

# VetMed Biology Learning Games and Animations

## Final Report

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**CSCE 606 - Software Engineering**

**Instructor: Dr. Philip Ritchey**

Spring 2022

**Important Links:**

Pivotal Tracker	<a href="https://www.pivotaltracker.com/n/projects/2556976">https://www.pivotaltracker.com/n/projects/2556976</a>
GitHub Repo	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations</a>
Deployment Status Sheet	<a href="https://docs.google.com/spreadsheets/d/1ONGrOZEGldePJ_KSnpPO_ENLpEQdU_VA3r1yopvTpGY/edit#gid=0">https://docs.google.com/spreadsheets/d/1ONGrOZEGldePJ_KSnpPO_ENLpEQdU_VA3r1yopvTpGY/edit#gid=0</a>
Inventory Sheet	<a href="https://docs.google.com/spreadsheets/d/1ONGrOZEGldePJ_KSnpPO_ENLpEQdU_VA3r1yopvTpGY/edit#gid=0">https://docs.google.com/spreadsheets/d/1ONGrOZEGldePJ_KSnpPO_ENLpEQdU_VA3r1yopvTpGY/edit#gid=0</a>
VetMed - WordPress and StepStone	<a href="https://vetmed.tamu.edu/peer/one-health/">https://vetmed.tamu.edu/peer/one-health/</a>
Minutes of Customer Meeting	<a href="https://docs.google.com/document/d/1PWrgTHStn2UAxnkCXVrX9yrozLq-M_LmipJB-xT5GyT4/edit?usp=sharing">https://docs.google.com/document/d/1PWrgTHStn2UAxnkCXVrX9yrozLq-M_LmipJB-xT5GyT4/edit?usp=sharing</a>
Slack	<a href="https://seoproject-1oc6126.slack.com">https://seoproject-1oc6126.slack.com</a>
Poster	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/blob/main/DocumentationSpring2022/Spring%202022%20Poster.pptx">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/blob/main/DocumentationSpring2022/Spring%202022%20Poster.pptx</a>

## **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: [!\[\]\(2bdfe261b986065ee0ac76460d6528c9\_img.jpg\) Minutes of Customer meeting](#)

Iteration	Meeting Date	Summary
<b>Iteration 0</b>	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.
<b>Iteration 1</b>	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.
<b>Iteration 2</b>	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.
<b>Iteration 3</b>	04/08/2022	Received suggestions to parameterize the code. Discussed mainly about WordPress and stepstone deployment. Dr.Walker suggested parameterization of the code.
<b>Iteration 4</b>	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

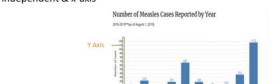
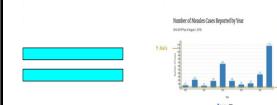
- Index.html
- css/
- img/
- js/

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.

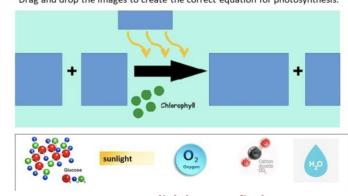
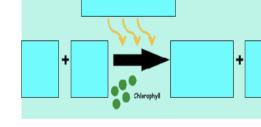
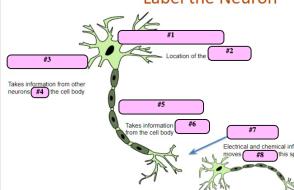
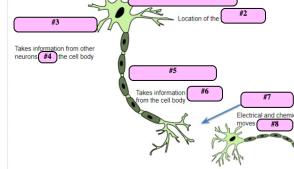
Testing on the deployment(Stepstone) environment is done with help of a dummy activity area in Stepstone. However, the json file “draggybox40” needs to be updated to launch and test the deployment of the specific slide/game and test for bugs/issues. The deployment is not straightforward. Two persons 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	<p>Knowledge Check: What are data?</p> <p>Fill in the blank with the correct words to define data.</p> <p>Data are a collection of _____, measurements and/or _____ for the purpose of _____ or analyzing information.</p> <ul style="list-style-type: none"> <li>• Observations</li> <li>• Studying</li> <li>• Facts</li> </ul>	<p>Knowledge Check: What are data?</p> <p>Fill in the blank with the correct words to define data.</p> <p>Data are a collection of <span style="background-color: cyan;">1</span>, measurements and/or <span style="background-color: cyan;">2</span> for the purpose of <span style="background-color: cyan;">3</span> or analyzing information.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Answers</b>  (Drag to drop into the boxes)  facts  studying  observations </div>
2. Infectious diseases module - Knowledge Check: Which axis is the right?	Deployed	<p>Knowledge Check: Which axis is the right axis?</p> <p>Which of the following answer choices correctly matches the variable to its axis on a graph? (an example graph is shown to represent each axis)</p> <p>A. independent &amp; y-axis, dependent &amp; x-axis  B. dependent &amp; y-axis, independent &amp; x-axis  C. none of the above</p> 	<p>Knowledge Check: Which axis is the right axis?</p> <p>Which of the following answer choices correctly matches the variable to its axis on a graph? (an example graph is shown to represent each axis)</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Answers</b>  (Drag to drop into the boxes)  dependent &amp; y-axis  dependent &amp; x-axis  independent &amp; x-axis  independent &amp; y-axis  None of the above </div>
3. Infectious diseases module - Knowledge Check: Name that variable	Deployed	<p>Knowledge Check: Name that Variable</p> <p>Match the three types of variables with their correct definitions.</p> <ol style="list-style-type: none"> <li>1. _____ A variable that is determined by the scientist</li> <li>2. _____ A variable that should remain constant when designing experiments to ensure outcomes are the result of a single factor.</li> <li>3. _____ A variable that responds to changes made by the scientist.</li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Word Bank</b>  Independent  Dependent  Controlled </div>	<p>Knowledge Check: Name that Variable</p> <p>Match the three types of variables with their correct definitions.</p> <ol style="list-style-type: none"> <li>1.A variable that is determined by the scientist <span style="background-color: cyan;">1</span></li> <li>2.A variable that should remain constant when designing experiments to ensure outcomes are the result of a single factor <span style="background-color: cyan;">2</span></li> <li>3.A variable that responds to changes made by the scientist <span style="background-color: cyan;">3</span></li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Answers</b>  (Drag to drop into the boxes)  Independent  Dependent  Controlled </div>
4. Infectious diseases module - Knowledge Check: Calculate the Value	Deployed	<p>Knowledge Check: Calculate the Value</p> <p>For the data set below determine the mean, median, range, and mode.</p> <p>1,5,2,6,2,4,6,9,2</p> <ul style="list-style-type: none"> <li>• Mean _____</li> <li>• Median _____</li> <li>• Range _____</li> <li>• Mode _____</li> </ul> 	<p>Knowledge Check: Calculate the Value</p> <p>For the data set below determine the mean, median, range, and mode.</p> <p>1,5,2,6,2,4,6,9,2</p> <ul style="list-style-type: none"> <li>• Mean <span style="background-color: cyan;">1</span></li> <li>• Median <span style="background-color: cyan;">2</span></li> <li>• Range <span style="background-color: cyan;">3</span></li> <li>• Mode <span style="background-color: cyan;">4</span></li> </ul>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>Answers</b>  (Drag to drop into the boxes)  4  2  8  4.1 </div>
5. Testing of Sprint 1 user stories locally and on Stepstone testing environment	Completed	<b>Not Applicable</b>	<b>Not Applicable</b>

