

Usability Engineering Assignment 1 - 1809781

by Jessica Elizabeth Marfell

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TIME SUBMITTED	29-MAR-2021 11:06AM (UTC+0100)	WORD COUNT	2777
SUBMISSION ID	148273392	CHARACTER COUNT	15584

ACCA6017

Usability Engineering

University Online Resource Prototyping

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Date: 08/03/2021**

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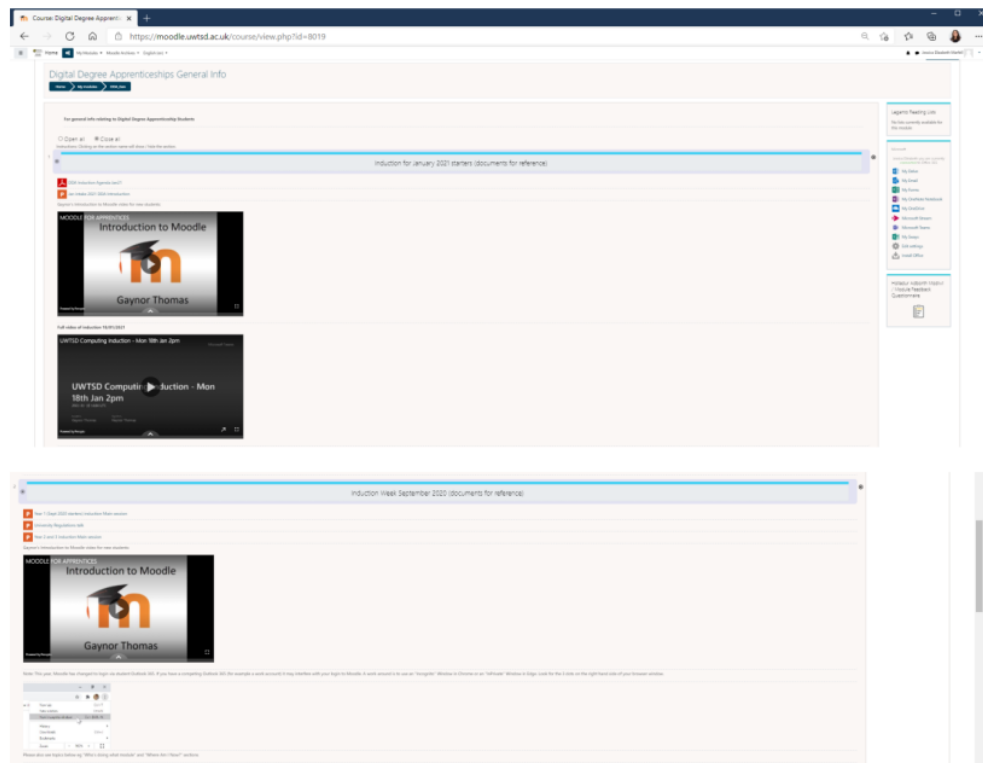
1 Introduction

A review has been conducted on the online resources available for staff and students that are used to stay connected remotely for the new working environments due to Covid-19.

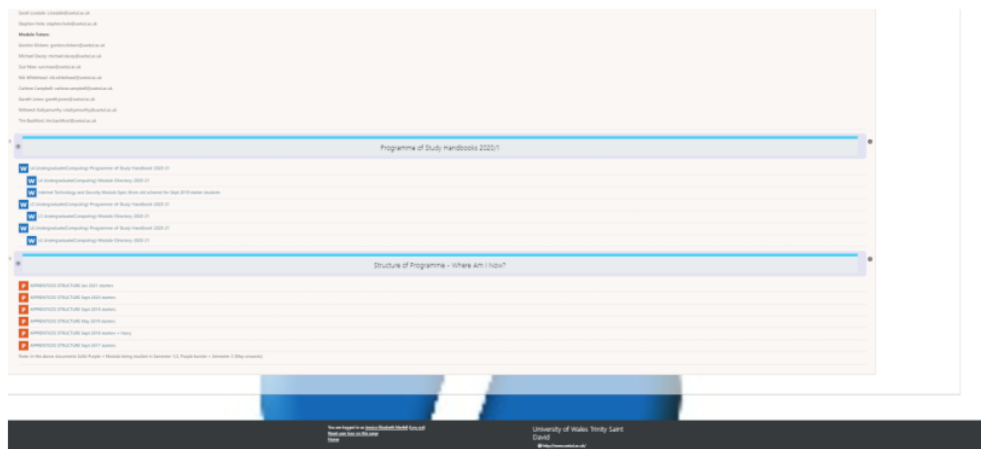
For this report, the Digital Degree Apprenticeships General Info module [1] on Moodle [2] is the given example that is going to be evaluated.

