Level 1 Digital Technologies 2024

92006 Demonstrate understanding of usability in human-computer interfaces

EXEMPLAR

Merit TOTAL **06**

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INSTRUCTIONS

The task in this assessment is in five parts:

- Part A – Short-answer questions
- Part B – Matching question
- Part C – Interface you have studied
- Part D – Scenario questions
- Part E – Real-world examples.

In Part D, you are required to discuss the usability of the interfaces in terms of mātāpono Māori (Resource A) or the usability heuristics (Resource B).

In Part E, you may play, pause, and restart the videos as often as you like.

Note: the videos have no sound.

Read all parts of the task before you begin writing.

Usability principles can refer to any of the following:

RESOURCE A: Mātāpono Māori

Mātāpono Māori relevant to usability could include:

- the accurate and clear use of te reo Māori (including macrons) within the interface
- whether tools such as spell-checking and word prediction work accurately with te reo Māori
- how the interface facilitates and allows for the expression and use of tikanga and mātauranga Māori.

RESOURCE B: Nielsen's 10 usability heuristics

"Usability heuristics" are general principles or "rules of thumb" to help measure the effectiveness of a user

10. Help and documentation.

RESOURCE C: Usability concepts

- Internal and external consistency
- Accessibility.

PART A – Short-answer questions

(i) What does accessibility refer to when applied to human-computer interfaces?

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> Accessibility, when applied to human-computer interfaces, refers to both the usability and flexibility of a feature/s or function/s. This can be done through a variety of ways, all of which are aimed at making a HCI an easy-to-use platform in consideration of different factors that could affect the way an user interacts with the system physically or digitally. It ensures that an interface is widely available for people to use; that it values global consistency and standards while being inclusive and non-restrictive to any group of people from using it efficiently. For example, text-to-speech is a feature that allows on-screen text to be read allowed by a voice assistant. It is user-friendly and has helped many people with particular vision problems in accessing more content online while not compromising the experience of others.

(ii) Give a definition **and** example of Nielsen's heuristic 'Error prevention'.

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(iii) Identify and describe one usability principle that can be seen on the image below.

Usability principle: Recognition rather than Recall

Description:

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> The image showcases an example of Recognition rather than Recall since it presents the user options for location so that they can filter the results of the webpage to make it easier to find what they were looking for.

(iv) The image below has been reproduced with labels numbered 1, 2, and 3. At each of these numbers, one or more of Nielsen's usability heuristics can be observed. Refer to Resource B for a full list of usability heuristics.

1. Which heuristic(s) can be seen at number 1?

User Control and Freedom - The user is clearly given an option through the button to return to the home page or previous page they were at before and exit the search bar.

Match between real world and system - The '<' on the < button is a symbol commonly used in other interfaces to indicate that you are going back to a previous page you were in. This indication matchers users' expectations of what an < symbol or drawing is usually used for in-real life, which is that something is located to the left. From this, users can make the connection that pressing this button will return them to the location where they "left" off or were last at.

2. Which heuristic(s) can be seen at number 2?

Match between real world and system - The magnifying glass on the left-hand side is a symbol commonly used in other interfaces to indicate the search bar or the search function. This indication matches users' precedent knowledge of what a magnifying is used for in real-life and other media, which is to magnify an image/look of a thing from a large space or to investigate. From this, users can make a connection between the two concepts and recognize its function immediately, lessening the mental load for them.

Consistency and Standards - It is a global/industry standard for all HCI (especially in media) to have a search bar or search function available so users can navigate through the website efficiently and quickly find what they are looking for. It is also common to find that search bars are at the top of the webpages regardless of their alignment.

3. Which heuristic(s) can be seen at number 3?

User Control and Freedom - The user is given an option through the X button to undo/cancel their action by completely erasing the text they inputted on the search bar in order to redo or input new text.

Match between real world and system - The 'X' on the X button is a symbol commonly used in other interfaces to indicate that you are cancelling or undoing a specific action. This indication matchers users' expectations of what an X symbol or drawing is usually used for in-real life, which is that something is wrong and you are given free-will to undo it.

(v) Why should usability principles be considered and applied to human-computer interfaces?

Usability principles should be considered and applied to human-computer interfaces because maintaining these across all online mediums would indicate and result in them becoming more accessible, inclusive, and easy-to-use for everyone regardless of the demographic and geographical differences. As the name suggests, they are rules that interface creators and developers should follow in order to maintain the usability of interfaces, pertaining to its effectiveness (in product), flexibility or compatibility across users and systems/devices, consideration of language, and consistencies internally and externally.

PART B – Matching question

In this question, match Nielsen's usability principles with their description.

Number	Description of usability principle
1	All interface elements should be consistent within the website or application.
2	The interface should follow common practices followed on websites.
3	The interface should reduce unnecessary elements and simplify the layout.
4	The interface should always keep users informed about what is going on, through appropriate feedback within a reasonable time.
5	A message showing that the level of stock is low.
6	The importance of providing clear assistance and guidance to users whenever they need it.

