JOURNAL OF APPLIED INFORMATION SYSTEMS AND INFROMATICS

APPLICATION OF USER-CENTERED DESIGN IN DAYSCADY APPLICATION DEVELOPMENT FOR DAILY ACTIVITY SCHEDULE MANAGEMENT

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***Abstract*— This study aims to evaluate the effectiveness of the Dayscady application, a daily schedule management tool designed using a user-centred design (UCD) approach. The application focuses on meeting user needs by providing a streamlined interface and personalised scheduling features. Twenty respondents participated in this research, providing insights into usability and potential improvements. The study used a mixed methods approach, combining quantitative surveys and qualitative interviews. Respondents completed a Likert-scale questionnaire to assess usability, satisfaction and functionality, and participated in interviews to provide detailed feedback. Quantitative results showed that 90% of respondents were willing to use the application regularly. However, qualitative feedback highlighted areas for improvement, including a desire for more dynamic interactions through pop-up features, clearer notifications and a comprehensive guide for new users. These findings demonstrate the potential of Dayscady to significantly improve user productivity by addressing their schedule management needs. The findings also highlight the importance of continuous iteration in application development, particularly in refining the user experience and functionality based on feedback. For future research, it is recommended to investigate the long-term impact of the application on productivity and to increase the sample size in order to draw more generalised conclusions. In addition, incorporating gamification elements or integrating AI-driven recommendations could further enhance the effectiveness and engagement of the application. This study provides a basis for optimising Dayscady and contributes to the advancement of user-centred application design.**

***Keywords*— Schedule Management, Dayscady App, User-Centered Design, Effectiveness, Mixed-Methods.**

Manuscript received 28 Nov. 2024; revised 30 Nov. 2024; accepted Nov. 2024. Date of publication Nov. 2024.

I. INTRODUCTION

Our world has changed drastically over the past few decades, and one of the main drivers of this change has been the rise of social media. Platforms such as Facebook, Instagram, Twitter and TikTok have woven a common thread between us, allowing us to connect with people around the world in the blink of an eye [1]. However, behind the ease gand convenience it offers, social media is also having a very significant impact on the way we think, interact, and see the world [2].

Social media is designed to keep us busy. The pop-up notifications, engaging content and interactive features make us feel the need to constantly check our phones. As a result, time that should be spent doing homework or studying is instead wasted scrolling through timelines or watching short videos [3].

Procrastination is a common habit for many people. The reasons can be varied, ranging from lack of motivation, to fear of failure, to difficulty managing time. If left unchecked, this habit can have a negative impact on productivity, work quality and even mental health [4].

In Hooked [5], Nir Eyal does not directly address procrastination as a main theme, but there are some habit-related points that can be linked to this behaviour. Procrastination is often triggered by the temptation to check notifications or surf social media instead of completing a task. The uncertain and variable rewards of these activities further reinforce the behaviour, making it difficult to stop. Importantly, internal triggers such as feelings of discomfort or stress can cause a person to seek distraction through digital products.

Time management is an important skill for increasing productivity and reducing stress, whether for students, professionals or other individuals. In the digital age, many applications aim to help users organise their time and daily tasks, but not all applications are able to meet users' needs thoroughly [6].

In this study, we surveyed 20 respondents, consisting of students and non-students, to find out their preferences in using scheduling and note-taking tools. The survey results show that 75% of respondents prefer to use digital applications such as notepads on their devices to manage their schedules and record important information. Meanwhile, the remaining 15% still rely on traditional methods using paper.

These findings reflect the growing trend in the use of digital technologies for personal management purposes while highlighting the group that remains loyal to traditional means. This information provides an important backdrop for understanding changing behaviours and preferences related to the use of scheduling and note-taking tools in the digital age [7].

In response to this shift, we have developed an innovative solution in the form of an app called DayScady. This app is designed to meet the needs of note-taking and scheduling, offering users convenience and efficiency. With advanced and user-friendly features, DayScady is expected to be an effective tool to help users better manage their time and activities, in line with the growing digital trend [8].