<b>6. Clinical Trial module - Hypothesize Knowledge Check</b>	<b>Deployed</b>	<p>I hypothesize that if you have been paying attention then you'll make the right choice!</p> <p>Choose the hypothesis stated most correctly.</p> <p>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.</p>	<p>I hypothesize that if you have been paying attention then you'll make the right choice!</p> <p>Choose the hypothesis stated most correctly.</p> <p><input type="checkbox"/> Wounds should be covered with bandages to prevent scarring. <input type="checkbox"/> All fish eat meat. <input type="checkbox"/> Six hours of sleep improves test scores. <input checked="" type="checkbox"/> Elementary aged children who eat dessert after lunch are more hyperactive than those who don't.</p> <p><b>Submit</b> You Selected right option!</p>																								
<b>7. Clinical Trial module - Identify the Variables</b>	<b>Deployed</b>	<p><b>Identify The Variables</b></p> <p>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.</p> <table border="1" data-bbox="665 629 915 741"> <thead> <tr> <th>Independent</th> <th>Dependent</th> <th>Control</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Variables</p> <ul style="list-style-type: none"> <li>• Soil</li> <li>• Water</li> <li>• Plant height</li> <li>• Sunlight</li> <li>• Apple juice</li> <li>• Amount of liquid</li> <li>• Milk</li> </ul> </div>	Independent	Dependent	Control				<p><b>Identify the variables</b></p> <p>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.</p> <table border="1" data-bbox="1176 578 1318 711"> <thead> <tr> <th>Independent</th> <th>Dependent</th> <th>Control</th> </tr> </thead> <tbody> <tr> <td>Amount of Liquid</td> <td>Plant Height</td> <td>Soil</td> </tr> <tr> <td>Milk</td> <td>Water</td> <td></td> </tr> <tr> <td>Sunlight</td> <td>Apple Juice</td> <td></td> </tr> </tbody> </table> <p><b>Submit</b></p>	Independent	Dependent	Control	Amount of Liquid	Plant Height	Soil	Milk	Water		Sunlight	Apple Juice							
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<b>8. Clinical Trial module - Prove that you are a scientific method expert!</b>	<b>Deployed</b>	<p><b>Prove You Are a Scientific Method Expert!</b></p> <p>Correctly order these research steps according to the scientific method.</p> <ol style="list-style-type: none"> <li>Send your complete laboratory report to a national magazine for peer review.</li> <li>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.</li> <li>What incubation temperatures will produce a female alligator to hatch from an alligator egg?</li> <li>Plot alligator gender versus temperature results in a graphic format.</li> <li>Conduct research on alligator reproduction and development.</li> </ol> <p>A. 3, 5, 2, 4, 1 B. 2, 3, 1, 5, 4 C. 5, 3, 4, 2, 1 D. 3, 2, 1, 4, 5</p> 	<p><b>Prove You Are a Scientific Method Expert!</b></p> <p>Correctly order these research steps according to the scientific method.</p> <ol style="list-style-type: none"> <li>Send your complete laboratory report to a national magazine for peer review.</li> <li>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.</li> <li>What incubation temperatures will produce a female alligator to hatch from an alligator egg?</li> <li>Plot alligator gender versus temperature results in a graphic format.</li> <li>Conduct research on alligator reproduction and development.</li> </ol> <p><input type="checkbox"/> 3, 5, 2, 4, 1 <input type="checkbox"/> 2, 3, 1, 5, 4 <input type="checkbox"/> 5, 3, 4, 2, 1 <input checked="" type="checkbox"/> 3, 2, 1, 4, 5</p>  <p><b>Submit</b></p>																								
<b>9. Clinical Trial module - Organize the Details of Clinical Trial Phases</b>	<b>Deployed</b>	<p><b>Organize the Details of Clinical Trial Phases</b></p> <p>Drag and drop the descriptions into the appropriate phase. Some descriptions may be used multiple times.</p> <table border="1" data-bbox="675 1136 931 1262"> <thead> <tr> <th>Phase I</th> <th>Phase II</th> <th>Phase III</th> <th>Phase IV</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> <li>• Safety</li> <li>• Fewer than 100 people</li> <li>• Long-term study</li> <li>• Comparing similar treatments</li> <li>• At least 100 people</li> <li>• Side effects</li> <li>• Several hundred people or more</li> <li>• Large groups of people</li> <li>• Effectiveness</li> </ul> </div>	Phase I	Phase II	Phase III	Phase IV					<p><b>Organize the Details of Clinical Trial Phases</b></p> <p>Drag and Drop the description into appropriate Phase</p> <table border="1" data-bbox="1103 1121 1334 1248"> <thead> <tr> <th>Phase I</th> <th>Phase II</th> <th>Phase III</th> <th>Phase IV</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Side Effects</td> <td><input type="checkbox"/> Safety</td> <td><input type="checkbox"/> Safety</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Safety</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> At least 100 people</td> <td><input type="checkbox"/> Effectiveness</td> <td><input type="checkbox"/> Effectiveness</td> <td><input type="checkbox"/></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Side Effects At least 100 people Effectiveness Comparing similar treatments Fewer than 100 people Long term study</p> </div> <p><b>Submit</b></p>	Phase I	Phase II	Phase III	Phase IV	<input type="checkbox"/> Side Effects	<input type="checkbox"/> Safety	<input type="checkbox"/> Safety	<input type="checkbox"/>	<input type="checkbox"/> Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> At least 100 people	<input type="checkbox"/> Effectiveness	<input type="checkbox"/> Effectiveness	<input type="checkbox"/>
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<b>10. Clinical Trial module - Think about it</b>	<b>Deployed</b>	<p><b>Think about it:</b></p> <p>What is the benefit to using animal subjects in testing drugs, treatments and devices? Choose all correct answers.</p> <p>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.</p>	<p><b>What is the benefit to using animal subjects in testing drugs, treatments and devices?</b></p> <p>Choose all correct answers.</p> <p><input type="checkbox"/> Animals have many of the same diseases as humans. <input type="checkbox"/> Animal organ systems are similar to humans. <input type="checkbox"/> Animals are inexpensive. <input type="checkbox"/> Animals don't experience side effects to medications.</p> <p><b>Submit</b> You Selected right option!</p>																								
<b>11. Clinical Trial module - Did you grasp the concepts?</b>	<b>Deployed</b>	<p><b>Did you grasp the concepts?</b></p> <p>What methods do scientists <b>NOT</b> use to help ensure that their results are accurate and reliable?</p> <p>A. Randomization B. Paid incentives C. Blind trials D. Placebos</p>	<p><b>Drag and drop the methods that scientists use to help ensure their results are accurate and reliable</b></p> <table border="1" data-bbox="1155 1649 1241 1712"> <thead> <tr> <th>Scientific Methods</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Randomization</td> </tr> <tr> <td><input type="checkbox"/> Paid incentives</td> </tr> <tr> <td><input type="checkbox"/> Placebos</td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Blind Trials</p> </div> <p><b>Submit</b> You didn't match all options correctly!</p>	Scientific Methods	<input type="checkbox"/> Randomization	<input type="checkbox"/> Paid incentives	<input type="checkbox"/> Placebos																				
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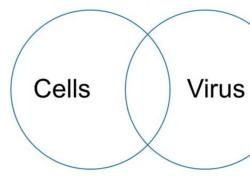
<p><b>12. Clinical Trial module - Can you count the costs?</b></p>	<p><b>Deployed</b></p>	<p>Can you count the costs?</p> <ul style="list-style-type: none"> <li>Drag and drop the word or statement that adds to the cost (financial and time) of clinical trials.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">The Costs of Clinical Trials</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Physical processes</td> <td style="text-align: center;">Insurance</td> </tr> <tr> <td style="text-align: center;">Research</td> <td style="text-align: center;">Patients/subjects</td> </tr> <tr> <td style="text-align: center;">Food</td> <td style="text-align: center;">Data analysis</td> </tr> <tr> <td style="text-align: center;">Facilities</td> <td style="text-align: center;">Equipment</td> </tr> <tr> <td style="text-align: center;">Vacation</td> <td style="text-align: center;">Vehicles</td> </tr> <tr> <td style="text-align: center;">Veterinarians</td> <td style="text-align: center;">Travel</td> </tr> <tr> <td style="text-align: center;">Veterinarians</td> <td style="text-align: center;">Physical processes</td> </tr> </tbody> </table>	The Costs of Clinical Trials		Physical processes	Insurance	Research	Patients/subjects	Food	Data analysis	Facilities	Equipment	Vacation	Vehicles	Veterinarians	Travel	Veterinarians	Physical processes	<p>Drag and drop the word or statement that adds to the cost (financial and time) of clinical trials.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">The Costs of Clinical Trials</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Physical processes</td> <td style="text-align: center;">Insurance</td> </tr> <tr> <td style="text-align: center;">Research</td> <td style="text-align: center;">Patients/subjects</td> </tr> <tr> <td style="text-align: center;">Food</td> <td style="text-align: center;">Data analysis</td> </tr> <tr> <td style="text-align: center;">Facilities</td> <td style="text-align: center;">Equipment</td> </tr> <tr> <td style="text-align: center;">Vacation</td> <td style="text-align: center;">Vehicles</td> </tr> <tr> <td style="text-align: center;">Veterinarians</td> <td style="text-align: center;">Travel</td> </tr> <tr> <td style="text-align: center;">Veterinarians</td> <td style="text-align: center;">Physical processes</td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Research Vacation Travel Data analysis Food Education Vehicles Patients/Subjects</p> </div> <div style="text-align: right; margin-top: 10px;"> <span style="border: 1px solid green; padding: 2px 5px; color: green;">Correct!</span>      You matched 2/6 options correctly!   </div>	The Costs of Clinical Trials		Physical processes	Insurance	Research	Patients/subjects	Food	Data analysis	Facilities	Equipment	Vacation	Vehicles	Veterinarians	Travel	Veterinarians	Physical processes
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Veterinarians	Physical processes																																		
<p><b>13. Ecology module - Ecological Succession Knowledge Check</b></p>	<p><b>Deployed</b></p>	<p>Drag the description to the correct column.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Primary Succession</th> <th>Secondary Succession</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td style="height: 100px;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Getsters clear forests and plant food crops in their place.</li> <li>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.</li> <li>Sand dunes form as wind blows sand to a sheltered area of a beach. Eventually, grasses take root on the dunes.</li> <li>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.</li> <li>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.</li> </ul>	Primary Succession	Secondary Succession			<p>Drag the description to the correct column</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Primary Succession</th> <th>Secondary Succession</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td style="height: 100px;"></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>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.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>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.</p> </div> <div style="text-align: right; margin-top: 10px;"> <span style="border: 1px solid green; padding: 2px 5px; color: green;">Submit</span> </div>	Primary Succession	Secondary Succession																										
Primary Succession	Secondary Succession																																		
Primary Succession	Secondary Succession																																		
<p><b>14. Ecology module - Producers Knowledge Check</b></p>	<p><b>Deployed</b></p>	<p>Producers Knowledge Check</p> <p>Drag and drop the images to create the correct equation for photosynthesis.</p> 	<p>Producers Knowledge Check</p> <p>Drag and drop the images to create the correct equation for photosynthesis.</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Answers (Drag to drop into the boxes)</p> <p>O<sub>2</sub>      C<sub>6</sub>H<sub>12</sub>O<sub>6</sub></p> </div> <div style="text-align: right; margin-top: 10px;"> <span style="border: 1px solid green; padding: 2px 5px; color: green;">Submit</span> </div>																																
<p><b>15. Ecology module - Living or Non-Living Knowledge Check</b></p>	<p><b>Deployed</b></p>	<p>Living or Non-living Knowledge Check</p> <ul style="list-style-type: none"> <li>Sort the words into the correct category.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Abiotic</th> <th>Biotic</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td style="height: 100px;"></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Grass      Sun Oxygen      Deer Worm      Rabbit Fire      Water Temperature      Fungi Soil      Bacteria</p> </div>	Abiotic	Biotic			<p>Place the words into the correct category</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Abiotic</th> <th>Biotic</th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td style="height: 100px;"></td> </tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Worm Grass Fungi Soil Water</p> </div> <div style="text-align: right; margin-top: 10px;"> <span style="border: 1px solid green; padding: 2px 5px; color: green;">Save</span> </div>	Abiotic	Biotic																										
Abiotic	Biotic																																		
Abiotic	Biotic																																		
<p><b>16. Stress module - Label the Neuron</b></p>	<p><b>Deployed</b></p>	<p>Label the Neuron</p>  <p>Location of the #2</p> <p>#1</p> <p>#3</p> <p>Takes information from other neurons #4</p> <p>Takes information from the cell body #6</p> <p>Electrical and chemical information moves through this space #7</p> <p>#8</p> <p>Axon Cell Body Synapse Dendrite nucleus away to across</p> <p>Submit</p>	<p>Label the Neuron</p>  <p>Location of the #2</p> <p>#1</p> <p>#3</p> <p>Takes information from other neurons #4</p> <p>Takes information from the cell body #6</p> <p>Electrical and chemical information moves through this space #7</p> <p>#8</p> <p>Axon Cell Body Synapse Dendrite nucleus away to across</p> <p>Submit Reset</p>																																