The module outlines information that is shared from staff to apprenticeship students that are studying at Swansea Campus in University Wales Trinity St David (UWTSD). A breakdown of information stored on the module is:

- Introductions
- Modules
- Term dates
- Software
- Workshop days
- Staff contact details
- Study handbooks
- Structure of programme



[illegible][illegible]



Data is sectioned which promotes human reasoning, although with combined information for all students it makes it harder to distinguish what is relevant to them. Tables have been used which is visually pleasing, however they could be formatted better to include more information and proper titles.

May 2019 starts

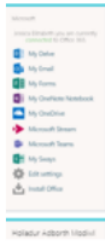
ONS	BS	ONS
Qualifying Engineering (Sem 2) MCA4017	Network Engineering Systems and Services (Sem 2) ACC4003	Network Engineering Systems and Services (Sem 2) ACC4003
Software Engineering (Sem 1) MCA4001	Software Engineering Principles and Practise (Sem 1 & 2) ACC4000	Software Engineering Principles and Practise (Sem 1) ACC4004
Information Systems (Sem 2) ACC4007	Information Systems Development (Sem 1+2) MCA4011	Information Systems Development (Sem 1+2) ACC4009

Summer 2 modules: ACC4003 Changeability - to be decided
Other Modules of Interest: ACC4003 Changeability - to be decided

Metaphors have been used through videos. As this is displayed at the top of the page the user preserves this information to be relevant to them which is not the case for all students.



Helpful links are used which promotes affordance as the user can recognise the icons and understands what the function is. It would be beneficial to include more helpful links for the user.



Additional information on other student platforms could be included such as time tabling.

Links to the online facilities are provided below and referenced throughout:

- Digital Degree Apprenticeships General Info Module on Moodle - <https://moodle.uwtsd.ac.uk/course/view.php?id=8019> [1]
- Moodle- <https://moodle.uwtsd.ac.uk/> [2]
- HWB- <https://hwb.uwtsd.ac.uk/dashboard/anonymous> [3]

2 Requirements

Two apprenticeship students were verbally contacted to conduct a task analysis on the Apprenticeship module [2]. The students have access to the module and started their studies in September 2018 and May 2019. A course tutor was also contacted to obtain feedback via email.

The task analysis conducted answers the following questions:

- Who are the users?

The users are part time students studying an apprenticeship computing degree in the following areas- Applied Data Science, Computer Networks and Cyber Security or Software Engineering. They are for students that started their study from 2017 to 2020.

Staff and liaison officers of the University may have access to the module to upload information on their work stream for the students to access.

- What tasks need to be performed?

Information needs to be provided by lecturers to part time apprenticeship students which include details on the University, module timetables, student handbooks, staff contact details and other information relating to their courses.

- How are the tasks learnt?

Students will access this information so they can read through what is provided by staff members. This may be done through Microsoft applications.

- Where are the tasks performed?

Students should access the information remotely. Access to information should be available to students while in University, at home, in work and remotely.

Tutors should be able to update and share information to students when required. Information should be updated remotely by the tutors.

- What is the user and data relationship?

The data is intended to suit all digital degree apprentices and inform them on their course requirements and other helpful information regarding their studies. The data is provided by University staff. The data is read only for students.

- What other tools does the user have?

The user will have access to online University materials and Microsoft applications.

