CST3180 UX Design CW3 - Group B3

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**1. Process - How you carried out user evaluation of the prototype (30%)**

**-Method, participants, materials, procedure etc.**

**Genna**

The method chosen for evaluating the smart home UX prototype often revolves around usability testing, think out loud method **(see appendix 1,2, and 3)**, which aims to uncover how users interact with the system and identify areas for improvement. With the think out loud method, it offered us direct insights into how the participants interpret tasks when trying out our Figma, so by hearing how the participants worked through the task, it made it easier to identify where they might be misunderstanding something. We identified pain points, and tried to understand user satisfaction which included a combination of interviews/surveys to gather both qualitative and quantitative data. We continued to assess specific features that were commonly found in smart homes and on smart home apps to further our knowledge regarding smart homes.

In terms of the participants, we used expert evaluation **(see appendix 5)** and interviewed individuals who were familiar with smart home technology, and those who were new to it, ensuring a diverse range of perspectives were given. With that information we created a persona for two user groups, persona 1 being parents, and persona 2 being students, and with the two we aimed to target these two groups in their specific requests for what they wanted in regards to smart home technology.

Regarding materials, Figma allowed us to develop realistic scenarios that reflected how users would interact with the smart home system/app in their everyday lives…

**\*encourage participants to think aloud and express their thoughts openly as they interact with the prototype**

Cognitive Walkthrough

We decided to use this method because it is task-oriented, meaning they focus on evaluating the usability of the system by simulating the thought process of users as they perform tasks. The three tasks we asked the participants to do are shown in **appendix 1,2, and 3.** Additionally, it works well in the early phases of design when prototypes are still being developed. Conducting a cognitive walkthrough enables us to identify usability issues prior to devoting substantial time and resources to development, as Figma prototypes can be relatively straightforward to create and modify. While going through the Figma Prototype, we assessed the participants using the survey method where we used Schneiderman’s evaluation to help for ten questions where five were quantitative and the other five questions were qualitative **(see appendix 4)**.

**2. Your analysis and summary of findings from the user evaluation (30%)**

Firstly, users would like to be able to easily update their profiles and view their details, as well as add a logout feature. This indicates that there are some deficiencies in the current personal data management functions, and that the user interface needs to be revisited and revised and improved to provide a more intuitive and simple personal data management experience. During the design process, emphasis should be placed on the ease of use and intuitive operation of the interface to ensure that users can easily complete various operations, thus improving user satisfaction and application usability.

Secondly, the function of the notification centre is also of concern to users. While most users were able to find the notification centre easily, some users reported that they were unable to find it. This suggests that the current notification centre interface may have a lack of visibility, making it difficult for some users to find the feature, and that the notification centre does not clearly show which section has new notifications. The notification centre can be enhanced by adding notification centre corners or more entry links and hints to increase users' perception of the notification function and improve their experience.

In addition, users mentioned the need for device control, including functions such as adjusting brightness and adding heat, however, there are design inconsistencies in the smart lighting and room temperature sections that may lead to user confusion. This indicates that users have certain requirements for the control functions of smart home devices and need to be able to provide more operating options and personalised settings, so the design and development of device control functions need to be strengthened to ensure that users can conveniently adjust the parameters of various devices to meet their personalised needs and preferences.

Finally, in terms of the login process, the design of the home screen was recognised as providing users with the information they needed to perform their tasks, but users reported some confusion and inconvenience, such as confusion in compiling login details, and the system's failure to capture usernames and lack of unique identifiers. This suggests that the current login screen may have some design flaws and needs to be re-optimised and improved. The login screen could be modified to provide clearer guidelines and steps, as well as to enhance the security of user authentication to ensure that users can log in and enjoy the application's features without any problems.

In summary, through careful analysis and comprehensive consideration of user feedback, we can gain a deeper understanding of user needs and expectations, so that we can improve the design and functionality of the smart home application in a targeted manner, optimise key functions such as personal data management, notification centre function, device control and login process, and enhance user experience and satisfaction.

**3. Detailed description of specified alterations to the prototype after the evaluation exercises**

We conducted evaluation activities on our prototype and found numerous changes that would improve the usability and functionality of our smart home application.

* We realised the necessity for a light theme alternative to cater to users' varying preferences throughout the day. Despite our original design being dark with touches of light blue, ensuring inclusivity for all our target audience means a simple theme appropriate for daytime use should take place.
* Enhancing the login screen to include a username choice would provide consumers with an alternative login method, therefore improving security and personalization of our application.
* A customised welcome message displaying the user's username can significantly enhance the user experience, adding a personal touch.
* The absence of a temperature adjustment option on the room temperature page was noted, which is crucial for user convenience. Allowing users to change the temperature even when not in the room improves the software's flexibility and usefulness.

