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Examination Answer Book

24 Pages

Instructions to candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right and seal to hide your name.
3. The answers must be **legibly** written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

1	Student Number	
2	Title of Examination Paper	<i>Usability Engineering</i>
3	Module Code	<i>MX 86 48</i>
4	Date and Time of Examination	<i>8-5-2018 13:30</i>
5	Examination Venue	<i>WAT2</i>
6	Seat Number	
7	Number of Answer Books handed in	<i>1</i>

List the numbers of the questions you have attempted	Office Use
<i>A1</i>	<i>20</i>
<i>B1</i>	<i>12</i>
<i>A2</i>	<i>20</i>
<i>B2</i>	<i>14</i>
<i>A3</i>	<i>20</i>
<i>B3</i>	<i>12</i>
<i>A1</i>	<i>20</i>
<i>B1</i>	<i>13</i>
<i>A2</i>	<i>20</i>
<i>B2</i>	<i>14</i>
<i>A3</i>	<i>20</i>
<i>B3</i>	<i>12</i>
	<i>98</i>
Total	<i>65%</i>

Please complete this section and SEAL before the examination starts.

Surname MARTIN Forename(s) ADAM RHY S (Block Capitals)

Complete section, remove strip, fold as indicated and SEAL

Question one

a) each of the two displays have rapidly different styles when dealing with the key concepts behind usability, both displays contain similar color themes by using red, black and green. Historical design (effective design) utilizes good contrasting color design that enables users to view data easily, while the Digital (less effective design) uses colour with a neon variant that can make its text hard to read.

Both systems use sound to convey certain data. The Digital display uses loud narration to help viewers follow its videos, all sound comes from directly behind viewers which changes their mental ability as this lacks any sort of affordance.

The Historic display uses sound sparingly, and uses it to help immerse its viewers into the world of historic organisations.

When dealing with touch each use different styles of control, Historic uses a touch pad, projection to easily allow for clickable objects to be used, while Digital has a simple touch screen. Both utilize Fitts' laws to properly scale each interactive element by making them larger and closer together.

Metaphor is poorly implemented within Digital Display due to the incorrect use of sound while Historical uses small sound effects and old camera sounds that help ground viewers into the reality of the organisation.

Affordance for each display is well executed with buttons showing that they have been pressed with its coloring change/shading. Some are highlighted and videos explain that they have ended.

b) While the digital display is inferior it makes sure to keep as simple as possible with how its features work and the feedback is given.

Color is always been an important factor to usability design, the display could change the colour to be lighter and work well with the text found instead of making it unusable. The sound could be placed within a predictable area as to not confuse users, sound is said to be the worst way of communicating data as there are many who have hearing problems. Interactive displays require many more features dealing in touch system, the digital display lacks that, certain addition features/control systems can be put in place as to make sure all viewers are entertained throughout their viewing.

The flexibility and overall learnability of the digital display is lacking due to no on-screen help. Without these key features it can make interactive exhibits suffer due to this difficulty.

question two

a) When dealing with the Interactive Display I believe that the best evaluation strategy is the one proposed by Nielsen and Molich also known as the heuristic evaluation. Several evaluators will be needed to carry this out due to the size and structure of interactive displays. For example most like the historic display can be difficult to understand, the technology used is rather new to most people so having multiple people looking for problems is optimal. He has factors that deal with problems and how they can be overcome, will the display be a one off and how seriously can the problem be perceived. He is good when looking more at complex systems that require multiple look throughs. For example systems such as Amazon have multiple large scale systems that deal with different styles of requests, evaluators are needed to look through all these systems to make sure no glaring problems arise.

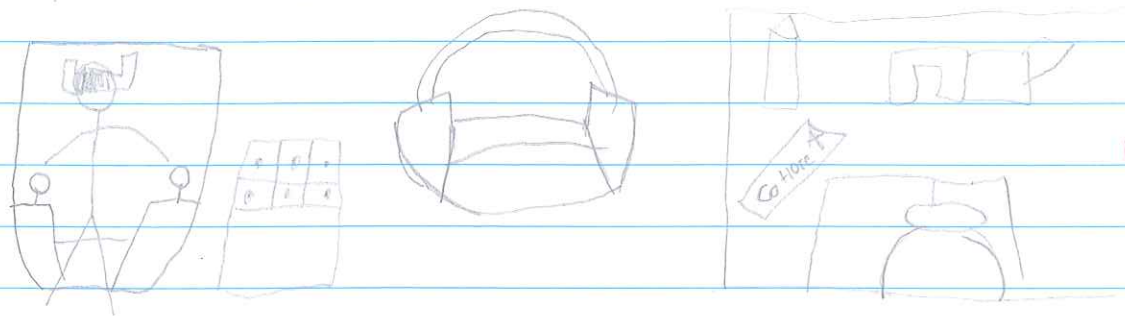
When it comes to interactive system there are only the main factors that must be thought about but many ways it can progress. What if viewers overlook or bypass key aspects, each iteration is needed to be documented so each can become more consistent and predictable with every analysis done.

