UI/UX Redesign of the Üsküdar University Mobile

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Analysis and Design of User Interfaces

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Abstract- This report details the redesign of the Uskudar University mobile application, aiming to enhance its usability, accessibility, and overall user experience for students. Initial research, conducted through interviews, observations, and questionnaires, identified significant issues including an unorganized layout, confusing navigation, and an outdated visual interface. Visual attention analysis further confirmed clarity problems in key sections of the existing app. Based on these findings, a high-fidelity prototype was developed, focusing on intuitive navigation, clearer presentation of information, and improved feature accessibility. Formal evaluation of the prototype yielded overwhelmingly positive feedback, successfully resolving most major usability concerns and highlighting its readiness for front-end development. This project underscores the effectiveness of a user-centered, iterative design approach in transforming complex digital interfaces into highly functional and user-friendly solutions.

Index Terms- User Experience (UX) Design, Mobile Application Redesign, Usability Testing, User-Centered Design, UI/UX Evaluation

I. INTRODUCTION

II. DATA COLLECTION TECHNIQUES

1. Interview:
As part of the data collection process, we conducted face-to-face interviews with 5 participants, from different departments, chosen because they represent the main user base and have frequent interactions with the app.
The goal of the interviews was to gather detailed insights into students' needs, expectations, and pain points through one-on-one conversations.
The type of interview was based on the question structure (unstructured interview) which is A free-flowing conversation that explores user needs without a strict format. The main questions included the following:

Question ID	*Question*
Q1	*If you could suggest one feature or improvement for the university app, what would it be?*
Q2	*Have you experienced any issues or difficulties when navigating the app or using its features? If yes, please describe them.*
Q3	*Which features of the university app do you use the most? Why?*
Q4	*What additional features or improvements would make the university app more useful for your daily academic needs?*

For analyzing the qualitative data from the interviews, we will use Thematic Analysis. This approach will help us identify key themes in the users' responses related to their experiences with the university app.
The students' responses provided us with valuable insights into common frustrations, pain points, and users' expectations of the app, and formed the basis for further analysis by validating the results by comparing the results with other techniques, which will be discussed later.

2. Observation:
For Observation Technique, we conduct indirect observation using a retrospective protocol with a total of 3 student participants. These students are irregular first-year students from different departments which will allow us to get more valuable insights. This procedure would give us an understanding of how new students interact with the app.
Observations took place in natural settings on campus, such as library, cafeterias.
After the sessions, students explain what they did and why, after they have finished the tasks and how they perform certain tasks within the app. The list of tasks was as follows:

- QR Code for Attendance
- Weekly Schedule
- Ring Hours
- Food List
- Send Message (STIX)
- Navigating Courses (ALMS)

These tasks were chosen because they represent the most common features of which the users use the most. Our objective is to observe users in their natural environment and understand their behavior, workflows, and challenges. The feedback from real-world use, with interview's insight, would help us to uncover hidden pain-points, challenges, which will help us to make decisions about prioritizing and improving the design of the app, which will be discussed later.

3. Questionnaire:

For better understanding of user preferences and gathering quantitative data, we did a questionnaire to 75 students at Uskudar University. The survey's aim is to acquire information on user experience, their viewpoints, pain points, and actions in relation to an interface's design, usability, and overall effectiveness. The questionnaire contains a set of multiple-choice, rating scale, and open-ended questions. The last question about users providing their feedback and suggestions will be analyzed with interview data.

Frameworks used for better result:

1- Net Promoter Score (NPS): NPS was used to evaluate user satisfaction by asking how likely users are to recommend the app to others.
   - Example Question: " I would recommend this application to others."

2- System Usability Scale (SUS): SUS was used to assess the overall usability of the app through 15 questions covering various aspects like ease of use, features, and satisfaction.
   - Example Question: "I am likely to continue using the university app in the future."

Below is the list of questions that have been used in the survey along with the corresponding answer options, the questions were designed to evaluate the level of satisfaction, usability, and overall experience with the university app.

Question ID	Question	Response Options
Q1	How frequently do you use the university app?	*Daily, Weekly, Monthly, Rarely*
Q2	What is your faculty?	*Faculty of Engineering and Natural Sciences, Faculty of Humanities and Social Sciences, Faculty of Communication, Faculty of Dentistry, Faculty of Health Sciences, Faculty of Medicine*
Q3	What year are you in?	*1st Year, 2nd Year, 3rd Year, 4th Year*
Q4	I can easily find what I'm looking for in the app (e.g., courses, grades, events).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q5	I find it easy to navigate through the app (e.g., menus, buttons, layout).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q6	It is easy to discover new features or sections in the app (e.g., features, navigation, discovery).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q7	The color scheme used in the app is pleasant and easy on the eyes (e.g., visual design, contrast, readability).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q8	The app runs smoothly without crashing or freezing.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q9	The events calendar in the app is useful for keeping track of campus activities (e.g., calendar, events, deadlines).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q10	The notifications I receive from the app (e.g., exam dates, deadlines) are helpful.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q11	The course schedule and details section of the app are useful to me (e.g., timetable, courses, schedule).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q12	The app provides useful information that helps me complete tasks (e.g., grades, assignments, communication).	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q13	I am likely to continue using the university app in the future.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q14	I would recommend this application to others.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q15	Overall, I am satisfied with using the app.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q16	I prefer accessing the university portal (STIX/ALMS/OBS) via the university app rather than through the browser.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q17	The QR code scanner for attendance is easy to find and access in the app.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q18	I find it easy to access and manage my academic documents (e.g., transcript, grades, certificates) within the app.	*(Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)*
Q19	Do you have any recommendations or suggestions for improving the university app?	*(Please leave blank if you don't have any suggestions.)*

III. Data Collection Process

The collected data from questionnaires, interviews, and direct observations provided a comprehensive understanding of user interactions and pain points within the current Uskudar University application. This multi-faceted approach allowed for both quantitative insights into overall user sentiment and qualitative depth regarding specific usability challenges.

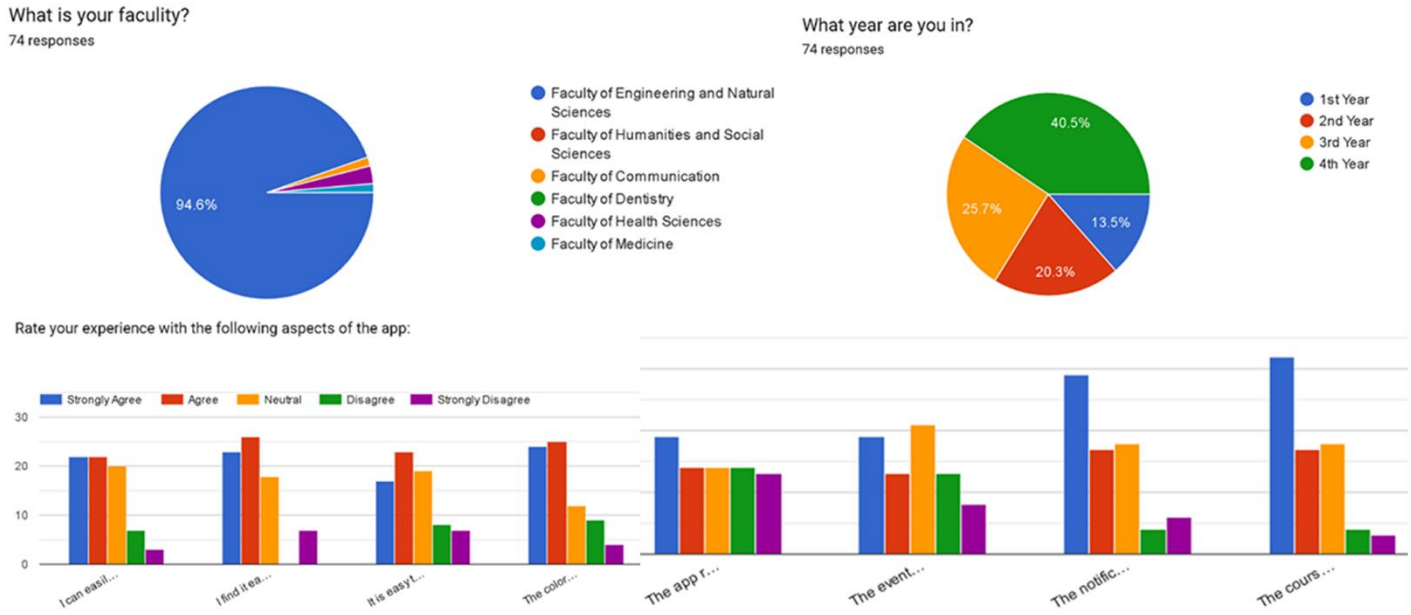
1- Interview: In-depth face-to-face interviews with 5 participants revealed critical qualitative insights into the daily struggles and expectations of students using the application. Recurring themes emerged from these conversations, highlighting frustration with inconsistent navigation, particularly when trying to access essential features like the QR attendance scanner and the STIX academic portal. Many students also expressed a desire for a more modern and intuitive interface, citing the current visual design as outdated and contributing to a confusing user experience. Specific pain points frequently mentioned included difficulty in finding information, issues with app responsiveness, and a lack of clarity in certain academic functionalities. These personal accounts provided a rich layer of understanding, explaining the 'why' behind some of the quantitative trends observed in the questionnaire.

