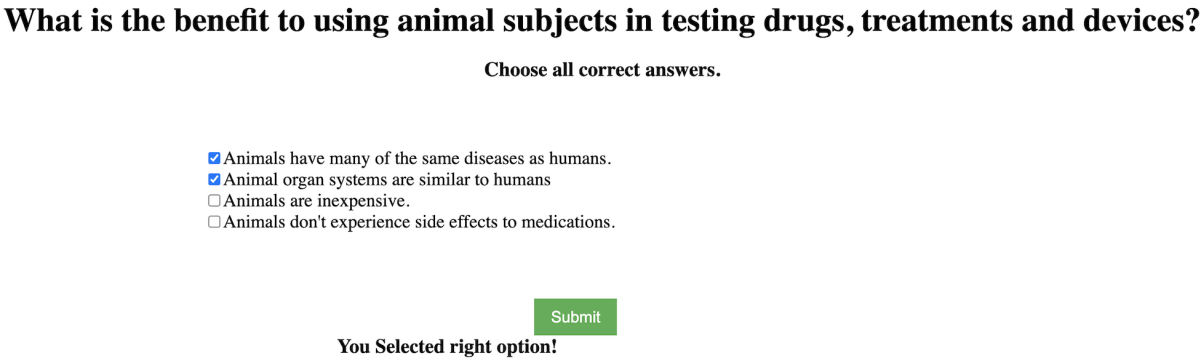
   So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:





Explanation:

We have developed a checkbox select animation for the slide “Think about it” from the Clinical Trial module. The Student has to select the checkboxes for the correct answers from the various options listed. The student has to click on the submit button to check their answers. The answer options are shuffled on each page refresh so that the students don’t memorize the correct answer sequence.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

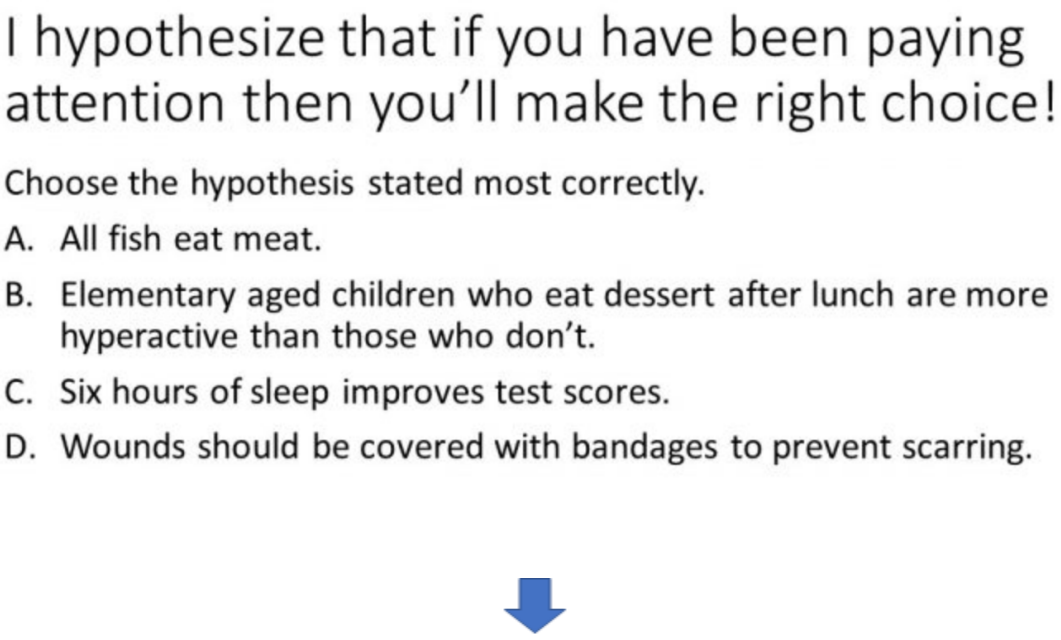
The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

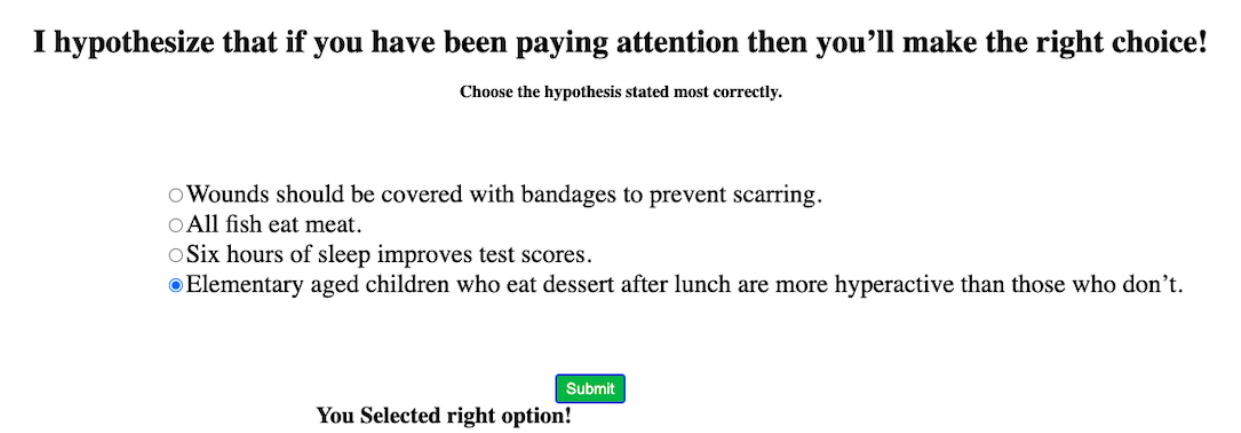
5. **[Shubham: 3 pts] Feature** - *UserStory No. 9*: Develop Clinical Trial module - Hypothesize Knowledge Check

   As an Instructor

   I want the students to use interactive animations for the Clinical Trial module - Hypothesize Knowledge Check

   So that the students can understand the concepts better.





Progress: Deployed on Wordpress

Story Points: 3

Design diagram:

Explanation:

We have developed a checkbox select animation for the slide "Hypothesize Knowledge Check" from the Clinical Trial module. The Student has to select the checkboxes for the correct answers from the various options listed. The student has to click on the submit button to check their answers. The answer options are shuffled on each page refresh so that the students don't memorize the correct answer sequence.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

ITERATION 4:

Story points completed : 15

User Stories

1. **[Shubham: 3 pts] Feature** - *UserStory No. 16*: Improve Stress module - Label the Neuron

