Programming a multiplayer mobile game to teach literacy in English

Somiron Kundu
Mentored by Mr. Casey Rock and Mr. James Schoening

Introduction

Children across the world are not meeting literacy standards (UNESCO Institute for statistics, 2022). To address this, Curious Learning created several apps that teach literacy. Included among these is the single player Feed the Monster app, available in multiple languages, which takes players through a series of 155 levels with questions developed by a professional linguist. Since this app is single player, it does not take advantage of the fact that competition and cooperation increase motivation and improve how well students learn (Burguillo, 2010; Hsiao et al., 2014).

To fill this gap and create an app to teach non-English speakers the basics of English, Mr. James Schoening and Mr. Casey Rock developed the app Multiplayer ABCs, which lets up to three players play through the game at once to learn English and is aimed at young children. However, users of this app were only completing the first few levels. The purpose of this project was to improve upon the Multiplayer ABCs app by lowering the requirement to advance to the next level and implementing a team mode to take advantage of the benefits of cooperation and competition to increase engagement.

Materials and Methods

The series of steps taken during this project is seen in Figure 2. Firstly, using SurveyMonkey a short survey was created to obtain information from the parents on who the app was being downloaded for, their reason for learning English, and their level of fluency in English.

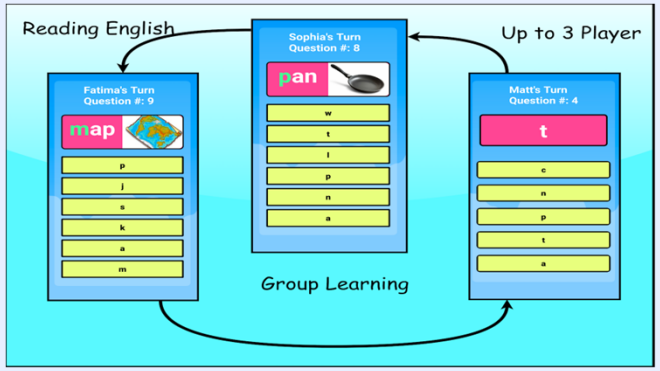

Figure 1 (above): This image was used to advertise the app on Facebook.

Materials and Methods (continued)

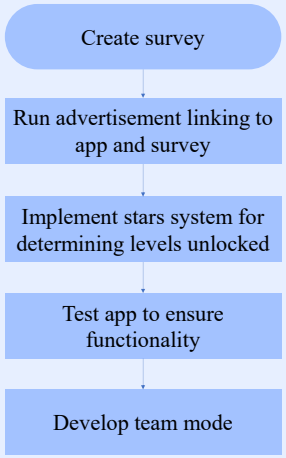

Figure 2 (above): This was the overarching series of steps taken during this project.

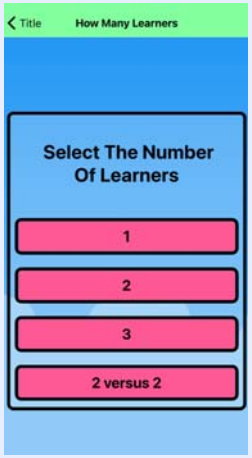

Figure 3 (above): An option for a 2 versus 2 team mode was added to the player number selection screen.

Next, an advertisement campaign was run for one day using Facebook ads targeted at those between the ages of 22 and 40 years in Africa to reach those in the age range with young children. When the advertisement (Figure 1) was clicked, users were led to the survey which contained a link to the app.

This app was coded in React Native, a framework based on JavaScript for developing mobile apps. In the original app, individuals had to get 80% of each level correct to advance to the next one. To address the issue of individuals not advancing past the first few levels, a system was implemented where players earned up to three stars per level and had to obtain a certain total to unlock the next level. The app was also linked to Firebase, a tool for tracking data, and code was added to track the number of days the app was played and what level was achieved each day. To ensure the app worked, it was tested with 10 Aberdeen High School students to level five, and then sent to two adult freelancers from foreign countries who also played to level five.

Finally, a team mode was added which split players into two teams, red and blue, titled "2 versus 2" (Figure 3). Figure 4 shows the screen where the red team can add their players, which would appear after this mode was selected.

Results

The 10 Aberdeen testers all got to level five successfully with no bugs. One of the foreign testers reported that the sound for the letter 'n' was unclear and was the same sound as that for 'm', but otherwise the testers reported no other bugs, a smooth interface, and both successfully got to level five.

While the screen for teams to add their players was successfully coded, the teams mode introduced a bug. Currently when the app is opened the screen turns all white.

Figure 4 (right): After the red team adds their two players on this screen, the next screen will do the same for the blue team.

Conclusions

As demonstrated through users testing the app, the stars system was successfully implemented. The lack of survey responses may have been a result of users clicking on the ad expecting the app, only to be met with the survey, and thus feeling misled. Additionally, the recipients of the survey may have not been sufficiently fluent in English in order to respond. Future studies could integrate an optional survey into the app to appear after several levels and use simpler language and questions, or even ask the questions in the native language of the target region. Future studies should also present potential respondents with one question rather than multiple so that they are more likely to receive a response.

References

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