This app doesn't just display to-do lists, it's designed for the way you think and work. The buttons are large and easy to press, the colours are easy on the eyes, and the layout is intuitive so users can quickly find the features they need. The app can also adapt the complexity of the task to the user's cognitive abilities. In other words, the app serves not only as a time management tool, but also as a personal assistant that understands its users' needs and preferences. As a result, users will feel more comfortable and productive when using the app, and will reduce the stress that often comes from piling tasks on top of each other [9].

User-centred design (UCD) is used in the application design and development process. This method focuses on the needs, wants and limitations of the end user at every stage of the design process. By involving users at various stages, such as interviews, observations and initial testing, the author can better understand what users want and ensure that the solution developed is truly relevant and easy to use [10].

The prototyping method was used to test and evaluate the UI/UX design. By creating an early prototype of the application, the author was able to conduct trials and receive feedback directly from users. These prototypes help to identify and resolve design issues earlier in the development process. This evaluation is important to ensure that the user interface (UI) and user experience (UX) of the DayScady app are truly optimised and meet user expectations.

Using UCD and prototyping methods, the author not only creates a functional application, but also ensures that the application provides a good experience and makes it easy for users to carry out their recording and scheduling activities.

II. Theoretical Basis

Efficient timetable management is one of the most important needs of students, especially in the digital age. With the development of technology, schedule management applications are a solution that can make it easier for users to organise their daily activities [11]. To develop this application, it is necessary to study theories that support the concepts of time management, user experience (UX) and user interface (UI).

A. Time Management

Time management is the method of arranging and controlling the sum of time went through on particular exercises. According to time management theory, time is a limited resource and should be managed wisely to achieve high efficiency and productivity. Some important concepts in time management are prioritising, scheduling and monitoring time spent [12]. This theory will underpin the development of key features in the DayScady application, such as to-do list creation, activity scheduling and reminders.

B. Ucer-centered Design (UCD)

User-centred design (UCD) is defined in [10] as a design method that places the user at the centre of the entire development process. The main goal of UCD is to create products or services that are intuitive, efficient and meet the needs and expectations of users.

C. User Experience (UX)

One of the key concepts in 'The Elements of User Experience: User-Centered Design for the Web and Beyond' by Jesse James Garrett is the division of the user experience into five main layers: Strategy, Scope, Structure, Skeleton, and Surface.[13] For the DayScady app, the Skeleton layer involves creating wireframes that show the layout of the calendar, to-do list, and reminders. Navigation will be designed so that users can easily move between daily, weekly and monthly views. Visual hierarchy will ensure that important tasks stand out and are easy to find. Interactivity will be designed to make it easy for users to add, edit and delete their schedules or notes.

D. User interface (UI)

The client interface is the point of interaction between the client and the computerized item. UI hypothesis underscores the significance of alluring and useful plan. A great interface ought to be simple to explore, steady and clear within the presentation of data. Within the DayScady application, the UI plan will pay consideration to aesthetics and ease of utilize to guarantee that clients can rapidly get it and work the application without trouble [14].

III. Method

A. Application development methodology

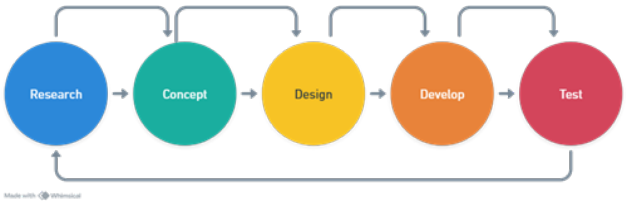

Fig. 1 Concepts in the user-centred design method

User-centred design (UCD) aims to ensure that the products created actually meet the needs and wants of the users. The main aim of UCD is to ensure that the products created actually meet the needs, preferences and limitations of the users. According to Norman (2013), UCD consists of

several stages, namely understanding users, defining problems, developing solutions and testing prototypes [15].