    As an student

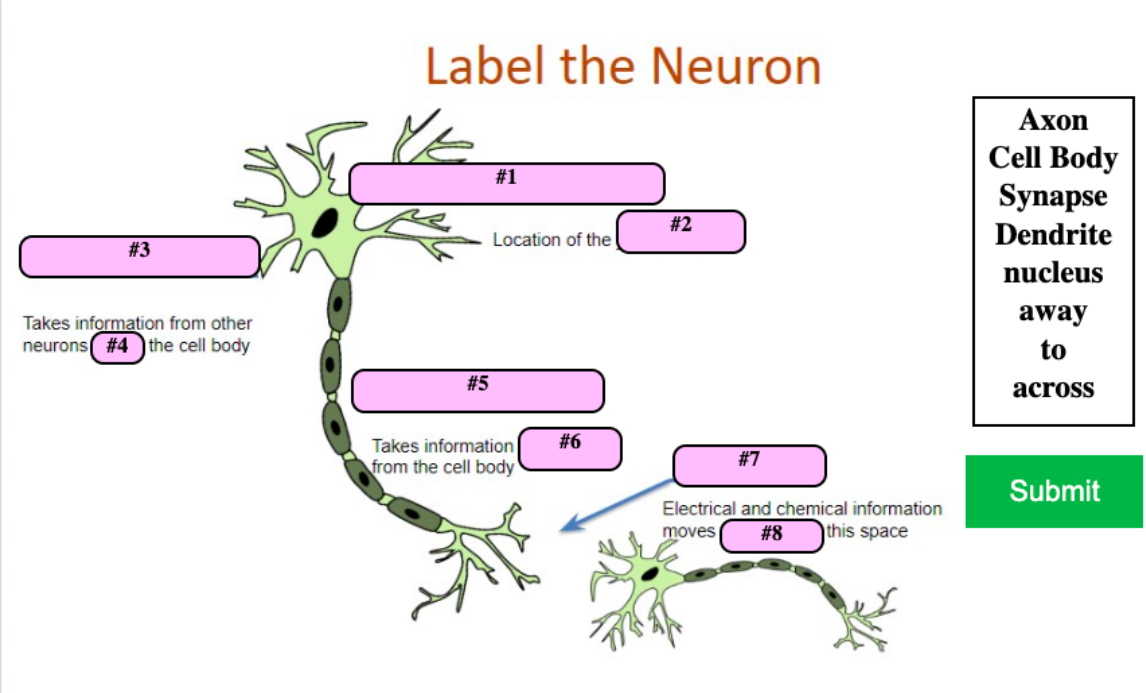
    I want the to reset the game

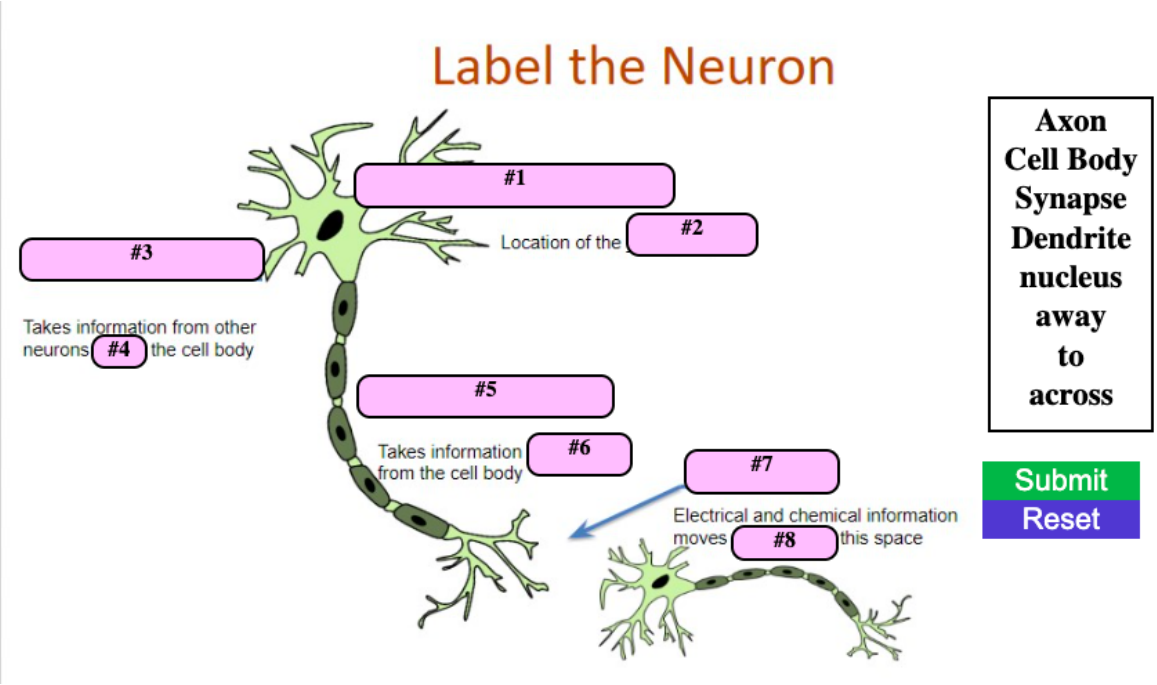
    So that I can recheck my understanding of the concepts better.

Progress: Deployed on StepStone, Wordpress

Story Points: 3

Design diagram:





Explanation:

We have developed a drag and drag animation for the slide ''Label the Neuron'' from the Stress module. The Student has to drag the answers from the ''Answers'' box and place them onto the correct boxes corresponding. The student should also able to reset the answers

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

2. **[Apurva: 3 pts] Bug Fix** - *UserStory No. 17*: Develop Stress module - Keep it in Balance

   As an Instructor

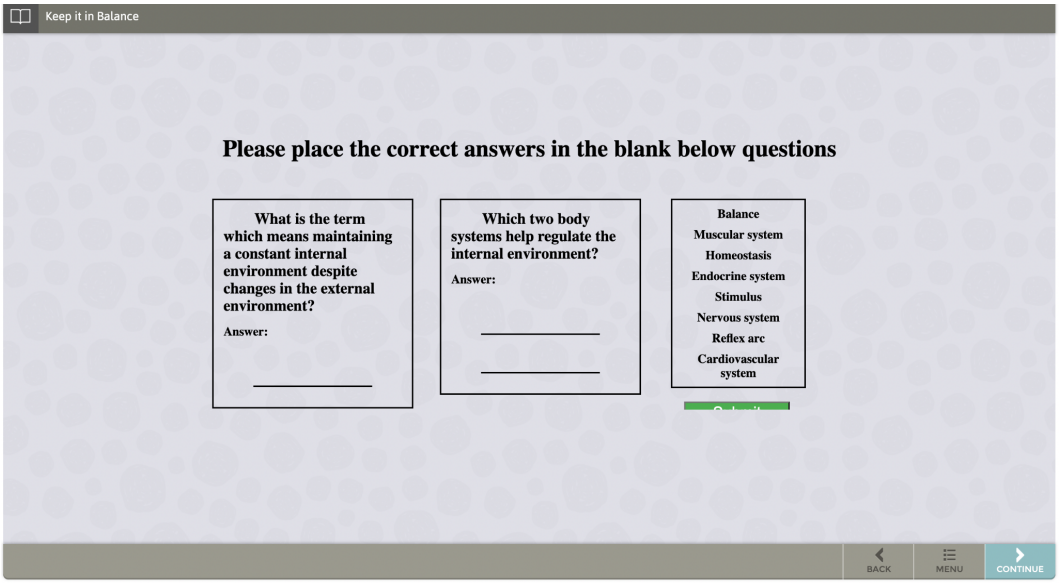
   I want the students to use interactive animations for the Stress module - Keep it in Balance

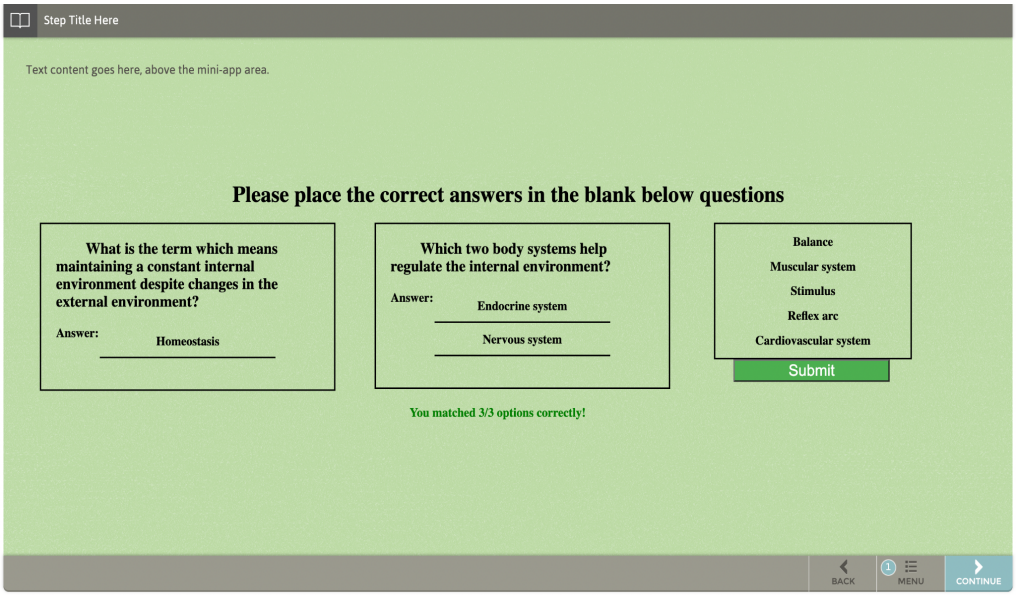
   So that the students can understand the concepts better.

Progress: Deployed on StepStone, Wordpress

Story Points: 3

Design diagram:





Explanation:

We have fixed the existing bugs to make the drag and drag animation for the slide “Keep it in Balance” from the Stress module. The existing code did not have the functionality required for the submit button and it was not compatible with touch devices. The answers are parametrized

so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

3. **[Sai Harini Voruganti: 3 pts] Feature** - *UserStory No.21*: Develop Infectious Diseases module : Knowledge Check: Infectious diseases

   As an Instructor

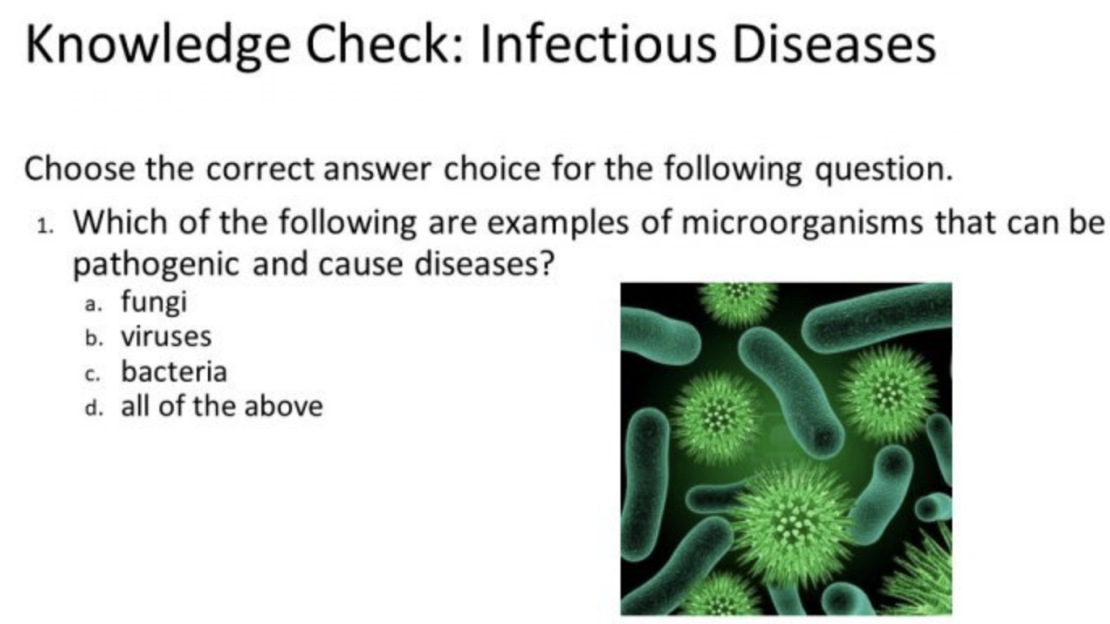
   I want the students to use interactive animations for the Infectious Diseases module - Knowledge Check : Infectious Diseases

   So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:



Choose the correct answer choice for the following question.

