

CSCE606 - Team theBugSlayers Biology Learning Games: Final Report

2020/05/05

Team Members

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Summary

The project we did deals with the educational games which help 6th grade students to improve their skills in biology. Our customer is the Veterinary Medical & Biomedical Sciences department of Texas A&M University. The person who is representative from the customer side is Torri Whitewalker. Since he is not always available, Dr. Hank Walker has been our customer contact. The biology games are hosted in the StepStone environment. StepStone is an application authoring system provided by the Texas A&M Center for Educational Technologies. It is designed to work over HTML5 for desktop and mobile platforms.

The team which worked on this project in the previous semester has developed two games- GuessUp and Scramble. Though they were able to get to a working version of the games, they were not able to deploy the games into the production environment. So, the games were not accessible to teachers and students. This was the main goal given to us, that is to deploy the existing games into the production environment. Also, there were some bugs in the games, which we solved. We also tested and made sure that these games work well on a variety of hand held touch devices. Later, we even got some feedback from our customer and implemented the changes suggested by them. And finally we were able to deploy the two games. We have also documented the steps required to do all this so that if the next team working on this project wants to implement new games, they can perform the whole process without wasting much time in logistics.

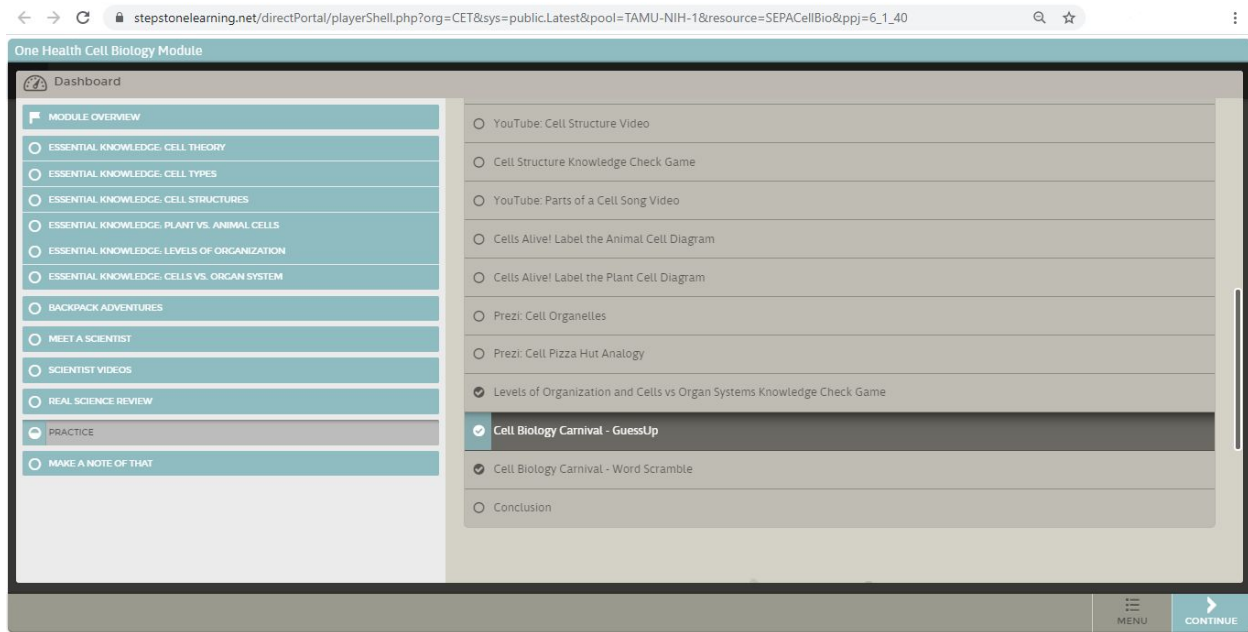
User Stories

We were able to polish the existing code, fix the existing bugs and deploy the code. And then, we took some feedback and implemented it. Because of time constraints, we were not able to develop new games.