1) *Research*

The main purpose of this research is to ensure that the product being developed truly meets the needs and preferences of the users. This method involves collecting data through interviews, surveys, observations, and analysis of user data to gain deep insight into the users [10]. In the development of the Dayscady application, research is very important to ensure that the recording and scheduling features provided are really useful and easy for users to use.

2) *Concept*

A concept is an idea or notion that forms the basis of a thought or plan. In the context of app development, a concept is an initial framework or plan that describes the purpose, features, and functions of the app [16]. In the development of the Dayscady app, concepts play an important role in determining how this app will help users track and schedule tasks.

3) Design

Design in the context of app development is the process of shaping the user interface (UI) and user experience (UX) to ensure that the app is easy to use, intuitive, and visually appealing. Design covers several aspects, including layout, colours, typography, icons, and user interaction with the app [17]. By focusing on design, Dayscady can provide an optimal user experience, increase productivity, and ensure that users feel comfortable using the app.

4) Develop

Development (prototyping) is a stage in the application development process where pre-designed ideas and concepts are translated into tangible form in the form of prototypes. A prototype is an early version of the application that includes key features and allows for early testing by users to obtain feedback [18]. In the development of the Dayscady app, design plays an important role in ensuring that users can easily log and schedule their tasks.

5) Test (Usability Testing)

Usability testing is the process of evaluating an application with real users to ensure that the application is easy to use and meets user needs. The main purpose of usability testing is to identify problems in the design and functionality of the application before it is officially launched. This process involves directly observing users interacting with the application and collecting their feedback [19]. In the development of the Dayscady app, usability testing is essential to ensure that the tracking and scheduling features provided are actually useful and easy for users to use.

B. UI/UX design testing and evaluation

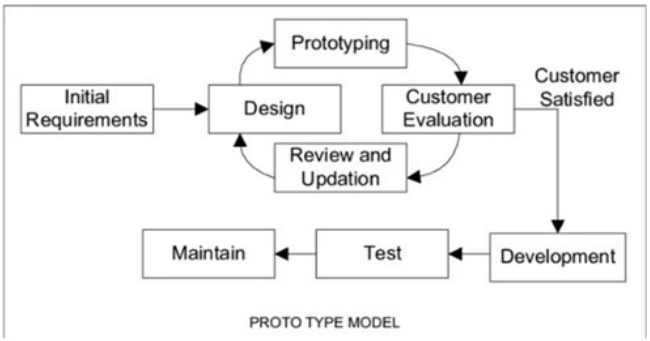

Fig. 2 Flow in the prototype method concept

Prototyping is a system development method that uses an initial model or prototype to describe the system to be built [20]. In other words, a simple version of the system is created before the full system is built. This simple version is then evaluated by users or stakeholders for feedback. Prototypes provide a clear visual picture of how the system will look and work. This is very helpful when communicating ideas to customers or users [17].

1) Identify needs: By creating a simple prototype of the Dayscady app, potential users are engaged early to provide immediate feedback [21].

2) Design the prototype: Prototypes allow developers to visualise ideas about the features that will be included in the Dayscady app. For example, how the calendar will look, how to add tasks, or how the reminder feature will work [22].

3) Prototype development: By identifying problems early through prototyping, developers can avoid larger and more costly mistakes that need to be fixed at a later stage of development [23].

4) Evaluation: Prototypes are shown to potential or early users for feedback. This feedback is invaluable for improving the design before further development [24].

5) Revision: The revision stage is a crucial part of the development process of any product, including an app like Dayscady. After the initial prototype has been created and tested, feedback is gathered from users or other stakeholders. This feedback is then used to make revisions to the design and functionality of the Dayscady app [17].