Interview Text	Initial Code
make a tab specifically for the QR code scan...	Wants easier access to QR code scan feature by having a dedicated tab
Not really. It's been like it was...	No problems experienced with the app usage
The weekly schedule to know, like the classes...	Uses weekly schedule feature to manage class timing and bus travel
I have nothing in mind but other than the QR code...	Only improvement suggested is better QR code scan feature, otherwise satisfied
First, in the 'Favorites' section, you can only add four...	Wants more than four items in Favorites for quick access
Another thing: in the Announcements or Activities sections...	Needs announcements and activities in English or translation feature
Also, the Ring Hours (bus schedule) system isn't very clear...	Wants clear bus routes displayed in Ring Hours section
Another issue: when I delete and reinstall the app...	Loses Favorites on reinstall; suggests syncing feature
Honestly, not really. Sometimes STIX is a bit slow...	Minor performance issue with STIX loading slowly
To be honest, the ones I use the most are STIX...	Frequently uses STIX, Weekly Schedule, Ring Hours, QR Code, and Exam Marks
Sometimes I don't have my laptop with me...	Uses app for STIX documents when laptop isn't available
Also, I like the Ring Hours feature...	Likes timely bus schedule feature
First, I think a translation feature would really help...	Suggests translation for accessibility to all students
Second, I suggest adding tutorials...	Wants tutorials for features like STIX and OBS for better understanding
They should make it easier to use...	Finds QR code and STIX access confusing; wants app to be more intuitive and creative
Also, it would help a lot if they gave us clear updates...	Wants clearer communication when app updates are made
Right now, it's easy to use...	Currently finds app easier; had difficulty switching sections previously
I use STIX and the weekly schedule...	Checks STIX and weekly schedule occasionally
I think they should improve the AI feature...	Wants AI assistant, daily lesson reminders, and alarm feature
I would suggest making some changes in the design...	Suggests simplifying app design to make it less complicated
Yes, yes, not always, but sometimes...	Sometimes faces login issues with STIX from app
I use STIX and the weekly schedule.	Frequently uses STIX and weekly schedule
I'm not sure if this is possible or not...	Suggests feature for submitting club creation requests via app
I would suggest fixing the problems first...	Wants problems resolved before adding new features; suggests friendly design and calendar
Yeah, there are multiple issues...	Cannot download documents from STIX via app; issues with notifications and login in ALMS; app is slo
I use STIX to see materials...	Uses STIX for materials, ALMS for lectures, and QR scan for attendance
Like I said, make the app more friendly...	Reiterates need for reminders and study tracking features

2- Observations: Direct observation of 3 irregular first-year students interacting with the application in a natural setting offered invaluable insights into actual user behavior and unexpected friction points. We observed students struggling with common tasks, such as locating the correct module for QR attendance, navigating the weekly schedule effectively, and finding specific information within the ALMS system. These observations confirmed that while some features existed, their discoverability and ease of use were low, leading to visible frustration and inefficient task completion. Specific examples included prolonged searches for the 'Ring Hours' section and difficulties understanding the hierarchy within the STIX portal. The observational data uniquely highlighted practical usability gaps that users might not explicitly articulate in interviews or questionnaires, providing direct evidence of navigational and structural problems.

Task	User	Device	Task status	Time Taken	User Comments/Suggestions
QR Code for Attendance	User 1	Android	Partially Successful	1m 10s	"I always got confused between these 2 options."
	User 2	iPhone	Successful (with help)	1m	"I did ask for help from a friend. There is an option but it was QR STIX login."
	User 3	Android	Successful	<1m	"The colors of the bottom bar are like the background is in blue and the text in black so it is hard to read them."
Weekly Schedule	User 1	Android	Successful	<1m	-
	User 2	iPhone	Partially Successful	~1m	"I struggled to know if the lecture is face-to-face or online because it's all in Turkish."
	User 3	Android	Successful	~1m	"The place of class name was not clear for me to know where the lecture will be held."
Ring Hours	User 1	Android	Partially Successful	<1m	"I honestly often ask the bus driver where they're going."
	User 2	iPhone	Partially Successful	1m	"I just stand on the bus stops and ask there."
	User 3	Android	Unsuccessful	~1m	"I wish they make it clearer, because of this I don't use the feature."
Food List	User 1	Android	Partially Successful	<1m	"I told you I don't have the language, that's why I couldn't understand that."
	User 2	iPhone	Successful	30s	"I usually have lunch with my Turkish friend, he helps me with the menu."
	User 3	Android	Successful	<1m	"It's nice to have a calorie count. I suggest listing the prices too."
Send Message (STIX)	User 1	Android	Successful	<1m	-
	User 2	iPhone	Successful (discovered)	1.5m	"Oh thank you! I didn't know we can send a message from here. But I guess we can't send attachments."
	User 3	Android	Successful	<1m	-
Navigating Courses (ALMS)	User 1	Android	Partially Successful	2m	"It didn't log in automatically, and when I clicked back, I was out of ALMS and had to re-enter."
	User 2	iPhone	Partially Successful	2m	"Same behavior as **USER1**, back button returns to the app and needs login again."
	User 3	Android	Partially Successful	2m	"I hope they make it log in automatically and solve the back button problem."

3- Questionnaire: The questionnaire, completed by 75 students, provided valuable quantitative data on their experience with the existing application. Overall, the mean score suggested a balanced perception among users, indicating that while some features were appreciated, significant areas required improvement. Specifically, users generally found features like the course schedule and notifications somewhat useful and discoverable. However, scores related to overall app performance, the clarity of the event calendar, and the intuitiveness of certain functionalities were notably lower. A large number of neutral responses indicated that the app often failed to either strongly satisfy or dissatisfy users, pointing to a need for more distinct value and usability. These results helped us identify patterns in user satisfaction and pinpoint general areas of concern before deeper qualitative analysis.



Response ID	Suggestion/Recommendation	Category
1	"The calendar for events sucks. Needs improvement. But besides that really the app is fine. If you wanna refine the design, look for another app that has a worse design instead of this. In my humble opinion"	Event Calendar, App Design
2	Notifications.	Notifications
3	Adding department schedule would be helpful for me sometimes.	Scheduling
4	"I think it needs a new design, more fresh."	App Design
5	"Uygulamadan stixe girince geri tuşuna bastığımda ana ekrana atmasın" (Translation: "When I enter the app, pressing the back button should not take me to the home screen.")	UX/UI Flow
6	Stop using QR scanner for attendance, please.	QR Code Attendance Issue
7	"Just don't make a lot of updates every day, I open the app and it wants me to update!"	App Updates
8	"Solve the issue of the QR code attendance."	QR Code Attendance Issue
9	"QR code for attendance doesn't work for all of us equally."	QR Code Attendance Issue
10	"Okay. So I've been using the university app for a while now, and... I mean, it works, kinda. Some parts are fine. Like, I can check my grades, see announcements, message a professor if I need to..."	General Feedback
11	"Things don't really link together (e.g., logging into OBS or ALMS separately)."	App Navigation, Single Sign-On
12	"No way to pay fees inside the app. Not even Apple Pay, Google Pay, nothing."	Payments, App Features
13	"SKS makes the app go weird. It lags, freezes, icons disappear. At some point, I just force-close the app and restart."	Performance Issues (Lag/Freezing)
14	"No GPA available. Can't download transcripts or anything as a PDF or Word doc."	Missing Features
15	"Where are my own documents? I need a copy of my registration or contract, but I have to go in person, wait, and ask."	Document Access
16	"No support. Like, none. No chat, no contact form, no help section. Nothing."	Support & Help
17	"The app's got potential but right now? It's halfway there. Needs fixes. Needs better flow. Needs real support."	General Feedback
18	"App doesn't open on my phone, I have to use a second-hand phone just for the QR code attendance."	Device Compatibility
19	"Before registering in a new course, we should receive more information than just the title. The STIX should have the location and time of the course."	Course Registration, STIX
20	"The notification of STIX should have the title of the announcement."	STIX Notifications
21	"ALMS is always crashing."	App Performance
22	"I hope we can download the PDF of the lecture because if I want to download it, I always go to the browser, not the app."	Download Features
23	"Sometimes the STIX tab starts hanging until I restart the app, I recommend fixing it."	Performance Issues (Lag/Freezing)
24	"Add a change language option inside OBS after login. Also, redesign the whole OBS to make it more modern."	Language Option, App Design
25	"I want to go back to manual sign-ins because we are in a private university, and no one should force us to attend lectures. Some students work to pay the fees, so how will they attend the lectures?"	Attendance Method
26	"As a double major student, I have difficulty switching between my majors, the timetable doesn't update, and I can't access my second major on STIX, so I have to use OBS, STIX, and ALMS through the browser."	Double Major Issue, App Navigation

IV. Data Analysis and Decision Making

The results from these techniques revealed some common themes, usability issues, general trends, and common problems that users encountered in university app, findings are illustrated in tables as follow:

1.1 Summary of Result

1.1.1 Questionnaire Summary: The total mean score is closely balanced perceptions, while some responses lean slightly toward positive perceptions such (e.g., feature discovery, course schedule, Notification), and some responses lean slightly lower score such (app performance, event calendar). Although majority of responses are in neutral scale, which means there is balancing between users find the features useful while others do not. To confirm our findings, we must compare the findings with other techniques.

