

Initial Plan Early Years Education

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Contents

Project Description.....	2
Project Aims and Objectives	3
Ethical Approval	3
Aims and Objectives.....	3
Work Plan.....	4
Bibliography	7

Project Description

Due to the rise of COVID-19 and social distancing within Schools, Early Years (KS1) have suffered a lack of hands-on teaching when it comes to learning content such as the alphabet and other basic drawing/writing skills.

My proposal is a mobile application that will allow Children to learn and practice such skills. Researching into the topic I found a teaching technique for those with learning difficulties and others who are simply struggling with their development called the "Montessori Method". Part of the method involves drawing the shapes of the alphabet in sandpaper, allowing them to learn the "feel" of the word, so that when they come to writing the character, they can draw the letter on their paper with their finger beforehand to remind themselves about the shape of the letter. According to Pickering who studied and analysed the method "The sandpaper letters allow the at-risk child to learn through four senses instead of the usual two (visual-auditory) which may be inefficient in the processing task." (Pickering, 1992 page 8). She also talked about how the method was useful as the progress was at the child's pace, not at any others, so that the learning would not become overwhelming and deter them from continuing.

I believe that the technique could be adapted to no longer need the sand, as the main aim of the technique is to learn the shape from your finger moving, so a positive reinforcement system on a mobile application where they would trace using the touchscreen should allow the transfer of those kinaesthetic skills allowing the user to develop and grow at their own pace.

My project would focus on learning the alphabet alone, as I do not think in the timeframe I could move onto more complex objects, and the focus is on Early Years Education, where the alphabet would be the most useful thing for them to learn as they can use it as a jumping-off point for more advanced learning.

In terms of the project work itself, both the front end and backend will have to be equally important in this project. Normally I would focus more on the backend of the project working, as without that the application cannot run even if the user would then struggle with the front end, however due to the age range of the user base, the front end will have to be created in a way that no matter your level of IT skill, you will be able to easily access and use the application, so care will have to be taken into account in that regard.

Project Aims and Objectives

Ethical Approval

As the project is all about Early Years Education, Extensive testing will need to be run, with a variety of ages, as I would initially work with other students and willing participants to allow for a “beta test” of sorts, removing any bugs that may occur while using the application before running a small focus group with younger years, I have already been in contact with a primary school teacher who has expressed interest in the project and has offered to talk to their administration department about me sending over the application for a test with the correct age demographic. All this testing with both groups would need to be fully approved by the ethics committee before any testing would occur, and due to the nature of the age demographic, I believe that at least a high functioning prototype would need to be developed before approval so that any doubts of legitimacy could be quelled.

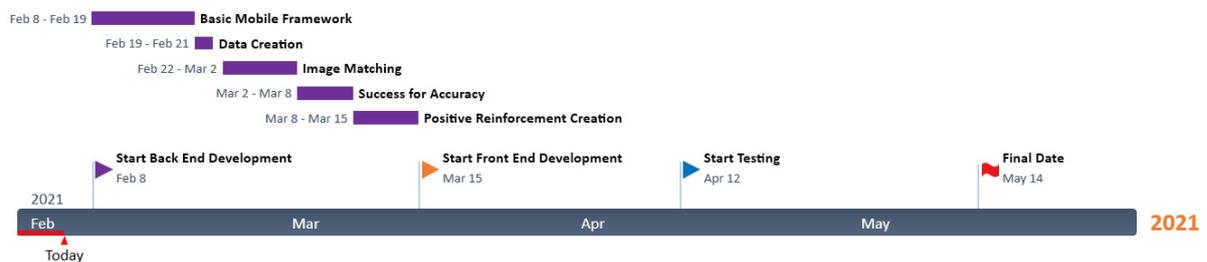
Aims and Objectives

- An improvement in the use of the alphabet, both in drawing and recognition.
- A completed application with an intuitive User Interface that will allow anyone to use the application successfully.
- A back end system that will compare shapes drawn with a touchscreen to pre created data.
- The system that will take data from the comparisons to decide whether the shape is accurate enough and providing feedback.
- A local storing of data that allows users to view their statistics and whether they are improving.
- A system that users enjoy using and do not find challenging or hard to work with.

Work Plan

The best place to start on my work plan would be a Gantt chart, then I can explain my work process, about why each section is required and why I believe the format should be as shown.

Unfortunately, due to the limitation of my software for creation of the chart I will expand each section of the chart individually and explain after each chart about why I have chosen each set of timings. It would also be noted that although I do explicitly say about certain days off to give myself a break, I prefer not to take long breaks from projects as I tend to lose track of my progress slowing down the development, instead taking short breaks throughout, when I start to lose focus on the project and taking a day to refocus, so the explicit details within each section may not be present about days working and days off.

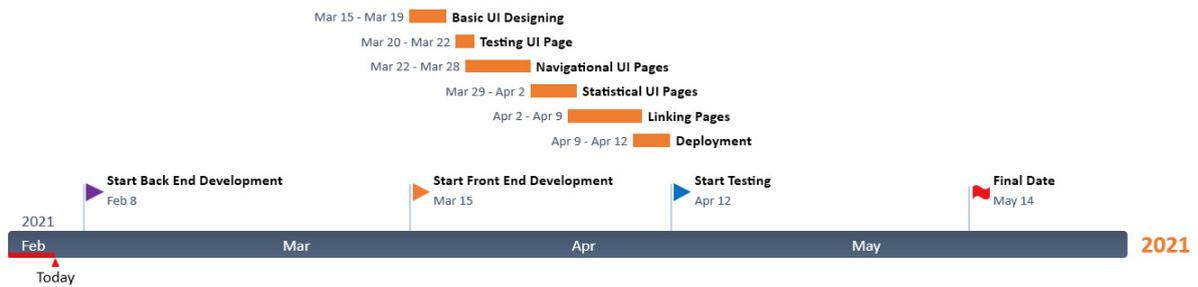


Firstly, the back end will need to be developed, and given the complexity of the backend, I allotted some of the most significant amount of time to it. As it will be a mobile application, the framework to allow the application to run must be set up first, and due to myself not being fully versed in the exact creation of this type of application, I decided to allot the largest amount of time to it.