* Similarly, the absence of a turn-off button in the room with the smart lighting was identified. Providing this button would enhance user control and convenience, allowing users to effortlessly turn off the lights without adjusting the brightness levels.
* Electricity usage information was found impractical when presented on both the smart lighting page and device status page. This information takes up unnecessary space and should be fit to match the page size.
* More customization choices are needed for the notification hub to best serve users' needs. Allowing users to add additional task hubs like light control or room temperature reminders, in addition to sections for chores, childcare, and study, would enhance user experience.
* Inconsistencies, such as the location page indicating "no GPS" but not offering a page to enable location services, were observed. Ensuring clarity in feature implementation is crucial for a smooth user experience. Providing a dedicated page for turning on location services would address this inconsistency.

* Difficulties in the availability of the username option between the login page and the view profile page were observed. Aligning these components across pages would ensure a steady user experience.

By implementing these changes, we aim to enhance the prototype's usability, functionality, and user experience, providing our consumers with a customised and efficient smart home app.

Appendix 1:

**Usability Testing - 7 Participants data collection .**

**Identified Task 1 related problems**

**Task 1: login in and check the notification hub and remove one of your tasks.**

1.1: From sign up page click bottom right to login

1.2: press login button

1.3 click bottom right notification hub

1.4 click study icon

1.5 attempt to remove tasks.

| **Problems** | **Identified problems by user** | **Participants** |
| --- | --- | --- |
| Task 1 – 01 | The user cannot write details to log in and is confused with a click of a button on the login they are in the app. | P1, P2 ,P3,P6, P7 |
| Task 1 - 02 | The system doesn't acquire a username and lacks a unique identity. | P1, P3, P4, P6 |
| Task 1 – 03 | Automated notification hub task to which the user never inserted it. | P1, P2 , P6 |
| Task 1 - 04 | Doesn't have a feature which allows the user to add a new notification. | P2, P3, P4 ,P6 |
| Task 1 – 05 | Cannot remove a task even when completed. | P1, P4, P5 |
| Task 1 – 06 | User request two step factor verification | P1, P2, P4 , P7 |
| Task 1 - 07 | Users feels application is rushed | P2, P3, P5 |

P1 - 5 errors - 3 minutes

P2: 2 errors - 4 minutes

P3: zero errors - 2 minutes

P4: 1 error - 1 minute

P5: zero errors - 2 minute

P6: zeros - under 1 minute

P7: 1 error - 3 minutes

Appendix 2:

**Identified Task 2 related problems - Usability Testing**

**Task 2: Sign up and check your settings, view, edit your profile and update new information.**

2.1 sign up first press the button

2.2 click top right setting icons

2.3 click view profile

2.4 edit profile

2.5 update information

| **Problems** | **Identified problems by user** | **Participants** |
| --- | --- | --- |
| Task 2 – 01 | Be able to create your own sign-up details. | P1, P3, P5, P6 |
| Task 2 - 02 | Be able to update profile details and see on page. | P2 , P3, P6 |
| Task 2 – 03 | Be able to delete profiles if needed. | P2 , P4, P5, P7 |
| Task 2 - 04 | Users cannot log out, which is a must for them. | P1 , P3, P6 |
| Task 2 – 05 | The profile is not unique to the user. | P2, P3, P4 |
| Task 2 – 06 | The dark theme makes it harder for the user to see what important detail . | P1, P4 , P5 |
| Task 2 - 07 | Confusion going to the setting page , user feels tricked with 2 potential settings icons | P1, P5, P6 |

P1 - zero errors - 1 minutes

P2: 1 errors - 2 minutes

P3: zero errors - 2 minutes

P4: 1 error - 1 minute

P5: 2 errors - 1 minute

P6: zero errors - under 1 minute

P7: zero errors - 1 minute

Appendix 3

**Identified Task 3 related problems - Usability Testing**

**Task 3: From the welcome page go to room temperature and smart lightning increases the heat.**

3.1 click room temperature page

3.2 increase heat

3.3 press back

3.4 go to smart lightning page

3.5 lower brightness

| **Problems** | **Identified problems by user** | **Participants** |
| --- | --- | --- |
| Task 3 – 01 | Show price of electricity usage daily not monthly usage as the user cannot see. | P1 , P4, P7 |
| Task 3 - 02 | Be able to increase heat, page is static so user cannot increase or decrease heat. | P1, P2, P3, P6 |
| Task 3 – 03 | User requests to have brightness lowered. | P2 , P3, P6 |
| Task 3 - 04 | User requested a lighter theme app as the colour is dark. | P1 ,P3, P5, P6 |
| Task 3 – 05 | The user wants to be able to turn off or on lights from any room but has no search button. | P1 , P3, P5 |
| Task 3 – 06 | Have an option to pay for electric usage from the app | P2 , P4, P7 |
| Task 3 - 07 | Cannot see all the features as it takes up too much space. | P2, P3, P6, P7 |