C. Presentation of the data

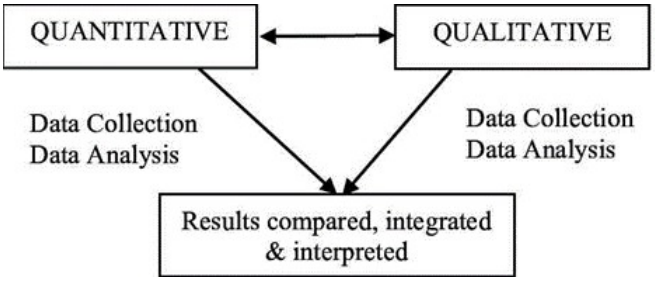

Fig. 3 Mixed-method concept

Mixed-methods combine quantitative (numerical data) and qualitative (descriptive data) methods to get a more in-depth picture of the app's effectiveness. This approach ensures that

the research findings are not only based on statistical data, but also directly consider the user's perspective.

IV. The Results and The Discussion

A. User Reserarch

Through a series of in-depth interviews and a prototyped online survey of 20 students and non-students, we were able to identify some interesting findings.

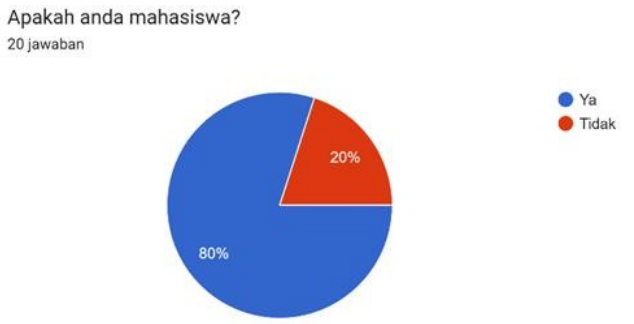

Fig. 4 Respondent status pie chart

The majority of respondents are students and office workers aged 20-35, who are highly mobile and often overwhelmed by the number of tasks and schedules they have to manage.

Fig. 5 Pie chart of respondents' needs for task scheduling applications

Respondents said they wanted a scheduling app that would act as a reminder to help them prioritise their tasks and manage their time more effectively.

Fig. 6 Diagram of tools used by respondents to carry out planning

Based on the results of this study, we concluded that Dayscady needed to be designed as an app that was not only functional, but also fun and easy to use [25]. The app is not just about displaying to-do lists, but is also designed to match the way we think and work. The buttons are large and easy to press, the colours are easy on the eyes and the layout is intuitive.

B. Concept

The core concept of Dayscady is to provide a simple and intuitive user experience in organising daily life. The app is designed to be a personal assistant, always ready to help users achieve their goals [26].

The information architecture of Dayscady is based on clean and simple design principles, with a focus on interactive calendar views and quick task addition features. The mental model of the user we are targeting is one who wants to have full control over their schedule but does not want to be burdened by overly complex features [27].