- How do the users communicate with one another?

The communication flow is from the lecturers providing the information to the students. Students do not have any communication workflow for one another and it not a necessity for the platform.

- How often are the tasks performed?

Tasks are performed on a need to know basis. Individual requirements may differ depending on students' necessities. Staff are to update the information when required.

The information should always be available for the student throughout the academic year.

- Is there a time constraint on the task?

The information needs to be simple and quick to access. Students do not want to spend time searching through information to find what is relevant to them. Appropriate sections should be considered for different entry years to ensure the information can be accessed quickly.

Information needs to be accessed quickly otherwise students may go direct to lecturers to request the information which will duplicate work.

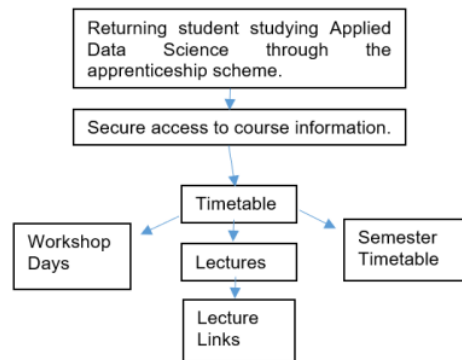
It needs to be kept up to date to ensure it is correct for students when entering new semesters.

- What is the process if something goes wrong?

If information is lacking, students can contact their course lecturer if their contact details are known.

Consideration has been made on the hierarchical task analysis for the below scenario.

An apprenticeship student is continuing their studies and moving into their third year of study at the University and would like to find out what modules they will be studying and when for the Applied Data Science course.

