

Using an Adapted Jake Knapp's Design Sprint Approach to Create a BBC Bitesize AR Application

CO7210 - Concepts of User Experience

Christell Ann Mataac, David Hynes, James Clare, Lewis Karisa, Nazmi Gargaliev, Shai Vure, and Timothy Davies



The Problem

The overall problem we faced as a team was to try to enhance the learning experience of 7 to 11 year olds in the home environment, using an immersive technology. The product was to be designed for tablet or smart phone use and should be able to be used by teachers and parents alike.



Issues with Current BBC Bitesize App

Issue 1 – Incorrect material being shown

Several team members downloaded the app and inputted mock details for a user in our target audience. However, the app would then display GCSE level material rather than age appropriate material.

Issue 2 – Lack of immersion

Most of the content on the mobile website and app is static content. There are some videos and interactive quizzes but these aren't necessarily used to their full potential. It could be suggested that as technology advances, especially in the classroom, traditional static content may become obsolete.

How will our product tackle these issues?

Immersive from the very start and designed entirely around Augmented Reality (AR). Users would be able to experience learning in their home environment. The belief was that this would be more enticing and encouraging than traditional static content.

Designed for 7-11 year olds; themed and worded specifically for our target audience. Users choose from a range of colourful avatars, like those in familiar video games aimed at the same ages. This guides them through the app, with the aim being that the user 'teaches' their avatar.

Utilises Protégé effect, which suggests that learning could be enhanced by teaching others the very same material in which you are trying to learn. Learning by teaching has shown to be effective in a number of settings. One such study from the University of Nottingham highlighted the effectiveness of this with German students (Stollhans, 2016).

Day 1

The aim of day 1 was to understand and diverge information. The morning was dedicated to defining the business problem, stakeholders, goals and role assignment. The afternoon focused upon diverging this information and homing in on key ideas.

Key findings from Day 1

Goals



Sprint Questions

Sprint questions were listed. This began with a discussion of how the project could fail, these fears were then developed into the following questions:

- How will the app capture attention?
- How will it help learning better than the existing website?
- How do we make the experience different?
- How can it work in every environment?
- How do we make it appropriate for the ages 7 to 11?
- Is it feasible for it to cover just one subject? (Can it scale?)



References

- Knapp, J., Zeratsky, J., & Kowitz, B. (2016). *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days* (1st ed.). New York, NY: Bantam Press.
- Nielsen, J., and Landauer, T.K. (1993) A Mathematical Model of the Finding of Usability Problems, Proceedings of ACM INTERCHI'93

Map

Key players appear on the left, completed goals appear on the right, and how the customers and key players interact with the product appears in the centre. The map produced by the team can be seen in Figure 1.

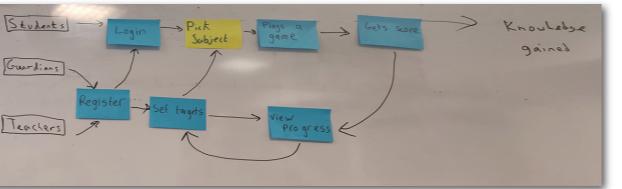


Figure 1 - Mapping Key players.

Day 2

At the beginning of Day 2, we collected and displayed on the board all the solution sketches we had from Day 1.



Figure 2 - Storyboard Creation.

Key findings from Day 2

Everyone had the chance to look at each sketch and evaluate based on the drawing and descriptions alone. After that, we placed our initial vote on the part of the sketch we liked using small dot stickers. We had a group discussion and interpreted each sketch from its respective creator. From the discussion, we each voted, with the decider's vote being final. We created a 15-window storyboard process of our application's prototype combining all the attributes each sketch had, such as the layout of the login page, the idea of the alien invasion and the concept of having avatars (see figure 2). After we finished our storyboard, each member was assigned different tasks. Some were tasked with gathering assets (i.e. images, fonts, colours, shapes), some to validate the process from Bitesize, some prepared interview scripts for user testing, and one was delegated to do the prototype using Adobe XD.



Figure 3 - Design Thinking 101 - NNGroup.com

Adobe XD - Creating a Hi-Fidelity Prototype

Shared job roles contributed to the hi-fidelity iteration process, with each member of the team taking turns to acquire assets, create written content and give interaction feedback. In figure 3 you can see the process involved in creating a prototype and in figure 4, the app was being tested via XD.