17. Stress module - Keep it in Balance	Deployed	<p>Please place the correct answers in the blank below questions</p> <p>What is the term which means maintaining a constant internal environment despite changes in the external environment? Answer: _____</p> <p>Which two body systems help regulate the internal environment? Answer: _____</p> <p><b>Balance</b> Muscular system Endocrine system Sensory system Reflex arc Cardiovascular system</p> <p><b>Homeostasis</b></p>	<p>Please place the correct answers in the blank below questions</p> <p>What is the term which means maintaining a constant internal environment despite changes in the external environment? Answer: Homeostasis</p> <p>Which two body systems help regulate the internal environment? Answer: Endocrine system Sensory system</p> <p><b>Homeostasis</b> Muscular system Sensory system Reflex arc Cardiovascular system</p> <p><b>Solve!</b></p>
18. Stress module - Can You Sense the Answers	Deployed	<p>The peripheral nervous system is made up of _____ and has two divisions: the _____ and _____.</p> <p>Wrong Guesses: 0 of 8</p> <p><b>a</b> <b>b</b> <b>c</b> <b>d</b> <b>e</b> <b>f</b> <b>g</b> <b>h</b> <b>i</b> <b>j</b> <b>k</b> <b>l</b> <b>m</b> <b>n</b> <b>p</b> <b>o</b> <b>r</b> <b>s</b> <b>t</b> <b>u</b> <b>v</b> <b>w</b> <b>x</b> <b>y</b> <b>z</b></p>	<p>Thanks for saving me!</p> <p>The peripheral nervous system is made up of <b>nerves</b> and has two divisions: the <b>autonomic</b> and <b>somatic</b>.</p> <p>Wrong Guesses: 7 of 8</p> <p><b>Reset</b> <b>You win! Hope you enjoyed playing.</b></p>
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	<p>Knowledge Check: Infectious Diseases</p> <p>Choose the correct answer choice for the following question.</p> <p>1. Which of the following are examples of microorganisms that can be pathogenic and cause diseases?</p> <ul style="list-style-type: none"> <li><input type="radio"/> a. fungi</li> <li><input type="radio"/> b. viruses</li> <li><input type="radio"/> c. bacteria</li> <li><input type="radio"/> d. all of the above</li> </ul>	<p>Choose the correct answer choice for the following question.</p> <p>Which of the following are examples of microorganisms that can be pathogenic and cause diseases?</p> <p><input type="radio"/> Fungi <input type="radio"/> Viruses <input type="radio"/> Bacteria <input checked="" type="radio"/> All of the above</p> <p><b>Solve!</b></p>

22. Infectious Diseases module:  
Knowledge Check: Virus

Completed

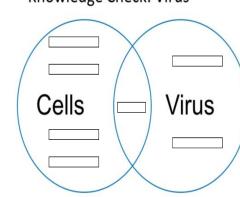
Knowledge Check: Virus



Drag and drop the appropriate word or phrase into the correct section of the Venn diagram.

- DNA/RNA
- Cells
- Able to reproduce on its own
- Visible with a light microscope
- Too small to be seen with a light microscope
- Living
- Non-living
- Organelles

Knowledge Check: Virus



Word Bank - Drag and place it in Venn Diagram

Too small to be seen with a light microscope  
DNA/RNA  
Able to reproduce on its own  
Living  
Visible with a light microscope  
Non-Living  
Organelles

Submit

## **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 \_\_\_\_\_



## Knowledge Check: Calculate the Value

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

[Reload this page](#)

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

- Mean 1
- Median 2
- Range 3
- Mode 4



### Answers

(Drag to drop into the boxes)

4  
2  
8  
4.1

### Explanation:

We have developed a drag and drop 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:

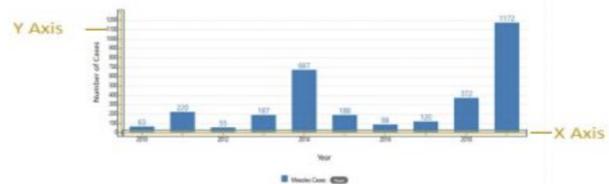
## Knowledge Check: Which axis is the right axis?

Which of the following answer choices correctly matches the variable to its axis on a graph? (an example graph is shown to represent each axis)

- A. independent & y-axis, dependent & x-axis
- B. dependent & y- axis, independent & x-axis
- C. none of the above

Number of Measles Cases Reported by Year

2010-2019\*\* (as of August 1, 2019)



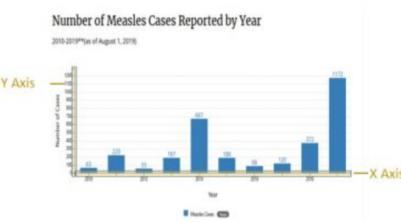
## Knowledge Check: Which axis is the right axis?