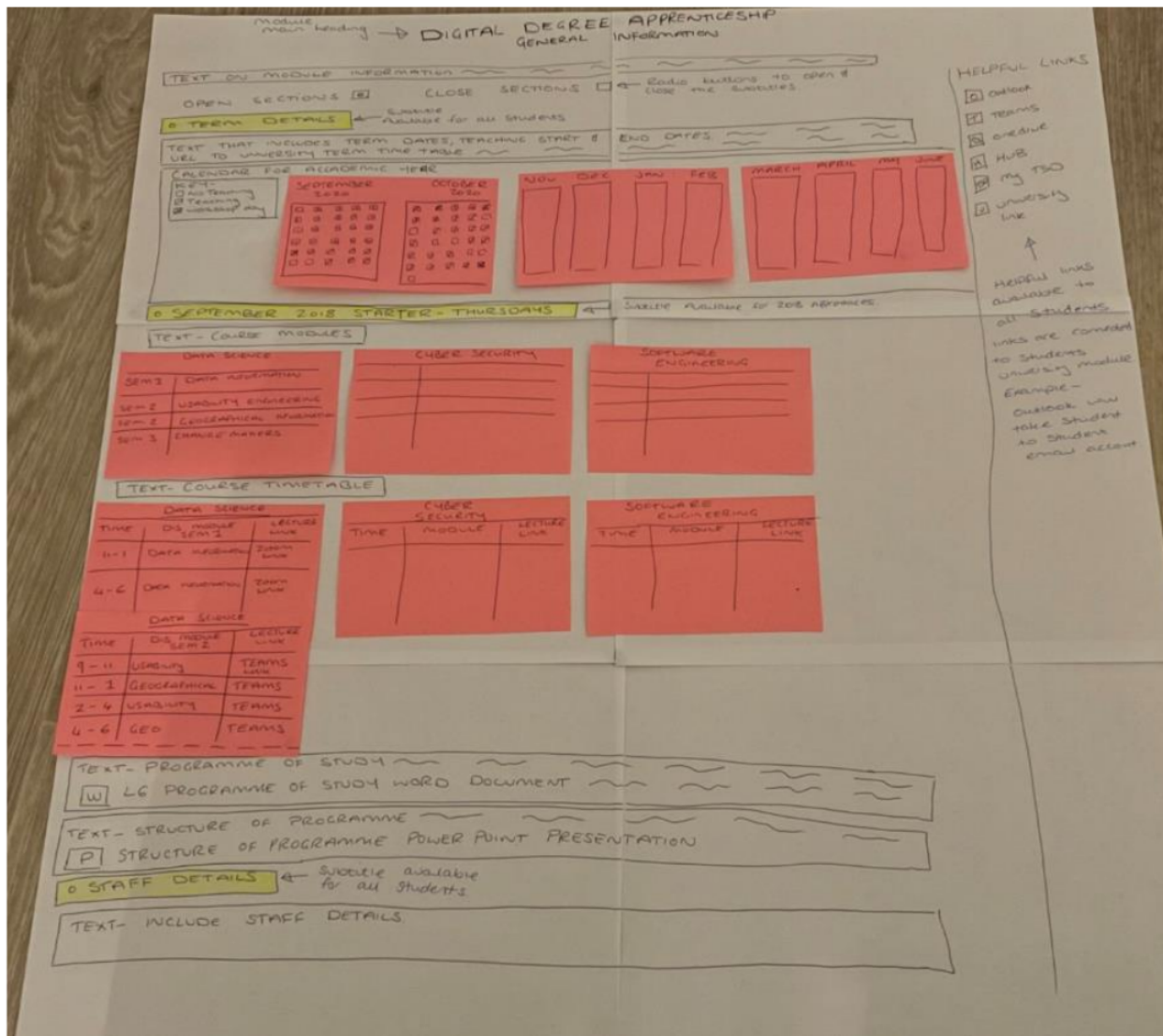


Following the MoSCoW [4] criteria the module should prioritise the following:

- Must have general information on the Apprenticeship courses from the course tutors.
- Should have specific course areas for students in accordance to their start dates and work stream.
- Could have semester timetables available in the location as the general information on the courses.
- Will not have access to open forums for students.

3 Paper Prototype

An evaluation on the information and module format has been conducted in accordance to the task analysis. Working with this information, a paper prototype has been created.



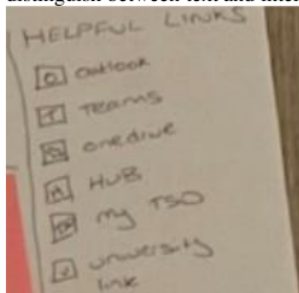
3.1 Human Factors

- Visual Perception

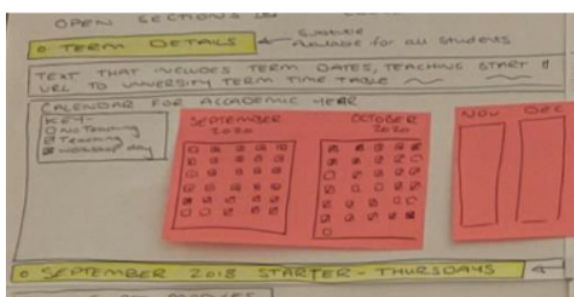
Visual perception is described as the ability to perceive surroundings. This involves colours, patterns, and the structure of perception. The proposed platform takes into consideration all these factors.

The colours for the module are plain and easy to understand. The background is white with black writing. This supports colour sensitivities as black text stands out against the white background making it easier for users to

distinguish [5]. This is also supported on the government website where it states, poor colour contrasts makes it more difficult to read [6], promoting accessibility. Icons and basic buttons have been used for users to easily distinguish between text and interactive content.



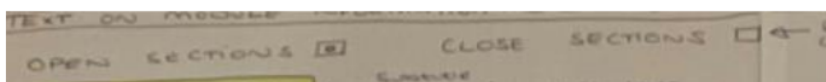
The structure of the module has been separated using subheadings in accordance to the user's requirements, ensuring information is easy to access and does not confuse the user.



