I. Project Description

MapuaMate is a mobile application designed to cater to the needs of MMCM students, offering a range of practical features to make university life easier. The application includes features such as a message board, university announcements, course announcements, class schedules, meeting room availability, room reservations, professor ratings, an event calendar, a grade tracker, a campus map, canteen menus, and lastly, a page to report and claim lost and found items. With its user-friendly interface and helpful features, MapuaMate simplifies various aspects of campus life.

II. Requirements Summary

Minimum Requirements	Processor Cores	Dual-Core
	OS	Android 6.0 iOS11
	RAM	2GB
Recommended Requirements	Processor Cores	Quad-Core
	OS	Android 8.0 iOS12
	RAM	4GB
Other Requirements	Connectivity	Wi-Fi Cellular data
	Permissions	Notifications Access to Photos

Table 1. System Requirements

The application is not necessarily demanding, however the recommended requirements seen in table 1 are suggested to ensure that users will experience the application’s full capabilities, without experiencing any lag.

Creating a user-friendly and efficient app for students involves several key elements. First, the user interface and experience (UI/UX) must prioritize easy navigation, ensuring a clear and logical flow between features. The design should be optimized for mobile devices, with readable and interactable elements on small screens. UI components should be large enough for comfortable touch interaction. Accessibility is also crucial, incorporating features like text-to-speech and colorblind-friendly designs to cater to all students, including those with visual impairments. Clear labels, larger buttons, and a minimalistic design will help accommodate less tech-savvy users.

The app aims to provide a comprehensive suite of tools to enhance student life. This includes a message board for discussions, sections for university and course announcements, a daily class schedule, and features for meeting room availability and reservations. Additionally, the app will offer a professor rating system, interactive event and course calendars, a visual grade tracker, an interactive campus map, a daily canteen menu display, and a virtual lost and found board. These features are designed to streamline access to essential information and services, making university life more manageable and efficient for students.

To ensure accessibility for all students, the app is designed to be compatible with a wide range of devices by lowering the system specifications required. This approach ensures that almost every smartphone can run the application smoothly, demanding less from the device's system and broadening access to the app's valuable features.

Overview

The survey to evaluate the application will be conducted using Google Forms. 10 students currently enrolled in MMCM will be selected as respondents. Respondents will be provided with a link to the Figma prototype and a link to the Google Forms survey containing the evaluation questions. The Google Forms survey will be distributed online (through messaging apps).

Throughout the survey, a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) will be used. The survey questionnaire comprises 5 sections, designed to gather comprehensive feedback on various aspects of the MapuaMate design prototype. These sections include:

1. **User Information:** Gathering data such as the user's vision status(whether he/she may have visual impairments or not) and technical proficiency.
2. **User Interface and Experience (UI/UX):** Assessing usability, mobile optimization, accessibility, and visual appeal using Likert scale ratings from 1 (Strongly Disagree) to 5 (Strongly Agree).
3. **Features Evaluation:** Rating the relevance, usability, and visual appeal of core app features based on daily activities as an MMCM student.
4. **User Satisfaction:** Gauging overall satisfaction with the MapuaMate design prototype.
5. **Additional Feedback:** Gathering additional comments or suggestions.

Upon completion, responses will be analyzed to evaluate the app design's effectiveness and identify areas for improvement. The evaluation will utilize the table below:

Interpretation	Value	Range
Not acceptable	1	1.00 - 1.80
Fairly acceptable	2	1.61 - 2.60
Moderately acceptable	3	2.61 - 3.40
Acceptable	4	3.41 - 4.20
Highly acceptable	5	4.21 - 5.00

Table 2.1 Interpretation of Rating Values

The survey questionnaire using Google Forms was selected to evaluate the MapuaMate design prototype due to its structured format, scalability, and ease of use. By employing a Likert scale, the questionnaire gathers quantitative feedback on UI/UX, feature relevance, and overall satisfaction, facilitating systematic analysis across demographic groups.

Additionally, this paper will correlate the respondents' visual impairments and technical proficiency with their evaluations. This approach aims to determine whether these factors significantly influence user feedback on the application's usability and effectiveness. The analysis will include t-tests, ANOVA, and Tukey-Kramer Test to identify significant correlations in the data. Below is a table that will be used to decide which hypothesis to accept:

Significance Level	Specification
$P > 0.05$	Not significant
$P < 0.05$	Significant

Table 2.2. Significance Level Table

Unfortunately, due to time constraints, a limited number of respondents were obtained. With a small sample size, the accuracy and generalizability of survey results may be affected.

Evaluation Survey Questions

Welcome to the MapuaMate Evaluation Survey!

This survey is part of a Human-Computer Interaction (HCI) project aimed at gathering feedback on the design prototype of MapuaMate. MapuaMate is envisioned as a comprehensive mobile application designed to enhance the experience of MMCM (Mapua Malayan Colleges Mindanao) students. It integrates various features to facilitate efficient communication and organization within the campus community.

Note: Please note that MapuaMate presented in this survey is a design prototype and not a fully developed application. This survey is mainly focused on design itself. Your feedback will greatly help us refine and improve its usability and functionality.

Thank you for taking the time to participate in this survey. Your insights are invaluable to us!

Section 1. User Information

Please select the appropriate response for each question.

No.	Question	Response
1	How would you rate your proficiency with mobile applications?	☐ Beginner ☐ Intermediate ☐ Advanced ☐ Expert
2	Do you have any visual impairments? If yes, please specify.	

Table 3.1. Questions for User Information

User Interface and Experience (UI/UX)

Section 2.1. Usability

Please indicate your level of agreement with each statement regarding the app's navigation.

No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The app provides appropriate feedback like message prompts on actions taken (e.g., confirming selections).					
2	The message prompts are clear, visible and understandable.					
3	Used words, phrases and concepts according to users' language rather than system oriented words and computer jargons.					
4	The system design provides ways of allowing users to easily "get in" and "get out" if they find themselves in unfamiliar parts of the system.					
5	Menus and other features of the system are arranged and positioned in a consistent way. (For ex. If your website has navigation buttons on the top under the					

	page title on one page, the users will automatically look there for the same features on other pages.					
6	Objects, icons, actions and options are visible for the user.					
7	Objects are labeled well with text and icons that can immediately be spotted by the user and matched with what they want to do.					
8	The system design provides easy to navigate menus.					
9	Graphics and animations used are not difficult to look at and does not clutter (mess) up the screen.					
10	the system design provides information that can be easily searched and provides help in a set of concrete steps that can					

	easily be followed.					
11	The texts, buttons, and icons are adequately sized and readable					
12	Overall, I found it easy to use the app.					

Table 3.2. Questions for Usability Evaluation

Section 2.2. Accessibility

Please indicate your level of agreement with each statement regarding the app's accessibility features.

