



**Faculty of Engineering and Information Technology
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MiniMinds

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Acknowledgment

We begin by remembering our brothers and sisters in Gaza and all across Palestine who continue to face hardship every day under occupation. This work is dedicated to their strength, resilience, and unbroken spirit.

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Disclaimer Statement

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Abstract

It is confusing and stressful to search for the appropriate kindergarten for a child. The majority of parents do not know where to start or how to select the most suitable one. **MiniMinds** is a straightforward app that guides parents in searching and enrolling for kindergartens quickly and easily.

MiniMinds brings parents and kindergartens together in one place. Parents can create profiles for themselves and each child, search for kindergartens by location, price, type of learning, special needs support, and more, and get recommendations that match what each family is looking for.

The application collects the required documents during registration and shows progress updates. It also allows parents to book seats, make secure payments through the app, and communicate directly with kindergartens via a built-in messaging system.

Once parents enroll, they become members of a community where they can view kindergarten activities, events, and announcements. Parents can like posts, comment, book events, and easily organize their schedules. They can also provide feedback after enrolling. The application categorizes this feedback by topic and sentiment (positive, negative, and neutral), allowing kindergartens to improve and providing other parents with a brief overview of these kindergartens. Additionally, parents can vote on feedback to indicate whether they agree or disagree with it.

MiniMinds has learning features that let parents create tests for their children. By using machine learning models, the app gives detailed reports showing each child's progress and areas that need improvement, while also creating personalized stories based on each child's needs and interests.

Kindergartens must be authenticated by the admin before they can join the platform. Once authenticated, kindergartens can make detailed profiles, manage registrations, track feedback, view statistics, manage payments, schedule semesters, and manage students at all academic levels, all from a single point.

Accounts management is done by the admin, who also ensures smooth operation, tracks app statistics, and sends broadcast messages to users when required.

In summary, MiniMinds simplifies the search and enrollment process in kindergartens for parents, streamlines operations and student management for kindergartens. The app simplifies the entire process for all stakeholders, making it modern, easy, and trouble-free.

Chapter 1: Introduction

1.1 Statement of the problem

Parents who are always looking for the best for their kids often face a struggle to find detailed and accurate information about kindergartens, as they usually depend on social media groups or asking friends to get pieces of information, which often lack accuracy and correctness, as there is no dedicated platform for this purpose. In addition, the enrollment process is typically manual and requires parents to visit the kindergarten in person, which can be time-consuming and annoying. Even after enrollment, communication between parents and kindergartens is weak, and routine tasks like fee payments can be uncomfortable, as parents may need to visit the kindergarten in person.

On the other hand, kindergarten owners also face various challenges, such as managing enrollments manually and tracking class capacity, also, the payment process is another major issue, as they must track each child's payments and send reminders to parents, which is a task that is often done manually and requires dedicated staff, also the kindergartens typically rely on platforms that are not designed specifically for parent-kindergarten interaction, leading to confusion or missed messages. Furthermore, the ability to collect and analyze feedback is often missing, making it difficult to identify what needs to improve.

MiniMinds successfully brings a solution for both parents and kindergartens by providing all the features they need in one easy-to-use and reliable platform.

1.2 Objectives

As mentioned before, this project is designed to deliver key features that effectively address the identified problem. The primary goals for this project include:

For parents:

- Ability to create a profile, add children, and personalize each child's profile with their weight and service preferences, which will be used during kindergarten search.
- Make it simple to browse kindergarten profiles, which include feedback, teachers' information, services, and contact details.
- Enable parents to search in different ways (advanced, similarity, and fuzzy search), compare, and apply enrollment requests based on their preferences.
- Simplify the enrolment process by allowing online registration and confirmation.
- Provide a secure payment method (monthly or per semester).
- Provide the ability for parents whose children are enrolled to give feedback, as well as upvote or downvote feedback based on its usefulness. The feedback is analyzed using AI-based sentiment analysis and topic targeting.
- Improve the communication between parents and kindergartens:
 - Chat messaging.
 - A community feature where parents can interact through likes or comments, RSVP to events, and stay updated with announcements and activities.
- Provide useful educational content and interactive tools quizzes (shapes, letters and digit) with machine learning to detect the accurate of writing, customize stories generated by ai and articles.
- Notification reminders for event attendance, payments, posts, feedback, enrollment status changes, updates on events, and more.
- Calendar to display information about events you will attend

For kindergarten:

- Ability to set up a well-informed profile including all provided services, working hours, supported languages, teachers, contact information, and educational levels.
- Manage the enrollment status procedure and level capacity for each semester registration.
- Browsing student enrolled in kindergartens and managing their levels transfer at the end of the year.
- Monitor payments for each child, view insights for each semester's payments, and track upcoming or overdue payments, with the ability to choose between monthly or semester-based payments and manually mark payments as completed if desired.
- Provide statistics about feedback provided by parents to know which area needs to improve.
- Improve the communication between parents and kindergartens:
 - Chat messaging.
 - A community feature where kindergartens can:
 - Specify the visibility of each post (only to enrolled parents, parents of a specific level, or public to all users).
 - Specify the type of post (an announcement, an event, an activity, or anything else).
 - Specify the time and place.
 - Add tags, images, or documents.
 - Manage attendance capacity by specifying the number of participants.
 - View the list of attendees.
- Provide insights into engagement, revenue, and sentiment via dashboards and analytics.
- Notification reminders for events, payments, enrollment applications, feedback submissions, interactions with posts, and more.
- Calendar to display information about events.

For Admin:

- Effectively managing users in various roles, such as kindergartens and parents.
- Ensure platform reliability and trustworthiness via verification and approval kindergarten before activation.
- Add new feature categories and send notifications to all users, to allow parents to update their children's preferences and kindergartens to update their services.
- Improve the communication between admin and kindergartens via chat messaging.
- Send broadcast notifications and messages with the option to choose the message type (email or in-app notification) and the target user role, city, or country.
- Monitor system usage and generate statistics via dashboards and analytics.

1.3 Significance of the work

A child's learning journey begins in kindergarten, so choosing the right one can affect their skills and views of learning as a fun and engaging experience. With the MiniMinds platform, parents can turn this dream into reality and support their little ones in their educational adventure.

With the MiniMinds platform, parents can make informed decisions based on reliable information and feedback about each kindergarten, saving time otherwise spent searching through unreliable sources or social platforms. The platform reduces stress and difficulty by providing different search techniques, online enrollment, secure payment options, and real-time communication with kindergarten staff.

Additionally, kindergartens will no longer depend on traditional enrollment processes that require meeting each parent in person. They can manage the entire procedure effectively with a single click. Financial management also becomes easier and more reliable through a reliable payment system with timely reminders.

Additionally, by integrating modern technologies like AI sentiment analysis, personalized notifications, and community features, the platform creates a smarter, more connected early education ecosystem.

1.4 Organization of the report

This report is organized to provide a clear and thoughtful overview of the project's development journey. It begins by discussing the main constraints encountered, the relevant standards and codes applied, and the ways in which earlier coursework supported the project's foundation. The literature review then explores existing studies and related work that helped inform and shape the project's approach. The methodology chapter describes the development process in detail, including the design and functionality of the app's screens. This is followed by the results and discussion chapter, which presents the key outcomes and reflects on their significance. The report concludes with a final summary that highlights the overall achievements and offers recommendations for future improvements.