Question	Adjective Pair (Theme)	Mean Score (1 à 5)
Q1	Boring / Interesting	3.734
Q2	Complicated / Easy	3.800
Q3	Conventional / Inventive	3.467
Q4	Clear / Confusing	3.774
Q5	Efficient / Inefficient	3.174
Q6	Exciting / Dull	3.267
Q7	Not interesting / Interesting	3.813
Q8	Responsive / Unresponsive	3.973
Q9	Secure / Not secure	3.533
Q10	Supportive / Unsupportive	3.720
Q14	Recommendable / Not recommendable	3.493
Q15	Satisfied / Dissatisfied (UX)	3.667
Q16	Preferred / Not preferred (Uni Portal Access)	3.453
Q17	Easy to access / Hard to access (QR System)	3.240
Q18	Easy to manage / Hard to manage (Document Access)	3.653

Task	Common Issues Observed	Sample Comments
QR Code for Attendance	Confusing placement, unclear labels.	"I always got confused between these 2 options."
Weekly Schedule	Language barrier, unclear classroom info.	"It's all in Turkish," "Classroom unclear."
Ring Hours	Poor visibility, unclear route info	"I don't use it, it's not clear."
Food List	Language-only in Turkish	"Couldn't understand."
Send Message (STIX)	Feature unfamiliar to users	"Didn't know this existed."
Navigating ALMS	Login/logout (poor integration)	"Needs auto-login and better back button flow."

1.1.2 Observational Study Summary

1.1.3 Interview Themes Summary (Thematic analysis)

Category	Sample Codes / Themes
Feature Suggestions	Enthusiastic QR tab, more Favorites, translation, study reminders, tutorials
Navigation & Usability	QR scanner confusion, inconsistent login, missing document access
Performance	Slowness, bugs in STIX/ALMS, sync issues with Favorites
Support Needs	Need for onboarding, update explanations, multi-language support
Frequent Features Used	STIX, Weekly Schedule, QR code, Ring Hours
Satisfaction	Mostly satisfied but want improvements before new features are added.

Findings: All techniques highlighted these Issues:

- **Navigation (especially QR and STIX).**
- **Performance.**
- **Language and accessibility.**
- **Features (e.g., schedule, QR, STIX, and Ring Hours).**

1.2 Design Decisions

Design Change	Description	Priority	Reason	Implementation Scope
QR Tab	Add a clear, separate tab or button for QR attendance scanning.	High	Common difficulty locating the feature during tasks.	Included
ALMS Access	Redesign the ALMS login flow to imply persistent sessions and clarify "Back" navigation.	High	Observed task frustration and interview complaints.	Included (UI only)
Language Translation	Add label for English/Turkish in key views like Food List and Schedule.	High	Affects usability for many non-Turkish speakers.	Included
Improved Visual Contrast	Adjust color schemes and font sizes for readability (esp. bottom nav bar).	High	Noted in both interviews and observation.	Included
Expanded Favorites List	Allow more than 4 features to be pinned for quick access.	Medium	Multiple interviewees wanted easier access.	Included
In-app Tutorials & Tooltips	Show tips or short intros for features like STIX, QR, ALMS.	Medium	Aimed at onboarding and clarity.	Included
Clearer Ring Hours Map	Add simple, clear visuals for campus shuttle routes.	Medium	Low success in task completion, user confusion.	Included
Sync Favorites Across Installs	Maintain user preferences even if the app is reinstalled.	Low	Mentioned by few users.	Beyond Our Scope
AI Assistant & Reminders	Include study planning, notifications, and alarms.	Low	Appealing but beyond current scope.	Beyond Our Scope
Club Request Feature	Enable student clubs to submit creation forms through app.	Low	Suggested by 1–2 users.	Beyond Our Scope

V. DESIGN TECHNIQUES

1- Visual Attention Analysis:
To help us with redesigning decisions, we took some screenshots of the current design of Uskudar university app and used them in an online tool which will predict and simulate eye-tracking of the user. The goal is to understand where they naturally focus their attention and identify which elements are overlooked than others.

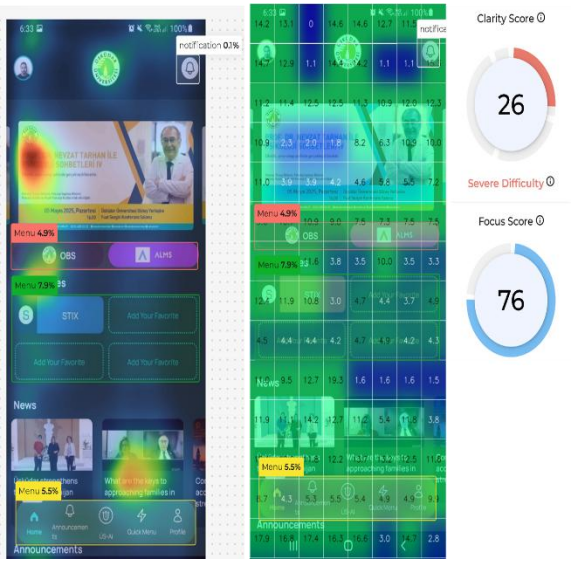
Terminology:

- **Clarity Score:** shows how clear or cluttered the design is for a new user. It considers various aspects of your design – the amount of text, text size, and text contrast, color saturation, number of images, and their size.
  - Severe Difficulty (0-29)
  - Moderate Difficulty (30-59)
  - Optimal Clarity (60-94)
  - Too Simple (95-100)

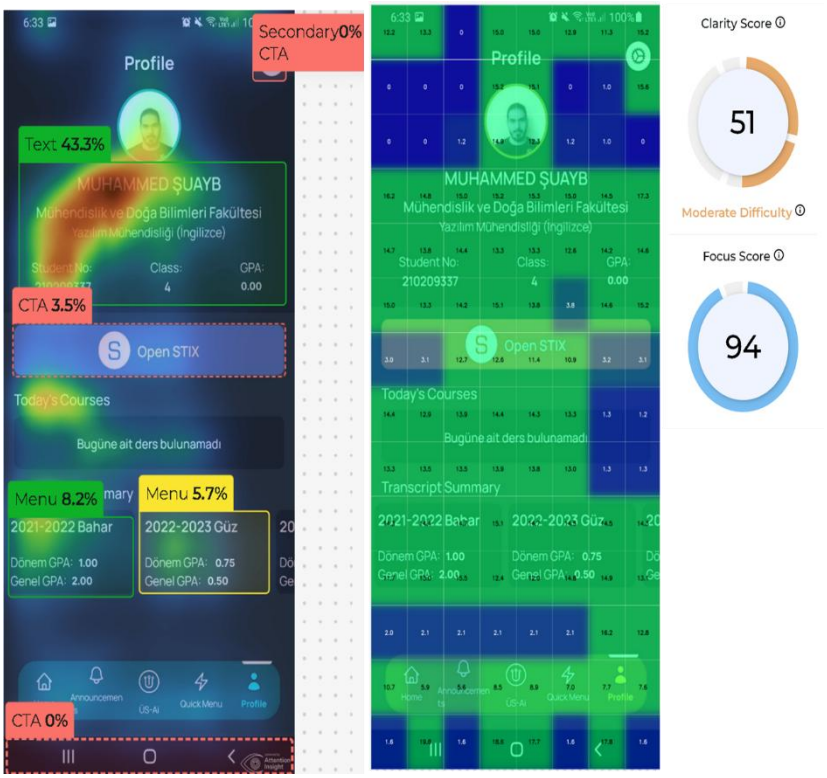
- **Focus Score:** measures the level of attention concentration in your image. In images with several attention-grabbing elements, attention gets divided among them, reducing the visibility of individual parts. This can make the image harder to comprehend or interpret. A higher score means more concentrated attention.