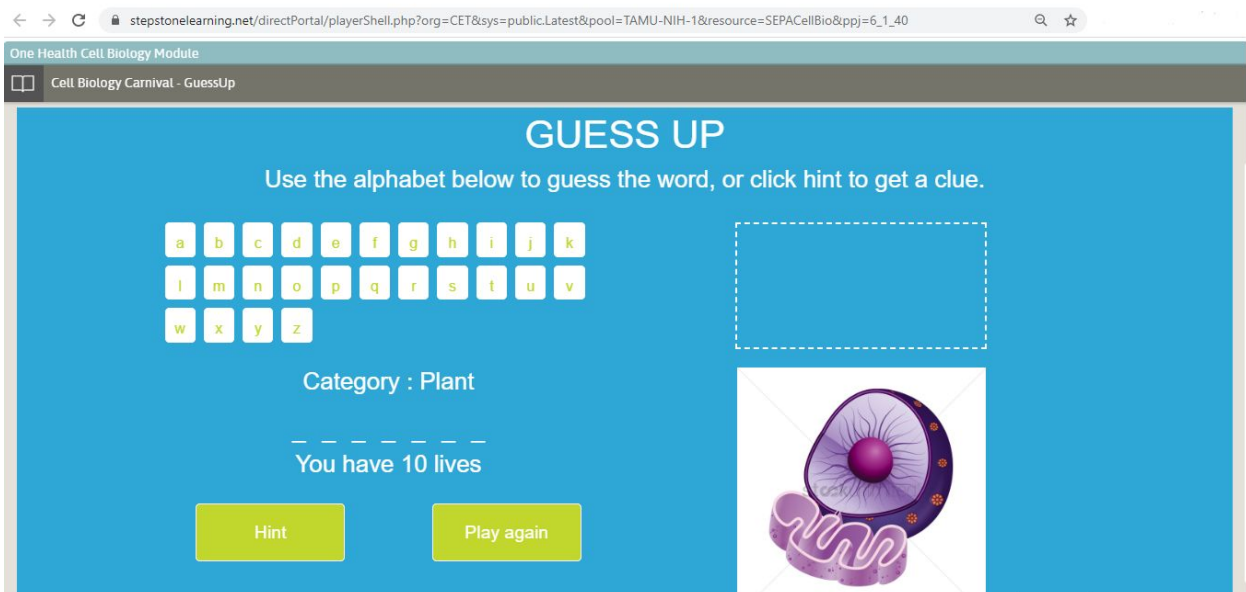
These are our user stories:

1. Polish the existing code and make it deployable - As a user, I want the new games to be available in the StepStone environment so that students and teachers can access the games.

We were able to make changes to existing code so that the libraries required for the games are used from the local environment rather than downloading them every time. Then, we first deployed it into the development server which is futuresdogter.com. Then, we deployed it into the actual stepstone environment. After going into stepstonelearning.net, the GuessUp and Scramble games are available in the practice module.



These are the screenshots of Guess up and scramble games:



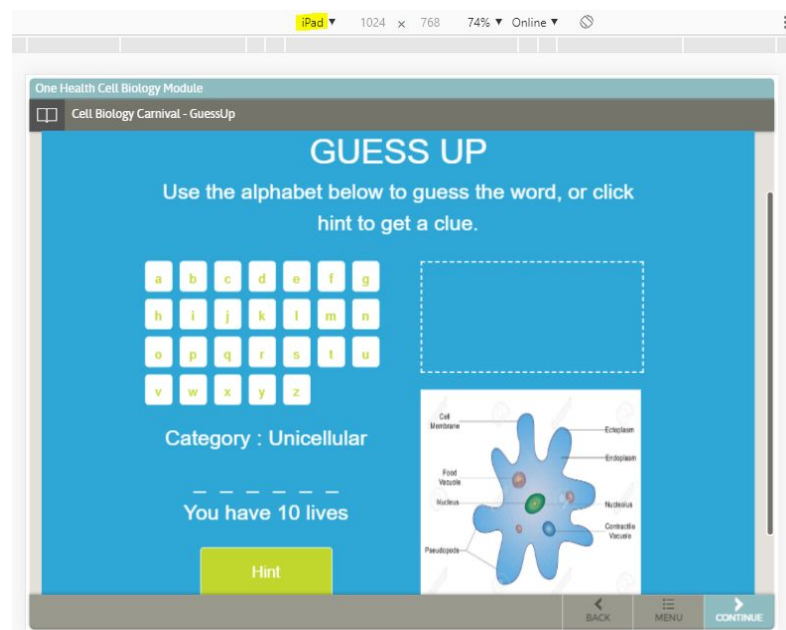


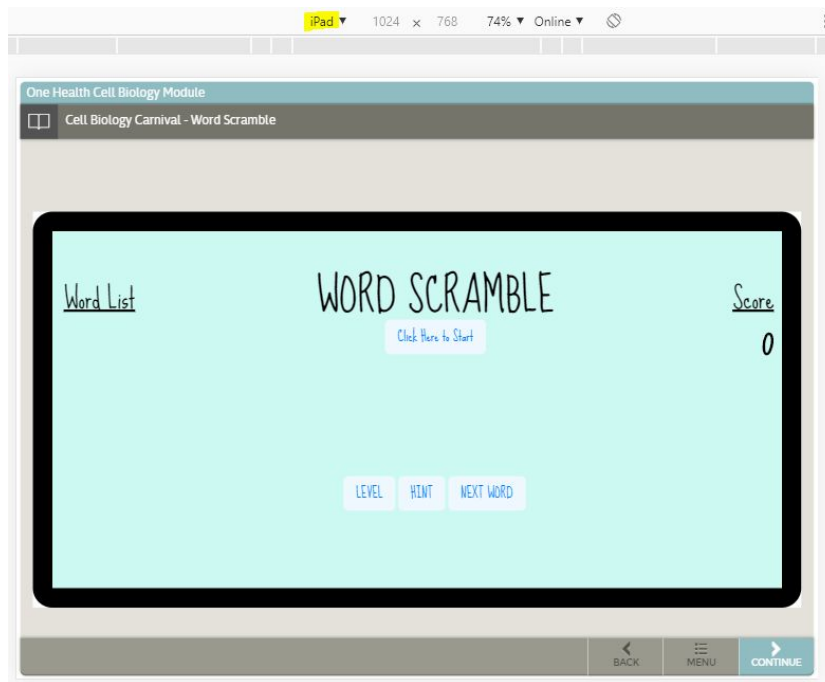
2. Make the game data configurable using json: As a user, I want to be able to use json formats to configure the data used in games.

Adding game data to the games was complicated previously. We worked on it and made it intuitive and easily usable even to non-technical users. The json files are Scramble/js/game_data.js for the scramble game guessUp/js/game_data.js for the GuessUp game.

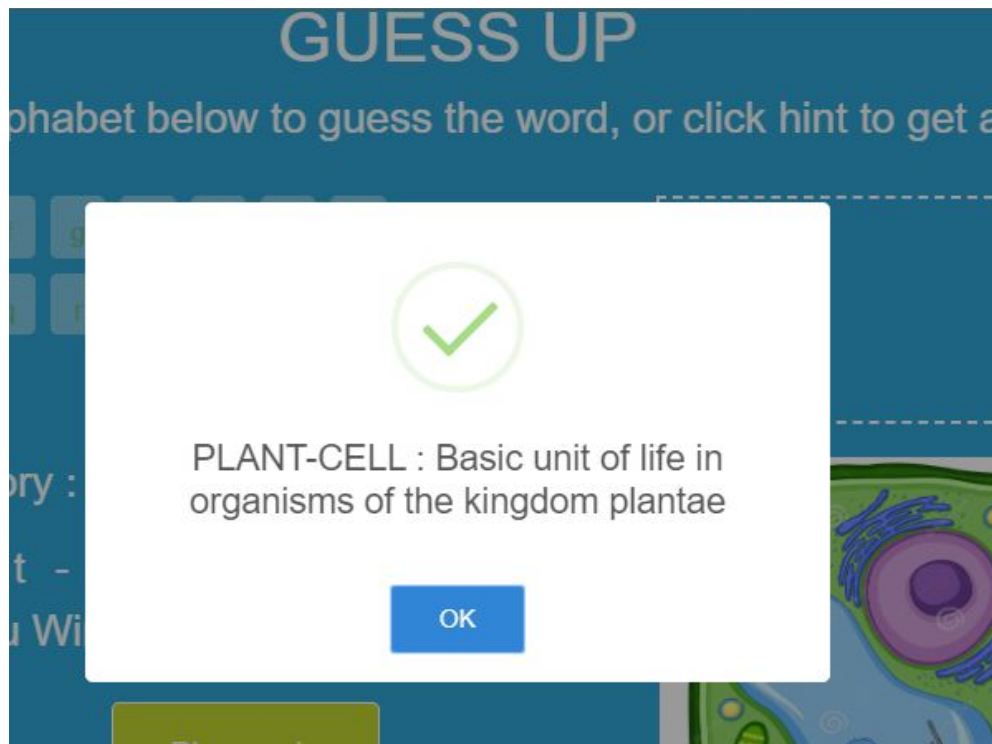
3. Make the environment responsive on all devices: As a user, I want to be able to use the environment on all kinds of devices.