Chapter 2: Constraints, Standards/ Codes, and Earlier course work

2.1 Constraints

Several challenges came up during the development of the application and website:

1. Limited experience with mobile app development made the beginning of the project difficult. Since this topic wasn't covered in classes, it took extra time to research and test different tools and technologies before choosing the right ones.
2. Google Maps API had a limited free time period that affected testing. It was used to select and view locations, but the free trial only lasted for a short time. After that, the service stopped working unless payment was added, causing delays.
3. Performance issues during Flutter development also caused slow progress. Android Studio, the tool used for building the app, ran slowly on the available computers. This led to lags and crashes, especially when using the emulator, which made development slower and more difficult.

2.2 Standards and codes

The project made use of various technologies, tools, and best practices to ensure efficient and well-structured development:

- **React with Vite** was used for developing the web application's frontend.
- **Flutter** was used for building the mobile application.
- **Android Studio** served as the main development environment for the mobile app.
- **Node.js with TypeScript** was used for backend development. It follows a **feature-based modular design** combined with principles of the **MVC (Model-View-Controller) pattern**. Each feature or core entity is organized

as a separate module containing its own models, services (acting as the business logic layer), controllers, and routes. This structure keeps the code modular and organized by responsibility, making it easier to scale, maintain, and develop new features independently.

- **Python** was used to implement AI-related features.
- **Ollama** was used to serve lightweight local LLMs for prompt-based AI interactions, allowing efficient and offline-compatible natural language processing.
- **MySQL** was used as the database management system.
- **Git** and **GitHub** were used for source code management and version control.
- **Postman** was used for testing and verifying API functionality.
- **Firebase** was used for handling notifications.
- **Socket.IO** was used to implement real-time chat functionality.
- The system followed the **REST architectural style** to ensure clear and consistent communication between components.

2.3 Earlier Coursework

The development of this application was supported by key courses in the Computer Engineering program that provided important knowledge and skills:

- **Programming Courses (C Programming, Data Structures, and Algorithms):** these courses cover how to write clear and efficient code. The study of algorithms helps optimize performance and improve data handling in the application.
- **Database Systems:** this course teaches how to design and manage databases. It includes organizing data using MySQL and writing queries to access and update information, which is essential for effective data management in the application.
- **Web Programming and Advanced Web Programming:** these courses cover both basic and advanced web development. The initial part focuses on HTML, CSS, and JavaScript for building responsive and interactive web pages. The advanced course introduces React.js for creating dynamic user

interfaces, along with advanced JavaScript techniques. In addition, real-time communication was explored using **Socket.IO**, which helped in building features that require live updates, such as messaging.

- **Software Engineering and Advanced Software Engineering:** these courses introduce best practices in software development, including software architecture, design patterns, and project management. Applying these methods ensures the application is well-structured, scalable, and easy to maintain.

Chapter 3: Literature Review

Much research has looked into the factors that parents consider most important when choosing a kindergarten for their children. Early studies showed that parents usually focus on emotional and educational factors like how warm and caring the teachers are, their level of education, and whether the school uses a play-based curriculum. These features make parents feel confident that their child will receive proper care and be educated in a nurturing setting [1].

Another study showed that although emotional warmth is still important, practical worries also play a big role in parents' decisions. For many families, especially those with tight budgets or single parents, factors like cost, location, and flexible hours can be just as important, and sometimes even make or break the choice [2].

More recently, a study looked into what really matters to parents when they're choosing a kindergarten. Out of many possible factors, five stood out the most: how good the school is overall, how professional the teachers are, how much it costs, and how well the school supports children's social and language development[3].

All these studies make one thing clear—parents consider a mix of emotional and practical things when choosing a school. They want kind and capable teachers, but also need to think about things like how close the school is, whether they can afford it, and if the schedule works with their lives. And it's not just about reading and math. Parents care about whether their child will make friends, feel safe, and learn to express themselves. In the end, it's about finding a place that feels right on every level.

At the same time, technology is helping parents stay better connected with schools. Tools like online registration, mobile apps, and digital forms are making it easier to

handle paperwork, make payments, and get updates [4]. These tools save time, reduce errors, and keep communication open between families and schools.

This is where MiniMinds comes in. While apps like **Kindertales**, **Brightwheel**, and **HiMama** are great for staying in touch once your child is already enrolled, they don't do much to help parents with the decision-making process at the beginning. Those apps focus on things like daily updates, messages, and billing—useful, but only after the choice has been made.

MiniMinds is different. It's built to support parents right from the start. The app brings together a wide variety of kindergartens in one simple platform, so parents can compare schools based on what's important to them, things like cost, distance, teacher quality, or special programs for social and language development. Parents can read reviews, check out upcoming events, and even start enrolling—all in one place.

Chapter 4: Methodology

This section presents the different application interfaces along with clear and simplified explanations. It includes the mobile interfaces for parents and kindergartens, as well as the web interface for the administrator.

1. Splash Screen

The splash screen is the first screen shown when the mobile application starts. This screen helps create a smooth start-up experience and reflects the identity of the application.



Figure 1: Splash screen

2. Authentication Screens

The application includes a set of authentication screens that allow users to securely access their accounts. These include:

Login Screen

This screen allows existing users to sign in using their email and password. However, kindergartens (KGs) are not allowed to log in until their license has been verified and approved by the administrator.