These pictures represent the primary functions of the apps, among other features:

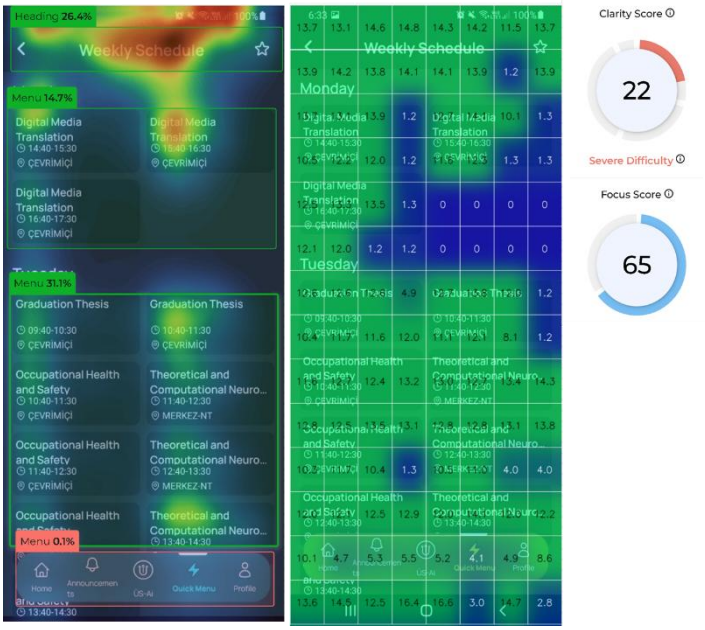
- **HomePage:** The analysis in HomePage reveals a critical dichotomy: while the application effectively captures user attention on key areas (evidenced by the high focus score and heatmap hot spots), the users simultaneously experience "Severe Difficulty" in understanding the content (indicated by the low clarity score). This suggests a strong need for design optimization.



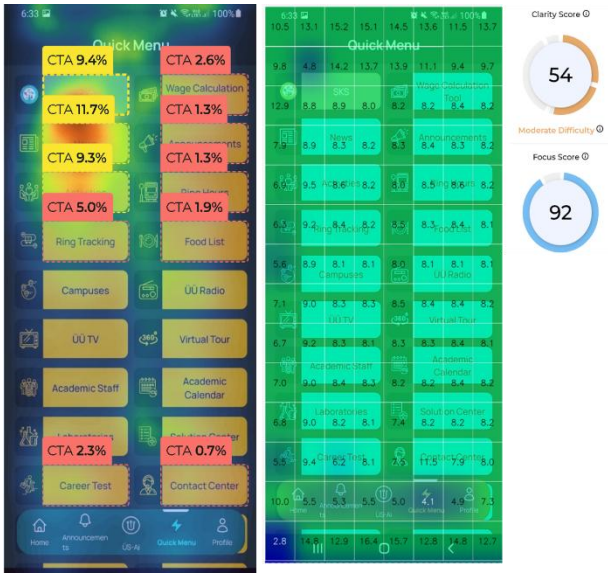
- **ProfilePage:** The profile screen effectively draws user attention to personal details and academic summaries. Despite this strong focus, users experience moderate difficulty in quickly understanding the information, suggesting improvements are needed to enhance clarity and reduce cognitive load.



- **Weekly Schedule Page:** This analysis of the weekly schedule screen shows users focusing on the main heading and certain specific entries. However, despite their attempts to concentrate, they found the overall information very difficult to understand. This suggests the screen's layout or density might be overwhelming, making it

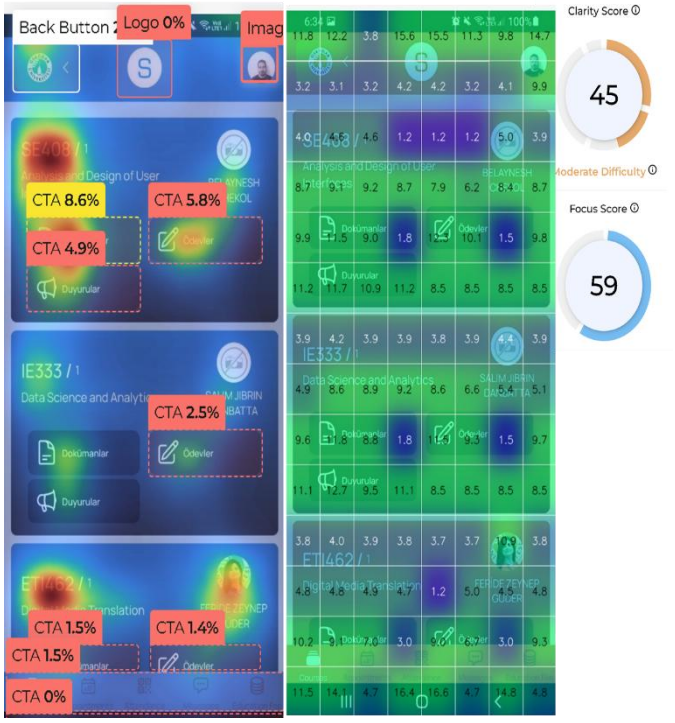


- **Quick Menu Page:** This image provides an analysis of the "Quick Menu" page. The heatmap shows that users pay significant attention to various call-to-action (CTA) elements scattered across the screen, particularly towards the top left, indicating they are actively looking for specific functions or information.



Despite this high level of user focus, the clarity score suggests a moderate level of difficulty in quickly understanding the page. This implies that while users are engaged and trying to find what they need, the sheer number of options or their arrangement might be somewhat overwhelming, requiring more effort to navigate. The design could benefit from simplification or a clearer visual hierarchy to make it easier for users to find their desired actions.

- **STIX page:** This image displays the analysis of the "STIX" page, which serves as a student platform for materials and announcements. The heatmap shows that users pay attention to the back button and their profile icon, as well as the individual course blocks. Within each course, their focus is drawn to key elements like "Documents," "Assignments," and "Announcements," where various calls-to-action are located. Despite users demonstrating a moderate level of focus on the screen, the clarity score indicates they experience moderate difficulty in quickly understanding the information presented. This suggests



that while users are exploring their course materials, the layout or organization of the page might be somewhat challenging to navigate efficiently, making it less intuitive to find specific items quickly.

1- **Typo-glycemia Effect:**

The fcat taht you can raed tihs txet shwos the way taht our birans pcresos wttrein txet. Dipetse the fcat taht the inside Itteres of ecah wrod are mexid up, it is siltl psoislbe to uanrdestnd msot wdros in tihs peice of txet.

The most efficient organ in the human being is the brain and it's highly efficient at identifying and **recognizing patterns**, which plays a **crucial role** in UI design.

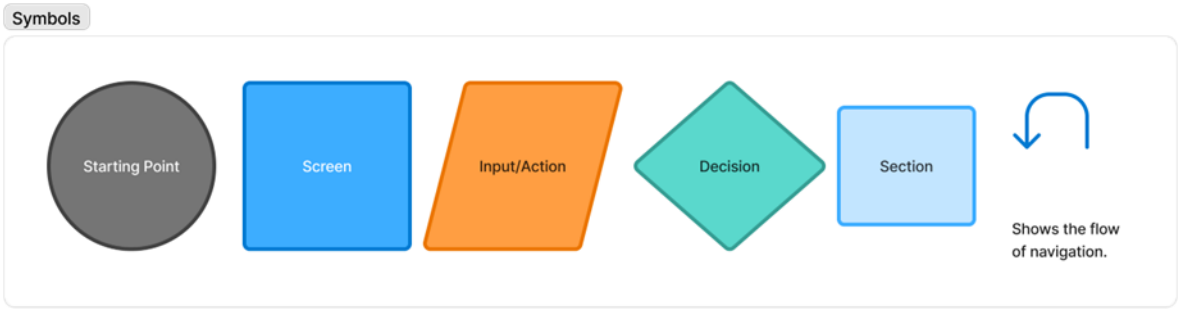
Despite The **scrambled letters**, the sentence still **readable** because our brain can identify familiar **word shapes**. In the same context A well-structured design with **consistent patterns** can help users quickly **understand** and **navigate** the interface without any confusion, this factor **influences** my design **decisions** to make more **predictable layouts** and **intuitive navigation**.

VI. DESIGN PROCESSES

❖ User Task-Based Diagram

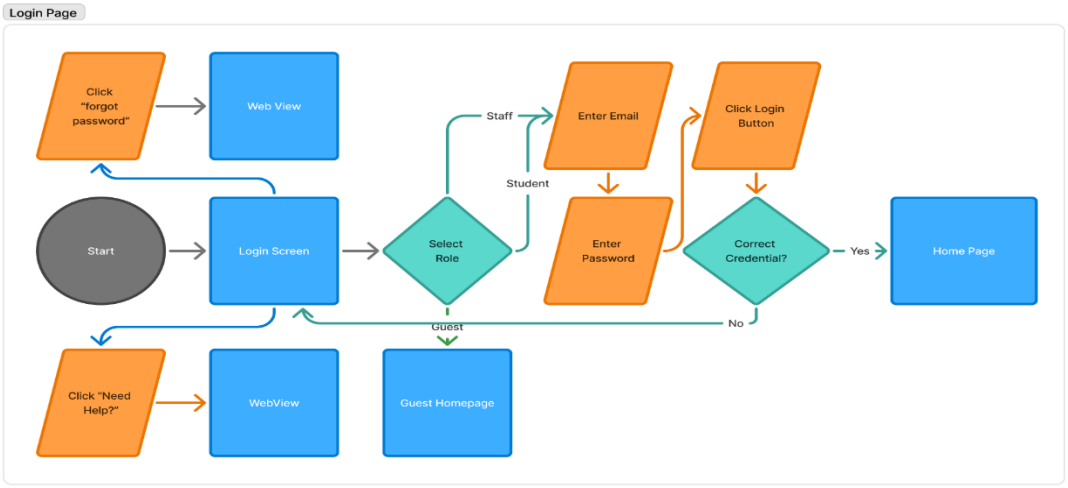
To illustrate the user journey map, we did a workflow diagram that defines how users can navigate through the redesigned app. Our aim is to focus on reducing the number of steps required to achieve a certain task and add alternative paths to improve flexibility and accessibility within the app.

