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Examination Answer Books

12 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, fold over and seal down (using the label provided) 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.
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5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
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**Complete, fold and seal
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SURNAME: JAMES

FORENAME(S): ROBERT ALEXANDER

1	Student Number	P144088
2	Title of Examination Paper	USABILITY ENGINEERING
3	Module Code	M6K01110
4	Date and Time of Examination	18th MAY '18 12:00
5	Examination Venue	GYM
6	Seat Number	6038
7	Number of Answer Books handed in	1

[illegible]

87%

874

1.
a.)



1. a. The interface ^{design} ~~evaluation~~ is for a native mobile app for Students of UWTSD. The interface uses menu based navigation to assist the user in accessing the information they want. The layout is a box design, separated by lines, as feature detectors in human vision, (neurons that respond to specific features of the environment such as lines and edges), move and settle more easily with grid lines. Icons are used as metaphors within the menu, eg. a burger for food, a house for accommodation to aid recognition. The human mind is in 3 parts, sensory memory, short term memory (STM) and long term memory (LTM). Information stored in LTM is more easily retrieved by recognition than recall. The ~~metaphor~~ metaphor images allows the user to recognise icons and use their tacit knowledge to retrieve their understanding of the subject.

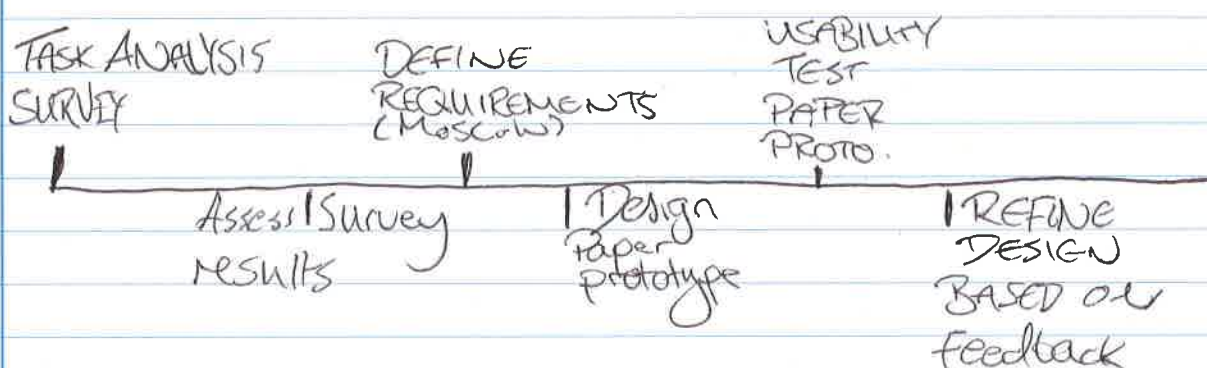
Affordance is used throughout the app, from the scroll bar on the right of the page, to the burger menu on the top right of every page. The menu's are purposely longer than the screen size to let the user know there's more options if they scroll down. Overall the app gives good affordance, the UWTSD crest is highlighted as a button to take users home, this is a familiar mobile app design.

Good designs is thoughtful application of usability principles

1. b. The development process started with task analysis to identify students requirements of such an app. Based on these requirements a paper prototype was created to allow for testing of user journeys and the interface design. These were assessed with

Users using direct observation. The feedback from the paper prototype then fed into the software design which was tested in a usability lab with indirect observation. Recording users using the app and monitoring their progress on a laptop.

Timeline:



Good explanation & timeline

- C. Usability techniques such as affordance let people know what or how something can be used. TASK ANALYSIS should be performed early on before design work to identify the tasks the app must support, based on user needs. Surveys are great for collecting large amounts of qualitative and quantitative data by using the Likert scale to identify what the app must do, what features it could have, should have and won't have. How else would developers know what to build?

The usability assessment of the paper prototype allows for refinement of the design so that it is usable by users and is predictable so as not to cause confusion or frustration to users.

Good justification

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2.

- a. When selecting evaluation methods one must consider the purpose of the evaluation, the stage within development, involvement of users, the type of data required (qualitative or quantitative), and practical considerations of time and resources.

Before design starts a task analysis must be undertaken to identify what users will want to achieve with the app, how do they expect to do this, and what previous knowledge or cultural and social experiences will they bring. Usability. Go states 'Task Analysis (TA) is the process of learning about ordinary users by understanding in detail how they perform their tasks and achieve their intended goals.'

TA is probably the single most important element of evaluation because its from conducting this you understand what is required of the app. TA can be conducted face to face or by survey or questionnaire. Surveys + questionnaires allow for collection of much greater volumes of data than face to face with much less resource investment. Online tools such as Google Forms or Survey Monkey can be used to capture responses digitally from users and provide good visualisations of the data captured.

Paper prototyping is the first opportunity to test an interface design with users performing real tasks. It allows the testing of user journeys to refine flows, all with minimal input, i.e. no code. However paper prototyping shouldn't be used to test technical feasibility, download + response

times, Scrolling, Colours, fonts or even icons. It's simply about navigation and user journeys with a small focus on overall design.