Which of the following are examples of microorganisms that can be pathogenic and cause diseases?

- ○ Fungi
- ○ Viruses
- ○ Bacteria
- ○ All of the above

Submit

Explanation:

We developed a MCQ animation for the slide “Knowledge Check : Infectious Diseases?” from the Infectious Diseases module. The Student has to select the answer from the available options and click on the submit button to check their answers.

Respective prompts are shown depending on the questions that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn’t affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

4. **[Nimisha: 3 pts] Feature** - *UserStory No. 18*: Develop Stress module - Can You Sense the Answers

As an Instructor

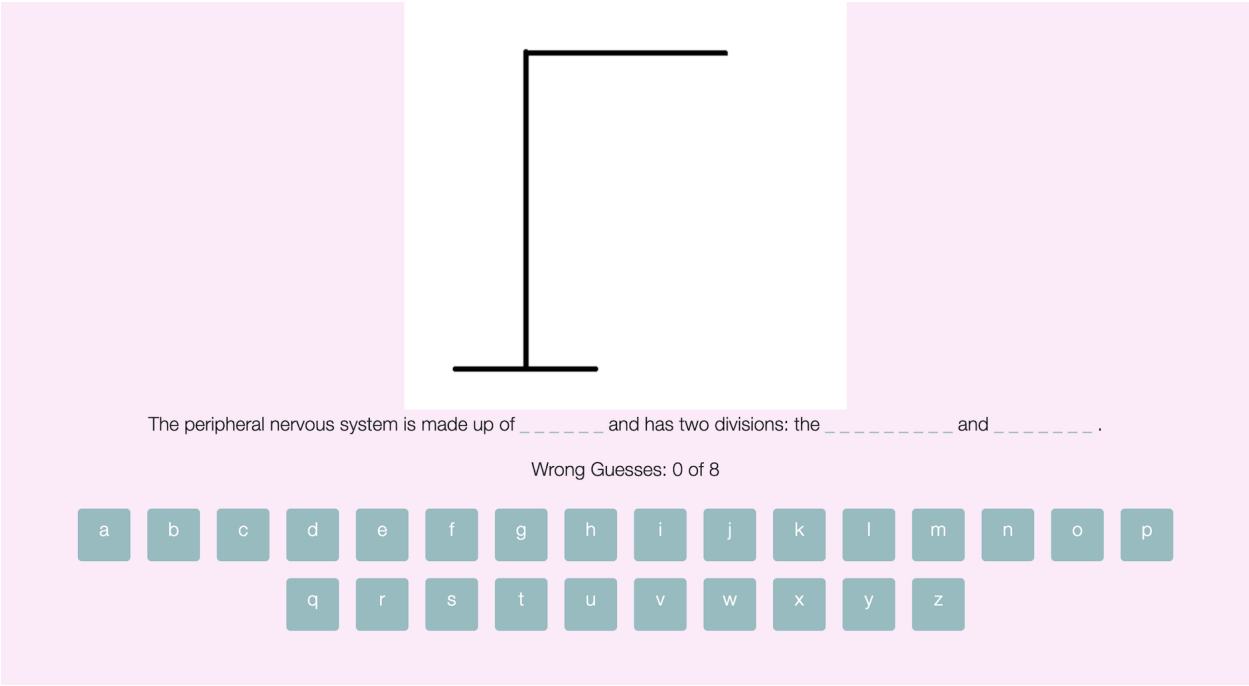
I want the students to use interactive animations for the Stress module - Can You Sense the Answers

So that the students can understand the concepts better.

Progress: Deployed on Wordpress

Story Points: 3

Design diagram:



The peripheral nervous system is made up of n e r v e s and has two divisions: the a u t o n o m i c and s o m a t i c .

Wrong Guesses: 7 of 8

Reset **You win! Hope you enjoyed playing.**

Explanation:

We have added a fill in the blank animation for the slide “Can You Sense the Answers” from the Stress module. The Student has to guess the correct letters for the blanks. They have only 8 incorrect attempts to make after which the hangman game is completed.

There is a reset button to restart the game.

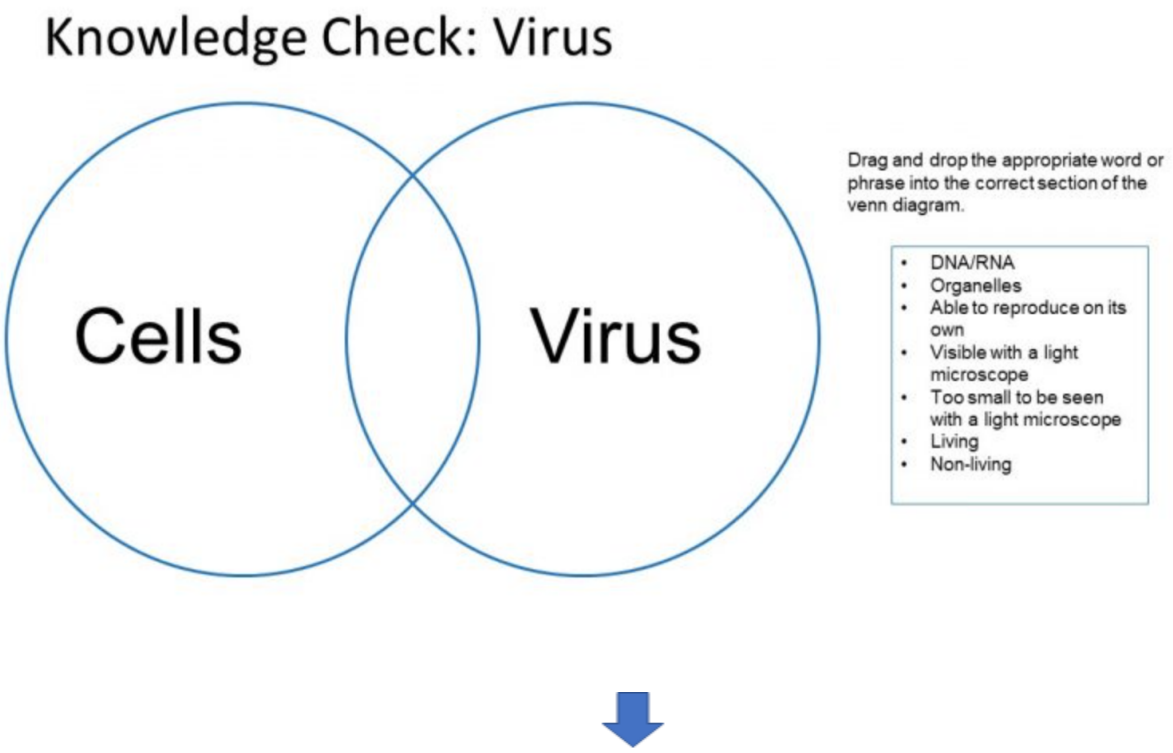
The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

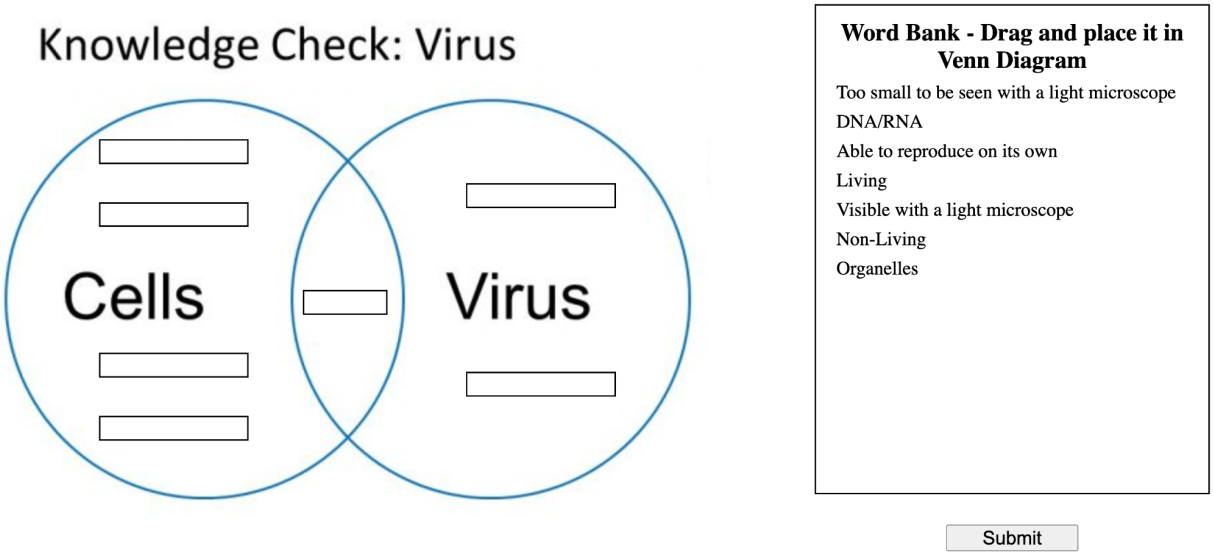
5. **[Prajwal: 3 pts] Feature -** *UserStory No. 22*: Develop Infectious Diseases module- Knowledge Check: Virus

   As an Instructor

   I want the students to use Venn diagram interactive animations for the Infectious Diseases module - Knowledge Check: Virus

   So that the students can understand the concepts better.





Progress: Deployed on Wordpress

Story Points: 3

Design diagram:

Explanation:

We have developed a Venn diagram animation from the Infectious diseases module.The students have to drag and drop the answers from the answers box to the correct place/portion in the Venn diagram.

Respective prompts are shown depending on the answers that the students get right.