No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The app accommodates potential users with visual impairments effectively.					
2	The app accommodates less tech-savvy users effectively.					

Table 3.3. Questions for Accessibility Evaluation

Section 2.3. Visual Appeal

Please indicate your level of agreement with each statement regarding the app's visual appeal.

No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The color scheme used in					

	the app is pleasing.					
2	The app uses images and icons effectively to enhance its appeal.					
3	The colors, text, labels, buttons and other elements in the design are uniform from start to finish**.**					
4	Overall, the visual design of the app is appealing.					

Table 3.4. Questions for Visual Appeal Evaluation

Features

Instructions: Please rate each feature of the MapuaMate app based on the following criteria:

Section 3.1. How relevant and useful would this feature be to your daily activities as an MMCM student?

No.	**Core features**	**Very useful**	**Useful**	**Neutral**	**Not useful**	**Very not useful**
1	Social Board					
2	Calendar					
3	Class Schedule					
4	Grade Tracker					
5	Instructor Ratings					
6	Room Reservation					
7	Campus Map					
8	Canteen Menu					

9	Lost and Found					
10	Contact Us					
11	Settings					
12	Feedback					
13	Help					

Table 3.5. Questions for Evaluating Relevance and Usability of Each Feature

Section 3.2. How easy is it to navigate and utilize this feature?

No.	Core features	Very easy	Easy	Neutral	Difficult	Very difficult
1	Social Board					
2	Calendar					
3	Class Schedule					
4	Grade Tracker					
5	Instructor Ratings					
6	Room Reservation					
7	Campus Map					
8	Canteen Menu					
9	Lost and Found					
10	Contact Us					
11	Settings					
12	Feedback					
13	Help					

Table 3.6. Questions for Evaluating Easy Navigation and Usability of Each Feature

Section 3.3. How visually appealing and intuitive is the design of this feature?

No.	Core features	Very appealing	Appealing	Neutral	Not appealing	Very not appealing
1	Social Board					
2	Calendar					
3	Class Schedule					
4	Grade Tracker					
5	Instructor Ratings					

6	Room Reservation					
7	Campus Map					
8	Canteen Menu					
9	Lost and Found					
10	Contact Us					
11	Settings					
12	Feedback					
13	Help					

Table 3.7. Questions for Evaluating Visual Appeal and Intuitiveness of Each Feature

Section 4. User satisfaction

Please rate your level of agreement with each statement regarding your overall satisfaction with the MapuaMate app.

No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Overall, I am satisfied with the MapuaMate design prototype.					
2	I want to see this app fully developed and use it daily.					

Table 3.7. Questions for Overall User Satisfaction

Section 5. Additional Feedback

Please provide your suggestions for improving the app and any additional features you would like to suggest.

No.	Question	Answer
1	Do you have any additional comments / suggestions for improving the app?	
2	Are there any features you would suggest being added?	

Table 3.8. Questions for Additional Feedback

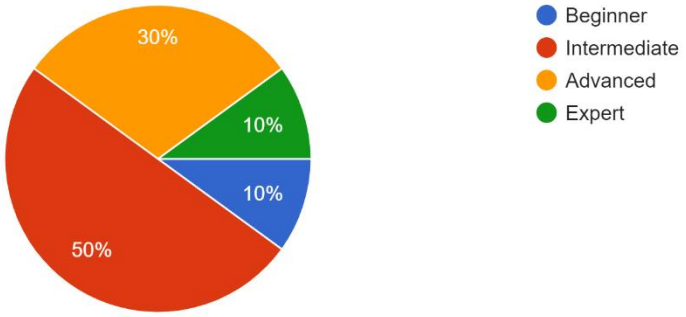
Thank you for your time and feedback!

Data Presentation

Section 1. User Information

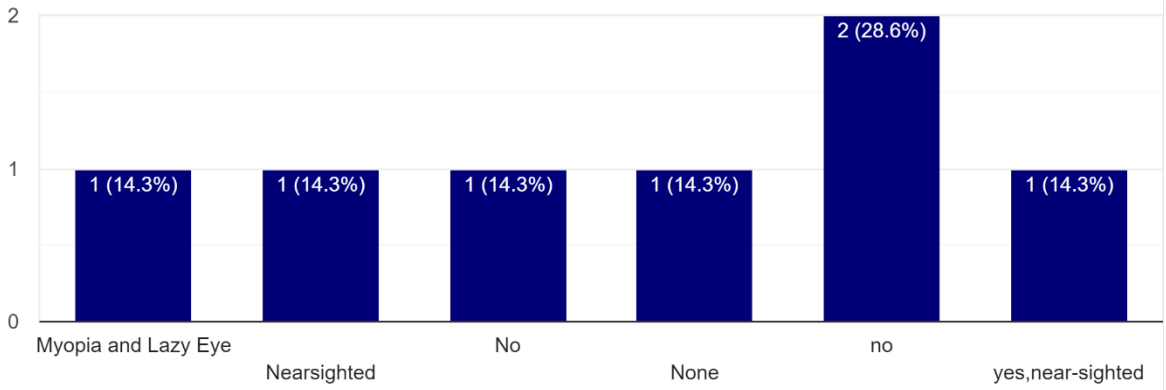
How would you rate your proficiency with mobile applications?