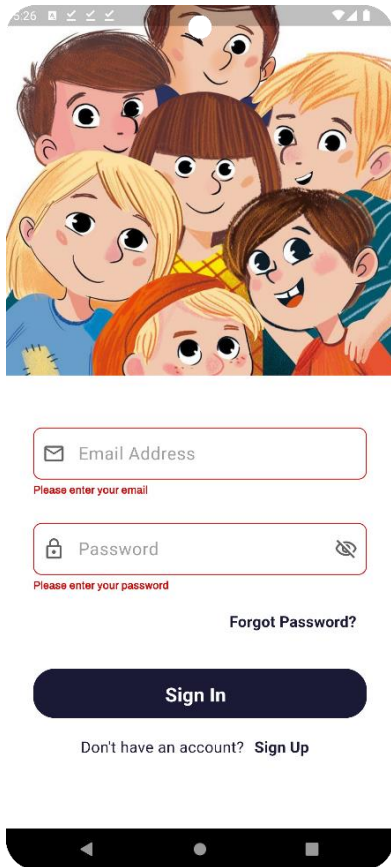


Figure 2: Sign in page with empty input fields

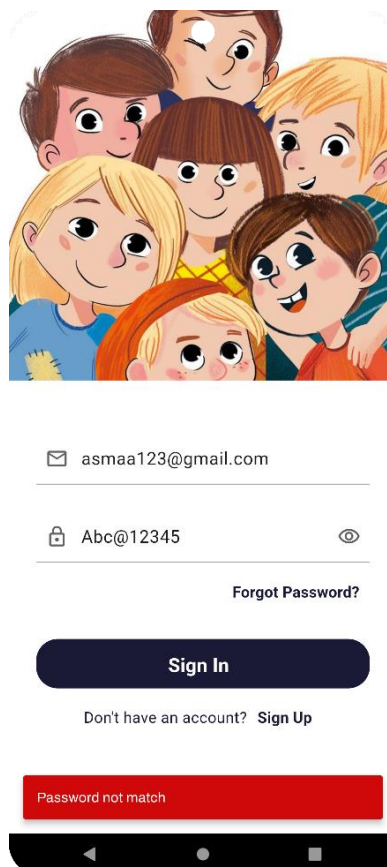


Figure 3: Password mismatch error on the sign in page

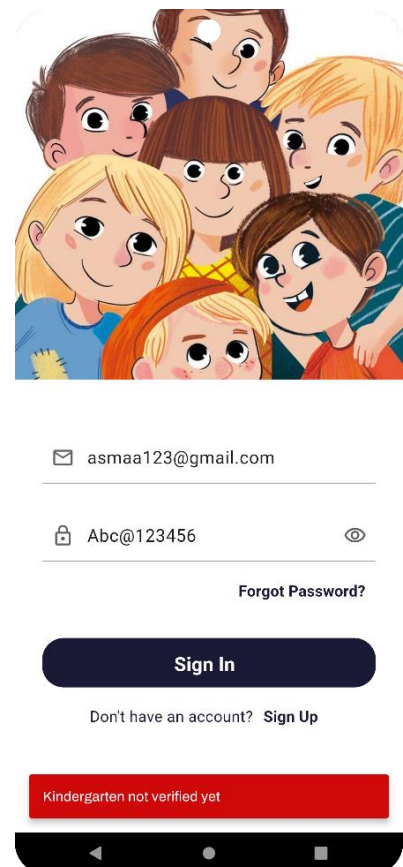


Figure 4: Sign in blocked for unverified KG

Registration Screens

The registration screen allows two types of users (**parents** and **kindergartens (KGs)**) to create an account. To sign up, users must provide their full name, email, mobile number, password, and their city and country, which are automatically detected using the map along with the user's location.

- If the user is registering on behalf of a kindergarten, they are also required to upload a valid license during registration.
- After completing the form, the user must verify their email through a One-Time Password (OTP) sent to their email address to activate the account.

The screenshot shows a mobile app interface for signing up. The title is "Sign Up". There are five input fields, each with a red border and a red error message below it: "Full Name" (Full name is required), "Email" (Email is required), "Phone Number" (Phone number is required), "Password" (Password is required), and "Confirm Password" (Confirm password is required). Below the fields is a green "Select Role" dropdown menu. At the bottom, there is a dark blue "Next" button and a red error message: "Please fill out all fields correctly".

Figure 5: Blank sign up form showing required fields

The screenshot shows the same sign up form as Figure 5, but with the following information filled in: "Full Name" (Asmaa Yahya), "Email" (asmaa123@gmail.com), "Phone Number" (0598986554), "Password" (Abc@123456), and "Confirm Password" (.....). The "Select Role" dropdown menu is open, showing "Parent" and "Kindergarten" options. The "Next" button is visible, and a red error message at the bottom says "Please select a role".

Figure 6: Missing role selection warning

The screenshot shows the same sign up form as Figure 6, but with the "Select Role" dropdown menu open, showing "Parent" and "Kindergarten" options. The "Next" button is visible, and a red error message at the bottom says "Please select a role".