The answers and the background photos are parametrized so that the code is easy to maintain and modify in the future. The animation has been developed such that resizing the window doesn't affect the working of the animation and it is also compatible with touch devices.

The color combinations, fonts and image sizes are chosen keeping accessibility in mind.

BDD/TDD Process

With the BDD/TDD processes, it becomes clear how a function should work and shouldn't be over complicated while still meeting the required standards, it also helps us think about making the code modular so that each function takes care of only one job. We use the following ways to test our code:

- **Manual testing**
  Open the respective index.html file on different browsers and check if the change is being reflected on the browser. Try different aspect ratios on the browser. Do functional testing manually and check if the response is as expected.
- **Emulating phone browser**
  Using the inspect element on the browser, choose "toggle device toolbar". Here, you can choose different aspect ratios based on different choices of the mobile handsets like MotoG, Google Pixel, iPhone, etc.
- **FutureDogter:**
  We figured out how to use this for testing deployments before deploying them to the production server by looking at previous conversations with Daniel Shuta because there is no proper documentation available for this. We also figured out how each URL maps to a test deployment and came up with a new way to test multiple deployments at once by generating unique URLs for each of them (from what we could gather from previous teams reports it seems they tested each slide one by one which would have increased the time taken for testing).
- **Server press:**
  This was used to test slides before deploying to the wordpress production server. This was relatively straightforward to set up locally and use but we ran into a few issues when we pushed to the production server. One of the main issues was that the ordess website blocks all HTTP links, so jQuery was not working on a few slides. We debugged this and other minor issues with the help of Samiksha Marne and deployed all the slides to production.

Tools

Git, Github, StepStone, ServerPress, FutureDogter

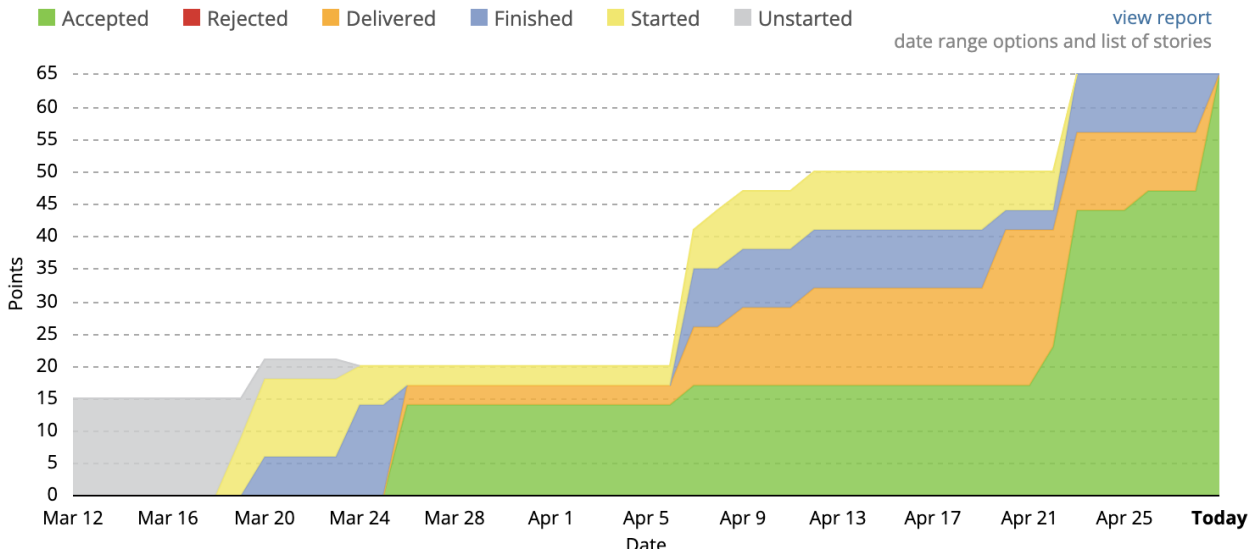
- Git and Github were really handy for projects like this and after everyone learned how to clone, add, commit, push, pull, there weren't any problems. We didn't create too many branches, commit messages were clear, everything was great.
- StepStone is the environment where we deploy our slides. We did find out that there are issues when we deploy and aren't reflected immediately until we clear our cookies, it

took us some time to deploy the slides but since we have the legacy code from the team last year, it wasn't a huge problem.

- ServerPress: This is a tool to test wordpress websites locally before deploying them.
- Futuredogter: This is an environment to test deployments for stepstone production environments.

Iteration Summary:

Velocity graph



Iteration 0:

In our very first iteration, we met our customer - Dr. Duncan Walker, who familiarized us with the animations that have already been deployed on the WordPress website. He outlined 2 major tasks for us. 1) To identify the buggy animations and deploy the animations on WordPress and StepStone after fixing them . 2) To create new animations. The next task was inventory check for figuring out modules in which animations can be added to make them more attractive to the students and also identify the animations which needed to be fixed. We worked on finding out which modules needed animation and the ones that did need it, and what type of animation could be added. We came up with user stories, individually, and met over zoom to discuss the ideas and the relevance of each of the user stories.

Iteration 1:

In iteration 1, we picked up user stories from **Infectious Diseases** modules. We worked on **User Stories 1, 2, 3, 4, 5**. We developed Drag and Drop animations for each of the user stories and tested them on ServerPress which is used for WordPress local testing and deployment. For Stepstone testing, we deployed on the test server of Stepstone and did the testing for laptop and mobile devices. For local deployment on ServerPress and Stepstone test environments, we followed the steps outlined in Tutorial 1 and 2 under the Tutorials section.

Iteration 2:

In iteration 2, we picked up user stories from **Clinical Trials and Ecology** modules. We worked on **User Stories 9, 12, 13, 14, 15**. We developed Drag and Drop animations for each of the user stories and tested them on ServerPress which is used for WordPress local testing and deployment. For Stepstone testing, we deployed on the test server of Stepstone and did testing for laptop and mobile devices. For local deployment on ServerPress and Stepstone test environments, we followed steps outlined in Tutorial 1 and 2 under the Tutorials section.

Iteration 3:

In iteration 3, we picked up user stories from **Clinical Trials** modules. We worked on **User Stories 6, 7, 8, 10, 11**. We developed Drag and Drop animations and Select Checkboxes animations for each of the user stories and tested them on ServerPress which is used for WordPress local testing and deployment. For Stepstone testing, we deployed on the test server of Stepstone and did testing for laptop and mobile devices. For local deployment on ServerPress and Stepstone test environments, we followed steps outlined in Tutorial 1 and 2 under the Tutorials section.

Iteration 4:

In iteration 4, we picked up user stories from **Infectious Diseases and Stress** modules. We worked on **User Stories 16, 17, 18, 21, 22**. We developed drag and drop animations for user stories 21 and 22 and tested them on ServerPress which is used for WordPress local testing and deployment. For Stepstone testing, we deployed on the test server of Stepstone and did testing for laptop and mobile devices. For local deployment on ServerPress and Stepstone test environments, we followed steps outlined in Tutorial 1 and 2 under the Tutorials section. We also picked up bug fixing and additional feature implementation in animations in this iteration. For this, we worked on User stories 16, 17 and 18 and followed similar local deployment steps as mentioned above.

Branches and Release Process

We followed the CI/CD approach for our release process. We used the **main** branch for all our releases. We planned a release for the StepStone and WordPress deployment after our iteration development was completed.
For StepStone deployment we contacted **Daniel Shuta** and for WordPress deployment, we got into contact with **Samiksha Marne.**

Configuration Management

GitHub:

We used GitHub as a configuration management tool for the project. The changes are not merged directly onto the main branch. Instead, every team member created a new development branch to push their code changes. Then he/she raised a pull request before merging the change into the main branch. In total, we had 19 pull requests over the course of 4 iterations.

Issues:

1. **Mobile compatibility**
   Touch (i.e., drag and drop) code doesn't work for mobile devices. To make this work, we have included the touch-punch.js jquery module. To make the animations compatible with mobile devices, a viewport meta tag is used which instructs the browser to use the actual device width with a scaling factor of 1. Then, we have used media queries to deliver different CSS styles to different mobile screen sizes. Most of the time, relative widths are used to avoid issues with resizing or different screen sizes.

2. **Stepstone issues**

   We faced issues with the animation heights during Stepstone deployment. Mini-apps are placed inside the StepStone environment in a customized "iframe" element. Therefore, the apps had to be resized using an iframe resizer. If this isn't triggered properly, the app is incompatible with StepStone. Also, using relative widths for the HTML page didn't work well with StepStone. Therefore, the height of the HTML, body, and/or the main container is changed to use a fixed value (600px or 800px for example).

3. **WordPress deployment issues**

Similar to the issue we have seen above for the StepStone environment, WordPress also expects HTTPS links instead of HTTP. So, we had to modify the HTTP links for jQuery to HTTPS.

4. **Deployment issues**
   There is no way for us to upload our apps into the production environment. StepStone developer Daniel Shuta would do this. We ensured that we tested the apps on a test framework simulating StepStone, but still we faced some height-related issues on the production server due to differences in the way the iframe resizer interacts with the mini-app. Also creating a new version of the module, with new instances of some paths does not include the steps already added and Daniel Shuta had to manually create these again to retain apps, nor existing mini-apps.