Which of the following answer choices correctly matches the variable to its axis on a graph? (an example graph is shown to represent each axis)

### Answers

(Drag to drop into the boxes)

- dependent & y-axis
- dependent & x-axis
- independent & x-axis
- independent & y-axis
- None of the above

Submit

### 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:

## **Knowledge Check: What are data?**

Fill in the blank with the correct words to define data.

Data are a collection of \_\_\_\_\_, measurements and/or \_\_\_\_\_ for the purpose of \_\_\_\_\_ or analyzing information.

- Observations
- Studying
- Facts



## Knowledge Check: What are data?

Fill in the blank with the correct words to define data.

Data are a collection of 1 measurements and/or 2 for the purpose of 3 or analyzing information.

### Answers

(Drag to drop into the boxes)

facts

studying

observations

### 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 drop 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:

## Living or Non-living Knowledge Check

- Sort the words into the correct category.

Abiotic	Biotic	Grass	Sun
		Oxygen	Deer
		Worm	Rabbit
		Fire	Water
		Temperature	Fungi
		Soil	Bacteria



## Place the words into the correct category

Abiotic	Biotic
Rabbit	Bacteria
Sun	Deer
Oxygen	Fire
	Temperature

Worm
Grass
Fungi
Soil
Water

**Submit**

### Explanation:

We have developed a drag and drop 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.*

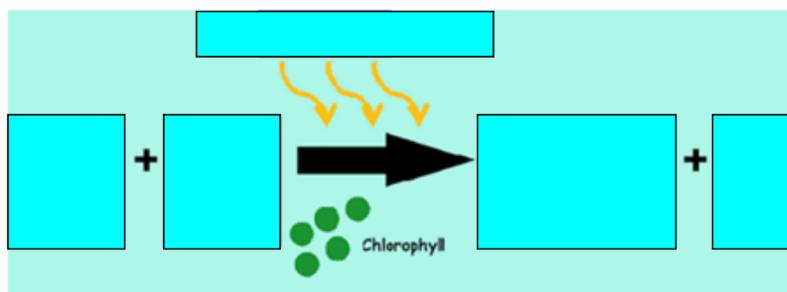
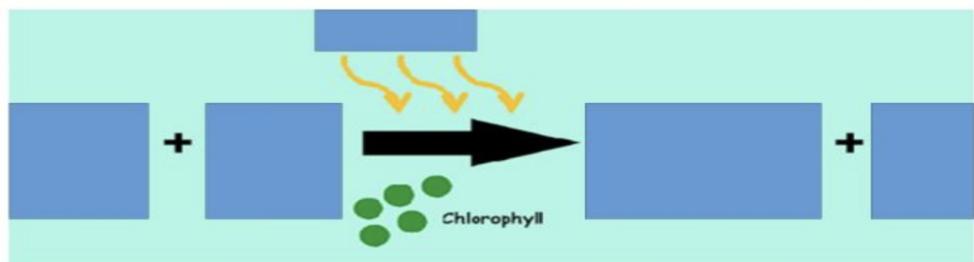
**Progress: Deployed on StepStone, Wordpress**

**Story Points: 3**

**Design diagram:**

## Producers Knowledge Check

Drag and drop the images to create the correct equation for photosynthesis.



**Answers**  
(Drag to drop into the boxes)

A large rectangular box containing five empty blue rectangular boxes for dragging and dropping answers.

**Answers**  
(Drag to drop into the boxes)

- Glucose
- Oxygen
- Carbon dioxide
- H<sub>2</sub>O
- sunlight

### Explanation:

We have developed a drag and drop 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:

**Can you count the costs?**

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



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

The Costs of Clinical Trials	
	Insurance
Physicalprocesses	
Veterinarians	Facilities

Research  
Vacation  
Travel  
Data analysis  
Food  
Education  
Vehicles  
Patients/Subjects

Submit

You matched 2/6 options correctly!

**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
	<ul style="list-style-type: none"><li>• Settlers clear forests and plant food crops in their place.</li><li>• 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.</li><li>• Sand dunes form as wind blows sand to a sheltered area of a beach. Eventually, grasses take root on the dunes.</li><li>• 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.</li></ul>



**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.

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 drop 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.*

## Organize the Details of Clinical Trial Phases

Drag and drop the descriptions into the appropriate phase. Some descriptions may 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



## Organize the Details of Clinical Trial Phases

Drag and Drop the description into appropriate Phase

Phase I	Phase II	Phase III	Phase IV
Side Effects		Safety	
	Safety		
At least 100 people		Effectiveness	

Side Effects  
At least 100 people  
Comparision to similar treatments  
Fewer than 100 people  
Long term study

Submit

### Progress: Deployed on StepStone, Wordpress

Design diagram:

Story Points: 3

Explanation:

We have developed a drag and drop 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:

**Place the words into the correct category**

Abiotic	Biotic

Bacteria
Worm
Deer
Grass
Sun
Oxygen
Fire
Rabbit
Fungi
Soil
Temperature
Water

**Submit**



## Place the words into the correct category

Abiotic	Biotic
Rabbit	Bacteria
Sun	Deer
Oxygen	Fire
	Temperature

Worm  
Grass  
Fungi  
Soil  
Water

Submit

### Explanation:

We have developed a drag and drop 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:

## 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



## 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.

- 3, 5, 2, 4, 1  
 2, 3, 1, 5, 4  
 5, 3, 4, 2, 1  
 3, 2, 1, 4, 5



**Submit**

### Explanation:

We have developed a drag and drop 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:

## 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
			<ul style="list-style-type: none"><li>• Soil</li><li>• Water</li><li>• Plant height</li><li>• Sunlight</li><li>• Apple juice</li><li>• Amount of liquid</li><li>• Milk</li></ul>



## 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.

Independent	Dependent	Control
Amount of Liquid	Plant Height	Soil
Milk		Water
Sunlight		Apple Juice

**Submit**

### 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:

## 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.



### What is the benefit to using animal subjects in testing drugs, treatments and devices?

Choose all correct answers.

- Animals have many of the same diseases as humans.
- Animal organ systems are similar to humans
- Animals are inexpensive.
- Animals don't experience side effects to medications.

Submit

You Selected right option!

### 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.*

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.



## I hypothesize that if you have been paying attention then you'll make the right choice!

Choose the hypothesis stated most correctly.

- Wounds should be covered with bandages to prevent scarring.
- All fish eat meat.
- Six hours of sleep improves test scores.
- Elementary aged children who eat dessert after lunch are more hyperactive than those who don't.

**Submit**

You Selected right option!