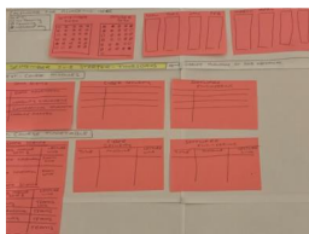
- Human Memory

Consideration to human memory has been conducted. Users are required to store the information in their long-term memory. Methods to ensure information is stored in the user's long-term memory has been researched [7]. The proposed platform supports the following:

1. Focusing the user's attention by sectioning the areas of information and the use of tables/ calendars.
2. Information is to the point and not crammed into small spaces or stored unnecessarily.
3. It's structured in accordance to the users required tasks and sections can be opened and closed depending on their needs.



4. Visual contents have been used such as interactive icons, tables, calendars, and sections. This is to ensure difficult information is displayed in a basic manor and users can visualise what the information is intended for.

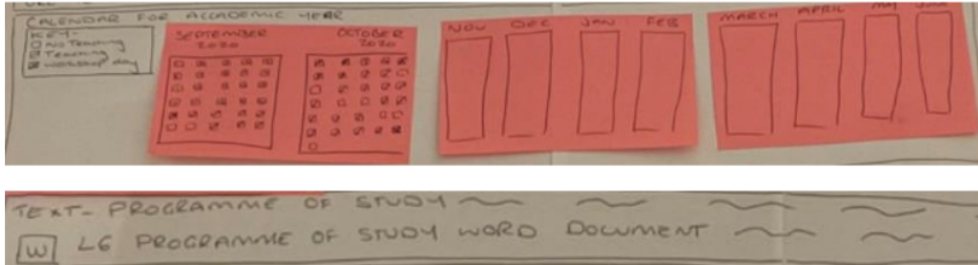


- Human Reasoning

Human reasoning is the logical way of thinking and interpreting information [8]. The structure of the module has been categorised so the user can distinguish the information in a logical way. The use of text and visual aids support the human factors involved with the users reasoning's.

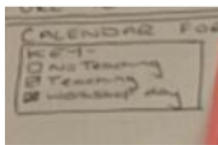
- Interface Metaphors

Interactive metaphors encourage user expectations on the systems behaviour. It relates areas of the interface to similar environments [9]. Many users have used calendars and have opened word documents. These are used as they are found in many places and should be known to the user.



- Affordance

Affordances are objects that show the users what actions they are required to take to complete a task. When used correctly the user knows what they are to do by looking. No instructions are required [10]. The platform does not involve complex steps for a user to take to complete the required task as it is read only information. Evaluating the module in accordance to research, a key for the calendar is required. This communicates what they are expecting to see from the information provided on the site. This supports Normans theory; the calendar key has been used for a visual clue.



The users of the platform have used many of the supporting tools such as Microsoft products. Links to information are displayed by Microsoft icons that users can relate to [11].

3.2 User walkthrough and feedback

Walkthrough steps:

1. Course tutor creates module on Moodle and provides access to the relevant apprenticeship students.
2. Student logs into Moodle and selects the module [1].
3. Information is displayed to all apprenticeship students as shown in paper prototype.
4. Users can open and close all sections or individual ones to display the relevant information for them.
5. Sections are designed for different year groups and store different information. Other sections are relevant for all students.
6. There are helpful links available on the site that is linked to the user's University account using their Moodle log in detail.
7. Word and PowerPoint applications are available for selection using Microsoft icons.

4 Review of class member's design

Below is a review of students 1802187 paper prototype.

The platform topic is students uploading assignments onto Moodle. A walkthrough has been conducted and the following points were raised.

A title describing the paper prototype should be considered so the user is aware of what is being designed. When the user enters the homepage, an extra click has been introduced which isn't required. User's main use of Moodle is to view their active modules and adding another click is not visually pleasing and goes against human reasoning.

The module page is very easy to understand and is structured in a way the user will be able to relate to and memorise. Sectioning information per lecture promotes usability and understanding the information. The structure of separating information into lectures is very easy to understand.

The turn it in process has been made to be consistent with other assignment upload applications and the return to module is user friendly as it easily directs the user back to the module homepage from the turn it in page.

Another plus to the prototype is the message displayed once an assignment is submitted on Moodle. This immediately informs the user their assignment has been submitted along with email confirmation.