Figure 7: User picking role from dropdown

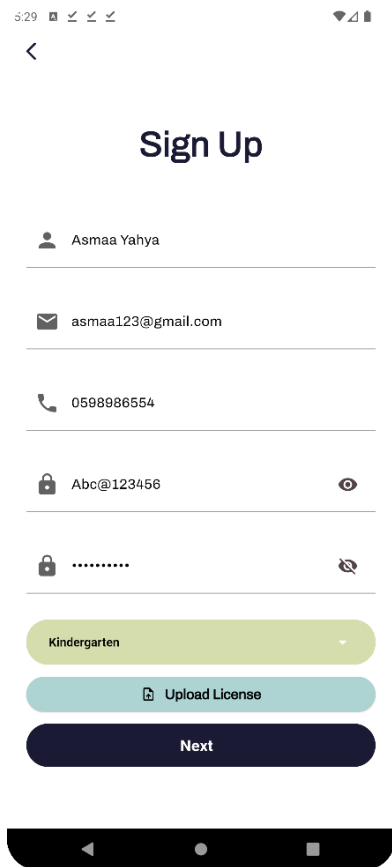


Figure 8: Sign up with kg role and license field

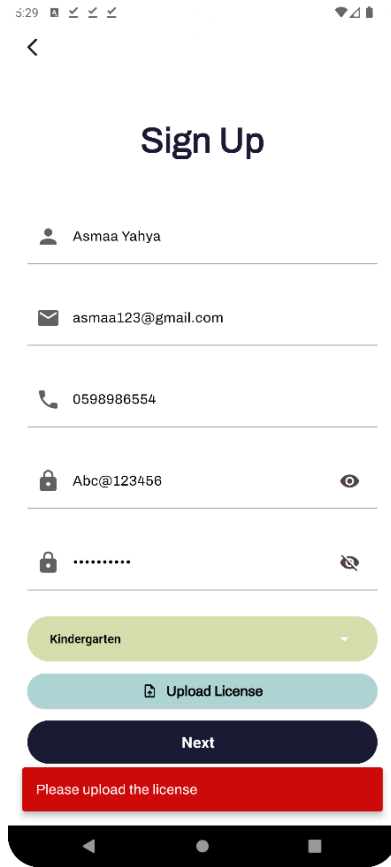


Figure 9: License is required alert message

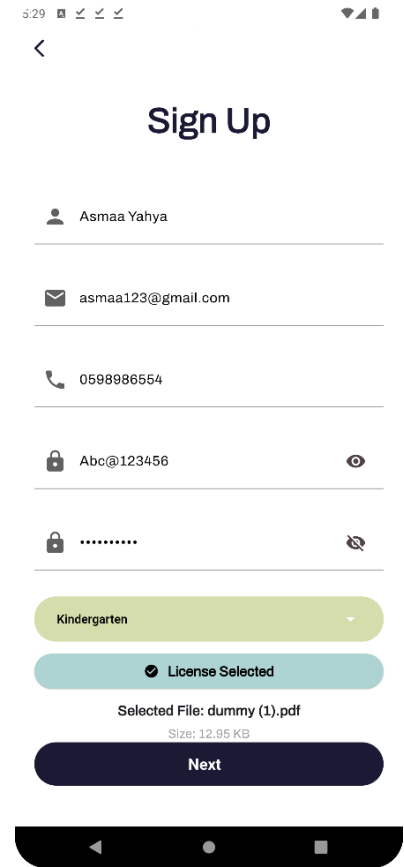


Figure 10: License file uploaded successfully

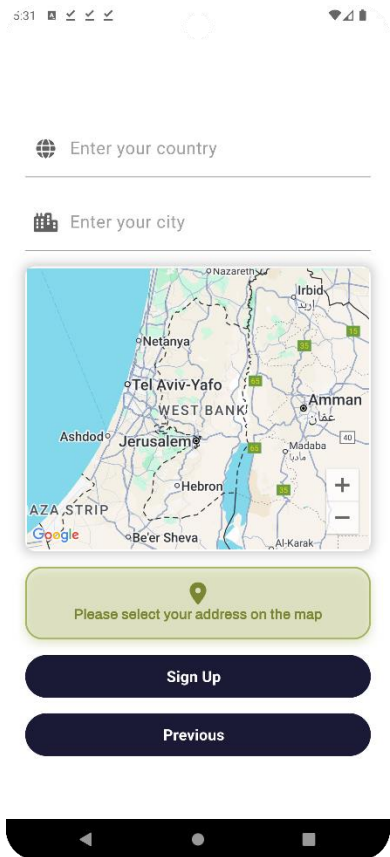


Figure 11: Sign up form showing empty location field

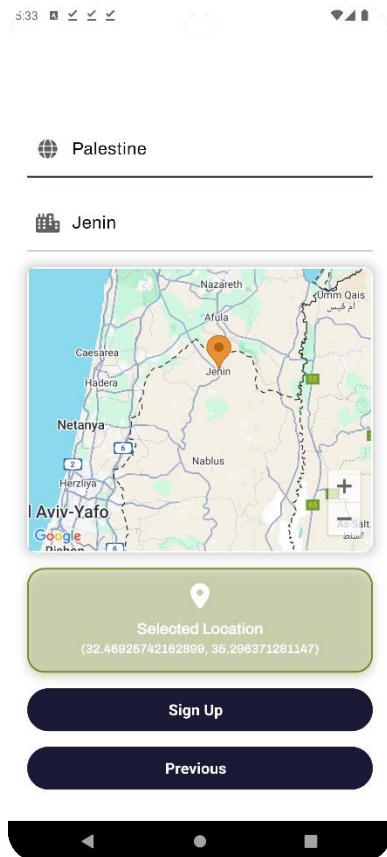


Figure 12: Sign up form with location selected

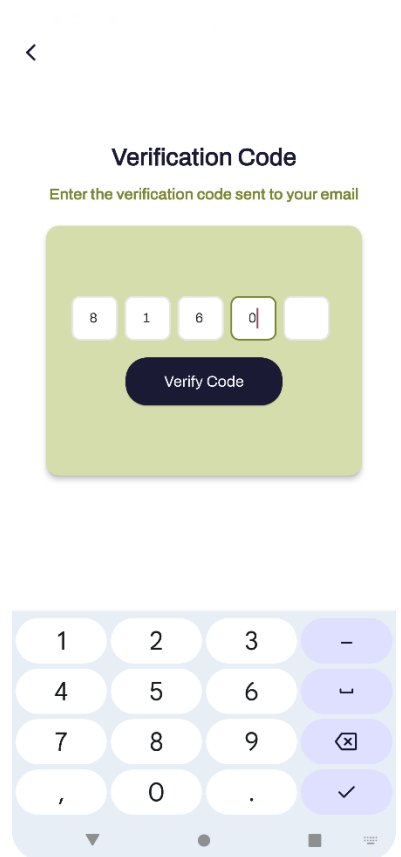


Figure 13: OTP verification screen

Forgot Password Screens

This screen helps users recover their account if they forget their password. The user first enters their email address, then receives a One-Time Password (OTP) to that email. After verifying the OTP, the user is allowed to create a new password and regain access to their account securely.

