

Analysis of the Computational Features used in Existing Solutions

Rather than look at exact solutions to my problem, I decided to take a step back and look at some solutions to education in general. There is still this ever present idea of fun that is also an important aspect, therefore I have also researched some games, but limited myself to platformers and point and click games to try to keep the approach as close to my solution as possible.

To help clarify the use computational features I have noticed and mentioned in my research files, this document exists to make quick summaries of what has been taken from each material. If you wanted to know more about the material and the analysis made, you can then read the whole document.

I started off with solutions to the problem of education. If a student is struggling to learn it class, it may be embarrassing to ask a teacher or peers for help, leading to a student to look online, I picked these examples of a solution:

BBC Bitsize

Rather than a feature, I explored the idea of the problem. Bitesize tries to tackle a massive problem, like providing information for every UK based exam board in GCSE science. I used this as an example to show the importance of computation in a solution. As a programmer or a team of programmers it is important to understand what you are capable of and use this information to make a solution to the problem that follows this idea of **Computation**.

This links back to my solution, as I spent a lot of time thinking not only about methods of solving the problem, but how viable they were not only as solutions, but as something I would also have to code myself. This was concluded with the logical choice that my solution will have to be small and only covers the fundamentals, as that is the best balance of solving the problem and being able to program that solution.

Teach ICT

This started off with some simple design analysis, stating that for my target audience I would try to avoid using that much text. I also explored the ideas of **Communication** and **Coordination**. Every part of the site was broken down into subject, topic, section and then those sections were split into slides. This idea of breaking down and storing information about the subject to help communicate it to students in chunks. These ideas cross over into my solution, as each level should be separated into topics, and should be small- only taking up a single screen in size. While this idea comes up many times again, I first came across it in Teach ICT.

While my client was clear that he wanted a digital solution, non-digital methods have been used for many years, it would be ignorant to not include them, although it would be hard to include how they used computational features, I focused more on the design and presentation of each. This could loosely come under **Recollection**.

Questions & Answers-Earth and Space

In this book I looked at its use of **Communication**, it was **Designed** to break down information and sections based on questions rather than the normal subjects and sections. There are also some common themes that is shared with most books- the font is large and there is an abundance of images. This is expected of books that are designed for a younger audience.

Edexcel GCSE Science

Rather than taking any features from the book, I took a lot of information about each GCSE subject from this book to base my levels on. While I did take a look and the use of **Recollection**, as the information itself was stored and presented in many different ways, each section bearing a designated number, I personally didn't take any of these features into consideration from my own game, as they represent some of the features that cause students to struggle in education.

The Illustrated Encyclopedia of Animals

This book made interesting use of **Recollection** and **Design**, upon first look, you think that this book makes use of images as its main method of **Communication** seemed to be the use of massive detailed images and diagrams. This idea starts to fall off when you notice that these images are surrounded by small text. This lead to the conclusion that this encyclopedia just happens to give a lot of information. The major part of design I looked at was the front cover. It boasted an impressive image that would probably attract many readers. I have now reconsidered some of my design options and the possibility of a thumbnail or a starting screen for promotional reasons.

The Concise Human Body Book

After looking at a few books, I decided to select a guide, not only for its different take on **Design**, but also on just how different it's **Evaluation** is. Much like my own game, it was designed with an emphasis on visuals rather than text. This opens up questions about the very **Computation** of the problem itself, what is the minimal text required and can the bulk of the education be done with visuals alone?

Uncover Cobra

This was an interesting book in terms of **Design** and **Evaluation**. On average, the book itself was dull and offered nothing interesting. It was this idea that one feature would have such an effect on the overall product and how well it achieved its intended feature. This than made me think about the Evaluation of my own designs; were there aspects that have fallen behind others? I will have to consider other things rather than just mechanics to look over when testing.

As my solution itself was a game, there were two different types of games I believed I should analyse. The first being games with the purpose to entertain, and the others being educational. To try and keep the list of game focused, I only looked at games that shared the same genre as mine or was a puzzle game.

The Company of Myself

As my game is a 2D platformer with some puzzle elements, and The Company of Myself is a puzzle 2D platformer, I felt that it would be important to see how they worked. Like all platformers, on a basic mechanical level they all use the same principle of **Computation** when it comes to the concept and movement. The **Communication** between the games were also the same, each one was split into levels, although I did have an area in between. The idea of **Coordination** between elements started off the same, as things like movement and interactions between objects are shared in both games, but as The Company of Myself started to show its more complex levels, the features started to greatly pass mine, showing that when **Evaluated** this increase in depth probably meant that my game wasn't as entertaining, but on the same vein, it wasn't as difficult. This led to the difference of **Design**, both games have been designed for reliability and dependability with their respective target audiences in mind.

Little Wheel

As it has been stated before, my game could have been a point and click type game (it wouldn't be too hard to convert it to a point and click game even at this point). Little Wheels is a point and click game with a low complexity in terms of user interaction. When looking at the problem that is being **Computed**, you start to notice that from an **Evaluation** point of view, the game isn't complex in a mechanical sense, but in its choices and execution of design. By using **Communication** that resembles the level mechanic found in most platformers and point and clicks, rather than each one being a complex puzzle with many interactive variables to solve each puzzle, the game would rather impress with interesting art, full animations and killer audio. This interesting take on **Recollection** made me consider my own game, as while different, the would principle of how the problem has been computed was very close to my own, with animations and visuals being the bulk of the game.

Questionaut

BBC's Questionaut took a different approach on the same mechanics of a point and click game like Little Wheel and by acting one of idea to the solution that was **Computed**, it gave a different result. By slightly changing the **Design** of the game by adding in questions, they have taken the formula for a standard point and click and have turned it into an educational game by adding in a quiz mechanic. Looking at this design, it is enough to say that my solution is very close to this game. Due to differences in **Evaluation**, I am avoiding this quiz mechanic and attempted to compensate with only relevant interacts that related to the subject that dictated the level (what was not always the case in Questionaut).

Electric Box 2

Unlike the other games, this puzzle game is neither a point and click or a platformer. Because of all the shared designs and computations of a platformer, I decided to look at something unrelated. In terms of the problem being **Computed**, both my solution and Electric Box 2 share this awkward common ground between an educational game or just science themed. It is also worth looking at this game as with 40 different levels, in terms of **Design** and **Evaluation**, this game is far superior to mine. My solution might have resembled a game like Electric Box 2 if I was trying to make a massive

game and had more time and experience. Electric Box 2 was one of the only resource I looked at that really focused on **Coordination** as a major point. My game is all about using many different objects to interact with each other to solve the problem. None of the other games really showed this happening as clear as Electric Box 2, the main point of the game is having all the objects interact to power the atom.