To conclude there are similarities with the setup which is currently available within Moodle and the turn it in process. Minor adjustments have been made to improve the usability and allow the process to be simple to understand without requiring instructions which give affordance to the process.



5 Software Prototype

Microsoft PowerPoint has been used to represent the software. This has been used as the platform is already available and information has been taken from the existing webpage as it follows the standard module set up within Moodle. PowerPoint has allowed screenshots to be added and the structure to be created for rapid prototyping. Screenshots are provided below:

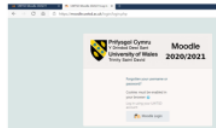
Webpage with comments:

Software Prototype

Accessing the Digital Degree Module via Moodle:

- User is granted University log in details
- Moodle details are provided to student to sign into:

[UWTSD Moodle 2020/21: Log in](#)

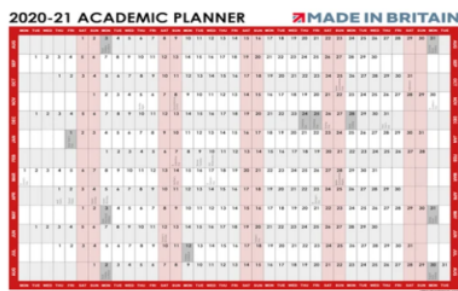


- Apprenticeship students are given access to module- Digital Degree Apprenticeships General Info by course tutor:

[Course: Digital Degree Apprenticeships General Info \(uwt.ac.uk\)](#)



The module webpage will be structured as documented below:



Information on up and coming events.

September 2018 Starter- Thursdays

The following modules will be studied during the academic year 2020/2021.

Data Science		Cyber Security		Software Engineering	
Semester 1	Data Visualisation	Semester 1	Advanced Networking	Semester 1	Advanced Software
Semester 2	Usability Engineering	Semester 1	Network Operating	Semester 2	Software Engineering
Semester 2	Geographical Engineering	Semester 2	Advanced Cyber	Semester 2	Cloud Webservices
Semester 3	Change Makers	Semester 3	Change Makers	Semester 3	Change Makers

Holladur Adhorth Modiwl /
Module Feedback
Questionnaire



Link for students to provide
module feedback to course
tutors.

Example calendar taken from: (1)
[2020 - 2021 Academic / Student
Wall Planner | Available in Sizes
A3, A - Alltrade - Online \(alltrade-
online.co.uk\).](#)

Subtitle that students can open
and close to show information if
applicable to their year of study.
Tables used to inform students of
what modules they are taking and
when.

Course Timetable:

Data Science Semester 1		Data Science Semester 2		Data Science Semester 3	
Time	Module Link	Time	Module Link	Time	Module Link
11.00-13.00	Data Visualisation Teams link	11.00-13.00, 14.00-16.00	Geographical information Teams link	11.00-13.00	Change Makers Teams link
16.00-18.00	Data Visualisation Teams link	9.00-11.00, 16.00-18.00	Usability Engineering Teams link	16.00-18.00	Change Makers Teams link
Cyber Security Semester 1		Cyber Security Semester 2		Cyber Security Semester 3	
Time	Module Link	Time	Module Link	Time	Module Link
9.00-11.00, 16.00-18.00	Advanced Networking Teams link	11.00-13.00	Advanced Cyber Teams link	11.00-13.00	Change Makers Teams link
11.00-13.00, 14.00-16.00	Network Operating Teams link	14.00-16.00	Advanced Cyber Teams link	16.00-18.00	Change Makers Teams link
Software Engineering Semester 1		Software Engineering Semester 2		Software Engineering Semester 3	
Time	Module Link	Time	Module Link	Time	Module Link
11.00-13.00	Advanced Software Teams link	9.00-11.00, 16.00-18.00	Software Engineering Teams link	11.00-13.00	Change Makers Teams link
16.00-18.00	Change Makers Teams link	11.00-13.00, 14.00-16.00	Cloud Webservices Teams link	16.00-18.00	Change Makers Teams link

Swansea Seafont
location:



[SA1 Swansea Waterfront |
University of Wales Trinity
Saint David \(uwtsd.ac.uk\)](#)

Map to display Swansna seafont
campus with a link to the
university site to obtain
directions.