### 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*

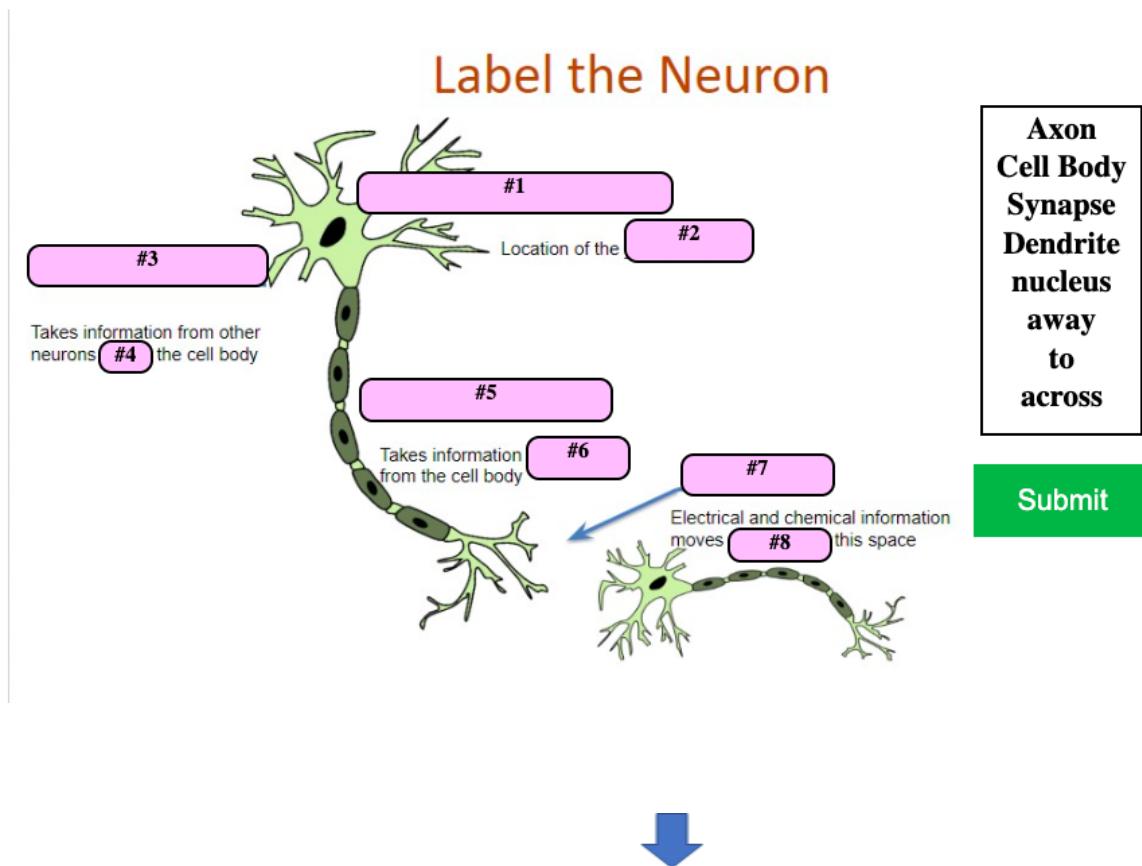
*I want the to reset the game*

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

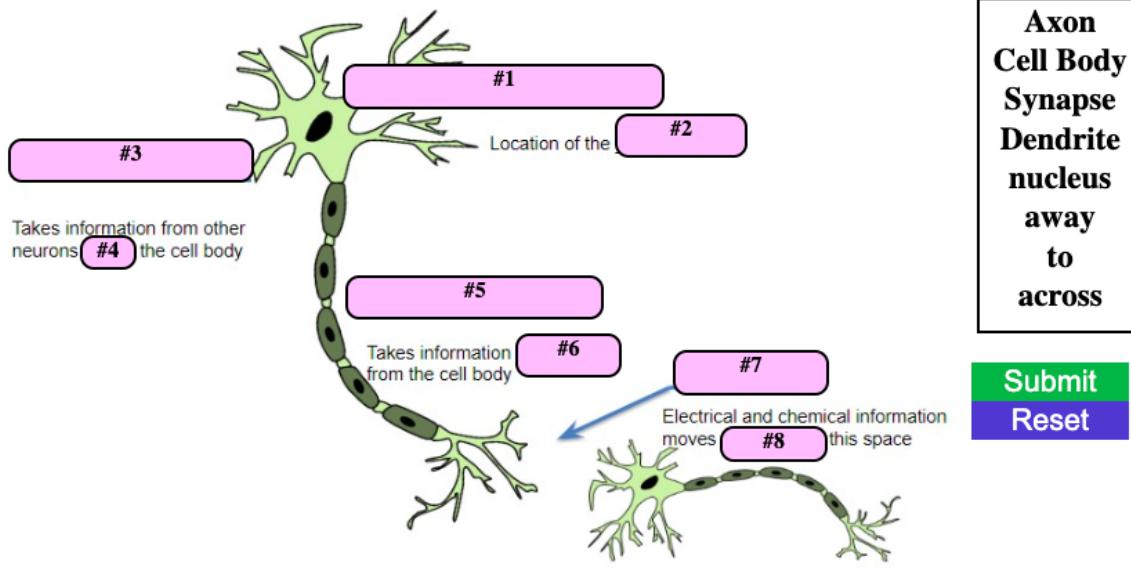
Progress: Deployed on StepStone, Wordpress

Story Points: 3

Design diagram:



## Label the Neuron



### Explanation:

We have developed a drag and drop 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:

Keep it in Balance

Please place the correct answers in the blank below questions

What is the term which means maintaining a constant internal environment despite changes in the external environment?

Answer: \_\_\_\_\_

Which two body systems help regulate the internal environment?

Answer: \_\_\_\_\_

Balance  
Muscular system  
Homeostasis  
Endocrine system  
Stimulus  
Nervous system  
Reflex arc  
Cardiovascular system

Submit

BACK MENU CONTINUE



Step Title Here

Text content goes here, above the mini-app area.

Please place the correct answers in the blank below questions

What is the term which means maintaining a constant internal environment despite changes in the external environment?

Answer: Homeostasis \_\_\_\_\_

Which two body systems help regulate the internal environment?

Answer: Endocrine system \_\_\_\_\_  
Nervous system \_\_\_\_\_

Balance  
Muscular system  
Stimulus  
Reflex arc  
Cardiovascular system

You matched 3/3 options correctly!

BACK MENU CONTINUE

### Explanation:

We have fixed the existing bugs to make the drag and drop 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:

## Knowledge Check: Infectious Diseases

Choose the correct answer choice for the following question.

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

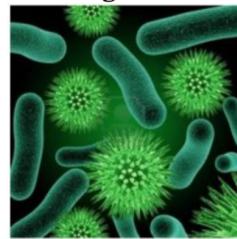
- a. fungi
- b. viruses
- c. bacteria
- d. all of the above





**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*

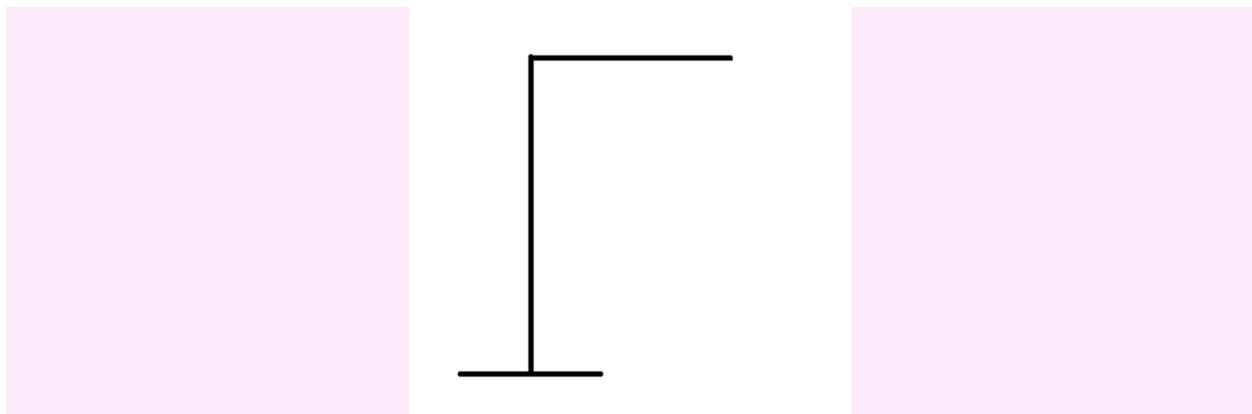
*I want the students to use interactive animations for the Stress module - Can You Sense the Answers*

*So that the students can understand the concepts better.*

### Progress: Deployed on Wordpress

Story Points: 3

Design diagram:

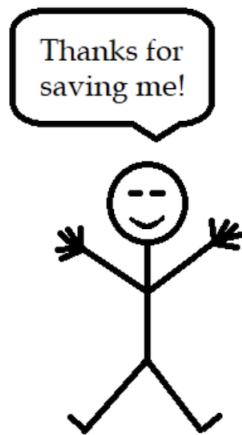


The peripheral nervous system is made up of \_\_\_\_\_ and has two divisions: the \_\_\_\_\_ and \_\_\_\_\_.

Wrong Guesses: 0 of 8

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
q	r	s	t	u	v	w	x	y	z						





The peripheral nervous system is made up of **nerves** and has two divisions: the **autonomic** and **somatic**.

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.