10 responses

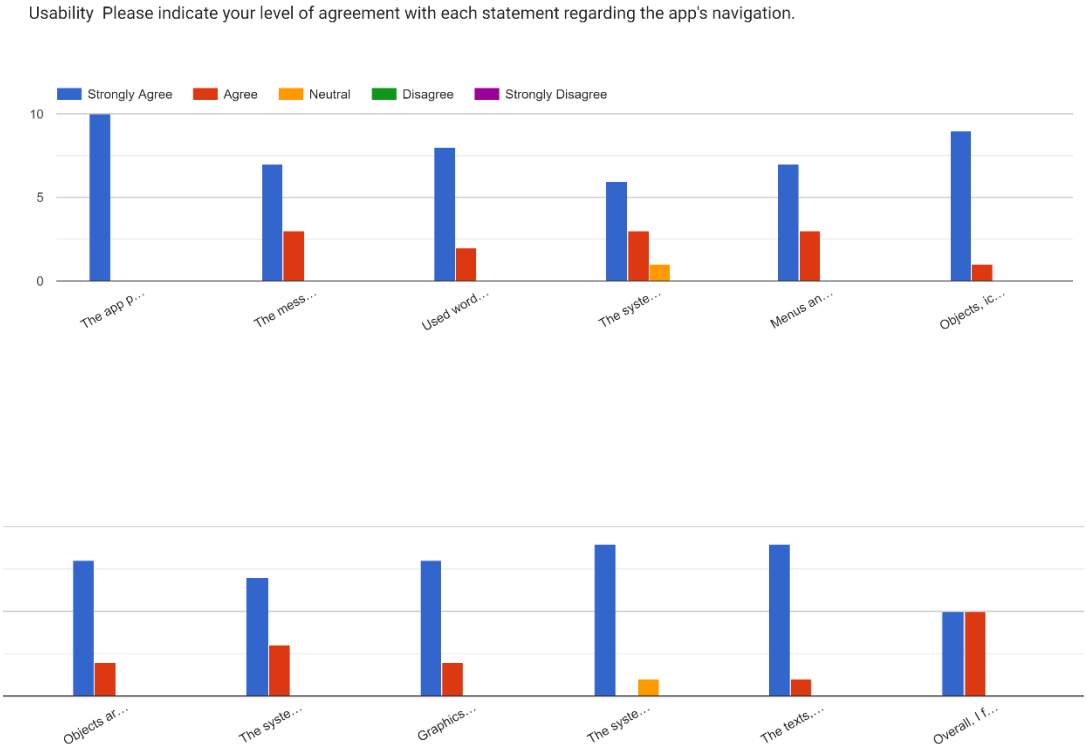


Do you have any visual impairments? If yes, please specify. If no, proceed to the next section.