Tables used to display students
time tables in semester order.
Links to online sessions are also
provided.

Programme of Study:

- U Undergraduate Computing Programme of Study Handbook 2020-21
- U Undergraduate Computing Module Directory 2020-21
- U Undergraduate Computing Programme of Study Handbook 2020-21
- U Undergraduate Computing Module Directory 2020-21

Structure of Programme:

APPRENTICESHIP STRUCTURE Sept 2018 starters + Harry

- May 2019 Starter- Tuesday
- September 2019 Starter- Tuesday
- September 2020 Starter- Monday
- January 2021 Starter- Monday
- Staff Details

Head of Apprenticeship Unit: Exampleemail@uwtsd.ac.uk
 Head of School of Applied Computing: Exampleemail@uwtsd.ac.uk
 Academic Programme Managers: Exampleemail@uwtsd.ac.uk
 Liaison Officers:
 Exampleemail@uwtsd.ac.uk
 Exampleemail@uwtsd.ac.uk
 Exampleemail@uwtsd.ac.uk
 Module Tutors:
 Exampleemail@uwtsd.ac.uk
 Exampleemail@uwtsd.ac.uk
 Exampleemail@uwtsd.ac.uk

uwtsd hub

uwtsd Students Union

- Student Services
- Scholarships and Bursaries
- Registry
- Library and Learning Resources
- Information Technology & Services

Link to redirect student to a word document. Icon has been used as the students will be familiar with the Microsoft icon.

Link to redirect student to a PowerPoint presentation.

Links to redirect students to university support materials.

The sections with the white circle are closed sections on the webpage. Should students wish to expand to see the information they can select the button to open. The structure of these sections will follow the example given above for the subtitle of: September 2018 Starter- Thursdays

Subtitle that includes information on the relevant staff emails that students may require.

View of full webpage with and without comments:

uwtsd hub

uwtsd Students Union

- Student Services
- Scholarships and Bursaries
- Registry
- Library and Learning Resources
- Information Technology & Services

uwtsd hub

uwtsd Students Union

- Student Services
- Scholarships and Bursaries
- Registry
- Library and Learning Resources
- Information Technology & Services

6 Evaluation

The chosen platform for prototyping was already available and used by students and University staff. The webpage layout has followed the same structure as before. This was decided as it portrays consistency with other modules to ensure information is stored in the user's long-term memory. This will help students recognise and easily read information.

Additional sections have been added such as the student's timetables. This seemed beneficial to have all course information stored centrally. The use of Teams links within the calendar also allows the users to easily access their lectures without confusion. Icons and links have been used to encourage interface metaphors.

Course Timetable:

Data Science Semester 1	
Time	Module Link
11.00-13.00	Data Visualisation Teams link
16.00-18.00	Data Visualisation Teams link

W Assignment and Exam timetable

- Student Services
- Scholarships and Bursaries
- Registry
- Library and Learning Resources
- Information Technology & Services

The format of information has been changed from the original design. Separating information for the students will allow them to access the relevant information for them easily. When new students join the apprenticeship scheme, additional sections can be used without having to change multiple sections. This design has been implemented for sustainability throughout the student's years of study which will eventually save time for course co-ordinators and hopefully reduce queries going direct to staff members, which was identified in the task analysis by the course co-ordinator.

Upon reflection, the information given is basic and could be more comprehensive to the student. The direction of design has been from the student's perspective due to the task analysis and user walkthrough feedback. Amendments have been made based on this feedback. Further information has been provided on the work streams and assignment timetabling.



Additional structuring and access rights could be considered to only allow the relevant year information to only be available for the student without having to close unnecessary sections.

The webpage is intended to be informative, easy to understand and to the point, which the prototype is believed to achieve. The design has been based off the task analysis, feedback, and research into usability factors.