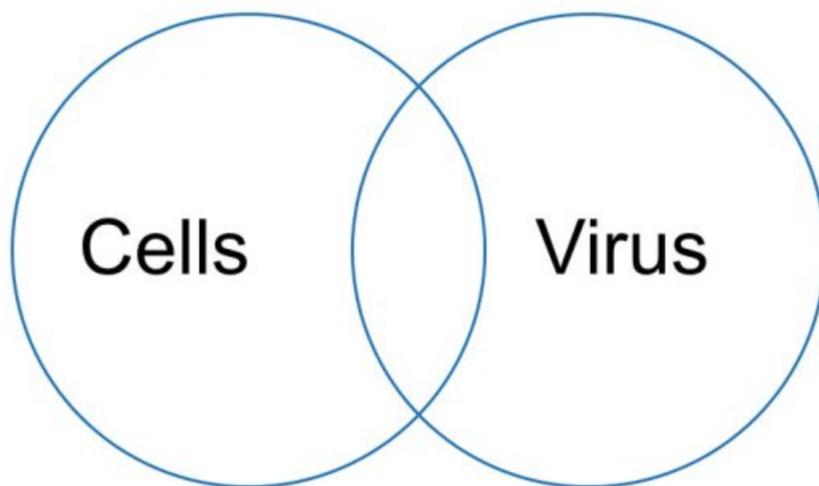
5. [Prajwal: 3 pts] Feature - UserStory No. 22: Develop Infectious Diseases module- Knowledge Check: Virus

*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.*

## Knowledge Check: Virus

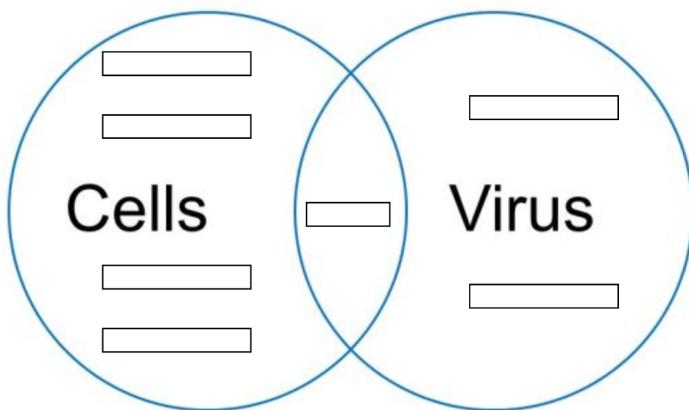


Drag and drop the appropriate word or phrase into the correct section of the venn diagram.

- DNA/RNA
- Organelles
- Able to reproduce on its own
- Visible with a light microscope
- Too small to be seen with a light microscope
- Living
- Non-living



## Knowledge Check: Virus



### Word Bank - Drag and place it in Venn Diagram

Too small to be seen with a light microscope  
DNA/RNA  
Able to reproduce on its own  
Living  
Visible with a light microscope  
Non-Living  
Organelles

[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**

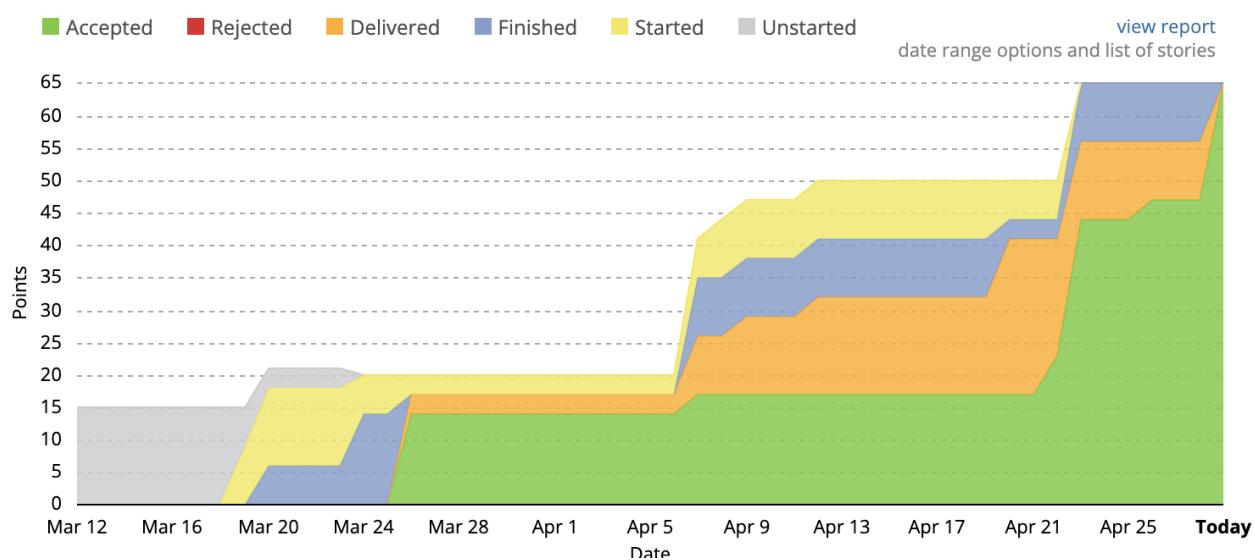
- Git and Github were really handy for projects like this and after everyone learned how to clone, add, commit, push, pull, there weren't any problems. We didn't create too many branches, commit messages were clear, everything was great.
- StepStone is the environment where we deploy our slides. We did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

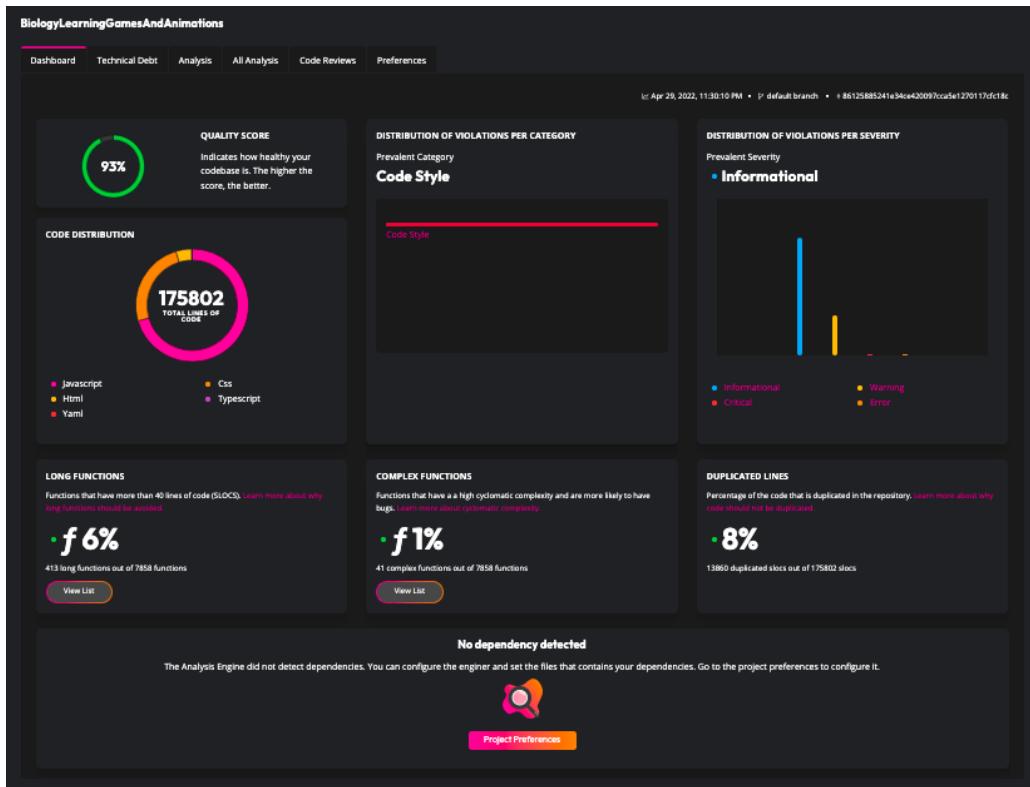
Physical LOC: 120
Logical LOC: 74
Mean parameter count: 0.42857142857142855
Cyclomatic complexity: 7
Cyclomatic complexity density: 9.45945945945946%
Maintainability index: 105.0098955220032
Dependency count: 0

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: 33.333333333333%
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

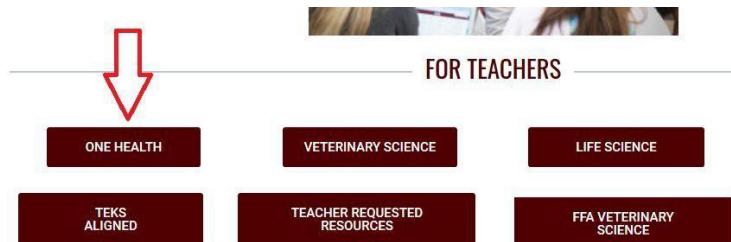
## Tutorials

### 1. Tutorial 1: What is StepStone?

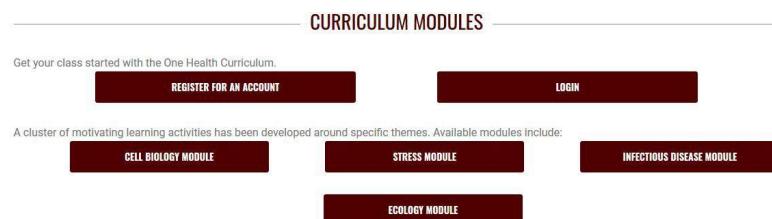
StepStone is the learning environment system created by the Peer Program. The relevant web pages and steps for reaching the StepStone modules are as follows:

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/>

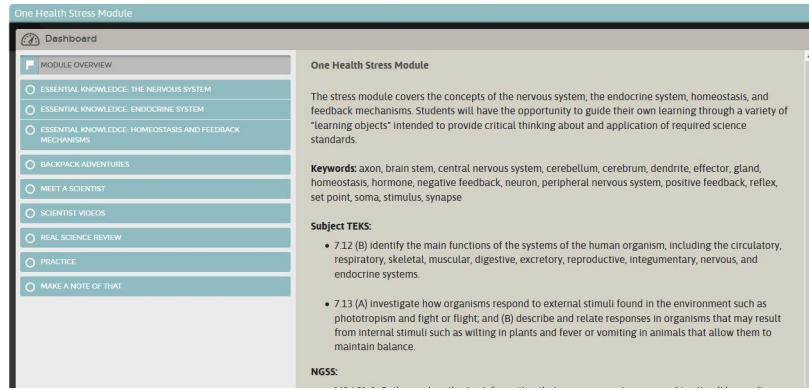


3. On the page, there is a section titled *Curriculum Modules*. This is the production environment where, depending on the module you work on, your mini-apps will be placed. No development is going to occur on this site, but you will go here to view your apps in action or determine where they are going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



The following modules are in development and will be added as they are completed: Ecology, Pollution/Hazards, Vaccination/Infectious Diseases, Zoonotic Diseases, and Clinical Trials.

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-licensed) 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 - [pqr@tamu.edu](mailto:pqr@tamu.edu) for accessing username, hostname and password. Use port number 21 in WinsCP 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 `futredogter.com` directory.

Name	Size	Changed	Rights	Owner
..				
futredogter.com		4/5/2018 11:54:57 AM	rwxr-xr-x	5102512
logs		4/2/2018 12:08:15 PM	r-xr-x---	5102512
Maildir		1/8/2018 1:30:13 PM	rwxr-xr-x	5102512

Now, navigate to the following path:

`futredogter.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.

Name	Size	Changed	Rights	Owner
..				
Basic-javascript-app		11/7/2019 6:42:40 PM	rwxr-xr-x	5102512
Drag And Drop SL66		4/17/2020 1:29:22 PM	rwxr-xr-x	5102512
hangman		4/5/2019 12:43:01 PM	rwxr-xr-x	5102512
hangman_test		4/5/2019 12:40:28 PM	rwxr-xr-x	5102512
JS_APP_test		11/7/2019 6:52:48 PM	rwxr-xr-x	5102512
new app		12/7/2019 5:40:37 PM	rwxr-xr-x	5102512
ReactAppTest		4/30/2019 1:36:35 PM	rwxr-xr-x	5102512
ReactAppTest2		11/17/2019 10:20:59 PM	rwxr-xr-x	5102512
Sanj_app		3/21/2020 1:29:23 PM	rwxr-xr-x	5102512
Slide 27 - OrderedIma...		4/29/2020 4:44:45 PM	rwxr-xr-x	5102512
slide12		4/28/2020 1:01:53 AM	rwxr-xr-x	5102512
slide20		4/24/2020 3:09:56 PM	rwxr-xr-x	5102512
slide24		5/2/2020 12:12:30 PM	rwxr-xr-x	5102512

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.

Name	Size	Changed	Rights	Owner
..				
css		4/10/2020 12:57:10 PM	rwxr-xr-x	5102512
features		4/20/2020 12:45:41 PM	rwxr-xr-x	5102512
img		4/10/2020 12:57:22 PM	rwxr-xr-x	5102512
js		4/10/2020 12:57:37 PM	rwxr-xr-x	5102512
index.html	2 KB	4/24/2020 2:57:14 PM	rw-r--r--	5102512

- 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.

```

    ],
    "miniApps" : [
        {
            "role" : "MainSandbox1",
            "type" : "Custom",
            "variant" : "Basic",
            "launched" : "slide20",
            "apiSet" : "basic",
            "maxW" : "Auto",
            "minH" : "Auto",
            "maxH" : "Auto",
            "----" : ...
        }
    ]
}

```

- 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-S  
EPA-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.

Chicken Farm

Step Title Here

Text content goes here, above the mini-app area.

The diagram illustrates the process of photosynthesis. On the left, two blue squares representing water molecules ( $H_2O$ ) are shown with a plus sign between them. A large black arrow points from these molecules towards a central green cluster of circles labeled "Chlorophyll". Above the arrow, several yellow wavy lines represent sunlight. On the right side of the arrow, the same two blue squares are shown again with a plus sign between them. Above the second set of squares is a blue rectangle representing oxygen gas ( $O_2$ ), with a plus sign preceding it. Below the second set of squares is a blue rectangle representing glucose ( $Glucose$ ).

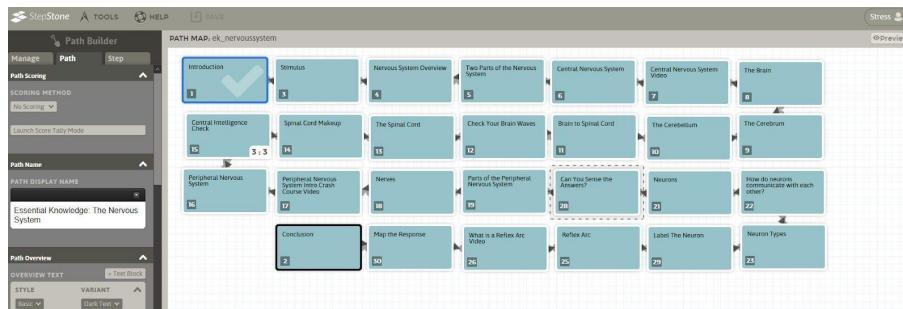
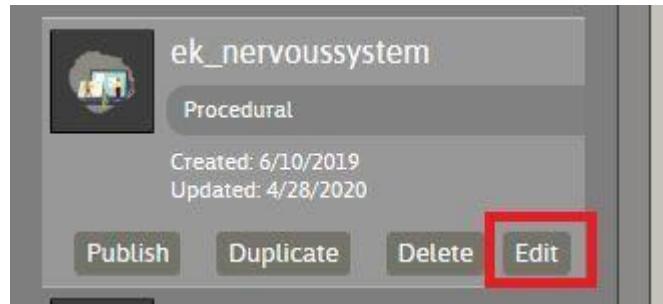
**Answers**  
(Drag to drop into the boxes)

Oxygen  
Water  
Sunlight  
Carbon dioxide  
Glucose

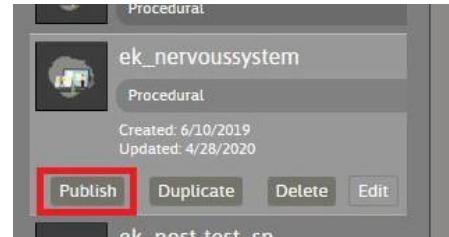
#### 4. Tutorial 4: Editing The StepStone Production Path

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](mailto: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

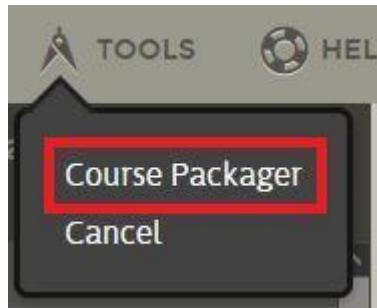


4. Each step, displayed as the blue boxes, is linked to its previous and next steps. To edit a specific step, click the step tab on the left of the page. This will display all of the relevant information (title, text contents, media, etc.) for that specific step. In StepStone, this will be one single 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.

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



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

A screenshot of a course list interface. At the top, there's a header for "One Health Stress Module (en Español)". Below it is a list item for "SEPAStressModule". Under "SEPAStressModule", there's a sub-item "One Health Stress Module". Below that, it says "Created: 8/3/2015" and "Updated: 5/1/2020". At the bottom of this list item are three buttons: "Duplicate", "Delete", and "Edit", with the "Edit" button highlighted by a red rectangle. Further down the list is another item: "SEPAStressPost-Test\_sp" followed by "Modulo de estrés de Una Salud: Examen final (en Procedural)".