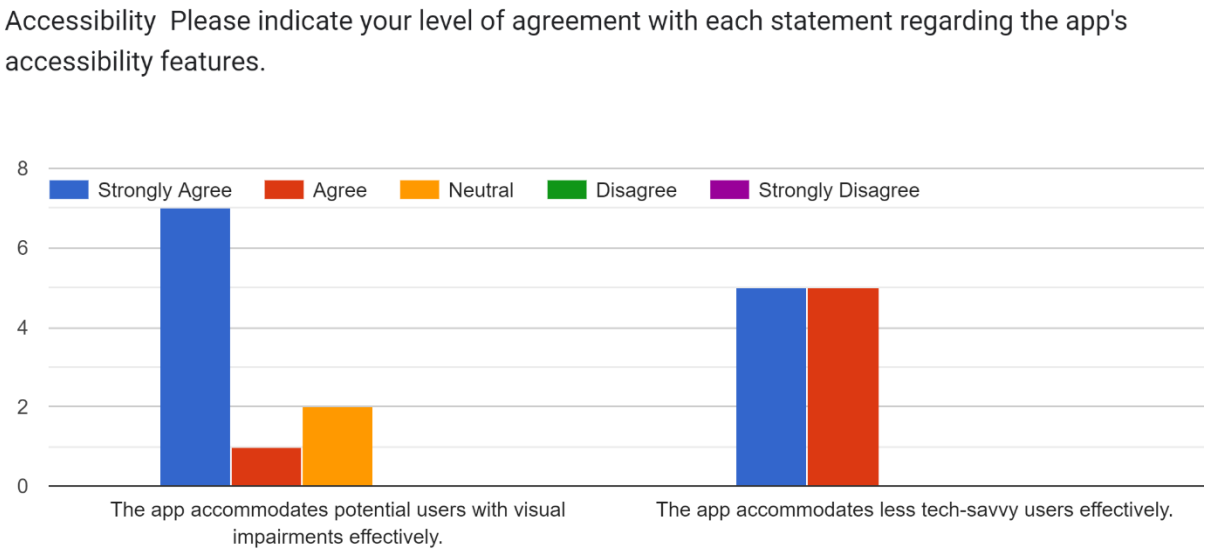
7 responses



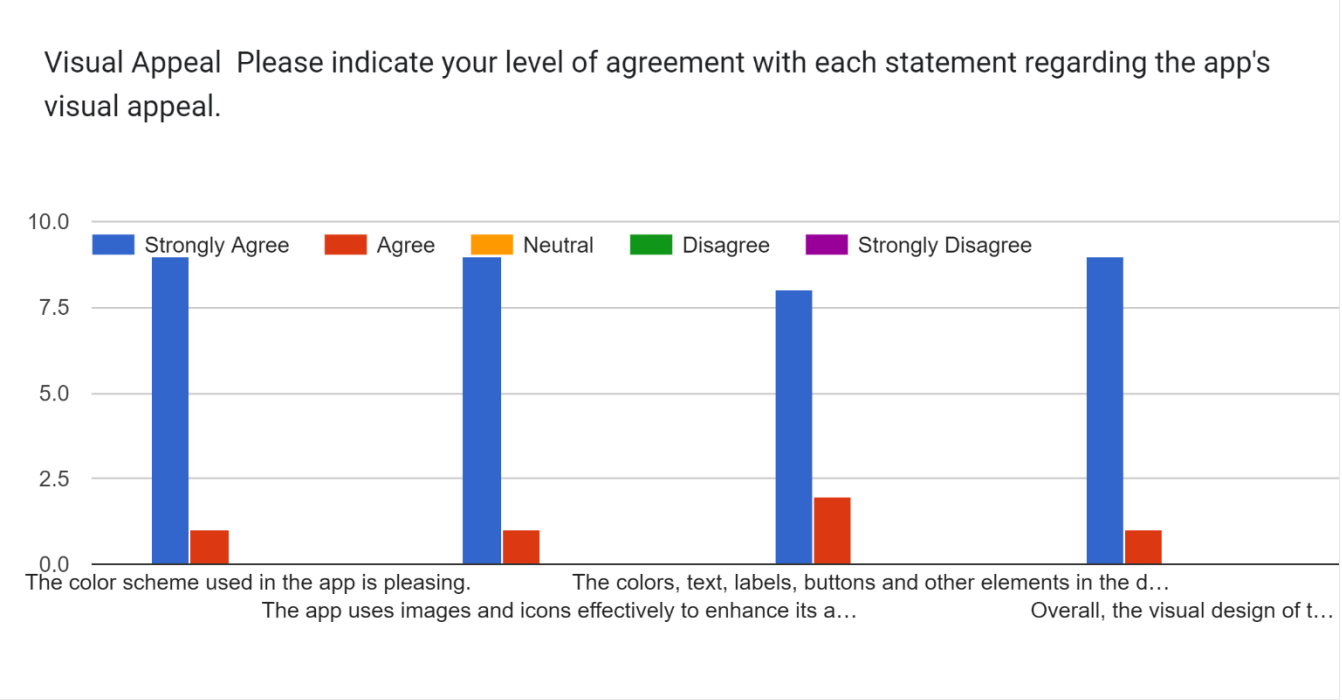
Section 2.1. Usability



Section 2.2 Accessibility



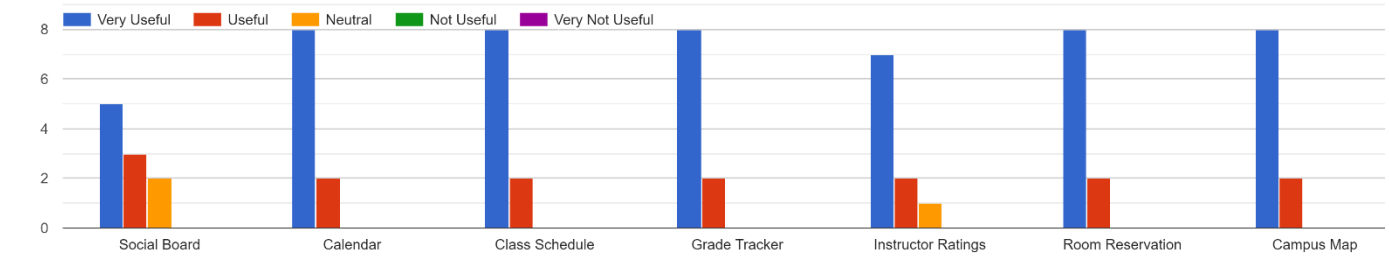
Section 2.3. Visual Appeal

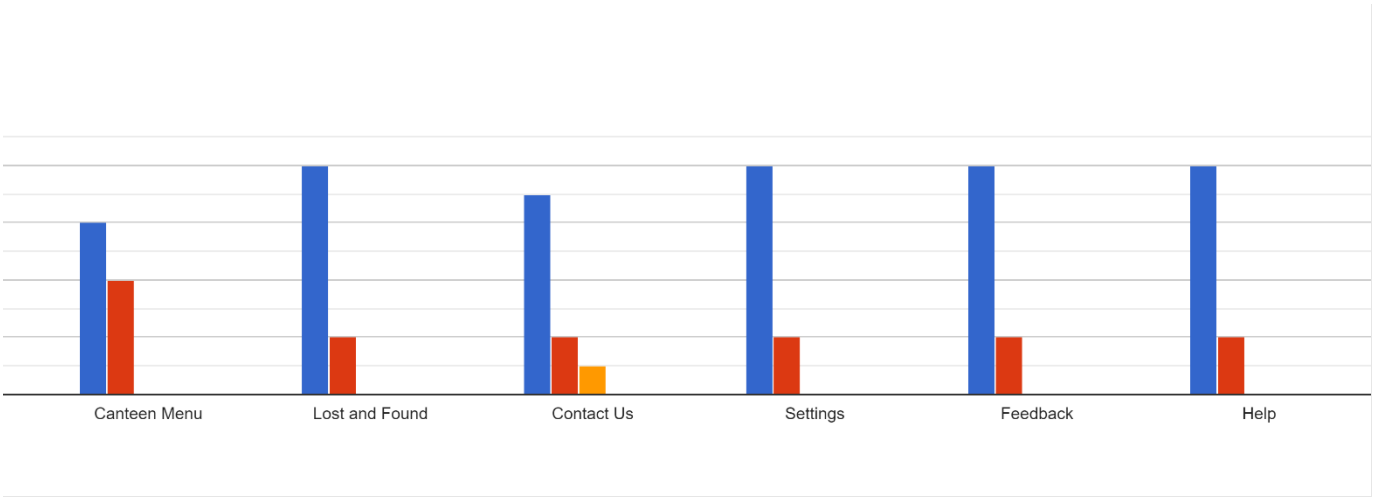


Section 3. Features

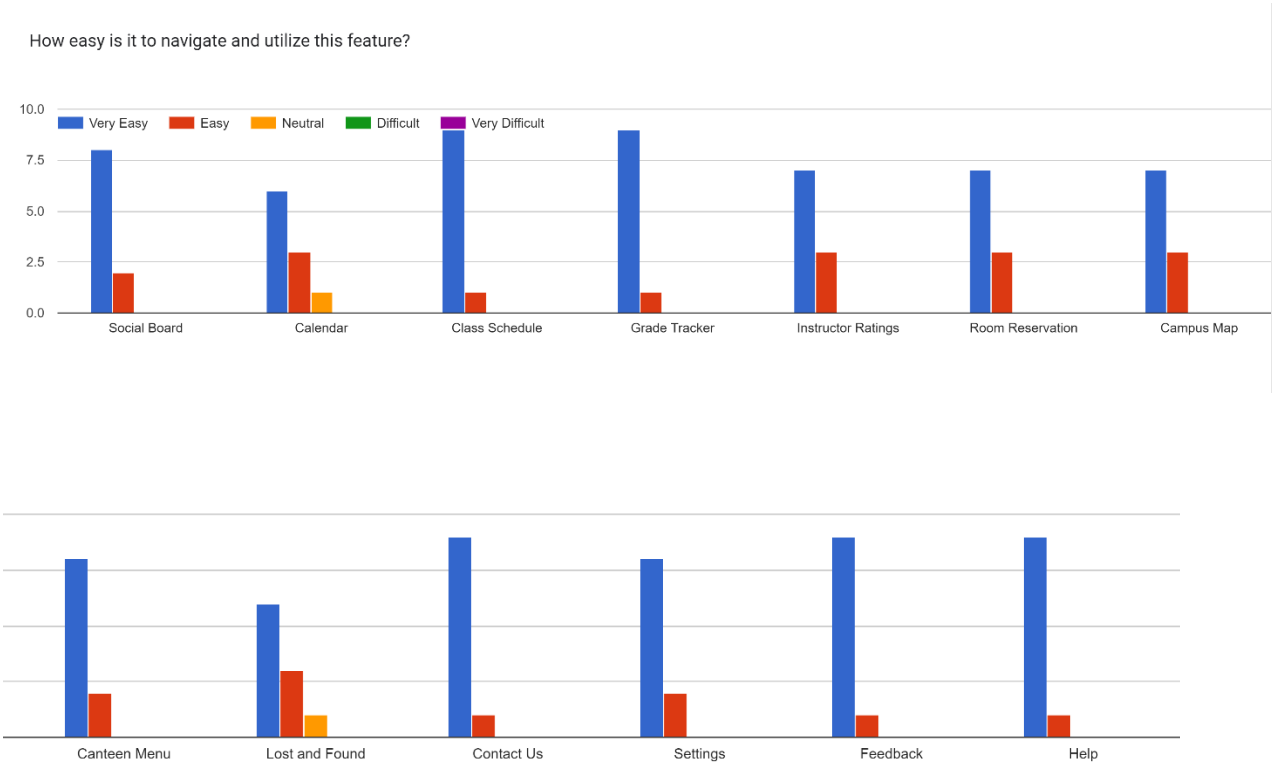
Section 3.1.

How relevant and useful would this feature be to your daily activities as an MMCM student?