7 References

- [1] UWTSD, "Digital Degree Apprenticeships General Info," UWTSD, Sept 2020. [Online]. Available: <https://moodle.uwtsd.ac.uk/course/view.php?id=8019>. [Accessed 11 02 2021].
- [2] UWTSD, "Moodle," UWTSD, 2021. [Online]. Available: <https://moodle.uwtsd.ac.uk/>. [Accessed 24 02 2021].
- [3] UWTSD, "HWB," UWTSD, 2021. [Online]. Available: <https://hwb.uwtsd.ac.uk/dashboard/anonymous>. [Accessed 24 02 2021].
- [4] ProductPlan, "MoSCoW Prioritisation," ProductPlan, [Online]. Available: <https://www.productplan.com/glossary/moscow-prioritization/>. [Accessed 24 02 2021].
- [5] Anthony, "When to Use White Text on a Dark Background," 28 04 2011. [Online]. Available: <https://uxmovement.com/content/when-to-use-white-text-on-a-dark-background/#:~:text=Using%20white%20text%20on%20a%20dark%20background%20as%20a%20highlighting,without%20getting%20an%20eye%20ache..> [Accessed 08 03 2021].
- [6] Gov.uk, "Understanding accessibility requirements for public sector bodies," Gov.uk, 09 05 2018. [Online]. Available: <https://www.gov.uk/guidance/accessibility-requirements-for-public-sector-websites-and-apps>. [Accessed 08 03 2021].
- [7] K. Cherry, "11 Methods for Improving Your Memory," verywellmind, 30 09 2019. [Online]. Available: <https://www.verywellmind.com/great-ways-to-improve-your-memory-2795356>. [Accessed 08 03 2021].
- [8] Vocabulary, "Reasoning," Vocabulary, [Online]. Available: <https://www.vocabulary.com/dictionary/reasoning#:~:text=Reasoning%20is%20a%20logical%2C%20thoughtful%20way%20of%20thinking..> [Accessed 08 03 2021].
- [9] J. M. C. Dennis C Neale, "Chapter 20 - The Role of Metaphors in User Interface Design," Science Direct, [Online]. Available: The Role of Metaphors in User Interface Design - ScienceDirect. [Accessed 08 03 2021].
- [1] "What is Interaction Design," Interaction Design Foundation, [Online]. Available: What are Affordances? | Interaction Design Foundation (IxDF) (interaction-design.org). [Accessed 08 03 2021].
- [1] M. Soegaard, "Affordances," Interaction Design Foundation, [Online]. Available: Affordances | The Glossary of Human Computer Interaction (interaction-design.org). [Accessed 08 03 2021].

Usability Engineering Assignment 1 - 1809781

GRADEMARK REPORT

FINAL GRADE

79/100

GENERAL COMMENTS

Instructor

Introduction:

An interesting example to improve with screenshots presented and some Usability theory applied. An improvement here would be to include more references, they could well be the same ones as in the Human Factors section.

Task Analysis:

In depth and thoughtful application of Task Analysis questions. One question where more detail could have been provided is the first one where users' characteristics - age, tech experience could have been considered. Degree Apprenticeship students are a diverse and interesting bunch with a range of age/background/expertise! Good to see University staff also considered as users. Effective use of a hierarchical task analysis.

Paper Prototype:

Very good application of paper prototyping. Good to see post it notes and a highlighter pen used to good effect!

Human Factors:

A strong section with very good research, discussion and use of examples is demonstrated here. The examples from the paper prototype make this even more effective. How could you bring the interactive nature of the calendars to the users' attention?

Review of another paper prototype:

Thoughtful and constructive comments here. The main improvement would be references to areas of theory.

Software prototype:

Attractive and realistic prototype shown here demonstrating that PowerPoint is a good prototyping tool. Callout boxes used to give explanation, perhaps a little more Usability theory could have been squeezed

in here. I really want this system as it's an improvement on the current one!

Evaluation:

Excellent review with specific examples analysed well. .

Overall an excellent mix of practical work and theory with a few points to note above. Well done!

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