- **User Task-Based Diagram Symbols**

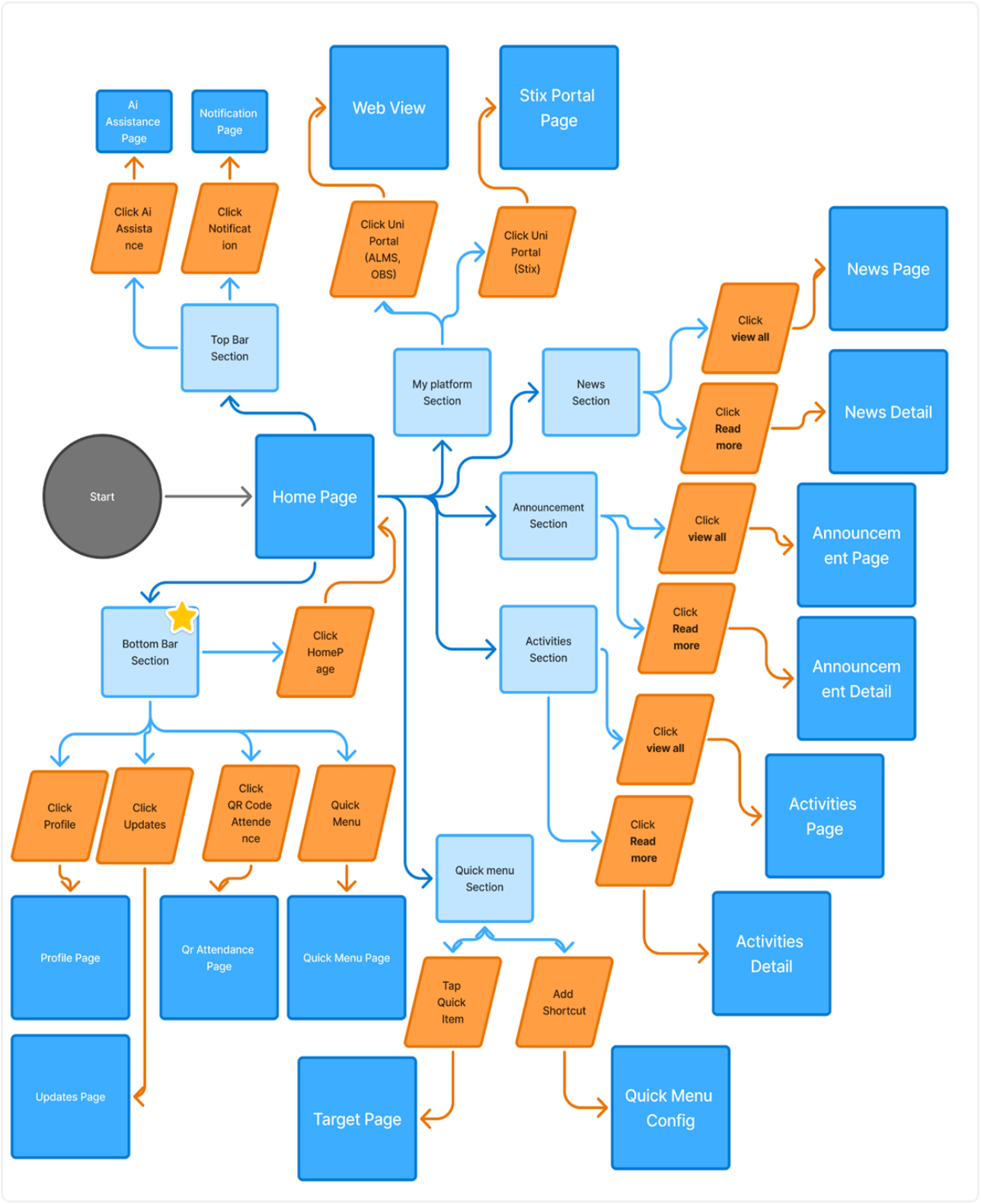


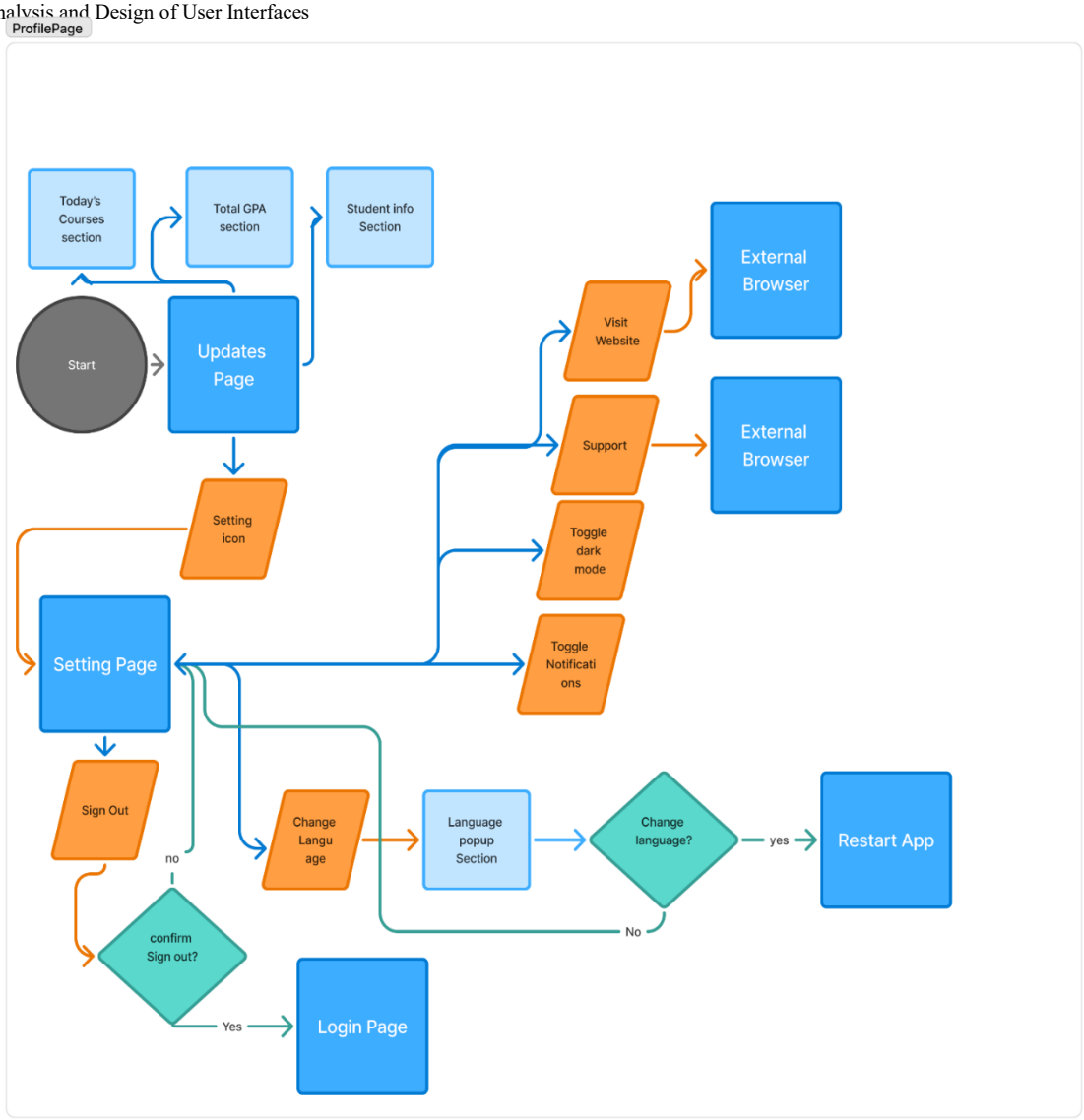
This figure shows the symbols that are used in the workflow diagram, screens, user actions, decisions, and navigation flow.