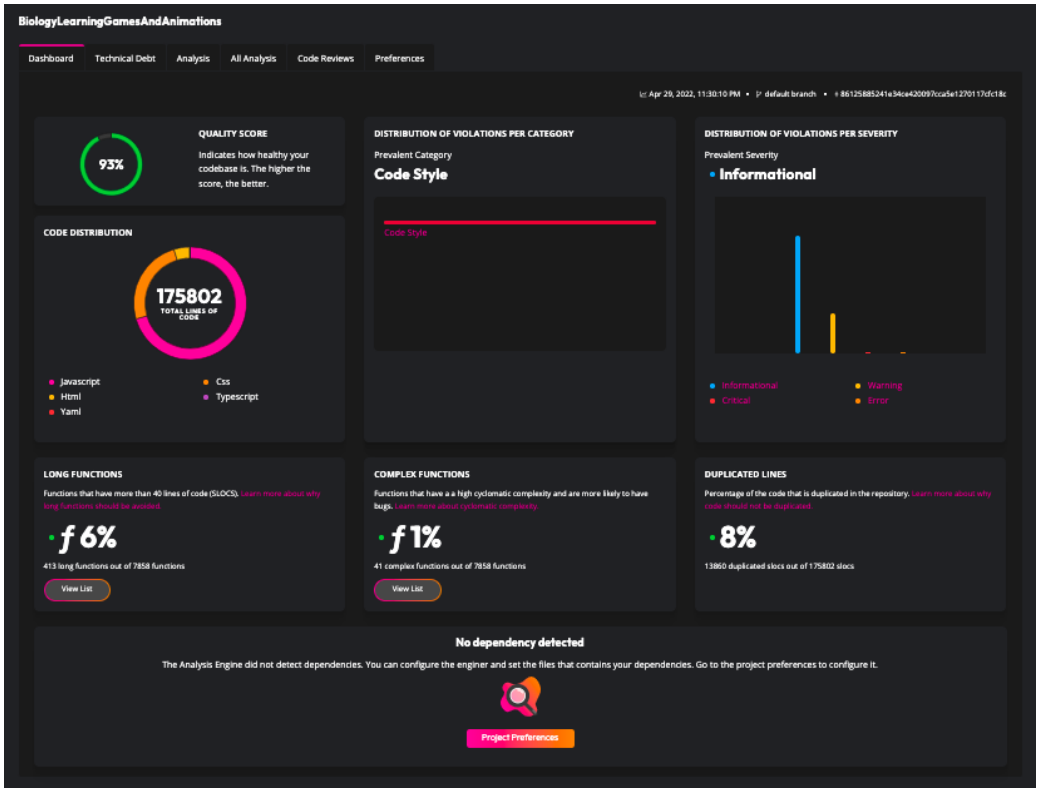
Code Complexity Report

For analyzing the complexity of our JS files, we used the **complexity-report** tool. It analyzes and reports various metrics for the code such as its cyclomatic complexity, lines of code for different functions of the JS file, code maintainability, halstead metrics and number of parameters in the code. This helps us estimate the quality of the code depending on its complexity parameters.

We generated the complexity report for each of our user stories. To do that, we first installed the npm package for the complexity report tool. Then we navigated to the folder of each user story and then executed the command **./cr** followed by the names of JS files we wanted to analyze. Below is a screenshot of the complexity report generated for one of our user stories.

```
Mean per-function logical LOC: 10.428571428571429
Mean per-function parameter count: 0.42857142857142855
Mean per-function cyclomatic complexity: 1.8571428571428572
Mean per-function Halstead effort: 3456.324741638265
Mean per-module maintainability index: 105.0098955220032
First-order density: 0%
Change cost: 100%
Core size: 0%

./hangman.js

  Physical LOC: 120
  Logical LOC: 74
  Mean parameter count: 0.42857142857142855
  Cyclomatic complexity: 7
  Cyclomatic complexity density: 9.45945945945946%
  Maintainability index: 105.0098955220032
  Dependency count: 0

  Function: window.onload
    Line No.: 14
    Physical LOC: 120
    Logical LOC: 20
    Parameter count: 0
    Cyclomatic complexity: 1
    Cyclomatic complexity density: 5%
    Halstead difficulty: 5.007692307692308
    Halstead volume: 950.1684502221161
    Halstead effort: 4758.151239189212

  Function: loadSentence
    Line No.: 49
    Physical LOC: 19
    Logical LOC: 3
    Parameter count: 0
    Cyclomatic complexity: 1
    Cyclomatic complexity density: 33.33333333333333%
    Halstead difficulty: 2
    Halstead volume: 68.53238859703687
    Halstead effort: 137.06477719407374
```

We also analyzed the code quality of the entire codebase using the online tool **Codiga**. We have provided a screenshot below for the same. As can be seen, it has reported the quality score of our codebase as 93%, the higher the quality score, the better the code quality is. It also shows the distribution of code between different technologies like JavaScript, TypeScript, HTML, CSS, etc and also reports the percentage of the long and complex functions in the entire codebase. It also provides a metric for code duplicacy.



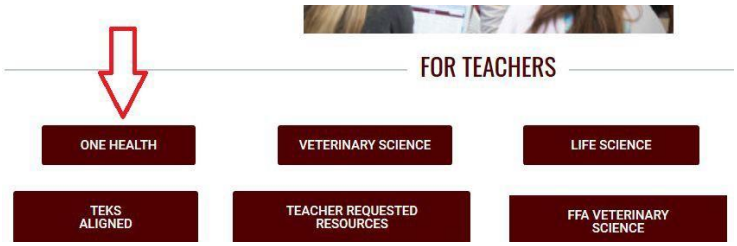
Repository contents and requirements for deployment

- Each slide in every module should be in a separate folder in the repository. Each folder should contain all the html, javascript, images and css files required for the deployment of that particular slide in the module. This folder with all the subdirectories should be added to the testing environment of StepStone. To do this, refer to the second section of Tutorials - **How to Test Your Apps in StepStone**
- After ensuring the folder contents are copied correctly and tested, the StepStone production path should be modified. There is no way for us to deploy our apps into the production environment; Daniel Shuta must do this for us. We need to provide him with the specific details mentioned below for our slide, for a particular module to be deployed on StepStone.
- For example, if we want to deploy the changes/development for the slide - Name that variable, for the Infectious Diseases Module, Data Collection, and Organization sub-module, we need to send the following information to Daniel. The steps to do this are mentioned in detail under the third section of Tutorials - **Editing The StepStone Production Path.**

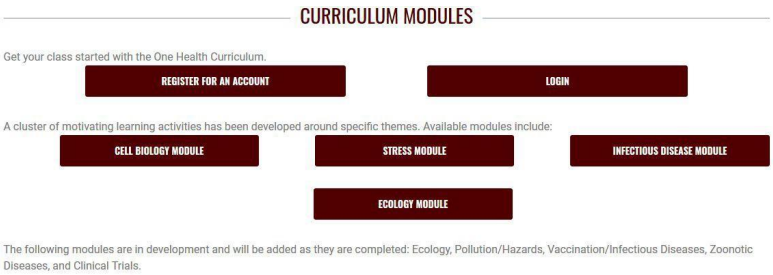
Course Package name: SEPA_InfectiousDiseases_EssentialKnowledge
Path: ek_data_collection_and_organization_new
Step ID: 12
Directory name in the FTP server under apps: Name_that_variable

Tutorials

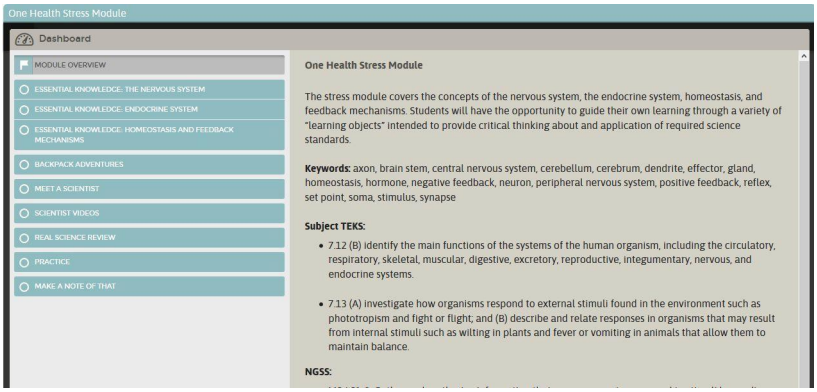
1. **Tutorial 1: What is StepStone?**
   StepStone is the learning environment system created by the Peer Program. The relevant web pages and steps for reaching the StepStone modules are as follows:
   1. Visit the Peer Program home page: https://vetmed.tamu.edu/peer/
   2. Near the middle, click the button that says *One Health.*
      The direct link is: https://vetmed.tamu.edu/peer/one-health/



   3. On the page, there is a section titled *Curriculum Modules*. This is the production environment where, depending on the module you work on, your mini-apps will be placed. No development is going to occur on this site, but you will go here to view your apps in action or determine where they are going to be placed.



   4. When you click on a module, you will be redirected to the StepStone learning environment and can then navigate it using the Dashboard and internal paths.



2. **Tutorial 2: Optimizing mini-apps for StepStone**

The mini-app iframe container needs to be initialized with a vertical size, it doesn't have a default height (rather, it is designed to allow a custom size set by the mini-app contents). Some user actions may trigger this vertical resize to occur on its own, but "forcing" the vertical sizing to display resolves the issue.

- For mini-apps we can include this handy (MIT-licenced) library within each mini-app for automatic height maximization of the mini-app iframe shell : https://github.com/davidjbradshaw/iframe-resizer. This library consists of 2 files, one for outside of the iframe, and one for the iframe's contents. The result is a css height style is applied dynamically to the iframe shell, determined by the iframe's contents. The "parent" file of the library pairing is already included with the current StepStone Player backbone code. You can place the contentWindow js file anywhere in your mini-app's structure, as long as it is invoked at run time to communicate with the paired parent file (calling it right after the jQuery inclusion in the index.html head code of my mini-apps can be a good option).