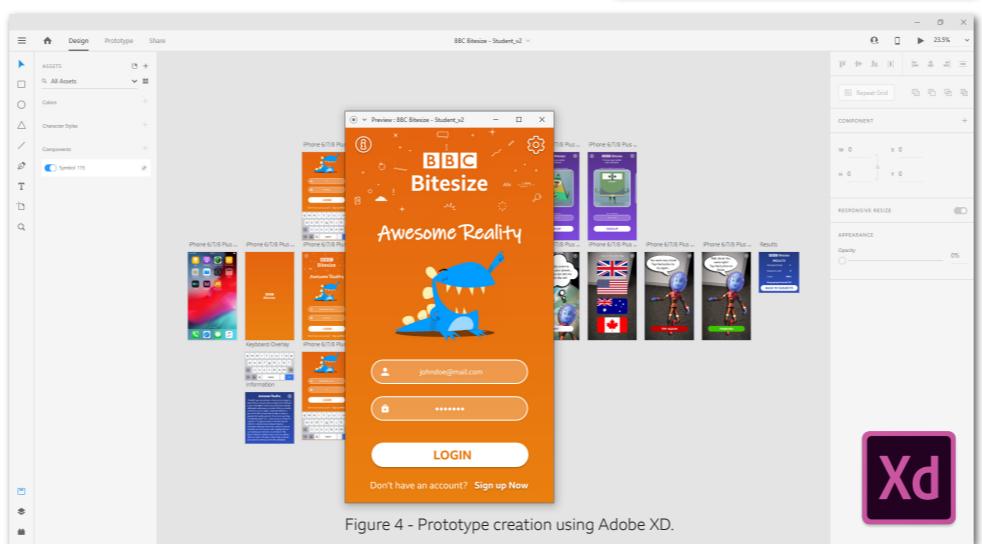


Figure 4 - Prototype creation using Adobe XD.

Day 3

This was the culmination of the project, where we demonstrated our prototype to a group of volunteers. Our UX lab was set up with a test area, including a phone with our app installed, a document scanner to record the user's interactions on video and a waiting area for the volunteers to relax.

Knapp, Zeratsky and Kowitz (2016) recommend separating the interview from the rest of the sprint team. This was to make the volunteer feel as comfortable as possible and ensure that they are not influenced by the team. However, as the volunteers were our tutors we felt that physical separation of the two groups wasn't necessary.

Nielsen and Landauer (1993) found that the ideal number of user tests is five. In five user tests, around 85% of usability problems are discovered. More interviews may lead to more discoveries, but the returns are diminishing. In our condensed sprint, we conducted three interviews. Whilst this was less than optimal, up to 70% of usability problems would have been discovered (Nielsen and Landauer, 1993) and this was an acceptable compromise.

The Interview

Knapp et al. (2016) recommend a five-act interview with volunteers at design sprints. The first three stages of the interview were as follows:

1. Friendly Welcome

- Thank you for coming to test our app today."
- "My name is..."
- "Are you happy being recorded?"

2. Context Questions

- "What is your name and what do you do?"
- "What experience do you have working with primary age children?"
- "How experienced are you using AR or VR apps?"

3. Introduction to the prototype

- "We're going to show you our app now."
- "The app we're going to be using is called BBC Bitesize: Awesome Reality."



Figure 5 - Interviews and user testing.

Key findings from Day 3

- First impressions about the app was that a variety of bright colours had been used which was appropriate to the target audience.
- It's a straight forward app which is friendly and arouses curiosity.
- Users detected the lack of information about the definition of Augmented Reality (AR) and context concerning floor placement. Adding a tutorial would help with this issue.
- Users easily managed to find the information and settings buttons.
- Instructions to follow were clear and interactions worked well. When registering, users stated that the amount of the questions asked were sensible and not intimidating.
- There was confusion why the BBC needed to know where students attended school. Users assumed that the details were to determine the key stages of their study.
- Avatar choices were intriguing but in terms of functionality, there was some confusion using the carousel to select an avatar, and why they were needed.
- Users were looking for more optional avatar images that would keep them using the app longer to make it more interactive. Capturing attention of 7-11 years old children could be challenging and must be fun during their learning activities.
- Alien avatar made users think that it would take them for a world tour and some exit buttons needed removing to prevent "cheating".
- Complications arose when users were unsure what to do when certain options appeared on the screen, as they did not accurately represent what was happening.
- More user feedback was required when users answered the questions correctly.
- Both positive and negative feedback helped the design team determine what improvements were achievable long term.
- All comments gave a better understanding of UX and importance of creativity.