When conducting usability assessments on software prototypes direct or indirect observation can be used. Direct observation is good for informal feedback, early on in a project. Indirect observations are more resource intensive, you need to capture users actions using video equipment, screen recording, keystroke recording and even eye tracking. However, as resource intensive as it can be it can yield huge amounts of data. It allows you a second, third, fourth and so on opportunity to observe the user and identify things you might not have noticed the first time such as facial expressions or body language. More so in direct observation, because the observer is sat near to the tester, is the possibility of the Hawthorne effect; the observation may change the users behaviour. Indirect observation reduces this effect as long as the monitoring software is unobtrusive.

Once the software is live, surveys, questionnaires or interviews could be used to capture users satisfaction with the design and ideas for improvement on an ongoing basis as part of continual improvement. Structured interviews would allow for the comparison of users views.

My recommendation for the interface evaluation strategy from development through to live would be to start with a task analysis conducted by questionnaire, if necessary it could be conducted face to face, but

Concise unambiguous questions should yield clear results with no need to conduct face to face task analysis. Next should be a review of a paper prototype using direct observation. There will lead to a software prototype which should be tested with users using indirect observations and think aloud verbal protocols, so the user verbalises their thoughts and reasons for their actions. If it was felt necessary, structured expert reviews could take place after this, with usability experts applying a set of guidelines of both design + accessibility to the interface to assess conformance.

Once in live, a series of ongoing questionnaires or structured interviews should take place periodically to support continuous improvement.

Create Strategy!

b. The benefits of interface evaluation are:

- An interface design refined by users who are carrying out tasks real users will want to complete, therefore navigation should be straightforward.
- Identification of human factor issues such as poor choice of colours for colour blindness.
- Adherence to W3C's accessibility guidelines so UNITS doesn't fall foul of the Equality Act 2010, formerly the Disability Discrimination Act 1995.
- Adherence to web design guidelines



Consistent design, reduce short term memory loads, perceivable, predictable.

- Suitability for international users. UWTSO has a number of foreign students so international design must be considered for example ~~is~~ in most of the world a tick means correct, but in Japanese it has the opposite meaning.
Good justification.

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3 a. There are many different usability guidelines for interface design, Dix, Nielsen, and Gould + Lewis to name a few. Common to Dix and Nielsen is consistency of the design. The design of my app is using a consistent design throughout. A header bar with UWTSO shield acting as a home button, the burger menu on top right of every page. All menu's are a consistent grid design.

Nielsen also suggests using simple natural dialogue users would use. This is aimed at students, so there is no value in using large over complicated words in the navigation menus. Both Nielsen + Dix state shortcuts should be provided for frequent users. An example of this is how Microsoft use keyboard shortcuts for copy + paste; Ctrl C and Control V. However, mobile app design should be as simple + concise as it possible. Mobile users do not typically pull up + use on screen keyboard to use keyboard

Short cuts. So this app doesn't adhere to this guideline, as it doesn't identify value to the user in it.

Schneiderman's 8 golden Rules of interface design talk about reducing the short term memory load of users, choose recognition over recall. The app does this through the use of Metaphor - icons to assist the user in identifying what that menu option is about. Schneiderman talks about offering informative feedback. The menu tile background is dark blue with text + icon in white. When a tile is selected it turns yellow (all UWTSD brand colours) to let the user know it's been selected before the next page loads. Schneiderman + Nielsen talk about ~~always~~ providing clear exits + reversal of action. Aside from operating systems navigation options, the app has a home page button on top of each page ~~allowing~~ by clicking on the UWTSD shield, a standard design in most apps. This allows users to return to the homepage from anywhere within the app.

Effective application of guidelines with specific examples

The legal case for web accessibility is the Equality Act 2010, which consumed the Disability Discrimination Act 1995. It states service providers are required to make reasonable adjustments to their services so that ~~disabled~~ disabled people can access them.

To make the app accessible the

design includes text alternatives for any non-text content, this helps screen readers convey what is being displayed to the user. This falls under W3C's Web Content Accessibility Guidelines (WCAG) of being perceivable.

The grid based layout is designed to aid those with limited motor movement as the whole tile is the clickable link and not just the central text and icon. WCAG says all functionality should be operable and not induce seizures. There is no flickering or pulsing imagery, only slowly sliding galleries with static backgrounds.

W3C's Web Design and Applications guidelines state many features that should be considered from HTML + CSS to audio + visual content. Of particular interest to UWTSD is internationalisation: factors to consider include text, i.e. the ~~the~~ technology should support any writing system used in the world. CSS needs to support Chinese writing which is normally written vertically, Arabic writing which is right to left, the opposite of English. Cultural symbols also need to be considered as a tick mark in most of the world means correct but it means incorrect in Japan. Either ticks should not be used or their cultural equivalent, a ~~circle~~ circle in Japan should be used + software should support this conversion on the home page the Union Jack is there as a language selector button. Colours have been chosen

not to adversely effect colour blind
or partially sighted users

Good specific accessibility discussion

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