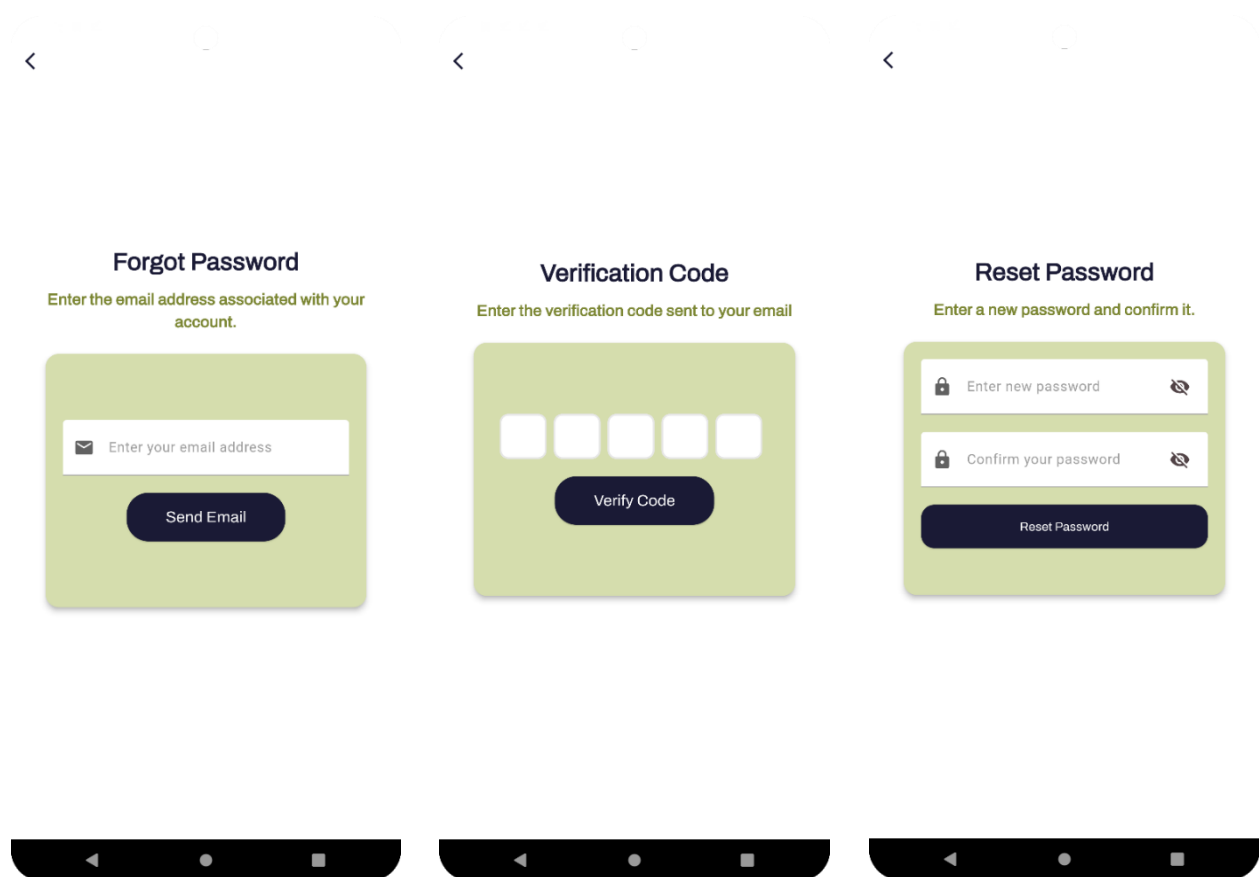


Figure 14: Screen for entering email to reset password

Figure 15: OTP verification screen after email submission

Figure 16: Screen to enter new password and confirm it

3. Parent Screens:

The mobile application provides a set of user-friendly interfaces designed specifically for parents to help them manage their child's kindergarten experience. These include:

Parent Profile Screens

Shows the parent's main information like name, email, phone number, and location. Parents can update their personal details and also manage their children's profiles. They can create a new profile for a child by adding the required details, and they can also change or fix existing profiles when needed. This screen helps parents keep their information and their children's details organized and up to date.