- 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.

A screenshot of a "Paths" tab interface. It shows a list of paths. One path is selected, indicated by a black square icon with a white circle. To the right of the path name are "X" and "▲" buttons. The path details show "Essential Knowledge: The Nervous System" and "Procedural". Below the path list are two buttons: "Path Selection" and "Choose", with the "Choose" button highlighted by a red rectangle. At the bottom of the tab are "PreRequisites" and "Assign" buttons.

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.

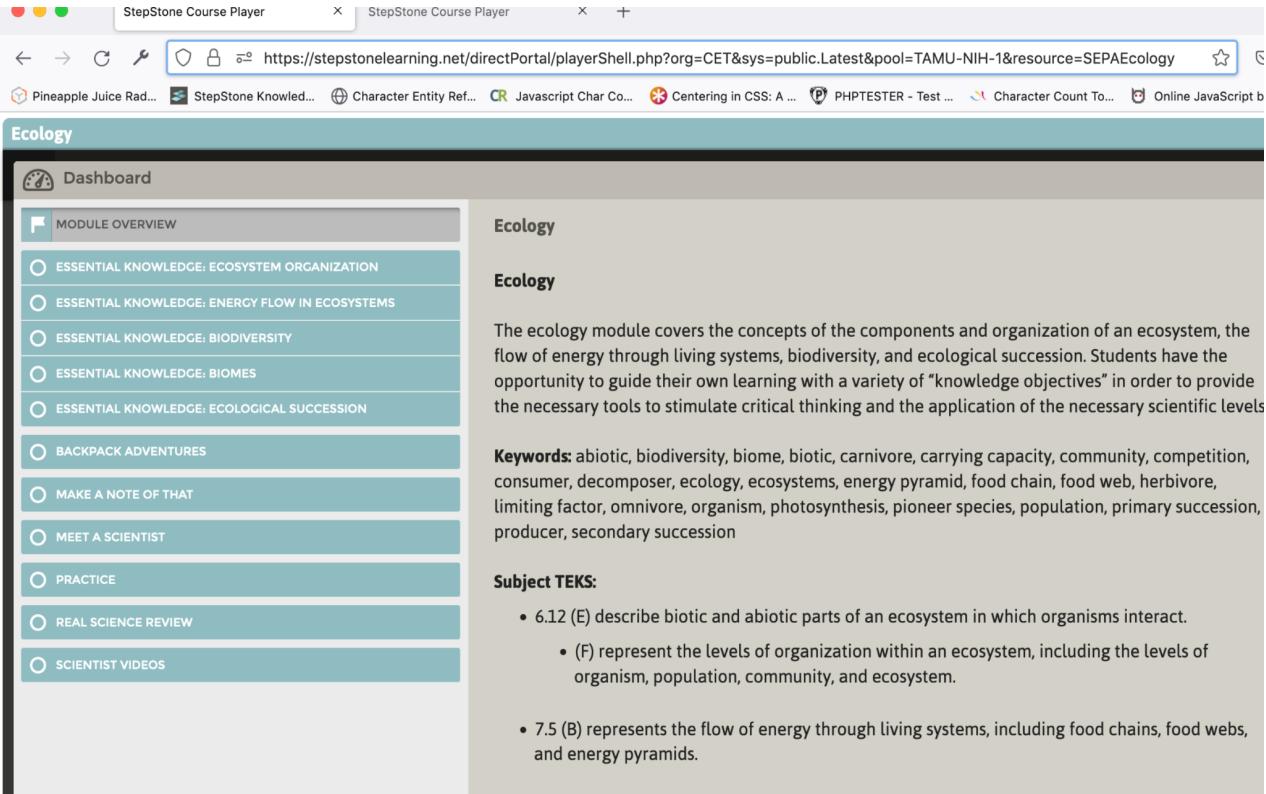


10. Now, you should see whatever changes you've made appear in the live corresponding StepStone module. At this point, you can email Daniel Shuta and tell him that your app is ready to be applied. The general procedure for doing that is:
  - a. Have your most recent app version uploaded to the apps folder 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 screenshot shows a web browser window titled 'StepStone Course Player' with the URL <https://stepstonelearning.net/directPortal/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-NIH-1&resource=SEPAEcology>. The page displays the 'Ecology' module. On the left, there's a sidebar with a 'MODULE OVERVIEW' section containing links like 'ESSENTIAL KNOWLEDGE: ECOSYSTEM ORGANIZATION', 'ESSENTIAL KNOWLEDGE: ENERGY FLOW IN ECOSYSTEMS', etc. The main content area has a heading 'Ecology' and a detailed description of the module's content. It lists 'Keywords' such as abiotic, biodiversity, biome, biotic, carnivore, carrying capacity, community, competition, consumer, decomposer, ecology, ecosystems, energy pyramid, food chain, food web, herbivore, limiting factor, omnivore, organism, photosynthesis, pioneer species, population, primary succession, producer, secondary succession. Below this is a 'Subject TEKS:' section with several bullet points related to ecosystem components and energy flow.

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](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 Knowledge: Data Collection and organization	Knowledge check: What are the data?	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/WhatAreData">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/WhatAreData</a>
Infectious diseases	Infectious Diseases: Essential Knowledge: Data Collection and organization	Knowledge check: Name that Variable	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Name%20that%20Variable">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Name%20that%20Variable</a>
Infectious diseases	Infectious Diseases: Essential Knowledge: Data Collection and organization	Knowledge check: Which axis is the right?	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/WhichAxisRight">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/WhichAxisRight</a>
Infectious diseases	Infectious Diseases: Essential Knowledge: Analyzing the data	Knowledge check: Calculate the Value	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Calculate%20the%20Value">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Calculate%20the%20Value</a>
Infectious diseases	Infectious Disease: Case Study: Influenza	Knowledge Check: Infectious diseases	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/KnowledgeCheckInfectiousDiseases">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/KnowledgeCheckInfectiousDiseases</a>
Infectious diseases	Infectious Disease: Case Study: Influenza	Knowledge Check: Virus	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Knowledge_check_virus">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/InfectiousDiseases/Knowledge_check_virus</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Scientific Methods	Hypothesize Knowledge Check	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/HypothesizeKnowledgeCheck">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/HypothesizeKnowledgeCheck</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Scientific Methods	Identify the Variables	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/IdentifyTheVariables">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/IdentifyTheVariables</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Scientific Methods	Prove that you are a scientific method expert	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/ProveThatYouAreAScientific%20MethodExpert">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/ProveThatYouAreAScientific%20MethodExpert</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Phases of Clinical Trials	Organize the Details of Clinical Trial Phases	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/OrganizetheDetailsofClinicalTrialPhases">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/OrganizetheDetailsofClinicalTrialPhases</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Phases of Clinical Trials	Think about it	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/ThinkAboutIt">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/ThinkAboutIt</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Research Concepts	Did you grasp the concepts?	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/DidYou%20grasp%20the%20concepts">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/DidYou%20grasp%20the%20concepts</a>
Clinical Trial	Clinical Trials: Essential Knowledge: Cost of Clinical Trials	Can you count the costs?	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/CourtTheCosts">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/ClinicalTrials/CourtTheCosts</a>
Ecology	Ecology: Essential Knowledge: Ecological Succession	Ecological Succession Knowledge Check	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/Ecological%20Succession">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/Ecological%20Succession</a>
Ecology	Ecology: Essential Knowledge: Energy flow in ecosystems	Producers Knowledge Check	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/ProducersKnowledgeCheck">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/ProducersKnowledgeCheck</a>
Ecology	Ecology: Essential Knowledge: Ecosystem Organization	Living or Non-Living Knowledge Check	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/Living_Non_Living">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Ecology/Living_Non_Living</a>
Stress	Stress: Essential Knowledge: The nervous system	Label the Neuron	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/LabeltheNeuron">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/LabeltheNeuron</a>
Stress	Stress: Essential Knowledge: Homeostasis and Feedback Mechanisms	Keep it in Balance	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/KeepInBalance">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/KeepInBalance</a>
Stress	Stress: Essential Knowledge: The nervous system	Can You Sense the Answers	<a href="https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/CanYouSenseTheAnswers">https://github.com/prajwaldas95/BiologyLearningGamesAndAnimations/tree/main/BiologyAnimation/Stress/CanYouSenseTheAnswers</a>