In the table below, enter the number of the description that correctly matches each usability principle.
One of these has been completed for you.

Aesthetic and minimalist design	3		Visibility of system status	4, 5
Consistency and standards	1, 2		Help and documentation	6

PART C – Interface you have studied

In the following question you will refer to an interface you have studied.

Name of your interface: Woolworths Online

Explain how effectively two usability principles were implemented in your chosen interface, and how they allowed the interface to achieve its purpose.

Usability principle (1):

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Error Prevention

Woolworths Online, like most e-commerce websites, requires a user to sign-in their account in order for them to have full access on their cart and check-out completely. However, I noticed that Woolworths Online differs from local compeitiors' grocery store websites because they fully disable the user's ability to perform any 'account-required' actions (i.e., when pressing 'Add to Cart' or 'Favorites' button) successfully unless they are signed in, and the website notifies a user of this immediately with a pop-up dialogue screen that says "Sign in Required" along a button below that leads you to the sign-in page. This makes it absolutely clear to users that their cart, along with other lists and information, are directly connected to their account that is required since they contain their verified and system-recognized information that is necessary to complete transaction and delivery. It acts as a safegaurd for users from wasting their valuable shopping time because they are notified of this error and other potential setbacks from the start rather than at the tail-end during their check-outs while being fully unaware of the systems' status.

Usability principle (2):

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Recognition rather than Recall

Using the search bar in Woolworths Online, a user is given a list of recommended results (general or specific product names) based on your inputted text or letters (regardless of amount), from which they can select from and then browse through page, with the option to filter out the results based on their preferences. If the user input something that is misspelled or does not appear in the recommended results list, the website will still give the user results based on what the system thinks that they are looking for, which can be helpful at times when one does not fully recall the name of the product they are looking for. Additionally, the products are all displayed with their corresponding photos that indicate the necessary labels, which is very useful for people who are looking for specified branded products. These features from the website help users to (like the heuristic name suggests) recognize a product or even recipes they are searching and lessening the mental load it takes to recall their name and other specifications. It makes the site easier to use by the online shoppers, espcially for the elder-aged users, since they are given plenty of options to choose and filtrate from in order to get their ideal outcome.

PART D – Scenario questions

Choose ONE of the following scenarios and write your answer in the box below.

(a) The school website needs updating. Discuss ways of incorporating Māori principles, such as integrating te reo Māori and honouring tikanga Māori, into the update of the website and its content. Discuss at least two practical examples of applying Māori usability principles to ensure the interface effectively serves the needs of the whole school community.

OR

(b) Imagine you are developing a program for students to use in the library to reserve laptops. How would you apply usability principles to create an interface that meets their needs? Discuss at least two Nielsen's usability principles you would consider, and how you would implement them.

Scenario chosen:

◯ (a)

⬤ (b)

Write your answer here.

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In developing a program for students to use in the library to reserve laptops, I would consider and implement these usability principles:

1. **Visibility of System Status** - It is important that an interface keeps users informed about what is going on internally with appropriate feedback given in a reasonable time. For this instance, the website should have a message indicating what laptops are currently available or unavailable to be used, the wait-time is to use one in cases that all are taken, and its availability to be used for an extended amount of time. This would ensure that there is transparency between the school library (lendors) and the students so that there would be complete understanding of the laptop-use status, which is most especially important for students who require laptops for their studies and assessments.

2. **Aesthetic and Minimalist Design** - It is important that an interface presents their information neatly while remaining visually appealing. For this instance, the school's primary colors should be used as the accent colors and white for the main background as to not bombard users with an overstimulating amount of color. The text style and font to be used would follow industry standards so that it is visually readable.

3. **User Control and Freedom** - It is important that an interface presents an open, clear option for users to undo, redo, cancel, and confirm their systemic actions. For this instance, there would be a buttons for Home, Back, Forward, and Refresh functions, all located at the top of each webpage. There would also be dialogue boxes with 'Continue' and 'Cancel' buttons that clearly inform users of their actions in the site and gives them a moment to thoroughly evaluate an action they want to perform.

4. **Help users recognize, diagnoze, and recover from errors and Error Prevention** - It is important that an interface prevents a user from making an error that would affect their experience on-site sooner rather than later. Students, though most are tech-informed, can sometimes make errors because they skip an information box or they write their response in an incorrect format on whenever they input certain information. For this instance, there would be a red asterisk that indicates that an information box is a required field and there would be a greyed-out format within those boxes that would show an example of how that field is meant to be typed/inputted. And if something is left-out or inputted incorretly, the site will automatically scroll up or down to the part that requires the change to be fixed. Not only is this function helpful for the students, but it is also necessary for the school library in order to note the students' information and keep track of what laptops are in-use and who are in possessions of them throughout the day.