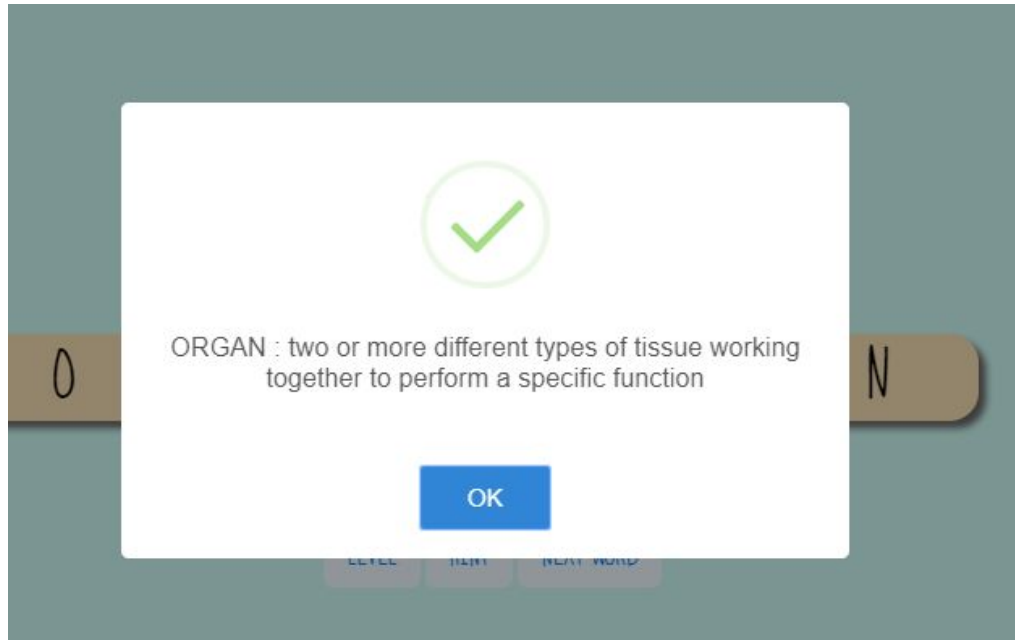
We fixed the code so that it would work well on touch devices like iPad and some mobile phones.





4. Show the definition of the word even when the student wins the round: As a teacher, I want the students to know the meaning of the word they played in all cases. We made changes so that hint of a word will be shown during the game, and also after the game finishes.





Summary of progress

Legacy Project Description:

The previous teams were able to develop the initial version of both the games. Our strategy was to first understand the code, deploy it and then work on top of it. We were able to go through and understand the code in the first iteration. We got details of how to deploy the code to the development server from the previous team and did that. The games were developed in javascript and few third party libraries were used to improve the look and feel of the games.

Iteration 1:

1. We were able to procure the credentials for accessing the FTP server (in which the game is hosted) and the stepstone environment from the previous team.
2. We took the GuessUp and Scramble game developed by the previous team, fixed some bugs and modified the game UI so that it would be responsive across multiple devices.
3. We hosted the game on the FTP server, which displays the game as a part of the stepstone environment
4. We ran tests by playing the games on multiple screens with different resolutions, and controls.

Iteration 2:

1. We added more words to the two games so that when a person is playing again and again, it lowers the possibility to get the same word every time.

2. We moved all game data of the guessup game to another separate javascript file easily readable and editable by a non-programmer.
3. We increased the fluidity of the scramble game which makes it much easier to move the letters around.
4. We tested our app on various devices and browsers.

Iteration 3:

1. We moved the game configuration data of the scramble game into a separate javascript file, so that it would be easy to edit the game data. We added instructions in the game data javascript file so that it is intuitive for the non-programmers to add game data i.e., more words to the games.
2. After discussion with Dr. Walker, we contacted Dan regarding deployment of the games. We started the process of hosting the games to the production server so that all teachers and students can utilise the games and we can get some constructive feedback.
3. We fixed the bugs related to alignment and small logical bugs in both the games.

Iteration 4:

1. We added further instructions to the database of both GuessUp and Scramble games so that future editors can update their content correctly, in which we recommend using hyphens “-” or underscores “_” instead of spaces in the word. That prevents dummy elements in the game.
2. We modified the Scramble game so that each word will appear only once. This is implemented by recording the words being played by a list variable in the script.
3. We contacted Dan, the host of the customer server, for updating the above modifications.
4. In a previous meeting with professor Duncan Walker, we are requested to hand in a detailed final report that serves as a tutorial for future groups. These will include how to set up the environment, program, test on the FTP server, deploy the project to the customer server, and avoid every potential pitfall.

Customer Meetings:

● 2/28/2020 - Summary:

Main priority was to polish the existing code and make it deployable. Then, we had to make the game data configurable using json. We need not have to implement high score saving since we need to save it to the server, and this was not feasible. We should set the difficulty by using different pools of questions for different difficulty. Both the games should be displayed properly on all devices. We need to develop a hint system for the GuessUp game. We can experiment on this. Customer doesn't have strong requirements.

- **3/31/2020 - Summary:**

Push the code to the customer's environment and add more words to the Guessup and Scramble games. We had to create a proper document for the next team including the instruction to get access to our code and document. Convert game data JavaScript to JSON in order to let the file be dynamic and easily used by other people who want to edit the word list. Correct the small logic bugs in the Scramble game. Shrink the GuessUp game to fit into one game and solve other logical bugs.