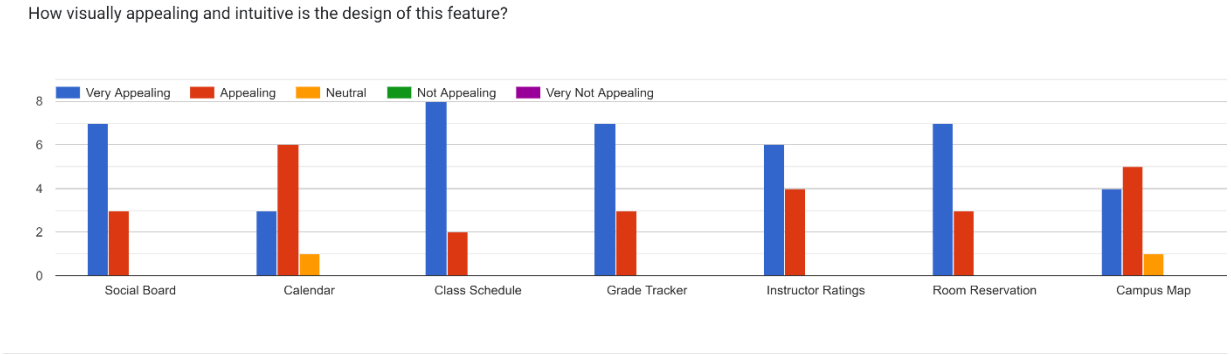


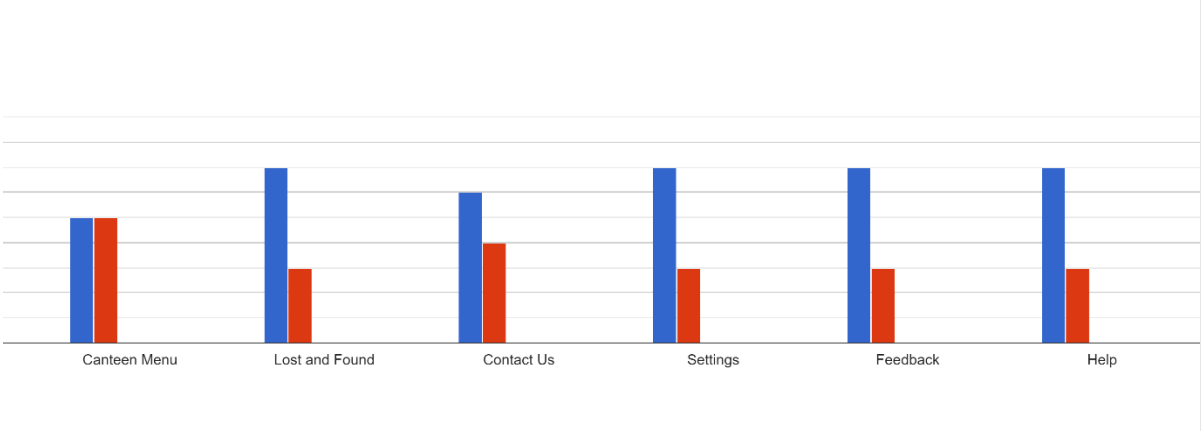


Section 3.2.

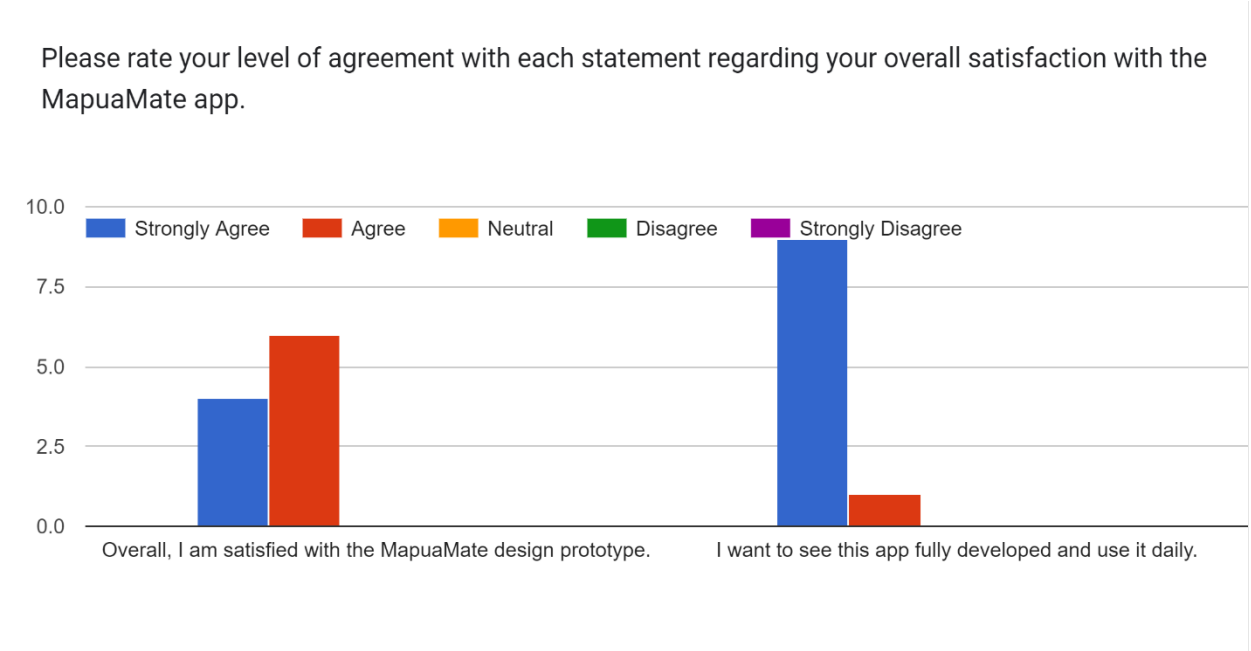


Section 3.3





Section 4. User Satisfaction



Section 5. Additional Feedback

No.	Question	Answers
1	Do you have any additional comments / suggestions for improving the app?	1. Settings should have more features such as "dark-mode" and notification settings. 2. None 3. N/A GOOD JOOB! KEEP UP THE GOOD WORK! :3 4. no, it's already good 5. No 6. the dash board on top blocks some icons on the phone specifically the three-lined icon on the upper left corner. Also, the phone is too long for the laptop screen which confuses

		other users where to scroll up to see more features IN the phone and to scroll up to get to the top.
2	Are there any features you would suggest being added?	1. None 2. chat w the prof feature 3. no, it's already good 4. Everything is good. 5. I would add a daily reward system that will give small canteen discounts to keep user engagement. I would also add Chats with classmates/professors and Clubs/School Communities. In other words, I'd make something similar to a small social media platform exclusive for Mapuan students.