PART E – Real-world examples

(i) Compare the usability of BOTH real-world examples below in terms of usability heuristics. Video 1 and Video 2 below show the user setting up an account on two different websites. Discuss **at least two** usability principles in your answer.

It is recommended that you view all videos below in 'full screen' mode, by clicking the screen icon in the bottom-right corner of the video window. To exit this mode, click the screen icon in the bottom-right corner of the enlarged screen window.

Video 1: Noku

Source: https://noku.co.nz

Video 2: Air New Zealand

Source: https://www.airnewzealand.co.nz
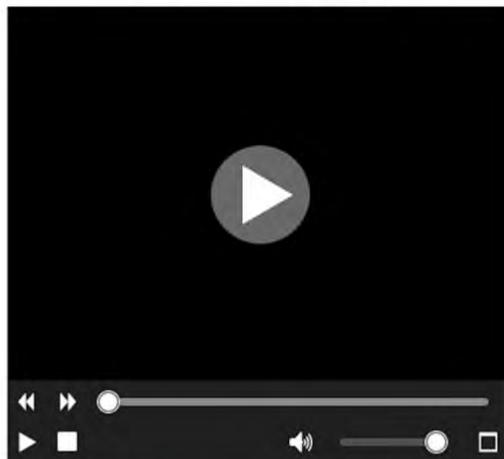
Write your answer here.

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Recognition Rather than Recall - Both Noku and Air New Zealand present the user options and fixed format in fields that require a specific location.

Consistency and Standards - Both Noku and Air New Zealand follow the standard that a user with an account is required to fill in their personal information.

Error Prevention - I notice that both interfaces do not visually indicate whether or not is a required field that needs input, and this could be an inconvinience later on when a user attempts to finish logging in but finds that they accidentally missed a specific information box.

(ii) Compare the usability of BOTH real-world examples below in terms of usability heuristics. Video 3 and Video 4 below show the user adding and removing an item from a playlist on two different websites. Discuss **at least two** usability principles in your answer.

Video 3: Spotify

Source: https://www.spotify.com
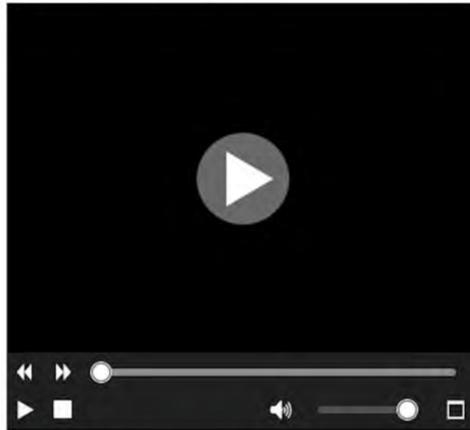
Video 4: Other playlist

Source: https://music.youtube.com

Write your answer here.

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User Control and Freedom - Spotify (video 3) and Youtube Music (video 4) both present options for the user to create and delete playlists, set playlist privacy, and add or remove tracks from the playlists when a user clicks the three dots (...) button. Their differences lie in user convinience. Video 3 shows us that a Spotify user can select a single track and create a new playlist from it while Video 4 shows us that a Youtube Music user can add a full album to their library but not add individual tracks to the blank playlist that the created immediately without saving. This difference is more noticable considering that the list/library of created playlists and saved albums are at a fixed side bar in Spotify, which is more convinient since they are technically all in one page, while the library in Youtube Music is located in another webpage within the site, which can be confusing for users who do not immediately notice the small dialogue box on the bottom left of the screen that indicates its location.

Visibility of System Status - Spotify's display of dialogue boxes are bigger and located clearly at the middle of the screem, while Youtube Music's display of dialogue boxes are quite smaller, especially for the dialogue boxes that indicate a recently performed action.

(iii) Suggest improvements for enhancing the usability of ONE interface from any of the four videos above. Justify your suggestions by referring to usability principles.

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In terms of Accessibility, I believe that Youtube Music in video 4 can improve on the **Visibility of system status principle** by increasing sizes of their text and dialogue boxes so that users are more clearly informed about the system's status/aftermath based on the action they just performed and that people who have difficulty in reading smaller texts (visually impaired or elder people) can see the information given to them more clearly and be able to navigate the site without external help. I'd also recommend that they make it easier to add tracks to playlists so it becomes less confusing to go through the process and ensure that the action you intend to do is presented correctly on screen.

Merit

Subject: Digital Technologies

Standard: 92006

Total score: 06

Task	Grade score	Marker commentary
One	M6	The candidate showed a good knowledge of usability heuristics and was able to evaluate, and explain the use and implementation of usability principles in detail in sections C and D.
		To reach Excellence level, the candidate would have needed to add to section E with more detail and a range of comparisons. They would also have needed to explain several improvements, rather than just one.