- **04/15/2020 - Summary**

Push the code in the FTP server to the customer's environment so that the games are available in the actual deployment environment. Make the process of adding game data simpler so that non technical people can use it with less efforts. For GuessUp game: put more comment on game_data.js to make it more intuitive. For Scramble game: put a note about the backslash

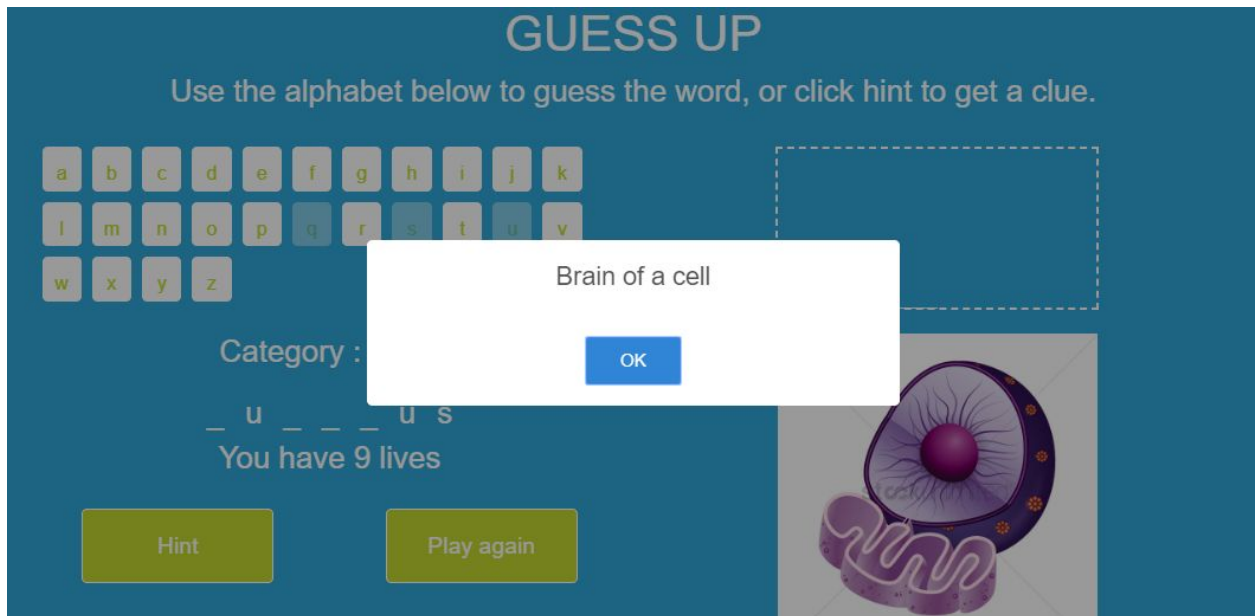
- **04/29/2020 - Summary**

Add some instructions to the game database to support editors while adding new contents. Modify both games so that they display the hint when a student gets the answer correct. Edit the final report as a guideline that teaches the future teams to get access to the project. Correct the small bugs in the scramble game.

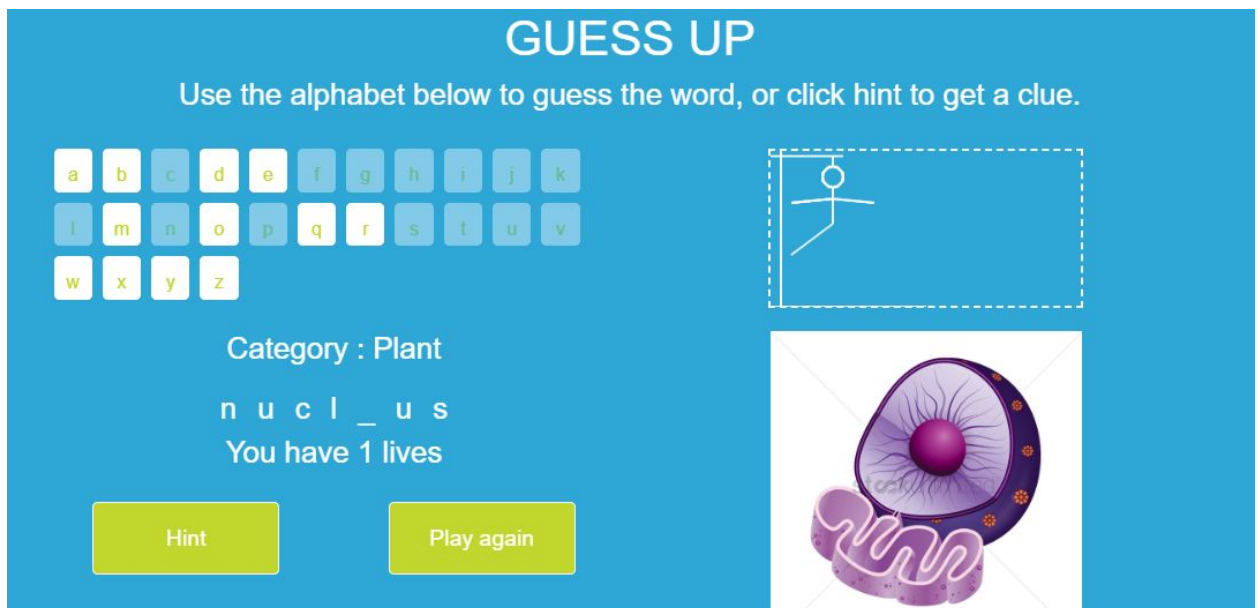
Gameplay Images:

- **GuessUp:**

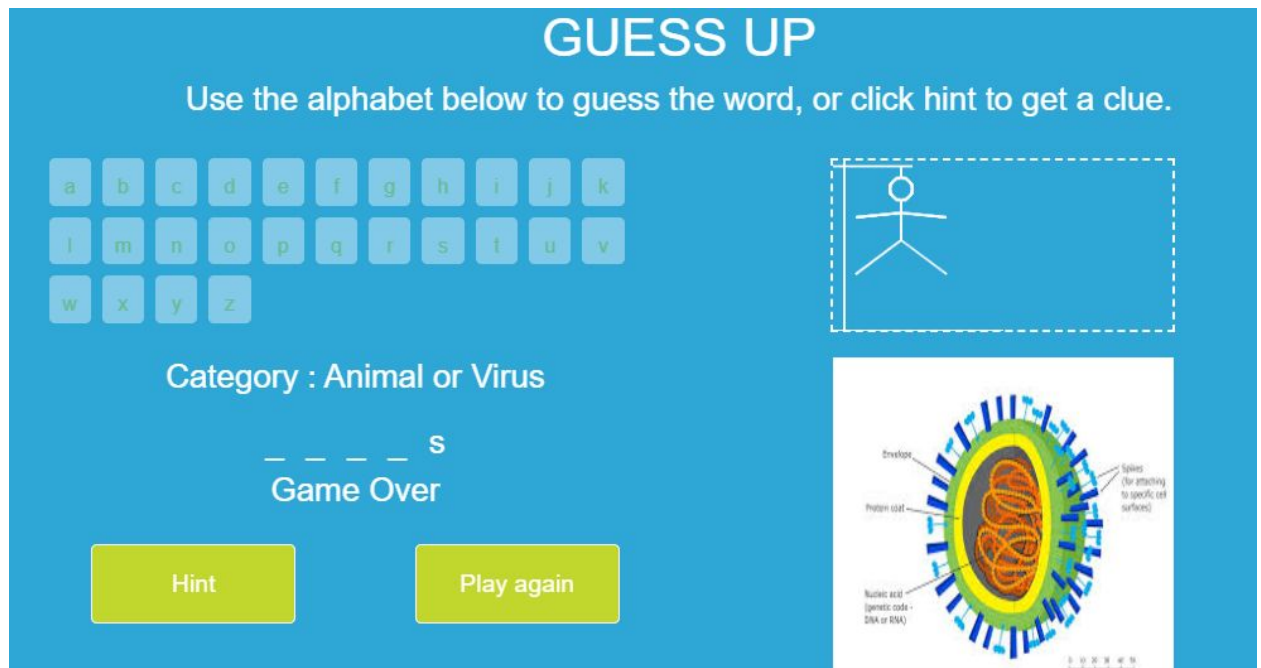
This is the hint popup.



The hangman image keeps coming up as we make mistakes. Used alphabets are faded.