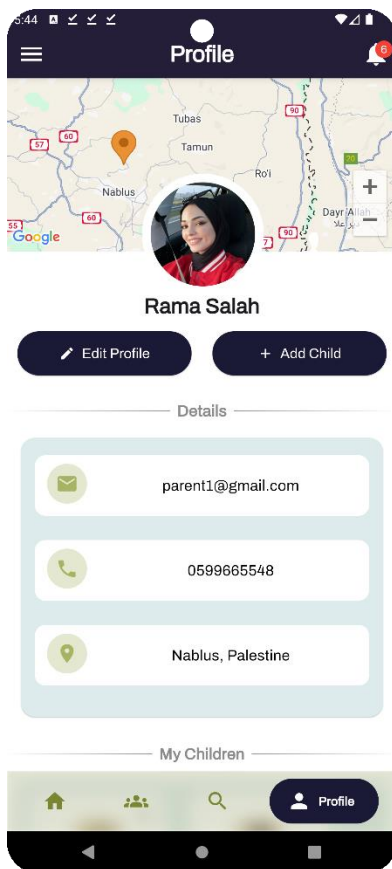


Figure 17: Parent profile page showing user details

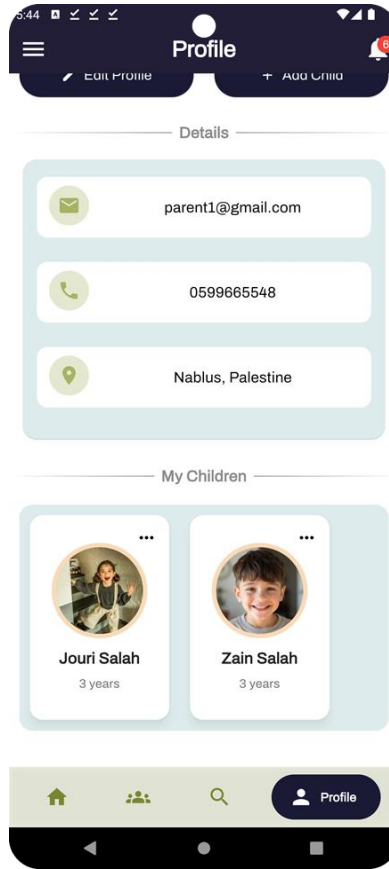


Figure 18: Children associated with parent shown on profile page

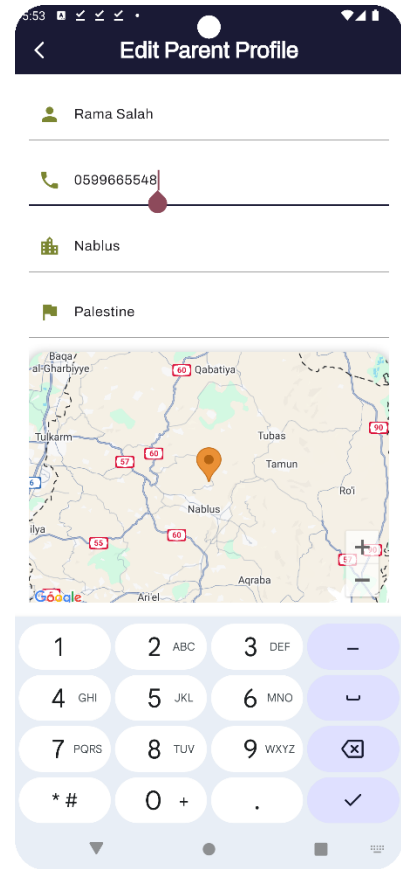


Figure 19: Parent profile edit page

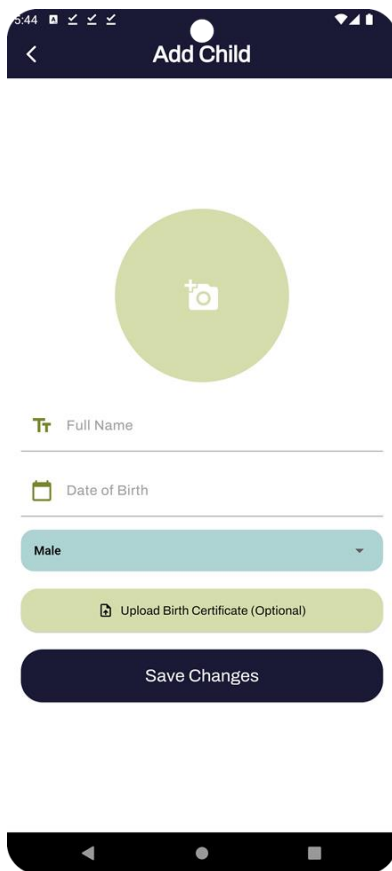


Figure 22: Add child form with empty input fields

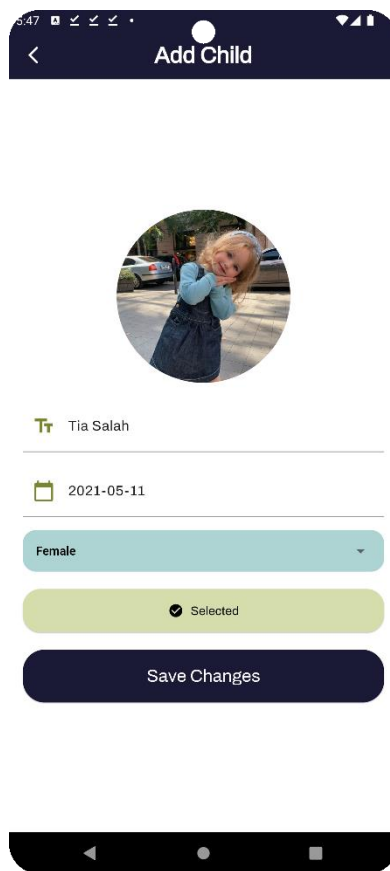


Figure 21: Add child form with filled input fields

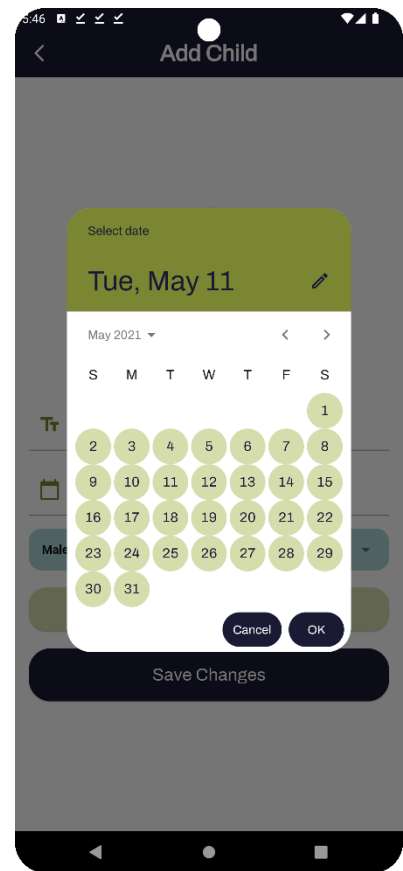


Figure 20: Date picker used to add child's dob

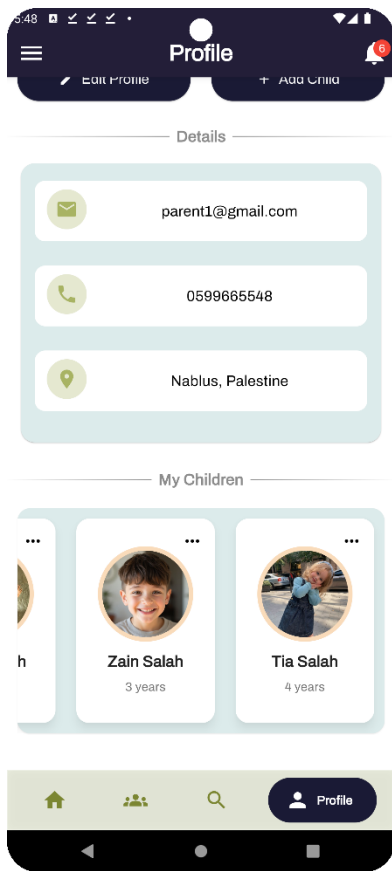


Figure 23: Updated children list showing newly added child

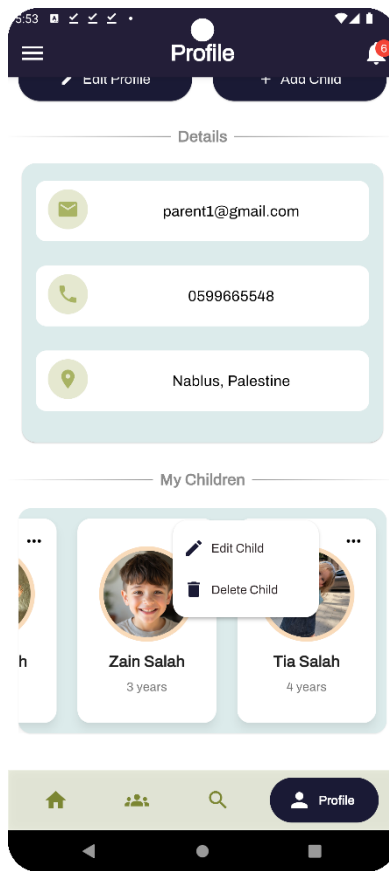


Figure 24: List of children with edit icons on each card

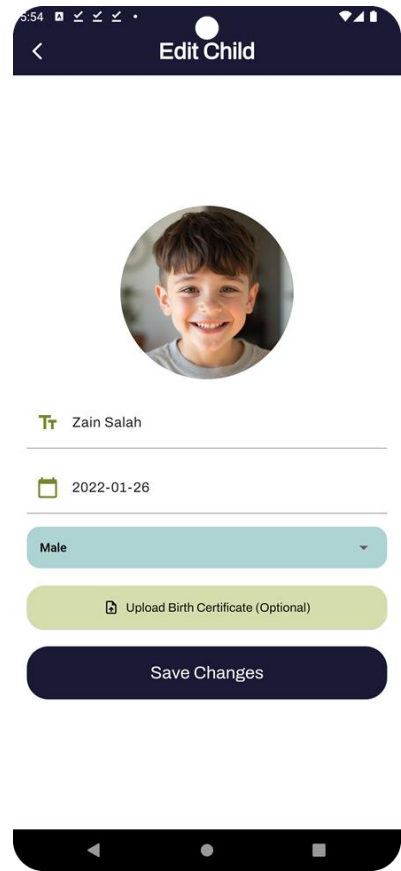


Figure 25: Form to edit child details

Child Profile Screens

When a parent clicks on a specific child, the **Child Profile Screen** opens. This screen shows the child's basic information and allows the parent to add the child's preferences based on their individual needs, such as transportation or medical support. Each preference can be given a **weight** according to its importance for that child, and these weights can be updated at any time.