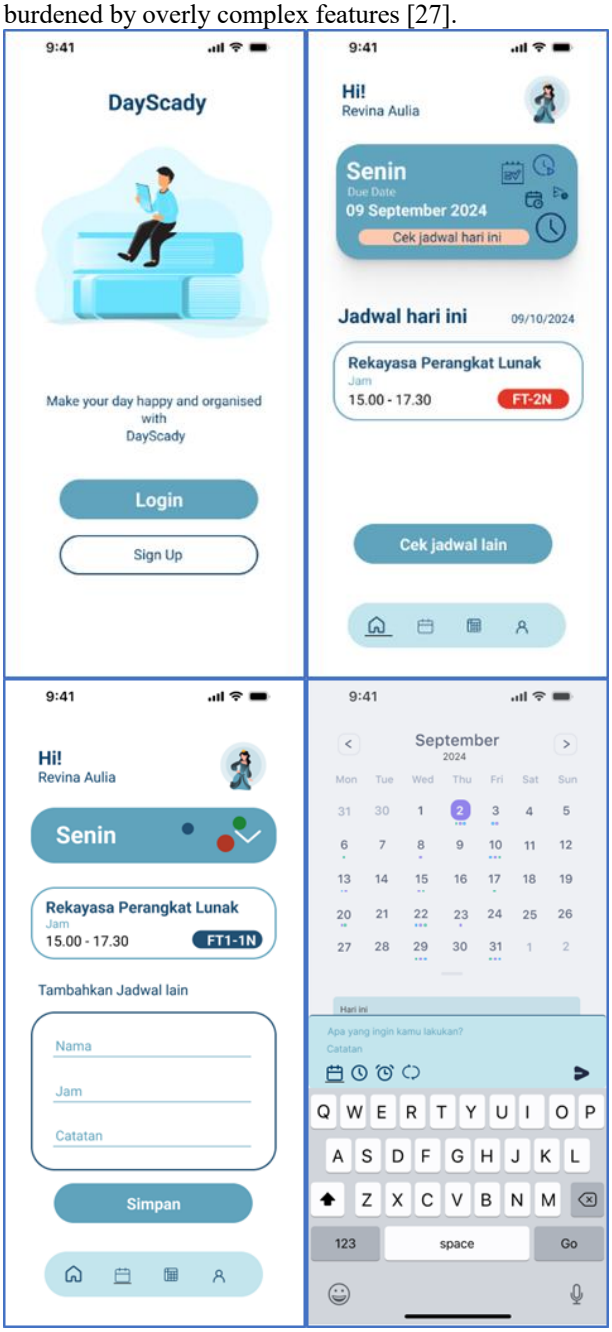

Fig. 7 Some pages in the DaySCady application (login, main page, add schedule, add task)

C. Design

Once the concept of the Dayscady app had been formed based on the results of the user research, the next step was to turn the concept into a concrete design. This design includes the user interface (UI), user experience (UX), and user interaction with the application.

1) User Interface

The minimalist look is designed to keep the interface

simple with a limited number of elements to minimise cognitive load. The choice of colours should take into account colour psychology to support user concentration and comfort [28].

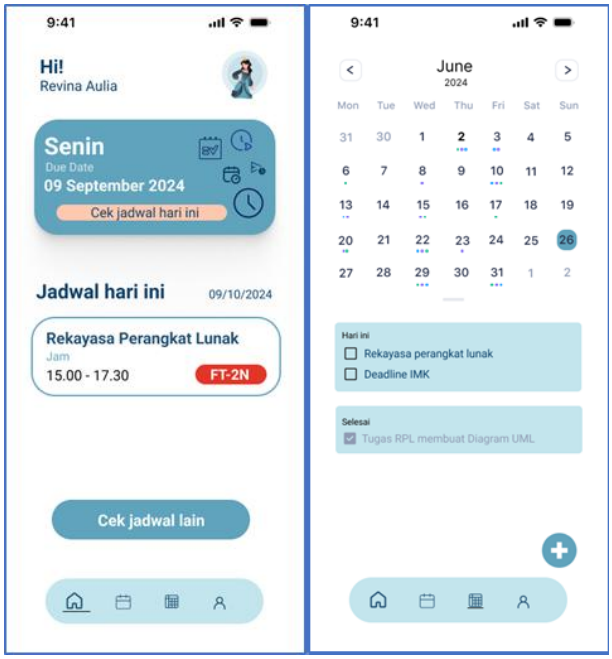

Fig. 8 Minimalist and convenient DayScady app interface

The DayScady app uses blue as the main colour, as it conveys a sense of calm and productivity. A neutral background colour of white is combined with prominent key elements (such as buttons and important text) to ensure good visibility.