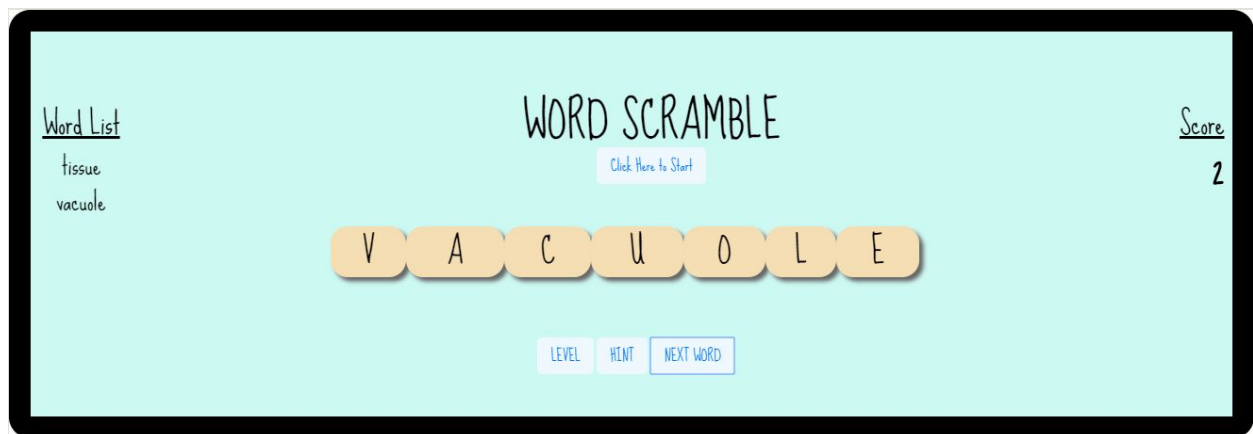


When we lose all the lives, (there are 10 lives) hangman image completes and “Game Over” is displayed.

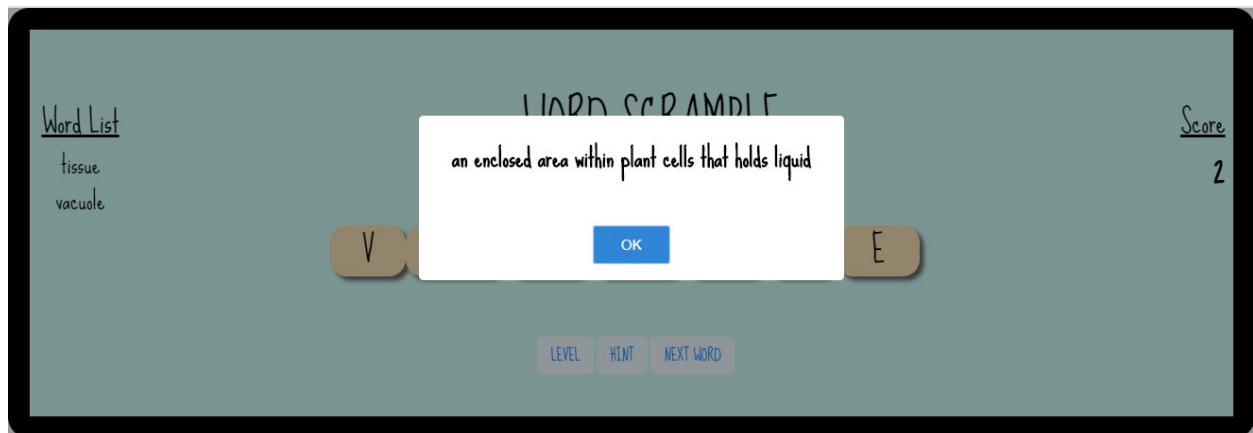


- **Scramble:**

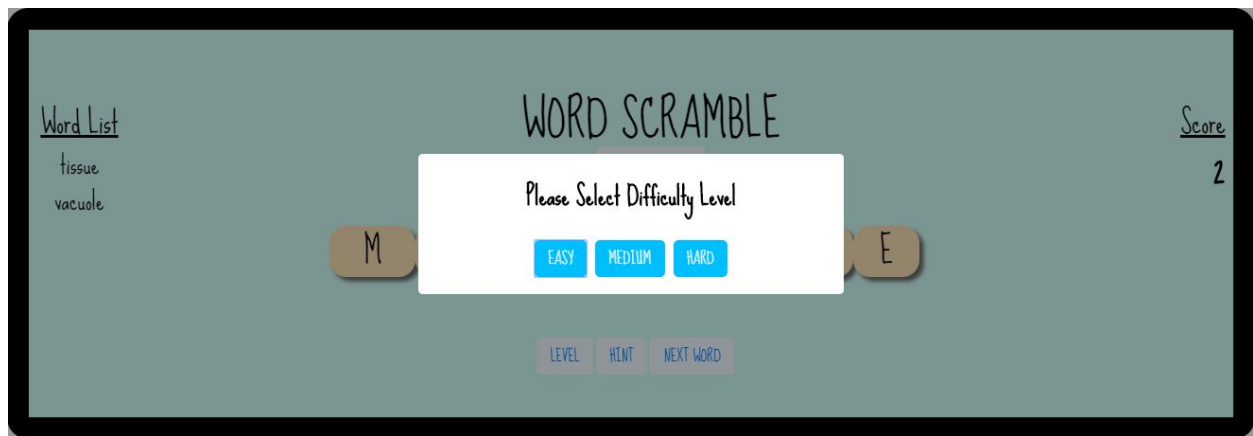
Scramble game UI. Word list and scores are displayed.