Table 4. Additional Feedback

Data Analysis

Below is the discussion of the survey results for each section, including the average ratings and interpretation for each Likert-scale question. Average scores have been calculated for each question and section where applicable.

Section 1. User Information

The first section of the survey focuses on user information. This section helps identify any factors, such as visual impairments and technical proficiency, that may affect their experience and satisfaction with the application.

Respondents were asked if they have any visual impairments and to rate their proficiency with mobile applications. According to the results, 50% of the respondents identified as intermediate users, 30% rated themselves as advanced, 10% as expert, and 10% as beginners. This indicates that most respondents are intermediate and familiar with using mobile applications. Regarding visual impairments, 60% of the respondents reported having no visual impairments, while 40% indicated they have visual impairments such as nearsightedness or lazy eye.

Section 2.1. Usability

No.	Question	Mean	Interpretation
1	The app provides appropriate feedback like message prompts on actions taken (e.g., confirming selections).	5.00	Highly acceptable
2	The message prompts are clear, visible and understandable.	4.70	Highly acceptable
3	Used words, phrases and concepts according to users' language rather than system oriented words and	4.80	Highly acceptable

	computer jargons.		
4	The system design provides ways of allowing users to easily “get in” and “get out” if they find themselves in unfamiliar parts of the system.	4.50	Highly acceptable
5	Menus and other features of the system are arranged and positioned in a consistent way. (For ex. If your website has navigation buttons on the top under the page title on one page, the users will automatically look there for the same features on other pages.	4.70	Highly acceptable
6	Objects, icons, actions and options are visible for the user.	4.90	Highly acceptable
7	Objects are labeled well with text and icons that can immediately be spotted by the user and matched with	4.80	Highly acceptable

	what they want to do.		
8	The system design provides easy to navigate menus.	4.70	Highly acceptable
9	Graphics and animations used are not difficult to look at and does not clutter (mess) up the screen.	4.80	Highly acceptable
10	the system design provides information that can be easily searched and provides help in a set of concrete steps that can easily be followed.	4.80	Highly acceptable
11	The texts, buttons, and icons are adequately sized and readable	4.90	Highly acceptable
12	Overall, I found it easy to use the app.	4.50	Highly acceptable
Total Mean		4.76	Highly acceptable

Table 5.1. Usability

According to table 5.1, the usability evaluation of the app yielded highly positive results across various metrics. Users rated the app's feedback provision, message clarity, language appropriateness, navigation ease, consistency of design elements, visibility of objects and labels, menu navigation, graphical clarity, help accessibility, readability of text and icons, and overall usability very favorably, with mean scores ranging from 4.50 to

5.00 out of 5.00. The overall mean score of 4.76 indicates that users found the app highly acceptable in terms of usability, reflecting effective design and functionality that meet user expectations and needs effectively.

Section 2.2. Accessibility

No.	Question	Mean	Interpretation
1	The app accommodates potential users with visual impairments effectively.	4.5	Highly Acceptable
2	The app accommodates less tech-savvy users effectively.	4.5	Highly Acceptable
Total Mean		4.5	Highly Acceptable

Table 5.2. Accessibility

In Table 5.2., the app received consistently high ratings, indicating effective accommodation for both users with visual impairments and those who are less tech-savvy. Users found the app highly acceptable in terms of its accessibility features, with mean scores of 4.5 for both categories. These results suggest that the app incorporates design elements and functionalities that cater well to diverse user needs, ensuring inclusivity and ease of use for different users. The overall mean score of 4.5 underscores the app's strong performance in accessibility, reflecting its capability to provide a user-friendly experience for a broad range of individuals.

Section 2.3. Visual Appeal

No.	Question	Mean	Interpretation
1	The color scheme used in the app is pleasing.	4.9	Highly Acceptable
2	The app uses images and icons effectively to enhance its appeal.	4.9	Highly Acceptable
3	The colors, text, labels, buttons and other elements in the design are uniform from start to finish.	4.8	Highly Acceptable
4	Overall, the visual design of the app is appealing.	4.9	Highly Acceptable
Total Mean		4.875	Highly Acceptable

Table 5.3. Visual Appeal

Table 5.3. shows the visual appeal evaluation of the app, which reflects overwhelmingly positive feedback across various aspects. Users rated the color scheme, use of images and icons, consistency of design elements, and overall visual appeal very highly, with mean scores ranging from 4.8 to 4.9 out of 5.00. Specifically, the color scheme was deemed pleasing, and the use of images and icons effective in enhancing the app's appeal. The uniformity in design elements throughout the app was also noted positively. The total mean score of 4.875 indicates a high level of satisfaction with the app's visual design, suggesting that users found it attractive and well-organized visually. These findings highlight the app's successful integration of aesthetic elements that contribute positively to user experience and overall satisfaction.

Features

Section 3.1. How relevant and useful would this feature be to your daily activities as an MMCM student?

No.	Core features	Mean	Interpretation
1	Social Board	4.3	Highly Acceptable
2	Calendar	4.8	Highly Acceptable
3	Class Schedule	4.8	Highly Acceptable
4	Grade Tracker	4.8	Highly Acceptable
5	Instructor Ratings	4.6	Highly Acceptable
6	Room Reservation	4.8	Highly Acceptable
7	Campus Map	4.8	Highly Acceptable
8	Canteen Menu	4.6	Highly Acceptable
9	Lost and Found	4.8	Highly Acceptable
10	Contact Us	4.6	Highly Acceptable
11	Settings	4.8	Highly Acceptable
12	Feedback	4.8	Highly Acceptable
13	Help	4.8	Highly Acceptable
Total Mean		4.715384615	Highly Acceptable

Table 5.4. Relevance and Usefulness of Each Feature

Table 5.4. assesses the perceived relevance and usefulness of various features of the app among MMCM students. Across all core features evaluated, including Social Board, Calendar, Class Schedule, Grade Tracker, Instructor Ratings, Room Reservation, Campus Map, Canteen Menu, Lost and Found, Contact Us, Settings, Feedback, and Help, users rated them very positively. Mean scores ranged from 4.3 to 4.8 out of 5.0, indicating that students found these features highly acceptable and beneficial to their daily activities as MMCM students. Features like Calendar, Class Schedule, Grade Tracker, Room Reservation, Campus Map, and Lost and Found received particularly high ratings, reflecting their perceived importance and utility. The overall mean score of 4.715 suggests a strong consensus among users regarding the app's relevance and usefulness in supporting their academic and campus-related needs effectively.

Section 3.2. How easy is it to navigate and utilize this feature?