2) User Experience (UX)

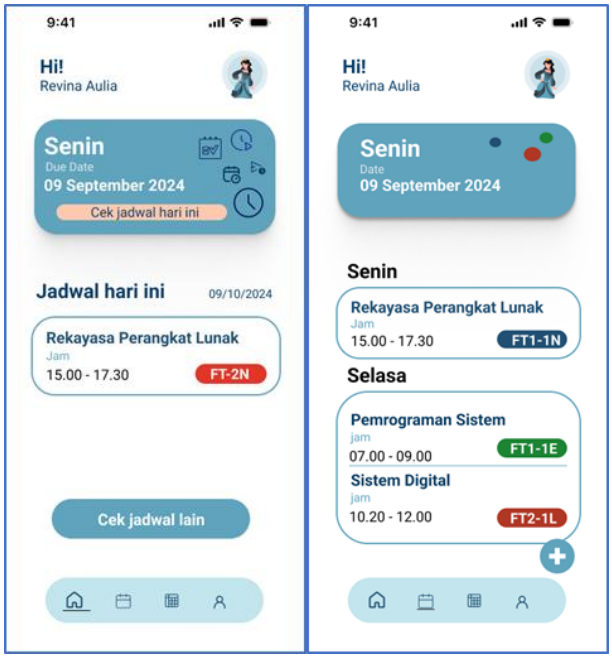

Fig. 9 Page with a plus button for users to add new schedules and tasks

When users open the app and log in, they are immediately presented with the app home, including a list of nearby tasks or schedules. Users can add new schedules using the '+' button that is always visible in the bottom right corner. Adding a new schedule requires only 2-3 simple steps (entering the time, activity and optional reminder).

At the bottom is a simple navigation menu with four main icons: Home (daily schedule), Tasks (to add or manage to-do lists), Date, and Profile Settings. The DayScady app has a minimalist look to keep the interface simple with a limited number of elements to minimise cognitive load [29].

Based on the results of a survey of 20 respondents who tried the prototype of the DayScady app, it was found that 55% of them found the app fairly easy to understand, while another 35% found it very easy to understand.

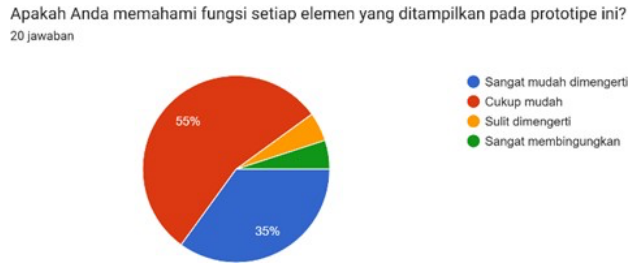

Fig. 10 Pie chart of respondents' understanding of all features included in the prototype

These results show that the majority of users felt comfortable and understood the functions of the elements in the Dayscady prototype. This is a positive indication that the user interface (UI) design and user experience (UX) of the app are good enough and intuitive. However, there is still room for improvement so that more users find it very easy to understand the app.

D. Development (Prototyping)

Fig. 11 Prototyping stages using figma application

The development here is the development of the ui/ux design of the DayScady application. In the prototyping process, the DayScady application uses the Figma application as a platform to sketch and design ideas to make the prototype more interactive.

E. Test

Mixed-Methods combine quantitative (numerical data) and qualitative (descriptive data) methods to provide a more

in-depth picture of the effectiveness of the app. This approach ensures that the research findings are not only based on statistical data, but also directly consider the user's perspective [30].

The level of usability of the application by the respondents can be categorised as follows:

TABLE I
CATEGORY EASE OF USE OF APPLICATION

No	User-friendliness in Using the Application		
	Category	**Total number of respondents**	**Percentage**
1	Very easy	7	35%
2	Easy enough	11	55%
3	Hard	1	5%
4	Very confusing	1	5%

Most respondents (55%) found the app fairly easy to use. A further 35% found it very easy to use. However, there were still around 10% of respondents who had difficulty using the app, either because it was difficult or very confusing.