P1 - zero errors - 1 minutes

P2: 2 errors - 2 minutes

P3: 1 errors - 1 minutes

P4: 1 error - 1 minute

P5: zero errors - 1 minutes

P6: zero errors - less than 1 minute

P7 - 1 error - less than 1 minute

Appendix 4

**Survey - Schneiderman's evaluation method**

**1. On a scale from 1 to 5, how would you rate the clarity of the sign-up/login process?**

P1:3

P2: 3

P3:3

P4:4

P5:3

P1: 5

P7:4

**2. Were you able to locate the notification hub easily? Please share your experience.**

P1: Yes

P2: yes

P3: Yes

P4:Yes

P5:Yes

P6:Yes

P7:No

**3. How intuitive was it for you to remove a task from the notification hub? Describe any challenges you encountered.**

P1: Difficult

P2: didn't work

P3: difficult

P4: Difficult

P5:Difficult

P6: Cannot remove it

P7: Didn’t work

**4. How easy was it for you to update your profile details? Please rate on a scale from 1-5.**

P1: 3

P2: 2

P3:5

P4:5

P5:1

P6:2

P7:1

**5. Were the settings section and profile editing options easily accessible? If not, what improvements would you suggest?**

P1: Easy to navigate

P2: Buttons didn't work, better if you link it.

P3: does what is supposed to do

P4:Easy to navigate

P5:Buttons didn't work

P6 :Not necessary sections to have

P7: The buttons do not work

**6. How clear and accessible was the information regarding electricity usage? Please rate on a scale from 1 to 5.**

P1:4

P2:4

P3: 4

P4:3

P5:2

P6:5

P7: 3

**7. Were you able to adjust the room temperature without difficulty? Please provide details.**

P1, P2:Can't adjust it

P3; understand the prototype

P4:Unable to adjust it

P5:Couldnt to adjust it

P6; couldn't adjust

P7:Was not working

**8. How easy was it for you to control the brightness of the smart lighting feature? Please rate on a scale from 1 to 5.**

P1:4

P2:1

P3: 4

P4:3

P5: 1

P6:1

P7:1

**9. What are your thoughts on the app's colour theme and visual design? Any suggestions for improvement?**

P1: Suits the theme

P2: Looks rushed – fonts are different – not a lot a little time

P3: Likes the theme and colour scheme used.

P4:Great and simple

P5: Don’t suit the theme

P6: Like this

P7: Great and Simple

**10. Overall, how satisfied are you with the usability and user experience of the smart home app? Please rate on a scale from 1 to 5.**

P1:4

P2:2

P3:4

P4:5

P5:2

P6:4

P7: 3

Appendix 5:

**Expert Evaluation Participant 1**

# Overview

The user interface for login and signup is smooth and easy to understand for a new user to realise what to do. The design of the home screen is minimalistic and provides the information required for the users to perform the tasks they want to do.

However, there are some confusions in the notifications section. For example, when I enter the notification hub from the home screen, which currently shows 2 unopened notifications, it is better to show which section has new notifications (study, child care, or chores). In addition, I do not understand about the managed notification section in the settings page. In my opinion, it should have been a control centre to turn on and off notifications.

In the smart lighting and room temperature section, the design is not consistent. For instance, the information that shows electricity usage needs to be scrolled to see the full description, which would likely make users confused.

Finally, it would be a more interactive prototype if the application provides some features to be actually controllable such as brightness. However, the overall design is awesome and needs some necessary improvements.

**Question and topics in bold- answers in normal font**

**Navigation**

**How seamless is the navigation within the application?**

The navigation is smooth with some animations instead of instant change from page to page.

**Can you easily locate what you're searching for?**

Yes, I can easily locate where I want to go except for the confusion with the notification section.

**Is the organisation of the navigation menu (or navigation bar) logical and sensible for users?**

Yes, it is really sensible to users**.**

**Adjusting temperature**

**How user-friendly do you find the temperature adjustment feature on the smart home app?**

To be honest, I can't adjust the room temperature. Even though I clicked the button to adjust the temperature, it didn't interact.