- **App User Task-Based Diagram**



Home page screen



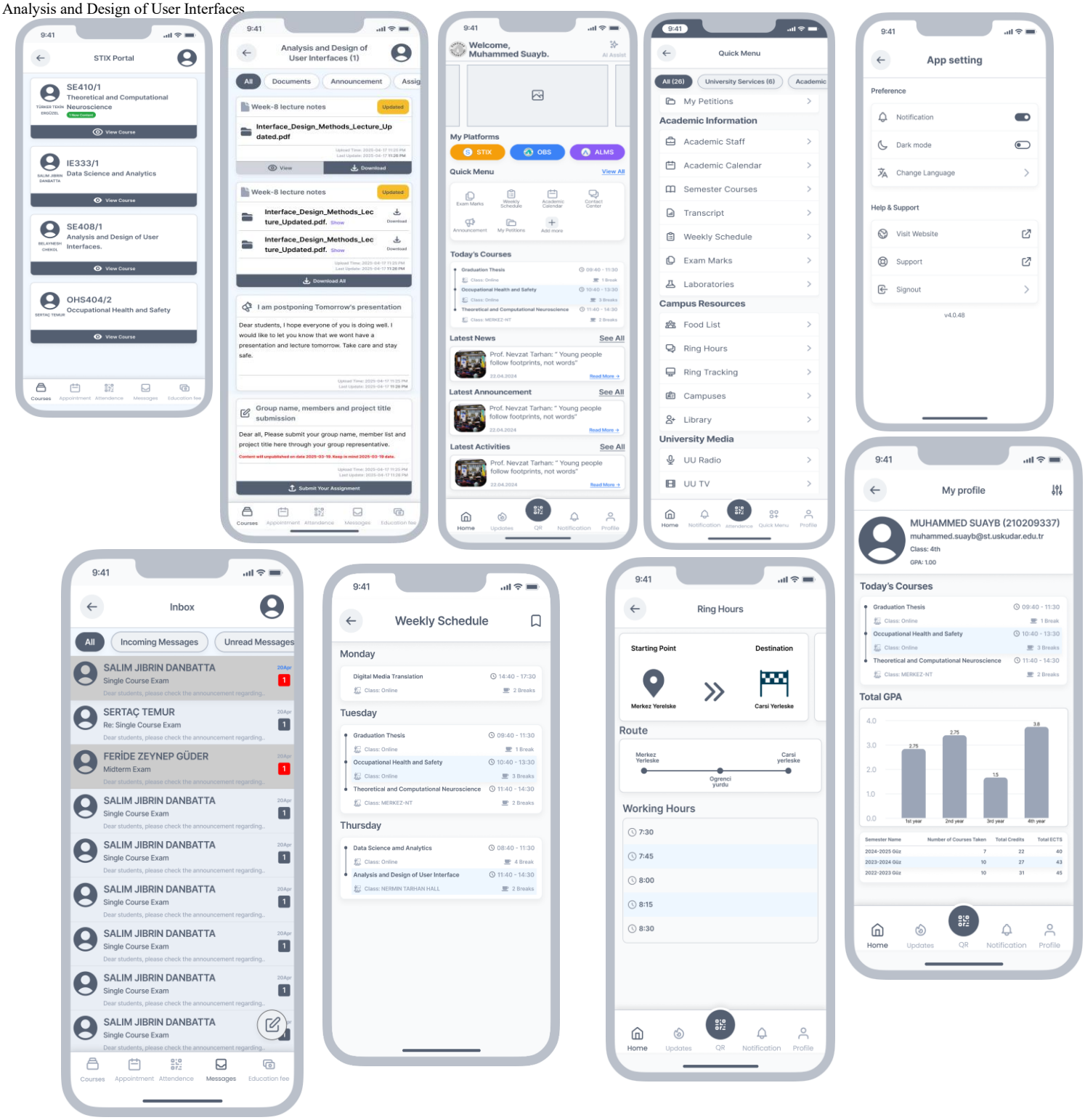


❖ **Wireframes**

The wireframes are high-fidelity level, including a basic color palette, icons and consistent design hierarchy, they were designed based on student's feedback after interpreting the analysis to enhance accessibility and usability.

- **Color Palette**

- **Wireframe Screenshots**


STIX Portal
SE410/1
Theoretical and Computational Neuroscience
IE333/1
Data Science and Analytics
SE408/1
Analysis and Design of User Interfaces.
OHS404/2
Occupational Health and Safety
Analysis and Design of User Interfaces (1)
Week-8 lecture notes
Interface_Design_Methods_Lecture_Updated.pdf
I am postponing Tomorrow's presentation
Group name, members and project title submission
Welcome, Muhammed Suayb.
My Platforms
Quick Menu
Today's Courses
Latest News
Latest Announcement
Latest Activities
Quick Menu
Academic Information
Campus Resources
University Media
App setting
Preference
Help & Support
My profile
MUHAMMED SUAYB (210209337)
muhammed.suayb@st.uskudar.edu.tr
Today's Courses
Total GPA
Inbox
SALIM JIBRIN DANBATTA
SERTAÇ TEMUR
FERİDE ZEYNEP GÜDER
Weekly Schedule
Monday
Tuesday
Thursday
Ring Hours
Starting Point
Destination
Route
Working Hours

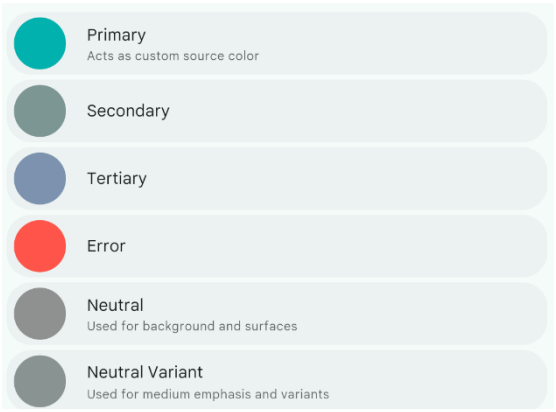
VII. Color Palette Selection and Implementation

The color palette for the application was strategically developed to ensure strong brand consistency with the university's identity while adhering to modern design principles for usability and accessibility.

1. Primary Color Derivation: The foundational primary color for the application was directly derived from the official university logo. This decision ensures immediate brand recognition and a strong visual connection to the institution, making the application feel integral to the university ecosystem.

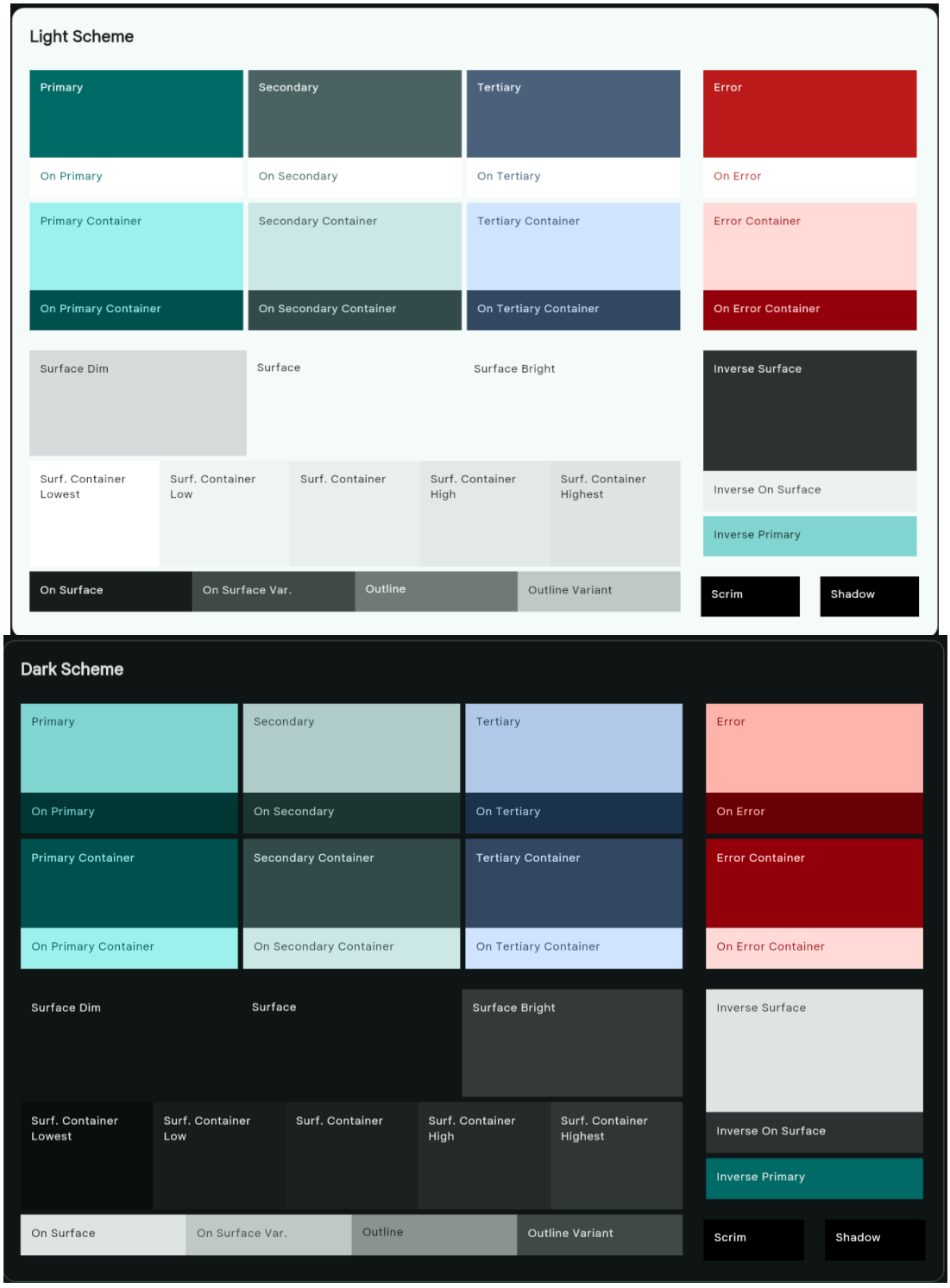
2. Material 3 Theme Integration: This derived primary color was then used as the "seed color" and fed into the Material 3 Theme Builder. The Material 3 design system is engineered to generate a comprehensive, harmonious, and accessible color palette based on a single input color.