Hint is displayed as a popup.



Users can select difficulty level in the scramble game:



Management Approach:

We initially created a new repository for our code and cloned the code of the previous team. Each of the team members had access to push to this repository. We used to send the developed code for review by other team members and then finally push it. At the beginning of each iteration, we used to host a planning meeting within ourselves as well to discuss who would take which tasks for that iteration. The initial meetings were in-person, but due to some circumstances, all the later meetings were virtual. This led to a slight slowdown in our pace, but soon, we managed things well. For each iteration, we had developers, scrum master, product owner, testers, and technical writers. We made sure that development tasks are done well before the iteration ends so that there is enough time for testing and fixing bugs raised by the testing team. The product owner also reviewed the user interface at every iteration in order to make sure that requirements of the customer are well satisfied.

Production Issues:

We were new to the stepstone environment. So, it took awhile for us to understand the whole deployment process. We were able to deploy the code to FTP server using the details provided. But, the deployment to the actual server was to be done by Daniel. We had a meeting and had to communicate through emails to get our games deployed. This led to setbacks in our previous plan. So, we did not have enough time to work on implementing a new game. But, we have made the deployment process clear for the future teams working on this project.

Notes on Deployment to Production:

Once the games have been deployed to the FTP server and successfully tested and verified, the deployment to the main production server can begin. For this we will need to contact Daniel Shuta (dshuta@cvm.tamu.edu) , our main contact for the purpose of deployment from the stepstone system (since we don't have direct access to the deployment server). The following details are needed to deploy.

Module ID : This is the module ID present in the main stepstone authoring system. This can be found under the course packager application of the stepstone authoring system. For our project this was “SEPACellBio”

Path ID : This is the path ID that is found under the module. This can also be found under the course packager application of the stepstone authoring system inside your module. You will need to give both the module ID on the FTP server and the production server to which you want to deploy to perform a successful deployment. For us it was “Practice_Cells1” in the prod server, “practice_c1” in the FTP server

Step ID : This is id referring to the individual steps inside the path of the module that your games are ultimately present in. This is determined by the id that you have on the stepstone environment. For our project it was 40 and 41 both in the FTP server and on the production server.

We will need to provide all the above fields to Dan for him to deploy our apps into the production server. It also helps if you can give him the individual links to your games for him to verify the deployment himself.

The direct links on the FTP server are

GuessUp game:

<http://www.futuredogter.com/stepstone/playerShell.php?org=CET&sys=public.Latest&pool=TA>

[MU-CET-1&resourceloc=www.futuredogter.com&resourceavatar=NIH-SEPA-1&resource=SEPACellBio&ppj=7_1_40](http://www.futuredogter.com/stepstone/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-CET-1&resourceloc=www.futuredogter.com&resourceavatar=NIH-SEPA-1&resource=SEPACellBio&ppj=7_1_40)

Scramble game:

http://www.futuredogter.com/stepstone/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-CET-1&resourceloc=www.futuredogter.com&resourceavatar=NIH-SEPA-1&resource=SEPACellBio&ppj=7_1_41

The direct links on the Production server are

GuessUp game:

https://stepstonelearning.net/directPortal/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-NIH-1&resource=SEPACellBio&ppj=6_1_40

Scramble game:

https://stepstonelearning.net/directPortal/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-NIH-1&resource=SEPACellBio&ppj=6_1_41

Those last 3 numbers in the url are the Group, Path, and Step ID you wish to jump to. Group ID is the numeric representation of the Path ID described above. It can be found in the course packager application of the stepstone authoring environment under your specific module. The Path ID here is the position of your path under the group. Since our group had only one path, this was always one. The Step ID is the same as the one described above.

Links:

- **Pivotal Tracker:** <https://www.pivotaltracker.com/n/projects/2437172>
- **Legacy Github:** <https://github.com/traveler0027/Biology-Learning-Game> ,
<https://github.com/alpha-csce606/semester-proj>
- **Current Github:** <https://github.com/ravi97/CellBiologyLearningGames>
- **FTP server Deployment:**
<http://www.futuredogter.com/stepstone/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-CET-1&resourceloc=www.futuredogter.com&resourceavatar=NIH-SEPA-1&resource=SEPACellBio>
- **StepStone Deployment:**
<https://stepstonelearning.net/directPortal/playerShell.php?org=CET&sys=public.Latest&pool=TAMU-NIH-1&resource=SEPACellBio>
- **StepStone Game Demonstration Video:** <https://vimeo.com/415044250>
- **Poster presentation video:** <https://vimeo.com/415337987>