No.	Core features	Mean	Interpretation
1	Social Board	4.8	Highly Acceptable
2	Calendar	4.5	Highly Acceptable
3	Class Schedule	4.9	Highly Acceptable
4	Grade Tracker	4.9	Highly Acceptable
5	Instructor Ratings	4.7	Highly Acceptable
6	Room Reservation	4.7	Highly Acceptable
7	Campus Map	4.7	Highly Acceptable
8	Canteen Menu	4.8	Highly Acceptable
9	Lost and Found	4.5	Highly Acceptable
10	Contact Us	4.9	Highly Acceptable
11	Settings	4.8	Highly Acceptable
12	Feedback	4.9	Highly Acceptable
13	Help	4.9	Highly Acceptable
Total mean		4.769230769	Highly Acceptable

Table 5.5. Ease of Navigation and Usability of Each Feature

Table 5.5. evaluates the ease of navigation and usability of core features within the app as perceived by users. The table shows consistently high ratings across all features assessed. Users rated the ease of navigation and utilization of features such as Social Board, Calendar, Class Schedule, Grade Tracker, Instructor Ratings, Room Reservation, Campus Map, Canteen Menu, Lost and Found, Contact Us, Settings, Feedback, and Help very positively, with mean scores ranging from 4.5 to 4.9 out of 5.0. Particularly noteworthy are the high ratings for Class Schedule, Grade Tracker, Contact Us, Feedback, and Help, which all received scores of 4.9, indicating that users found these features exceptionally easy to navigate and utilize. The overall mean score of 4.769

further emphasizes the app's success in providing intuitive and user-friendly navigation across its core functionalities.

Section 3.3. How visually appealing and intuitive is the design of this feature?

No.	Core features	Mean	Interpretation
1	Social Board	4.7	Highly Acceptable
2	Calendar	4.2	Acceptable
3	Class Schedule	4.8	Highly Acceptable
4	Grade Tracker	4.7	Highly Acceptable
5	Instructor Ratings	4.6	Highly Acceptable
6	Room Reservation	4.7	Highly Acceptable
7	Campus Map	4.3	Highly Acceptable
8	Canteen Menu	4.5	Highly Acceptable
9	Lost and Found	4.7	Highly Acceptable
10	Contact Us	4.6	Highly Acceptable
11	Settings	4.7	Highly Acceptable
12	Feedback	4.7	Highly Acceptable
13	Help	4.7	Highly Acceptable
Total Mean		4.607692308	Highly Acceptable

Table 5.6. Visual Appeal and Intuitiveness of Each Feature

Table 5.6. evaluates the visual appeal and intuitiveness of core features within the app as perceived by MMCM students. Overall, the table reflects strong positive feedback, with mean scores ranging from 4.2 to 4.8 out of 5.0 across the features assessed. Features such as Class Schedule, Grade Tracker, Room Reservation, Lost and Found, Contact Us, Settings, Feedback, and Help received particularly high ratings, with scores of 4.7 or higher, indicating that users found these features visually appealing and intuitive

in design. Although the Calendar feature received a slightly lower score of 4.2, it still falls within an acceptable range. The total mean score of 4.608 underscores the app's overall success in providing a visually appealing and intuitive design across its core functionalities, contributing to a positive user experience and satisfaction among MMCM students.

Section 4. User satisfaction

No.	Question	Mean	Interpretation
1	Overall, I am satisfied with the MapuaMate design prototype.	4.4	Highly Acceptable
2	I want to see this app fully developed and use it daily.	4.9	Highly Acceptable
Total Mean		4.65	Highly Acceptable

Table 5.7. User Satisfaction

Table 5.7. assesses user satisfaction with the MapuaMate design prototype. Users expressed high satisfaction with the prototype's design overall, with a mean rating of 4.4 out of 5.0, indicating it is highly acceptable. Additionally, there is strong enthusiasm for the app's full development and daily use, as evidenced by a mean score of 4.9. The total mean score of 4.65 reflects widespread satisfaction and eagerness among users, suggesting strong potential for adoption and positive user experience with MapuaMate in its final form.

Section 5. Additional Feedback

The additional feedback provided by users highlights several key suggestions for improving the app and adding new features, like adding features such as dark mode and notification settings in the settings section. One user proposes a daily reward system for small canteen discounts and social features like chats with professors and classmates.

This section analyzes how visual impairment influences students' app experience. It explores differences in evaluations between users with and without visual impairments.

Visually Impaired (3)	Not Visually Impaired(7)
4.779661017	4.779661017
5	4.203389831
4.898305085	4.576271186
	4.779661017
	4.745762712
	4.830508475
	4.542372881

Table 5.8. Overall Mean Comparison: Visually Impaired vs. Non-Visually Impaired

t-Test: Two-Sample Assuming Equal Variances

	Visually Impaired (3)	*Not Visually Impaired(7)*
Mean	4.892655367	4.636803874
Variance	0.012161256	0.04843983
Observations	3	7
Pooled Variance	0.039370186	
Hypothesized Mean Difference	0	
df	8	
t Stat	1.868589342	
P(T<=t) one-tail	0.049310289	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	0.098620579	
t Critical two-tail	2.306004135	

Table 5.9. t-Test for Visually Impaired and Non-Visually Impaired

Table 5.8 displays the overall average ratings of the prototype, with respondents categorized into two groups: visually impaired (3 participants) and not visually impaired

(7 participants). Table 5.9 presents the results of a t-test conducted on the data from Table 5.8. With a significance level of 0.05, the p-value of 0.049310289 is lower than the significance level. Therefore, it implies that **visually impaired respondents rated the app prototype significantly higher than those who are not visually impaired.**

Below is a discussion of the significant differences in evaluations between users with different proficiency levels in using mobile applications.

Beginner	Intermediate	Advanced	Expert
4.203389831	4.779661017	4.779661017	4.542372881
	5	4.779661017	
	4.898305085	4.745762712	
	4.576271186		
	4.830508475		

Table 5.10. Overall Mean Comparison Between Beginners, Intermediate, Advanced, and Expert

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Beginner	1	4.203389831	4.203389831	#DIV/0!
Intermediate	5	24.08474576	4.816949153	0.024906636
Advanced	3	14.30508475	4.768361582	0.000383032
Expert	1	4.542372881	4.542372881	#DIV/0!