6) augmented reality applications are known to be difficult to understand for those with little knowledge. that is why the selected analysis method is one proposed by Polson et al also known as the Cognitive Walkthrough. Unlike He (Haurstic) CW is used with regular users in mind, it allows them to create a step by step guide. On how regular users would approach a system such as the one on phones. most users are already acquainted with their phones. but not with AR that is why focussing more on the user is necessary due to the inherent difference between interactive and AR. CW is separated into different considerations for potential users. such as how will user AR impact the users interaction, does AR prove to strong for normal users to learn, as well as what is the final goal.

CW is used to help users gain an understanding in new ways and was used when new technology came out, such as chip and pin (first release). He would be unable to be used as there may be no clear problems with new tech that can be found. phones are often changed due to a persons differences so run throughs must be done with taking these into account. during both development and maintenance.

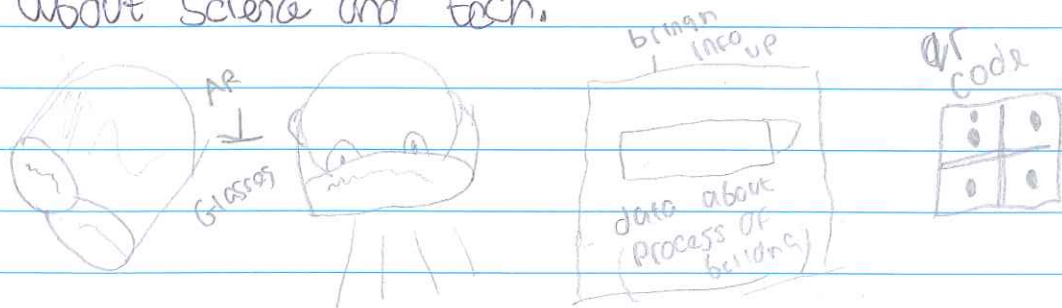
Question three

- A) The VR System that I propose will allow viewers to select different areas of time and view and use machinery within a virtual space. The VR system will have users take a seat in a mobile seat that acts as a controller, from there all audio and visual data will be put through a VR headset such as the Oculus Rift or HTC Vive, from there users would be able to see through the eyes of a digital character and walk or use virtual wheels to go around a world full of old and future tech to see how they would work. Close to a game.



Usability with VR is still new but most still apply such as touch control when moving is one way, extra features such as speech could move the player model around in elements as to allow those with disabilities to use, the same can be said of subtitles for those without hearing. Most old tech seen in museums no longer work and some future tech is still out of our reach that is why having them work in a virtual environment allows them to see how it works and create an interest in new topics.

The AR System is far more easier to build and maintain. The AR System will be run on a set of AR Glasses like Google Glass that allows users to bring up information about science and tech that are relevant to the viewed exhibit. All data will be brought up upon scanning a QR code on each of the exhibits about science and tech.



AR usability is far more inline with what is current; that is why phones can also be used to bring up the information by using its built-in camera. Each is unused by the system and only uses speech and audio-based communication during its development. Colour is void within the system as the visual field is directly close to the user's eye and a wish to not hurt viewers' eyes is recommended.

The AR systems help and provide additional background information based on the science and tech exhibits as most of them will not be able to relay all information based on a field of their choice. Its main goal is to once again create an interest based on the existing topics that the museums hold and to allow users to spend time learning new things.

b) most AR/VR Systems of today such as video games and my suggested design try to fulfil the act of true immersion and entertainment based learning. Sutherland's goal was to create realism using digital data that could both affect a user's mental and physical self. While true realism is yet to arrive most believe that as tech gets stronger aspects such as human memory, touch, taste and smell will be interchangable between the virtual and real world.

AR and VR share some similarities such as mainly for entertainment and the tech that works behind them, but their differences are one of many. Such as the way visual perception is done, VR allows for a proper first person look at a fully digital world, while AR uses digital overlay onto the real world (augment the world).

VR is far more costly than producing AR systems due to having to create an entire world while AR adds info boxes or small animation through the use of a camera.

VR must make more careful design when choosing aspects such as color or additional sound. The way VR works makes color contrasting that more complex and detrimental to its success.