**Do you feel that the app provides sufficient flexibility in adjusting the room temperature to meet your preferences?**

The design is sufficient to show the temperature I change only if I can adjust the temperature.

**Usability**

**Can you customise the app settings according to your preferences easily?**

Yes, I can change the profile details but it would be better to have a notification control centre.

**Device status page**

**How detailed is the information provided on the device status page regarding weekly usage, electrical consumption, and monthly costs in the smart home app?**

The graphical representation in addition to the text representation makes it easy to understand how much I spent on electricity. It would be better if I can see them without the need to scroll.

**Can users easily access and interpret the weekly usage, electrical consumption, and monthly cost data on the device status page within the smart home app?**

Yes, it can**.**

**Accessibility**

**Does the application assist users in accomplishing their intended tasks?**

Yes, the labels and icons provided are concise and help me to achieve the goals I intended.

Appendix 6:

**Expert Evaluation Participant 1**

**Overview**

**Firstly, the user interface needs to be optimised for a smoother experience when managing their personal data, with a focus on updating personal data and easy logout features to make it simpler to manage personal data.**

**Secondly, there are some concerns about the visibility and functionality of the notification centre, which needs to be improved to increase accessibility and clearly indicate new notifications. Smart home devices need more comprehensive control modules, including features such as brightness adjustment and temperature control. Addressing design inconsistencies and providing more personalised settings is key to meeting these needs.**

**Finally, while the home screen provides necessary information, the login process remains problematic, including confusion at login and inadequate security measures.**

Question and topics in bold- answers in normal font

**Navigation**

**How seamless is the navigation within the application?**

1. The navigation can be switched smoothly with some dynamic effects.

**Can you easily locate what you're searching for?**

2. Yes, I can easily use it.

**Is the organisation of the navigation menu (or navigation bar) logical and sensible for users?**

3. Yes, it is important to users.

**Adjusting temperature**

**How user-friendly do you find the temperature adjustment feature on the smart home app?**

1.Actually, I can't change the room temperature using the adjustment buttons.

**Do you feel that the app provides sufficient flexibility in adjusting the room temperature to meet your preferences?**

2. It doesn't show the temperature all the time.

**Usability**

**Can you customise the app settings according to your preferences easily?**

1. Yes, I can change my profile and interface.

**Device status page**

**How detailed is the information provided on the device status page regarding weekly usage, electrical consumption, and monthly costs in the smart home app?**

1. Not only can I see the data in text, but it also provides graphs to give me a more visual experience.

**Can users easily access and interpret the weekly usage, electrical consumption, and monthly cost data on the device status page within the smart home app?**

2. Yes, it can.

**Accessibility**

**Does the application assist users in accomplishing their intended tasks?**

1.Yes, it accomplishes the desired effect through a series of design

Appendix 7:

**Expert Evaluation Participant 1**

**Overview**

**The user interface for login and registration is well designed so that new users can easily understand the steps, and the main interface is designed to be simple while displaying the required information so that users can easily understand all the features.**

**There are some interaction problems in the notification section, the notification centre shows unread messages but does not show which section the unread messages are from, so it may be necessary to add a brief description of the information. There are some inconsistencies in the design of the lighting and room temperature modules, which will increase the cost of using the application.**

**Finally, the application can be made more useful by adding more operation modules.**

Question and topics in bold- answers in normal font

**Navigation**

**How seamless is the navigation within the application?**

1. Clear and easy to use navigation

**Can you easily locate what you're searching for?**

1.Apart from the lack of clarity in the notifications section and a slight inconsistency in the internal design of the functional modules, the rest of the section is easy to use.

**Is the organisation of the navigation menu (or navigation bar) logical and sensible for users?**

3. Yes, this is an important part of improving the user experience

**Adjusting temperature**

**How user-friendly do you find the temperature adjustment feature on the smart home app?**

1. I can't change the room temperature with the button.

**Do you feel that the app provides sufficient flexibility in adjusting the room temperature to meet your preferences?**

2. It only shows the room temperature when I change it.

**Usability**

**Can you customise the app settings according to your preferences easily?**

1. Yes, I can modify some parts of the custom modification app such as the profile.

**Device status page**

**How detailed is the information provided on the device status page regarding weekly usage, electrical consumption, and monthly costs in the smart home app?**

1. I need to scroll through the information because of the inconsistent design of the modules, but the advantage is the use of text and charts together to display the information.

**Can users easily access and interpret the weekly usage, electrical consumption, and monthly cost data on the device status page within the smart home app?**

2. Yes, it can.

**Accessibility**

**Does the application assist users in accomplishing their intended tasks?**

1. Yes, there are still improvements to be made but the desired goal has been achieved.