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.352034856	3	0.117344952	7.013162915	0.021814123	4.757062663
Within Groups	0.100392607	6	0.016732101			
Total	0.452427463	9				

Table 5.11. ANOVA Analysis on Different User Proficiencies

Tukey Test	Absolute Difference	Standard Error	q_tukey	q critical value	Significant?
Beginner vs Intermediate	0.613559322	0.100196111	6.123584171	4.896	Yes
Beginner vs Advanced	0.564971751	0.105615975	5.349302051	4.896	Yes
Beginner vs Expert	0.338983051	0.129352624	2.620612101	4.896	No
Intermediate vs Advanced	0.048587571	0.066797408	0.72738707	4.896	No
Intermediate vs Expert	0.274576271	0.100196111	2.740388496	4.896	No
Advanced vs Expert	0.225988701	0.105615975	2.13972082	4.896	No

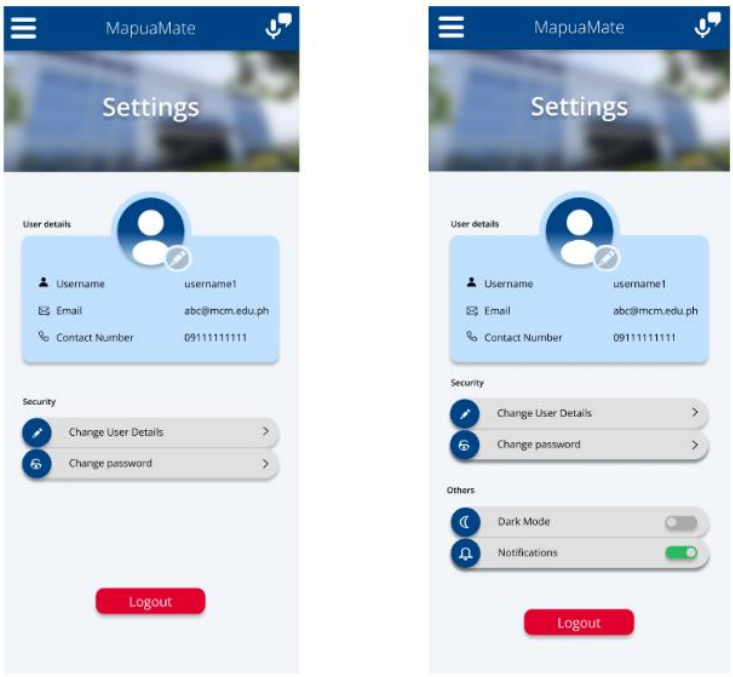
Table 5.12. Tukey-Kramer Test on Different User Proficiencies

The ANOVA analysis on different user proficiencies indicates a statistically significant difference in the average ratings of the app prototype among the four proficiency groups (Beginner, Intermediate, Advanced, and Expert), as the p-value (0.021814123) falls below the significance level ($\alpha = 0.05$).

Furthermore, the Tukey-Kramer test was used to identify which specific pairs statistically differ. The test indicated significant differences between Beginner vs. Intermediate and Beginner vs. Advanced, as shown by q_tukey values surpassing the critical value of 4.896 (refer to Table 5.12). With Beginners having lower average ratings, it suggests that **Beginners rate the app prototype significantly lower than Intermediate and Advanced users do.**

Design Implications

The prototype has shown significant success in meeting the needs of MMCM students. They have expressed satisfaction with the prototype's usability, accessibility, and visual appeal, indicating that it effectively serves its intended purpose. However, they also listed some areas to improve on.



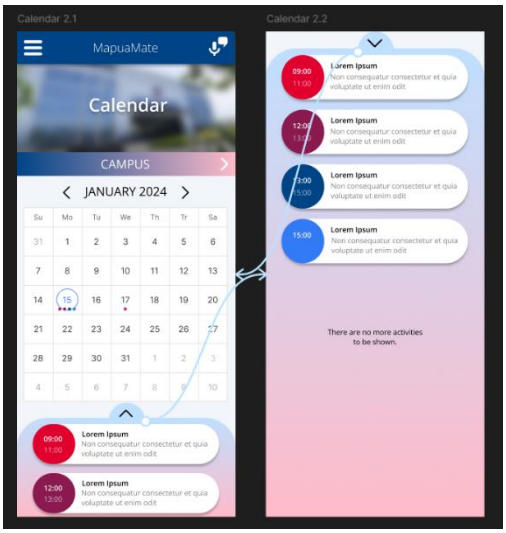
Added toggle button to enable/disable Dark Mode and Notifications

Figure 1. Dark Mode and Notifications

Figure 2. Dark Mode Sample

Suggestions include a customizable notification setting and a dark mode option as seen in Figure 1 and Figure 2 respectively. Implementing a daily reward system for discounts at the canteen, and incorporating chat with peers, professors, and school communities were also mentioned These two suggestions may be difficult to implement because we would have to consider several factors, such as how and where to display online users, where to access the chat box in a way that it adheres to UI/UX principles, and a lot more. Implementing this may change the whole prototype, depending on how the team incorporates this feature.

According to the survey results, the calendar page was rated lower compared to the other features in the visual appearance category. This was probably due to the very small, scrollable section at the bottom of the screen that shows the events for a specific date. This issue could be addressed by creating a button (or swiping up) to show and hide the section, which would improve the overall visual appearance of this page.



In addition,

Additionally, with the finding that beginners or users who are not very proficient with mobile applications have rated the application slightly lower, the prototype could be made more user-friendly for less tech-savvy users. Adding more information to the help page or improving the user interface might help, although this would require more planning and changes.

Despite the prototype gaining positive feedback overall, it is essential to consider the broader audience, including individuals with varying levels of technical proficiency and visual capabilities. Ensuring the app remains accessible and user-friendly for everyone is paramount. Addressing the specific areas of concern and implementing the suggested improvements could lead to a more comprehensive and engaging app that truly meets the needs of MMCM students.

Critique and Summary

What were the advantages and disadvantages of your evaluation?

- The advantages the team had in their evaluation had enabled them to see the flaws in their application prototype which were then improved. There were a number of suggestions respondents gave, each of them has been taken into account and the team has given the prototype a closer look to see what more could

be done in the future. However, since the team conducted their evaluation online; by letting the respondents figure out how to evaluate on their own without the team's guidance, there were confusions regarding the matter as some of them were familiar with the prototyping app(Figma) the team has used. Additionally, since the team was only giving out the links of the prototype and the evaluation form, it is possible that some of the respondents haven't properly evaluated the application and just went directly to the evaluation form, essentially giving the team inaccurate results. Overall, most of the feedback received was insightful and the data gathered was adequate to let the team improve the design of the prototype.

What would you have done differently knowing what you know now (both designwise and evaluation-wise)? Given more resources, what could you have done that would have produced significantly more insightful evaluation results (again, whether this is an improved prototype or a different evaluation path).

- Design-wise, the team would have focused more on the usability aspect of the prototype. There were a number of core features in the prototype that were either unintuitive or that some of the elements were blocking important elements such as the calendar section in which the activities cannot be properly seen. Evaluation-wise, the team would have approached the evaluation in a better way. Since the team was conducting data gathering online, the team would have accompanied and guided the respondents while they were evaluating to ensure they are able to properly navigate the prototyping app and give more accurate results. As one respondent stated, they had difficulty in using Figma due to it blocking the phone screen as well as the phone prototype being too big to fit on a smaller laptop screen. All of these insights would have been helpful to the team if they were given more time.