Figure 26: Child profile page for newly added child



Figure 27: Add preferences screen for child

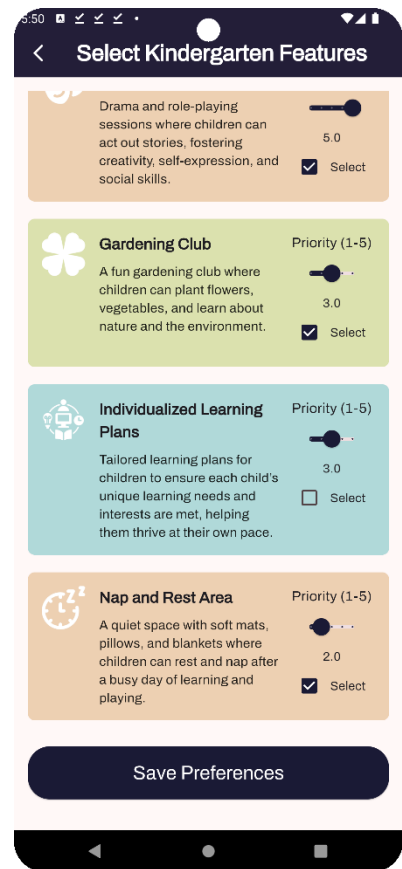


Figure 28: Child preferences save action button

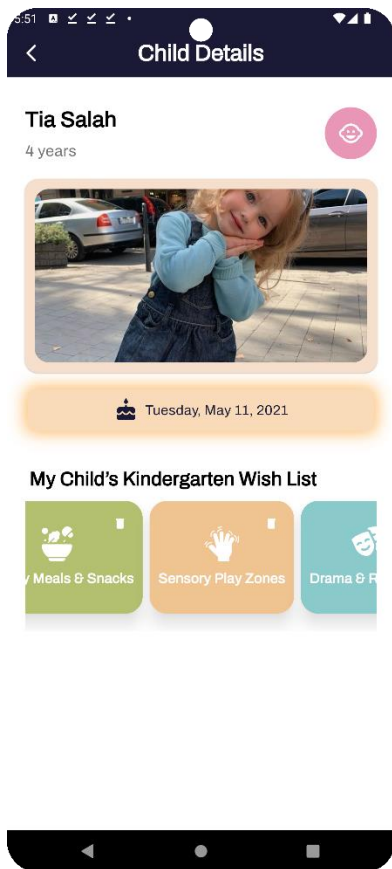


Figure 29: List of child preferences displayed after adding

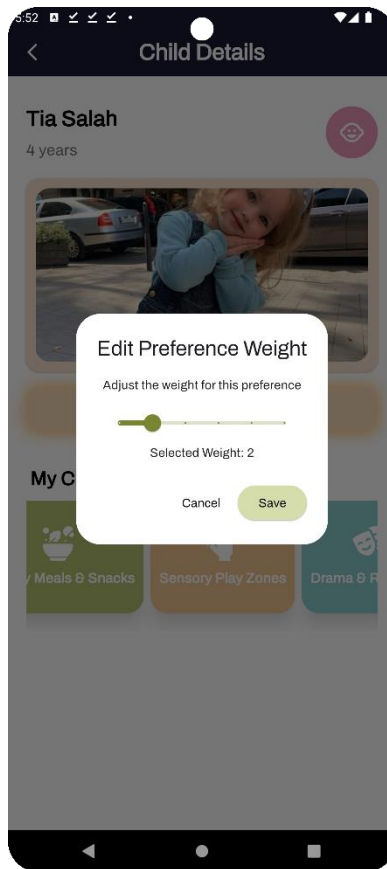


Figure 30: Preference weight slider on edit screen

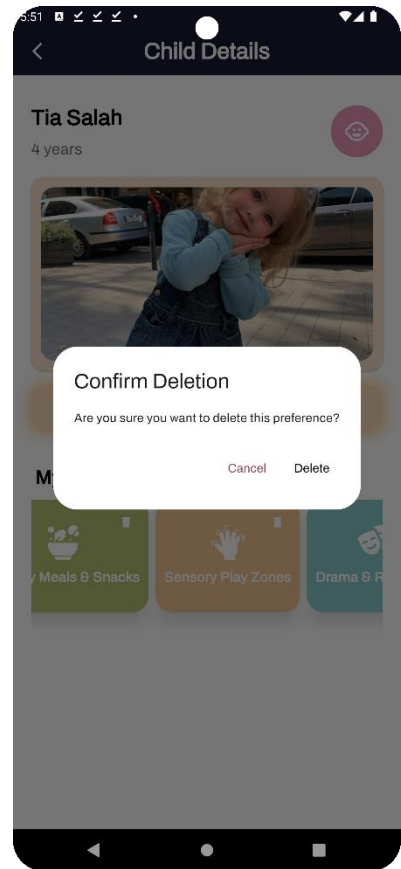


Figure 31: Confirmation dialog for deleting a preference

Main Search Screen

Provide different ways for parents to explore available kindergartens. On the **Main Screen**, there is a fuzzy search bar that allows parents to quickly search for kindergartens by name. The main screen also displays a list of the **nearest kindergartens**, based on the **location saved in the parent's profile**, as well as a list of the **highest-rated kindergartens**.

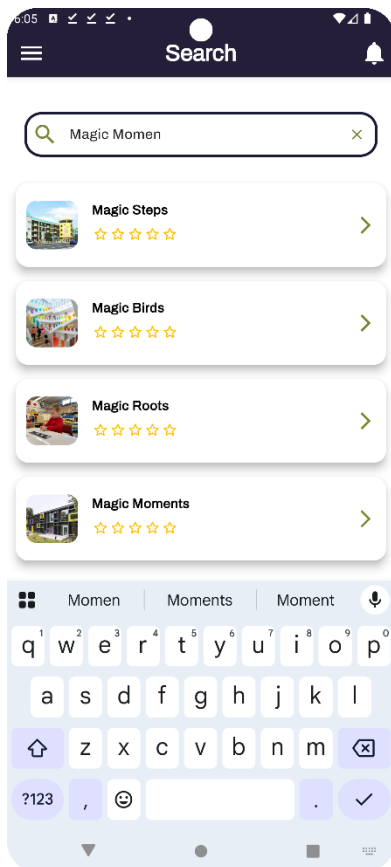


Figure 32: Fuzzy search screen displaying approximate matches

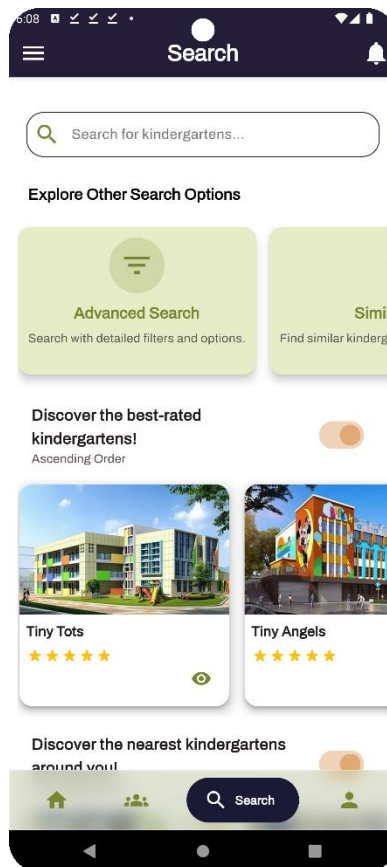


Figure 33: Centralized search page with filter options

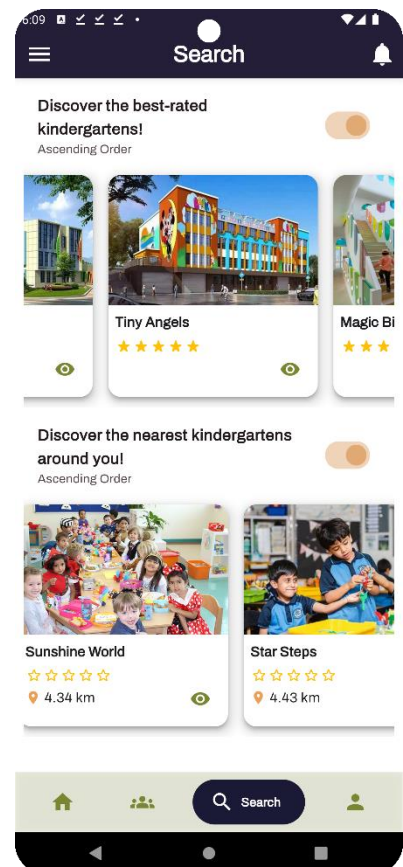


Figure 34: Nearby and top-rated KGs

Similarity Search Screen

This search option uses the preferences saved in the child's profile along with the preferences set by the parent, where the parent can assign weights to indicate the importance of each preference. It also considers the location selected by the parent on the map, rather than the default profile location. It uses cosine similarity, a method that measures the closeness of two sets of preferences by calculating the angle between them; smaller angles indicate a better match. The results are ranked based on how well they align with both the child's needs and the parent's priorities, helping parents find kindergartens that best suit their child's needs and their own priorities.