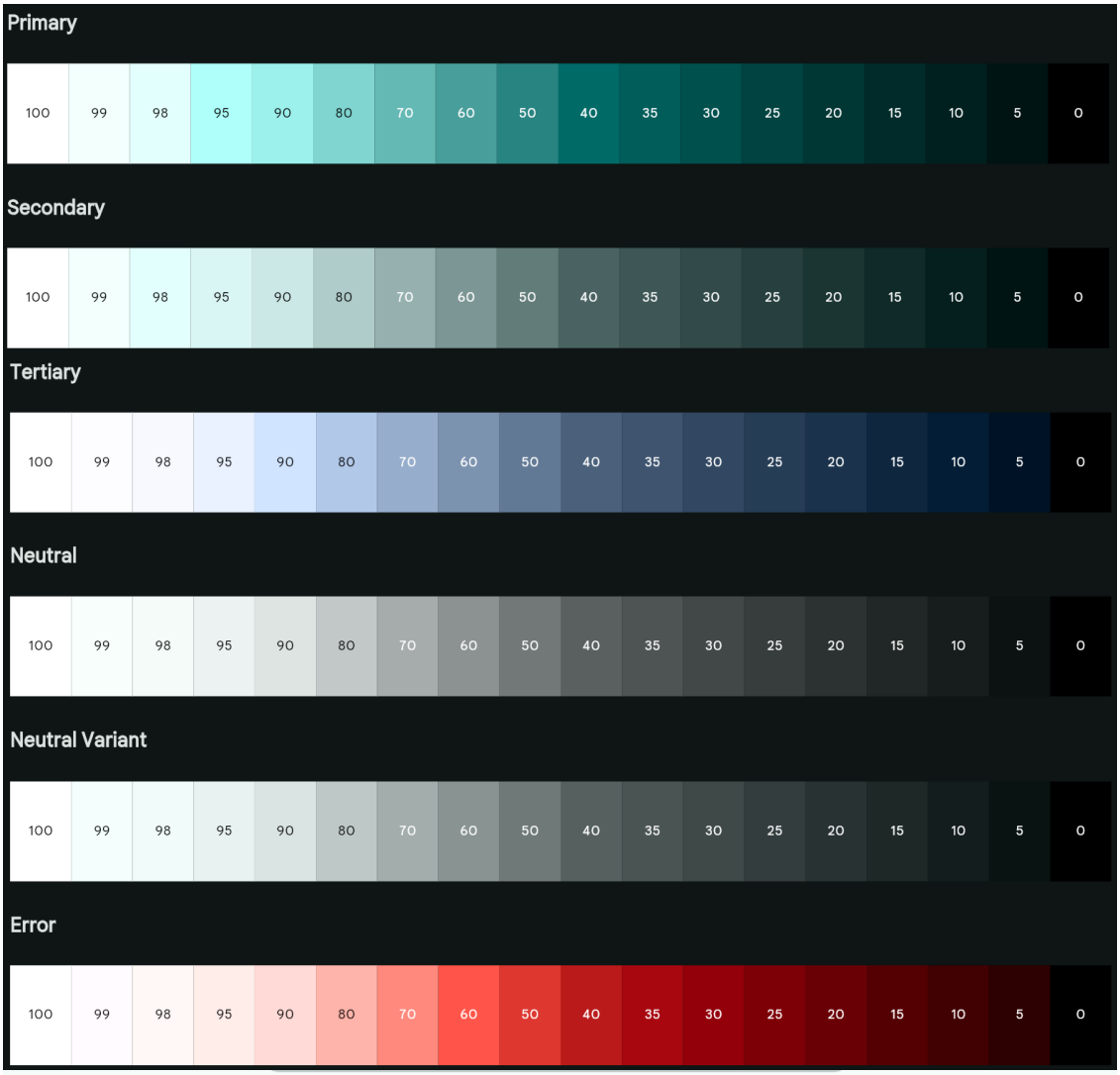
3. Color Palette Type and Characteristics: Rather than fitting into traditional classifications like complementary, triadic, or analogous (which often describe a few manually chosen accent colors), the resulting Material 3 palette is best described as a **system-generated, hierarchical, and adaptive palette**.

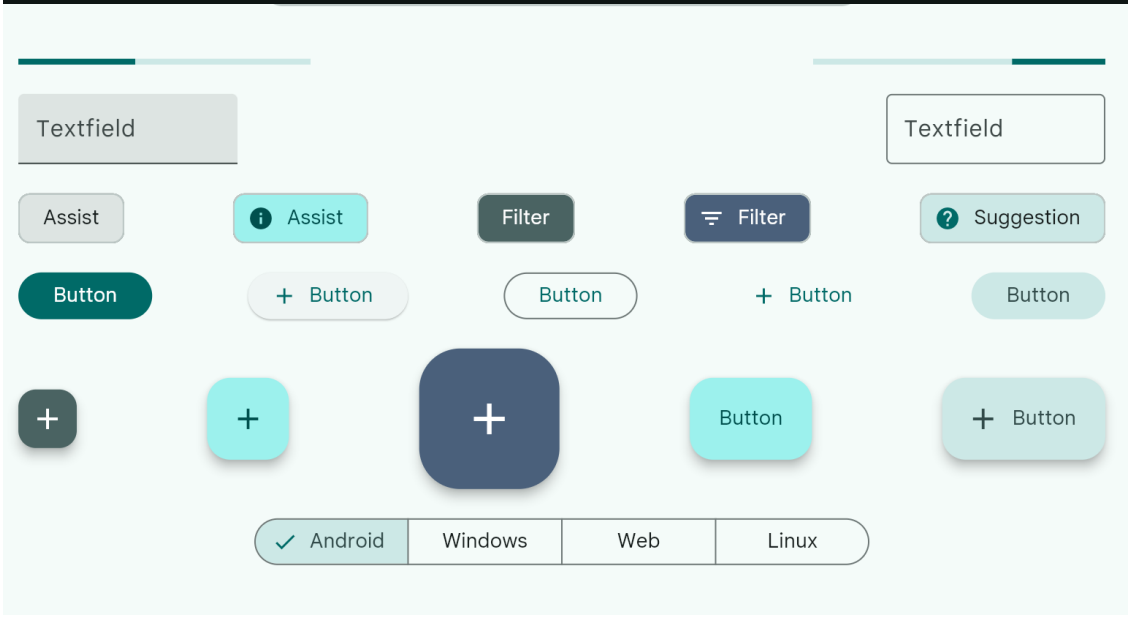


- **System-Generated:** The various shades for primary, secondary, tertiary, error, neutral (surface/background), and on-colors (text/icons on colored surfaces) are algorithmically created by the Material 3 system. This ensures inherent harmony and consistency across the entire user interface.
- **Hierarchical:** Each color in the palette is assigned a specific role and semantic meaning within the UI. For example, the primary color is used for key branding elements and prominent actions, while secondary and tertiary colors provide subtle accents or differentiate components. Surface and background colors ensure proper contrast and readability for content.
- **Adaptive (Light and Dark Themes):** A significant advantage of using the Material 3 Theme Builder is its automatic generation of a complete set of optimized colors for both light and dark themes. This provides a seamless and comfortable viewing experience across different user preferences and environments without requiring separate manual color selection for each theme.
- **Focus on Accessibility:** Material 3's color system is designed with accessibility (e.g., contrast ratios) as a core principle, ensuring that text and UI elements are readable for a wide range of users.

4. Overall Indication: This systematic approach to color ensures that the final product not only aligns perfectly with the university's brand but also benefits from a robust, flexible, and user-centric color scheme. It provides cohesive visual language that supports clarity, usability, and a consistent user experience throughout the application.




Primary
100 99 98 95 90 80 70 60 50 40 35 30 25 20 15 10 5 0
Secondary
100 99 98 95 90 80 70 60 50 40 35 30 25 20 15 10 5 0
Tertiary
100 99 98 95 90 80 70 60 50 40 35 30 25 20 15 10 5 0
Neutral
100 99 98 95 90 80 70 60 50 40 35 30 25 20 15 10 5 0
Neutral Variant
100 99 98 95 90 80 70 60 50 40 35 30 25 20 15 10 5 0
Error
100 99 98 95 90 80 70 60 50 40 35 30 25 20 15 10 5 0


Textfield
Textfield
Assist
Assist
Filter
Filter
Suggestion
Button
Button
Button
Button
Button
Button
Button
Android
Windows
Web
Linux

VIII. EVALUATION

After designing the wireframes and developing the high-fidelity prototype, I conducted continuous informal evaluations by collecting feedback from fellow university students. This feedback helped refine the interface before conducting a more structured observation.

