SAGE Midterm Report
HUD Styling and Per-block Feedback

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1. Abstract

In this midterm report, we will describe the progress of our research. Our work includes two parts: some feature improvements and bugs that have been fixed. Until now, we have finished changing the way to present scores and feedbacks. For per-block feedback, we can give the feedback according to each move. Besides, we also fixed some bugs along our development progress.

2. Implementations

1. Feature Improvements

HUD Styling

Originally, when students are solving parson's puzzles, the score for each step is calculated in sage scratch backend and directly shown in the scratch panel.

We moved this part out of sage panel and display it on the affinity space. To show the score and feedback on the affinity space, there are follow steps:

1. Calculate the updated score and generate the feedback according to current score in the backend of sage scratch.
2. Send current score and feedback to sage front-end and save them to the database.
3. Retrieve current data from database and display on the left panel of affinity space.

After improvement, the score and feedback are shown as follows:

2. Per-block Feedback

For the per-block feedback part, we have added and optimized two features on sage-scratch. The first one is optimizing the customized move feedback and the other is making the blocks in parsons palette can be used only one time.

For the customized move feedback part, we first wrote new APIs in sage-frontend to ensure instructors can write new feedback and save the move feedback in the mlab. Then we add a new module in scratch which can fetch the current feedback of the current assignment via socket. If there are customized feedback in the database, then we will use those. Otherwise, we will only use predefined feedback.

```
"moveFeedbacks": [
    {
        "content": "basic perf",
        "type": "neutral"
    },
    {
        "content": "you are wrong",
        "type": "incorrect"
    }
],
```

For the modification in the parsons block palette, every time the student drag a block from palette to the script part, this particular block will become invisible in the palette by setting the property of this block as ‘invisible’. In comparison, when this block is dragged back to the palette, it will reappear in the palette.

3. Main Bugs Fixed

1. Instruction mismatch

In the game design page, there are two types of game: cvg and parson. For different types of game, we will display different instructions for the instructors to design their puzzles. Before we fixed this bug, even if the instructor is designing a parson’s puzzle, the instruction that has been displayed is the one for cvg games. There is a mismatch between game type and instruction.

After debugging this problem, we found that when the instructor is designing a parson's puzzle, the global variable "gametype" is undefined, which causes the mismatch. We changed the way to get this variable and fixed this bug.

2. New Quest Creation

Before we fixed this bug, new quest could not be created. The UI is also confusing because there is no explicit save button on the page.

After debugging, we found that the new quests have been saved to database successfully, however they were saved in a bad format so that we could not fetch these new quests and display them. We modified the method for saving new quests and add a save button on the web page to give users better guidance.

3. Instructor Dashboard Tabs

In the class management page for instructors, there are several tabs on top of the page. Sometimes there are three tabs:

Sometimes there are four tabs:

After fixing this bug, there will always be four tabs.

4. New Assignment Creation

When a creator wants to create a new assignment, there are four options on the web page. For a user, it is confusing which button to choose. If they click on the "Design Game" button, they will enter scratch page but the assignment is not saved, there is no return button in the scratch page either. The assignment will be saved only when they click on "Save Assignment" button.

To make the creation progress clear, we remove the first three buttons and keep the last one for saving assignments. After user clicks save the assignment, they will enter the design scratch page. If they want to update either the game or the objections, they can do it in the dashboard page.

3. Limitations

Currently, the feedback shown in the affinity space is updating per second, that means we are creating a new feedback bubble per second, which makes the right part of the page a little mess. We should modify it to update only when it gets a different feedback or information.

4. Future Work

For the HUD styling part, since we can already get the score in the affinity space correctly, we are planning to design a graphical representation of the score for the next step.

For the per-block feedback part, we are thinking to add another factor – similarity, it should also be a part of feedback, which can tell the students the current progress he/she is making. And we are also planning to make it visualize in the affinity space by a bar chart.

For the SAGE-Scratch part, we are also planning to add a feature which is to have the same block multiple times in Parson’s palette. To do this, we may replace the current check box with a number selector in the SAGE design mode.