- There is some kind of delay, caused by dynamic placement of DOM elements affecting the height calculation or the absolute positioning. We need to force a size change once some things are drawn to DOM to trigger a height calculation request in the stepstone shell / iframe parent via that iframeresizer helper. There are different ways to remedy the problem. The below code can be used as a **workaround**. Add it to your document ready function in the .js file. This looks for a height value present on a DOM element and then triggers a size change in the master container. It sometimes doesn't work as expected with devices of smaller frame size, thus we also added a check. Apps deployed with this workaround have _step as a suffix in the github repository:

```
<script type="text/javascript">
        var timer1 = setInterval(function(){
          var width = (window.innerWidth > 0) ? window.innerWidth :
screen.width;
          if( $('.question-container').height() > 0 ){
            if(width>1050){
              $('#master-container').css( 'height' , 'auto' );
            }
            clearInterval(timer1);
             }
            }, 100);
   </script>
```

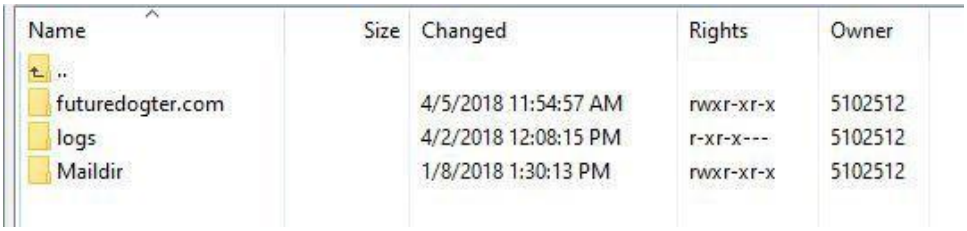
- Within the mini-app code, perform an initial sizing routine on document ready or some other stage of loading the mini app to maximize your needed vertical space for the given viewport size. This will help trigger the suggested/provided helper iframeresizer lib. to vertically fit the mini app iframe contents to the iframe container once the iframe contents are loaded. The exact methods and components that need sizing applied will depend on the mini-apps design, of course we can employ some combination of css and javascript (absolute positioning, forcing total height after summing pertinent DOM element heights, etc.), depending on what needs sizing.

- Responsive design should be considered. Should build/test application with a narrow device width in mind (but also other sizes!). StepStone sets the mini-app within a full-width iframe container (centered), and adds a bit of padding on the sides (matching other content on the step) so it won't be full-viewport. If the mini-app "innards" do not horizontally fill the allotted real-estate, it will "float" nicely in the center of the page.

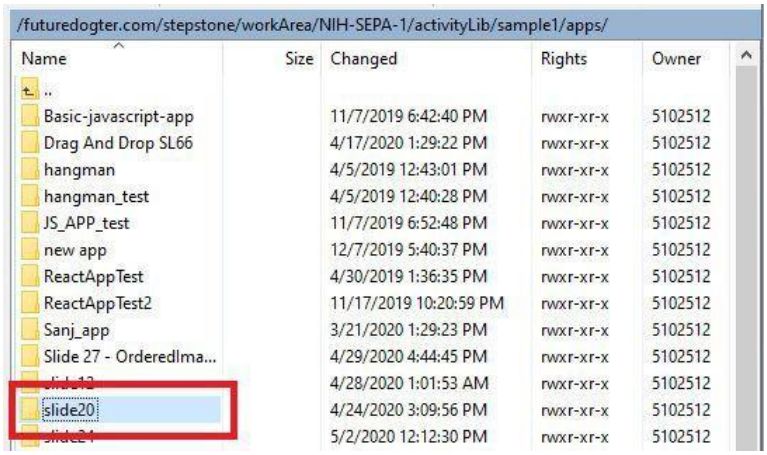
3. **Tutorial 3: How to Test Your Apps in StepStone**

   As of 5/2/2020, there is no way for you to stick our apps into the production environment; Daniel Shuta must do this for you. We are aware that Daniel is hard at work creating a method so that you CAN upload your apps yourself. Regardless, this tutorial explains how you can put your apps into a testing environment that Daniel provides.

   1. Download an app capable of establishing an FTP connection such as WinSCP or FileZilla. I used WinSCP, so this tutorial may have steps that won't match exactly with other clients.
   2. Contact professor Ritchey - pcr@tamu.edu for accessing username, hostname and password. Use port number 21 in WinsSCP to connect to the server.
   3. Once you are connected, you should see a directory that looks something similar to this but it should always contain a `futuredogter.com` directory.

      Now, navigate to the following path:
      `futuredogter.com/stepstone/workArea/NIH-SEPA-1/activityLib/sample1`
   4. This directory should contain three subdirectories titled "apps", "json", and "media". Whenever you want to test out your standalone mini-app, upload the entire app contents into the `/apps` directory as a subdirectory.



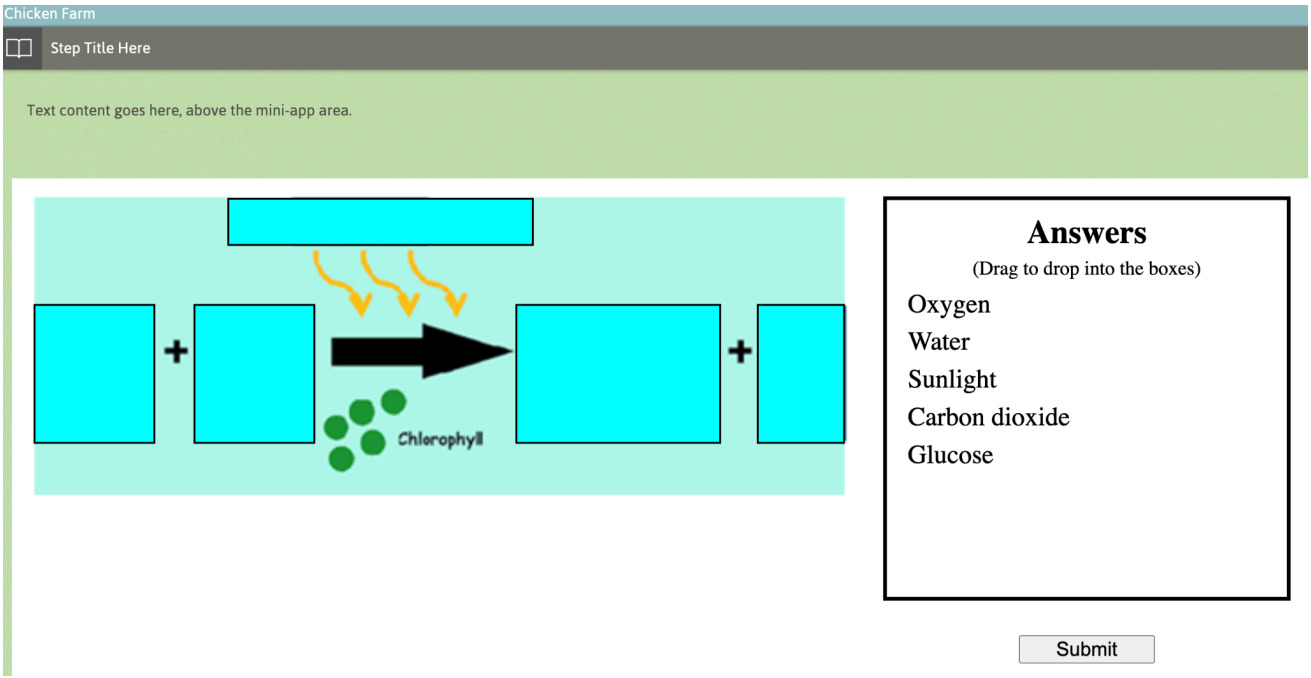
Be sure your specific app folder contains an `index.html` file at the root as well as any necessary JavaScript, CSS, and even other HTML files. It has been advised by Daniel that you shouldn't try to pull scripts externally, meaning any scripts you need to include for your app should be downloaded and included in your app's folder.

5. Once you've uploaded your app's folder into the `/apps` directory, go into the `/json` directory. You should see multiple JSON files, one of which is titled `draggybox40.json`. To view your app in a StepStone testing environment, open `draggybox40.json`, and edit the launched app to be the title of your app's folder. Remember, this folder must have an `index.html` file at the root.

6. Now you're ready to view your app in the testing environment. Visit the following link: http://www.futuredogter.com/stepstone/playerShell.php?org=CET&sys=public.Late

st&pool=TAMU-CET-1&resourceloc=www.futuredogter.com&resourceavatar=NIH-SEPA-1&resource=sample1&ppj=1_1_40

7. At that link, you should see your app embedded into the frame. You can disregard the titles and whatnot, as your app has no control over the page and is only responsible for itself. You can use this testing environment to repeatedly launch your app and make small adjustments so that Daniel doesn't have to reapply your app to production numerous times. Note that we had some loading and responsiveness issues in this environment when switching launched apps, so be sure to clear your browser's cache if you experience these types of issues.