The next step of shape matching is the data of the actual shapes we will be comparing with to be created. In previous projects, I have worked on shape creation and so I do not think a lot of time will be necessary for the data to be created. However, I have left a day spare between it and the next task in case it proves to be more difficult than previously thought, and if not then it will allow me to reorientate and have the day off to prepare for the next task which will be more difficult.

The next two sections can be described together, as I will immediately switch from one to the next without any break most likely, as it is a continuation of Image Matching section. This will be where the main algorithms are worked out, matching the accuracy of the shape drawn to the shape already created, and giving a value. That value will then be worked on in the Success for Accuracy section where the numerical value given to the drawing will be processed and compared to an average accuracy of the user previously and compared to what would be considered the “right answer” (e.g. an accuracy of 80%) which would be decided manually for each letter depending on how complex each shape drawn is.

The final section of the backend development is using the average data and the number of successes, as well as for each individual success, and creating the backend of a system of positive reinforcement to allow the user to know when they are working well and doing the right thing, this should not take too long. However, any time that I have spare can be used to increase the efficiency or change minor parts of the other systems, but in case it takes longer than anticipated the time is there to prevent lagging behind with my work.



The next part to focus on is the Front-end Development, as an easy-to-use UI will allow for the user to respond to the application more positively and have an overall more enjoyable experience. First, I would create some concept drawings/diagrams for the UI pages, so that when it came to developing and designing them in the code, I would have a clear picture of the layout to reference to.

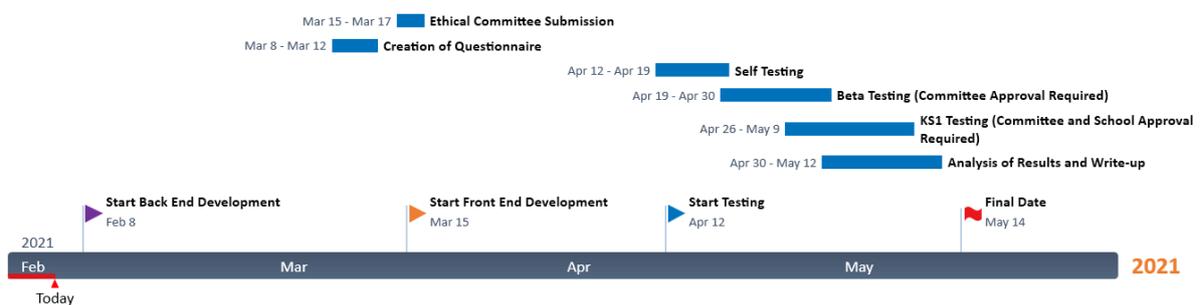
Next, I would focus on the main aim of the project, the teaching aspect of it, so I would design the pages for learning and Testing, due to them being similar in context I believe that it will take less time to design them as once I have one designed, I can use it as a reference point for the other.

The navigational pages would be the next part I would design, and I have allotted a large amount of the time to them, as the navigational pages like the home page will be the first thing the user sees upon opening the app, so making sure that they are working and efficient is key.

One of my aims is to allow the user to view their progress with locally stored data, so having a statistical page, and a user page where they can reset their progress is also needed, and due to the complexity of the page with hopefully to easy-to-read graphical data, I allotted some extra time to it.

I allotted a lot of time for the final part of the “coding” part of the development, which is linking the pages, as although it could be an easy task, the longer the user must wait on the pages loading, the less likely they are to continue using the application, so I allotted the time for making sure the linking is as efficient as possible creating a positive experience on the application.

The final days of front-end development I have set aside for Deployment of my application, as problems can occur when compiling and I want the application to be ready and working for the testing phase.



The final part of my Gantt chart could be considered the most important, the testing phase, as the entire project is to achieve the aim of helping the users. Due to the time taken for the ethics committee to process my application, I believe just before the front-end development begins that I should submit my application, which will then allow me to present them with the backend of the development as supporting evidence.

The first set of testing will be Self Testing, making sure there are no major bugs and fixing any that occur before it is rolled out to anyone else. It will also give me a chance to gain an understanding of the application from the user's perspective, so that if any issues occur down the line, I have a better understanding of how to fix the issue.

I want to have some beta testing with a wider range of students before I test with the KS1 group, and 10 days of testing I believe is adequate to have a brief glimpse into how the accuracy can improve in general with others.

The main part of the testing will be the KS1 testing if it is approved, as that kind of age range will be learning the alphabet so a testimony from the teacher comparing children who have used the application compared to those who have not will give crucial info into the success of the project, as well as with their parents' permission viewing their individual statistical data to see individual improvement.

During the KS1 testing the results from the Beta Test will be coming back so the analysis of the data can begin then, and working right up till the end date of the project, ending a couple of days before so I can make sure the formatting of my final submission is accurate and correct, allowing for easy reading of my findings as opposed to being rushed.

Bibliography

Pickering, J.S., 1992. Successful applications of Montessori methods with children at risk for learning disabilities. *Annals of Dyslexia*, 42(1), pp.90-109. The Orton Dyslexia Society.