The formal evaluation took place via Zoom sessions, where three participants tested a set of predefined tasks based on usability issues identified during the early research and analysis stages. While the focus was primarily on these predefined tasks, users were also encouraged to explore other parts of the prototype and express their opinions freely. This open-ended feedback allowed for the discovery of hidden usability issues that may not have emerged during earlier data collection or task-specific testing.

The following table summarizes the key observations from these sessions, including usability issues and strengths, the number of users affected, the relevant heuristics, severity level, and ease of fix. The severity and fix complexity are explained in the keys below.

- **Severity Ranking Key**

Code	Meaning
S0	Violates a heuristic but is not a usability problem.
S1	Superficial usability problem; may occur rarely and can be easily overcome. Fix only if time allows.
S2	Minor usability problem; more frequent or harder to overcome. Low priority fix.
S3	Major usability problem; persistent or confusing. Should be a high priority to fix.
S4	Usability catastrophe; blocks usage. Must be fixed before release.

- **Ease to Fix Key**

Code	Meaning
E0	Requires maximum effort and additional research.
E1	Considerable effort, but the issue and solution are understood.
E2	Moderate effort; issue and solution are clear.
E3	Easy fix by one developer with minor effort.
E4	Trivially easy to implement.

❖ **Summary of Observations from Prototype Evaluation**

#	User Task	Observation	Issue or Streng	Heuristic	Users Affected	Severity	Ease to Fix	Notes
1	Scan QR code for attendance	Users were happy with the prominent placement of the QR scanner on the homepage	Strength	Visibility of system status	3/3	–	–	Easy access from homepage improved usability
2	View weekly schedule	Users appreciated the clear schedule layout with breaks and locations	Strength	Aesthetic & minimalist design	3/3	–	–	Suggested collapsible days (toggle) for cleaner view
3	Check ring hours	Users liked the clear step-by-step labeling (Step 1, Step 2, Start, Finish)	Strength	Recognition rather than recall	3/3	–	–	Clearer than before; improved understanding of schedule timing
4	View food list	Users liked English translation of Turkish menu items	Strength	Match between system and real world	3/3	–	–	Solves language barrier issue for non-Turkish speakers
5	Send message via STIX	Users impressed with ability to attach files and organized chat filters	Strength	Flexibility and efficiency of use	3/3	–	–	Improvement over original app functionality
6	Navigate ALMS (course portal)	Users very happy with fixed navigation issue inside webview	Strength	Consistency & standards	3/3	–	–	Previously closed the webview; now it properly goes back
7	Explore Quick Menu options	Liked new layout and favorite button, but suggested an option to switch to old layout	Minor Issue	Flexibility and efficiency of use	2/3	S1	E3	Toggle view option can accommodate different user preferences
8	Manage favorited items on homepage	Users liked being able to unfavorite directly from homepage	Strength	User control and freedom	3/3	–	–	Previously required going deep into the service page
9	View exam marks page	Liked collapsible semesters and organized exam breakdown	Strength	Aesthetic and minimalist design	3/3	–	–	Users liked dropdown for midterm/final breakdowns
10	Access course content (assignments/docs)	Liked being able to track updates via badges and submit assignments easily	Strength	Visibility of system status	3/3	–	–	Previously missing; new functionality appreciated
11	View/download course materials	Users liked view/download buttons on cards	Strength	Flexibility and efficiency of use	3/3	–	–	Improved accessibility to materials
12	Filter course content inside course	Chip filters solved frustration from deep navigation	Strength	Flexibility and efficiency of use	3/3	–	–	Efficient content filtering appreciated

❖ **Summary & Interpretation of Findings**

The prototype evaluation revealed overwhelmingly positive feedback across all predefined tasks. Most usability issues identified during earlier stages were resolved in the prototype. Participants were able to complete tasks smoothly, and their feedback highlighted both expected improvements and a few additional suggestions that were not previously identified.

❖ **Insights from Strengths and Suggestions**

- **Strengths:** Users responded particularly well to the redesigned homepage features such as the QR scanner, the collapsible schedule layout, and direct access to favorite services. The clear structure and new flexibility in navigating course content significantly improved the overall user experience.
- **Suggestions:** Some users suggested a toggle between the new and old layouts in the quick menu for personal preference. This suggestion, while minor (S1), is easy to implement (E3) and may be considered for the next release to improve personalization.

❖ **Severity & Ease-to-Fix Reflections:**

The few identified usability concerns were ranked as low severity (S1) and required minimal effort to fix (E3). There were no major usability problems (S3–S4), and the prototype is ready for final implementation with minor adjustments.

❖ **Action Plan**

Since the prototype has resolved all major issues and received positive feedback, the next step is to move forward with developing the final front-end version. Minor suggestions will be included as part of ongoing refinement.

IX. RESULTS

Our project successfully fixed the common problems with the Uskudar University app. We started by finding out what was wrong, then designed and tested a better version that users loved.

- **Original App Problems Confirmed:** The old Uskudar University app had issues like a messy layout, confusing navigation, and an old-fashioned look. Even though it had important features like course sign-up and class schedules, it wasn't easy to use.
- **Finding the Problems (Why and How):**
  - **Interviews:** We talked face-to-face with 5 students. This helped us deeply understand what students needed, expected, and what bothered them about the app.
  - **Observations:** We watched 3 new students use the app naturally. This showed us hidden problems, especially with everyday tasks like scanning QR codes for attendance, checking weekly schedules, and using the ALMS system.
  - **Questionnaire:** We got answers from 75 students. This gave us numbers on how they felt about the app. Some liked features like schedules, but many had issues with how fast the app ran or the event calendar. A lot of students felt neutral, meaning the app wasn't really standing out as useful for them.
- **Main Problems Found:** All our research showed the same issues: navigation difficulties (especially for QR attendance and the STIX portal), slow app performance, language problems (only Turkish content), and issues with specific features like the schedule and bus "Ring Hours."
- **Visual Check Showed Confusion:**
  - **Homepage:** Users looked at it a lot (76% focus), but found it very hard to understand (26% clarity). This meant the page needed big improvements.
  - **Weekly Schedule Page:** Users focused here too (65%), but found the information extremely difficult to understand (22% clarity). This pointed to a cluttered or overwhelming design.
  - **Profile Page, Quick Menu, and STIX Page:** These pages were also moderately hard to understand, even when users focused on them. This suggested that the way information was presented wasn't clear enough.
- **New Design (Prototype) Was a Success:** The new, highly detailed app design, made using all the user feedback, was tested with three people and got fantastic reviews.
  - **Problems Fixed:** Most of the major usability problems we found at the beginning were solved in the new design.
  - **Easier to Use:** People could finish tasks easily and smoothly. They especially liked the easy-to-find QR scanner, the clear weekly schedule, step-by-step bus hours, English food list, better STIX messages with attachments, fixed ALMS navigation, and the ability to unmark favorite items on the homepage.
  - **Very Few New Issues:** We only found very small, low-importance problems (like suggesting a switch for the Quick Menu layout), which are easy to fix. We didn't find any big, serious problems.
- **Ready for Building:** The new design is now ready to be turned into the actual app, with only minor final tweaks needed.

X. LESSONS LEARNED

This project taught us important things about how to design good user interfaces and experiences, showing that focusing on the user and making small improvements along the way is key.

- ✓ **User Focus is Most Important:** Using different ways to gather feedback (interviews, watching users, surveys) was super important. It helped us fully understand what users needed and what their problems were. This detailed feedback directly led to smart design choices and a very effective solution.

- ✓ **Mixing Data Helps a Lot:** Combining feedback from surveys (numbers) with stories from interviews and observations (experiences) gave us a complete picture. We understood both *what* happened and *why* it happened. This mix was a strong base for finding out what needed fixing.

- ✓ **Clear Visuals are Vital:** Our visual analysis showed that just getting someone's attention isn't enough. A design also needs to be clear and easy to understand, otherwise, users will struggle, even if they're looking right at it. This means things like text size, color contrast, and how elements are organized really matter.

- ✓ **Designing for How Brains Work:** Knowing how people's brains recognize patterns helped us create predictable layouts and easy navigation. This made the app feel natural to use, reducing confusion and making it easier to learn.

- ✓ **Testing Often Makes Design Better:** Continuously testing our design (both informally and formally) was crucial. It helped us fine-tune the app's look and feel and catch problems early. The fact that we found only minor issues at the end proves that our design and testing process worked well.

- ✓ **Fixing What Matters First:** Using a system to rank problems by how serious they were and how easy they were to fix helped us decide what to work on first. This ensured we tackled the biggest problems right away, while smaller ideas could be saved for later.

- ✓ **Colors for Brand and Everyone:** Choosing the app's main color from the university's logo and using a modern design system (like Material 3) did two things: it kept the university's brand strong, and it automatically built in accessibility features (like good color contrast) for everyone, in both light and dark modes.