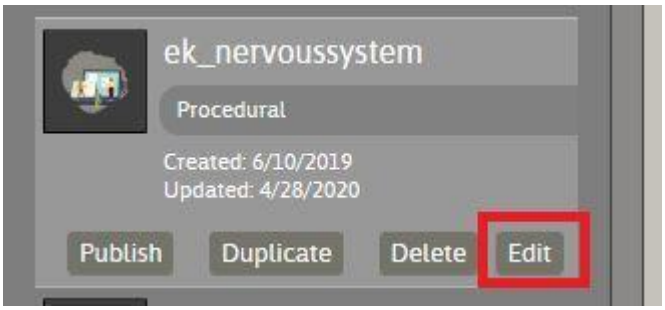


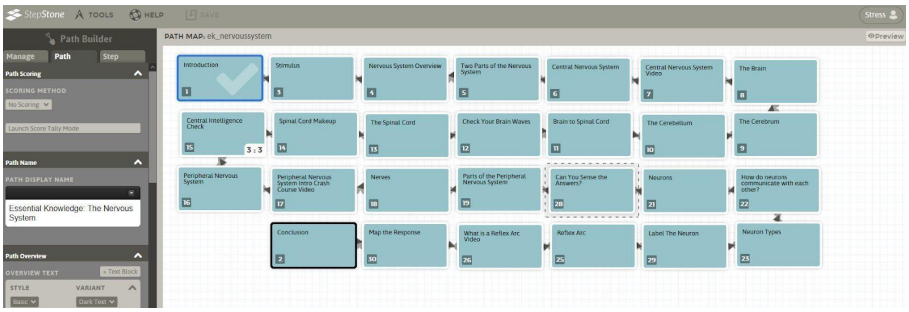
4. **Tutorial 4: Editing The StepStone Production Path**

Before you email Daniel to add your apps into the production environment, you first need to edit the live StepStone paths that dictates where your app is going to go on the slide.

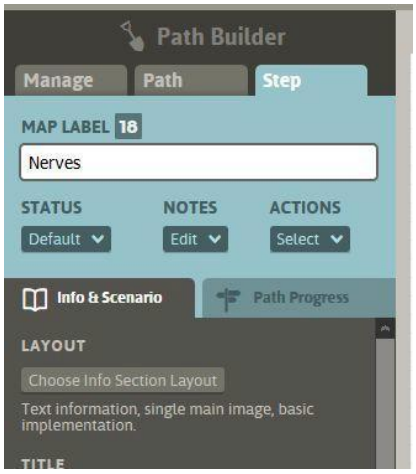
1. Go to the StepStone learning path editing website: https://stepstonelearning.net/
2. Contact professor Ritchey - pcr@tamu.edu for accessing username and passwords of every module.

3. This is where things can get a bit confusing. Once logged in, you should by default be at the Path Builder Tool. For your module, this will contain all of the relevant paths that are used by the module in production. If you choose a path and click 'Edit', you will be shown all of the internal steps that the path contain

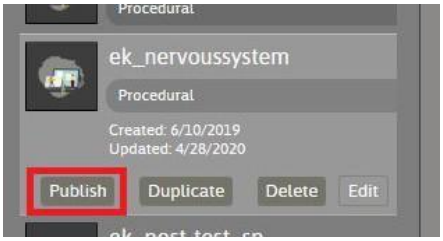




4. Each step, displayed as the blue boxes, is linked to its previous and next steps. To edit a specific step, click the step tab on the left of the page. This will display all of the relevant information (title, text contents, media, etc.) for that specific step. In StepStone, this will be one single slide in a path of the module. Use this feature of the tool to change anything you want about the step your app will go on, from text contents to background. The most likely occurrence will be that you want the slide to be completely empty because your mini-app SHOULD be completely independent and contain all information and interactions necessary on the slide. In that case, you might find it easier to simply delete the step from the path altogether and insert a new, completely empty step in its place.



5. Once you have all of your steps edited for the current path and your changes saved (which should be required by the system whenever you switch steps), you need to publish the new path. Go back to the ‘Manage’ tab and click ‘Publish’ for the path

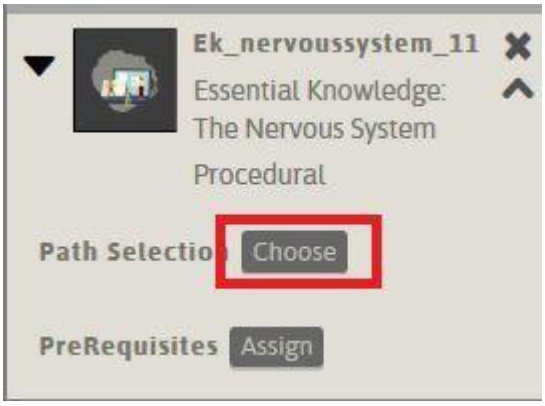


you've just edited. You will be asked for an ID for your new publication. Give it a unique ID, different from any of the IDs published for this path previously. If you try to name it a non-unique ID, the section will flash orange.

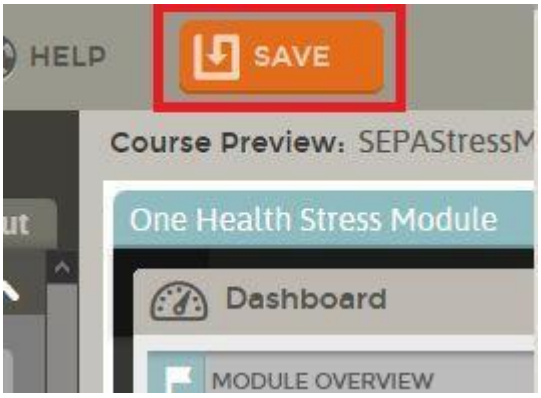
6. With your path published, go to the Course Packager tool.

7. In the list of courses, click on the module you've edited paths for, and click edit.

8. In this course's 'Paths' tab, find the path you made changes to, select its dropdown, and click 'Choose' to select a new path for the course.



9. After selecting the ID of the path you published in Step 5, click the save button at the top of the page to apply this selection to production.

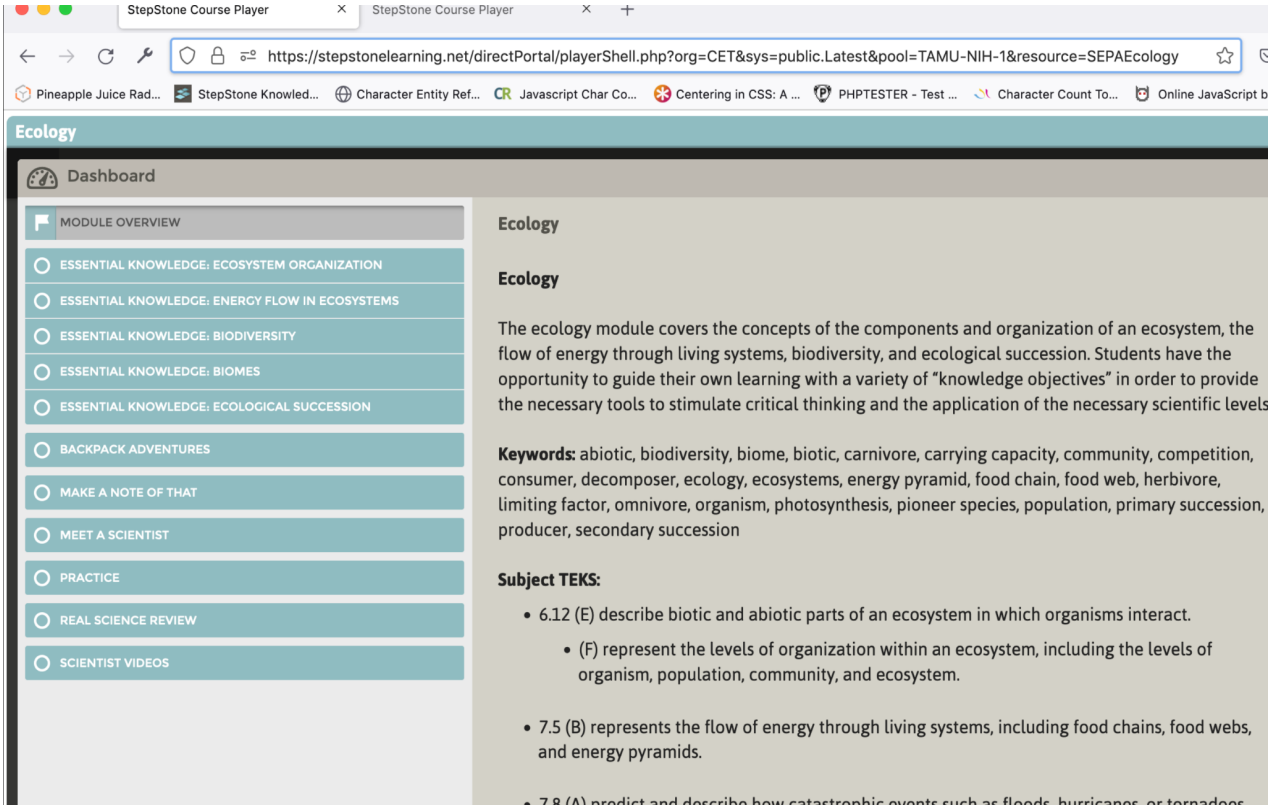


10. Now, you should see whatever changes you've made appear in the live corresponding StepStone module. At this point, you can email Daniel Shuta and tell him that your app is ready to be applied. The general procedure for doing that is:
    a. Have your most recent app version uploaded to the apps folder on the FTP server.
    b. Tell Daniel where the app should go; we followed the format: (app directory name) : (path name in StepStone) : (step/slide title)

5. **Tutorial 5: Deploying a mini-app to StepStone if the slide already exists.**

Firstly, you have to place your mini app in the ftp server by following the steps discussed in **How to Test Your Apps in StepStone.** Then, you need to find the path on the Stestone server where you want to deploy the mini-app. The easier way to do that is as follows:

To the url of the module on Stepstone add the "ppj=" query string at the end to jump to the exact step, ppj value example 1_1_1 — path group index (group 1), path-in-group index (path 1 in path-group 1), and step id number (step 1 in path 1 of path-group 1).