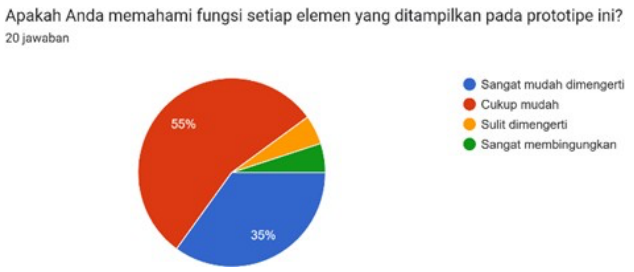

Fig. 12 Pie chart of respondents' understanding of all features

In terms of the impact of the application on user productivity, the following results were obtained:

TABLE II
IMPACT OF APPS ON USER PRODUCTIVITY

No	The Impact on Productivity		
	Category	**Total number of responden**	**Percentage**
1	Willing to use the app	18	90%
2	Unwilling to use the app	2	10%

In fact, 90% of respondents said they would use the app regularly. However, they did have some suggestions for improvements. Some respondents wanted more dynamic interaction through pop-up features, clearer notifications and a more comprehensive guide for new users. This shows that the app has great potential to increase user productivity.

The study used a quantitative approach to measure user satisfaction with the app. The main instrument used was a questionnaire consisting of 5 items using a 5-point Likert scale. These items were designed to measure user perceptions of usability, effectiveness, and user satisfaction in relation to five main features of the app, namely: (1) adding class schedules; (2) task list display; (3) reminder notification system; (4) integration with calendar; and (5) possible recommendations. Using a Likert scale, the researcher was able to obtain numerical data that could be statistically analysed to identify the features that users liked the most and the areas that needed improvement. The results were as follows:

TABLE III
FREQUENCY TABLE OF ANSWERS

Question	Strongly Disagree (0)	Disagree (1)	Neutral (2)	Agree (3)	Strongly Agree (4)	Total
Adding a lecture schedule	0	0	5	9	6	20
View the task list	0	1	6	9	4	20
Reminder notification	1	0	13	6	0	20
Integration with calendar	1	0	3	12	4	20
Recommend the app	0	1	2	12	4	20

The 'Integrate with calendar' and 'Recommend apps' features received relatively high average scores, indicating that users really liked these features. And for areas that need improvement, the 'Reminder notifications' feature received mixed responses, with many users choosing the 'Neutral' option. This suggests that there may be room for improvement in the notification system.

The qualitative data analysis revealed some key themes related to users' perceptions of the Dayscady app, as follows:

Fig. 13 Respondents' preferred features of the DayScady app

Firstly, respondents consistently praised the aesthetic design of the app, with many commenting on the attractive colour scheme and intuitive display. Secondly, the schedule reminder feature was rated as very useful and effective in helping users manage their time. Thirdly, the app prototype made a positive first impression, with respondents highlighting the ease of use of the app. These findings suggest that an attractive design, strong core features and a positive first impression are key factors in the success of an app [31].

Most respondents praised the attractive choice of colours and the intuitive display. This finding is consistent with aesthetic pleasure theory, which suggests that visually appealing design can enhance the user experience [17]. In addition, the app design also provides clear affordances for users, making it easier for them to interact with the app. This suggests that good design not only makes the app more appealing, but also improves the efficiency of use [10].

V. Conclusion

This study aims to evaluate the effectiveness of the Dayscady app in meeting user needs. Using user-centred design (UCD) development methodology and prototype testing, the app was designed to provide an optimal user experience [10]. Using a mixed methods approach combining quantitative and qualitative data, this study successfully identified the strengths and weaknesses of the Dayscady app [30].

Based on the analysis of quantitative and qualitative data, it can be concluded that the Dayscady app is generally well received by users. The appointment reminder feature and the aesthetic design of the app are the most positive aspects for users. However, there are still some areas that need improvement, such as the notification system and integration with other apps. Qualitative data shows that users value simplicity, effectiveness and attractive design. Therefore, future app development needs to focus on maintaining existing strengths and addressing identified weaknesses [30].

The Dayscady app has great potential to be an effective tool to help users manage their time and tasks. By continually making improvements based on user feedback and the latest technology trends, this app can become an even better solution for users.

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