The first ppj number is the path-group, group 1 is the 5 essential knowledge paths, group 2 is backpack adventures, etc. there's a larger gap separating groups, and just a single pixel line separating paths in a group. Module overview is not part of the group/path identification/numbering.

So, ppj for "biodiversity" path, "how many species are there" step is &ppj=1_3_4. We can view the slide number/ID of the current step by clicking on the grey step title bar below the blue module title bar and holding shift and alt/option, if done correctly a debug popup shows the current step number/ID. That would tell the 3rd ppj value, "4". Thus, full url to jump to that step would be: https://stepstonelearning.net/directPortal/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-NIH-1&resource=SEPAEcology&ppj=1_3_4

Once the path and the ftp location of the mini-app is available, it can be sent to Dan for deployment.

6. **Tutorial 6: What is the iframe Resizer?**

The iframe resizer is a JavaScript library that is used by StepStone to automatically maximize the height of iframe shells within each slide. The parent StepStone structure already implements one of the crucial library files. Your job when creating your mini-app is to include the second resizer responsible for resizing iframe contents. The JS file you must include is titled "iframeResizer.contentWindow.min.js". This file can be found in all of our apps, generally under the "js" directory. You can also find it at the library's GitHub - https://github.com/davidjbradshaw/iframe-resizer

As per Daniel Shuta:

> "You can place it anywhere in your mini-app's structure, as long as it is invoked at run time to communicate with the paired parent file (I've been calling it right after the jQuery inclusion in the index.html head code of my mini-apps)."

Most importantly, the way you choose to design your app and implement CSS can affect the interaction of the app with the resizer. Be sure to thoroughly test your app using the FTP server and ensure this script is included properly within your app. Again, you can refer to our GitHub for examples, but it's pretty straightforward. Daniel was also incredibly helpful and responsive throughout the semester we worked on our apps.

7. Tutorial 7: Setting up WordPress locally

Manual Installation of DesktopServer on Windows

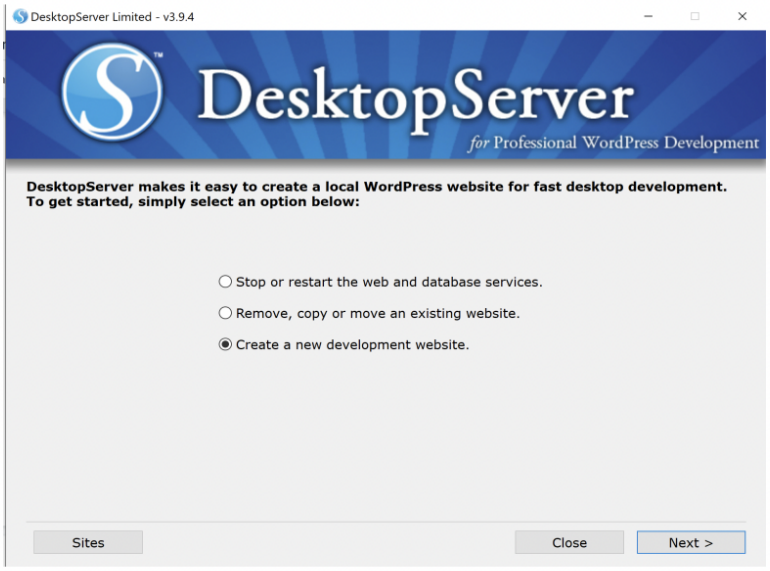
- Download the installation package for your platform from here
- Unzip the .zip file and locate the "libs" sub-folder containing the xampplite folder.
- Drag the xampplite folder to your c:\ hard drive.
- Open the Windows command prompt by pressing the Windows button on your keyboard or clicking the "Start" button and typing "Command Prompt", followed by pressing the enter key. - - (a) Type the following (on one line) in the Command Prompt window, followed by pressing the enter key:

  cd /D c:\xampplite\ds-plugins&..\all\bin\unzip ds-cli-win.zip

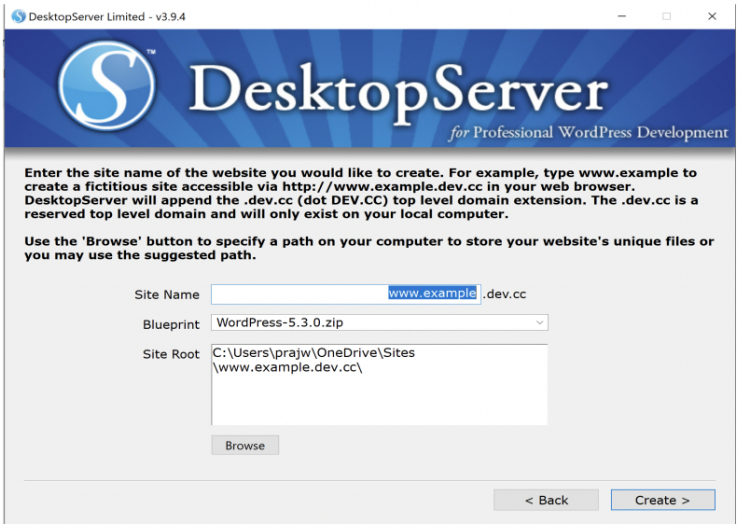
  (b) Type the next command, followed by pressing the enter key: cd /D c:\xampplite\mysql&..\all\bin\unzip backup.zip You may now close the Windows Command Prompt window or type "exit".
- Double-click the DesktopServer program icon from within your c:\xampplite

Steps for Manual Installation of DesktopServer on a Mac

- Download the installation package for your platform from here
- Unzip the .zip file and locate the “libs” sub-folder containing the XAMPP folder.
- Drag the XAMPP folder to your Applications folder.
- Double click the /Applications/XAMPP/ds-plugins/ds-cli-mac.zip to unpack the ds-cli plugin. You may delete the ds-cli-mac.zip file.
- Double click the /Applications/XAMPP/xamppfiles/var/backup.zip to unpack the MySQL folder.
- Right-click the DesktopServer application icon from within your /Applications/XAMPP folder and select “Open” from the pop-up context menu. Open the Desktop server and select the option ‘Create a new development website’.



- Then you will see the below window where you have given the site name and the local address where you want to save the site root.



- Click on create to start the webserver. To test any module, place your files/folder in the root directory and open the site in the browser. For example http://www.example.dev.cc/slide8/index.html File location- C:\Users\prajw\OneDrive\Sites\www.example.dev.cc\Slide4\index.html

8. Tutorial 8: Deploying the animations on the Website.

You need to reach out to the Webmaster for deployment of the animations on to the WordPress website. The animations should be tested on **DesktopServer,** steps for which have been shared above. Once the animations are ready for deployment the details should be sent to the Webmaster in the following format:

Module	Module info	Name of Slide	Repo Folder
Infectious diseases	Infectious Diseases: Essential Knowlegde: Data Collectoin and organization	Knowledge check: What are the data?	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/WhatAreData
Infectious diseases	Infectious Diseases: Essential Knowlegde: Data Collectoin and organization	Knowledge check: Name that Variable	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Name%20that%20variable
Infectious diseases	Infectious Diseases: Essential Knowlegde: Data Collectoin and organization	Knowledge check: Which axis is the right?	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/WhichAxisIsRight
Infectious diseases	Infectious Diseases: Essential Knowlegde:Analyzing the data	Knowledge check: Calculate the Value	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Calculate%20the%20value
Infectious diseases	Infectious Disease:Case Study:Influenza	Knowledge Check: Infectious diseases	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/KnowledgeCheckInfectiousDiseases
Infectious diseases	Infectious Disease:Case Study:Influenza	Knowledge Check: Virus	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Knowledge_check_virus
Clinical Trial	Clinical Trials: Essential Knowledge: Scientific Methods	Hypothesize Knowledge Check	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/HypothesizeKnowledgeCheck
Clinical Trial	Clinical Trials: Essential Knowledge: Scientific Methods	Identify the Variables	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/IdentifyTheVariables
Clinical Trial	Clinical Trials: Essential Knowledge: Scientific Methods	Prove that you are a scientific method expert	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/ProveThatYouAreAScientific%20MethodExpert!
Clinical Trial	Clinical Trials: Essential Knowledge: Phases of Clinical Trials	Organize the Details of Clinical Trial Phases	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/OrganizetheDetailsofClinicalTrialPhases
Clinical Trial	Clinical Trials: Essential Knowledge: Phases of Clinical Trials	Think about it	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/ThinkAboutIt
Clinical Trial	Clinical Trials: Essential Knowledge:Essential Knowledge: Reaseach Concets	Did you grasp the concepts?	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/Did%20you%20grasp%20the%20concepts
Clinical Trial	Clinical Trials: Essential Knowledge: Cost of Clinical Trials	Can you count the costs?	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/CountTheCosts
Ecology	Ecology: Essential Knowledge:Ecological Succession	Ecological Succession Knowledge Check	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/Ecological%20Succession
Ecology	Ecology: Essential Knowledge:Energy flow in ecosystems	Producers Knowledge Check	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/ProducersKnowledgeCheck
Ecology	Ecology: Essential Knowledge:Ecosystem Organization	Living or Non-Living Knowledge Check	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/Living_Non_Living
Stress	Stress: Essential Kowledge: The nervous system	Label the Neuron	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/LabeltheNeuron
Stress	Stress: Essential Kowledge: Homeostatis and Feedback Mechanisms	Keep it in Balance	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/KeepItInBalance
Stress	Stress: Essential Kowledge: The nervous system	Can You Sense the Answers	https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/CanYouSenseTheAnswers