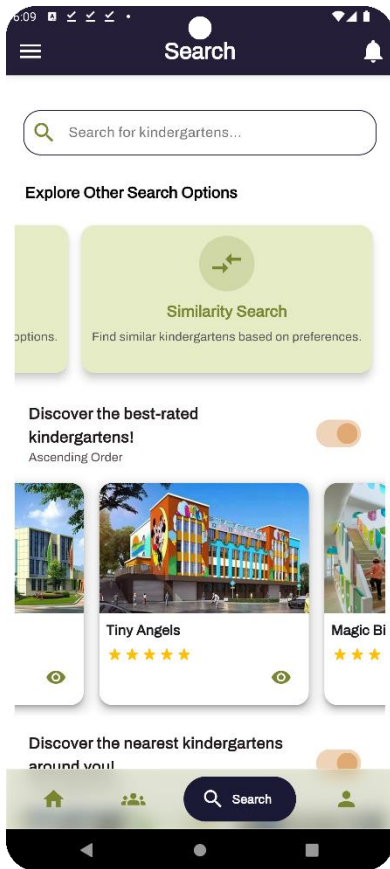


Figure 35: Search screen with similarity filter

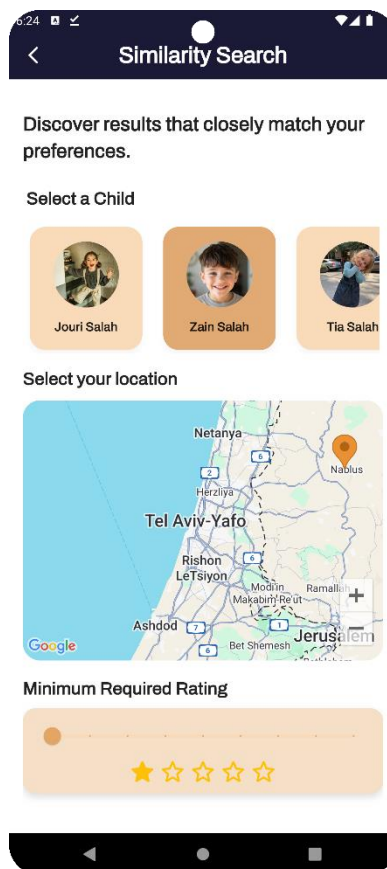


Figure 36: Similarity search screen

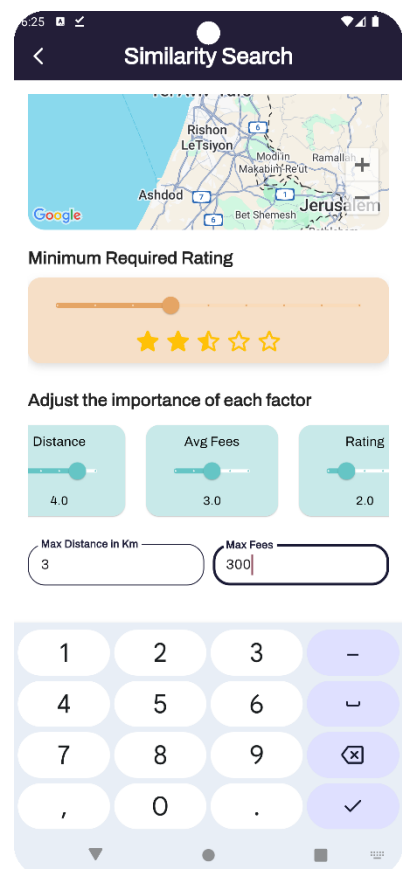


Figure 37: Similarity search with user inputs

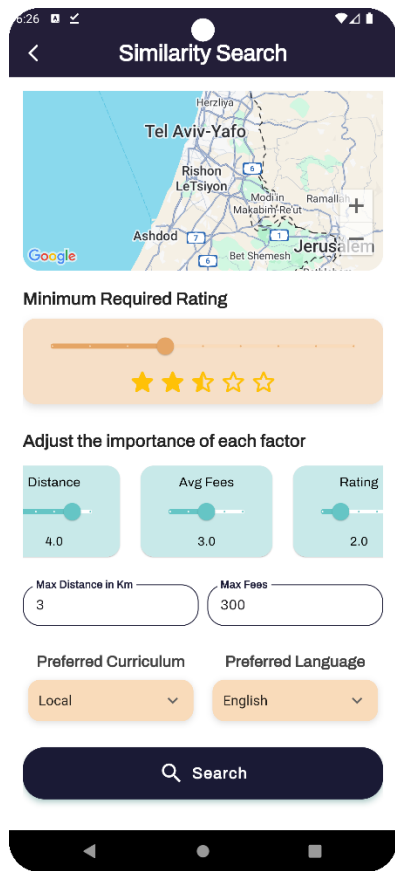


Figure 38: Search button to find similar results

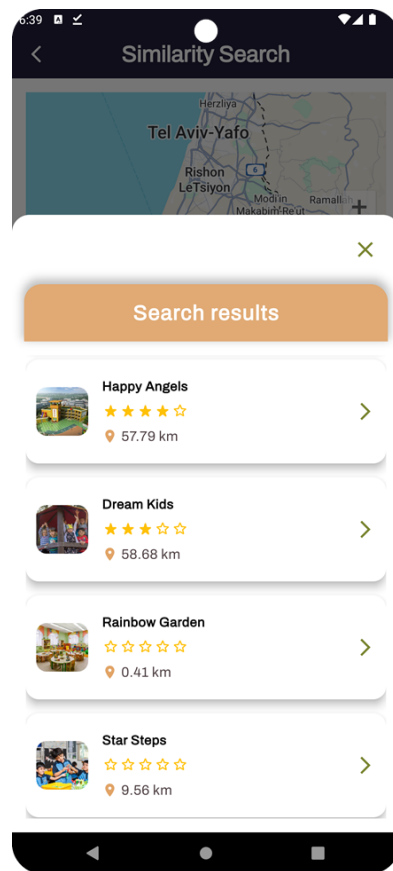


Figure 39: Similarity search results

Advanced Search Screen

This feature allows parents to search for kindergartens using detailed and customizable filters. Parents can select specific criteria such as the type of services provided (e.g., meals, transportation, special care), working hours, accepted age range, rating, distance, price, and more. By combining these filters, Advanced Search helps parents narrow down the list of kindergartens to those that precisely match their needs and expectations, making the decision process more efficient and tailored.

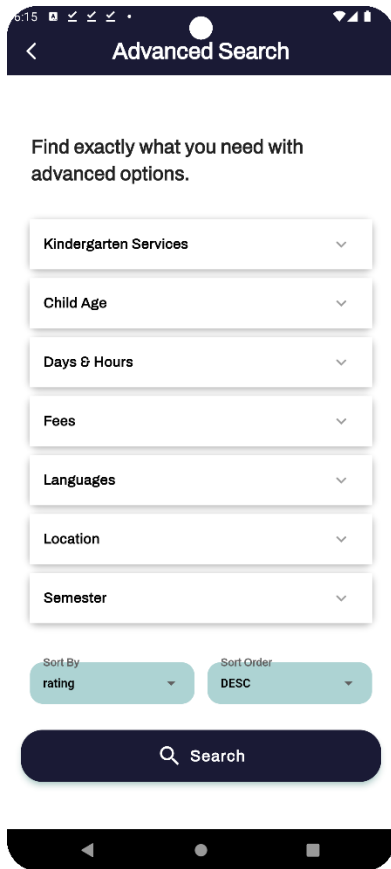


Figure 40: Advanced search screen

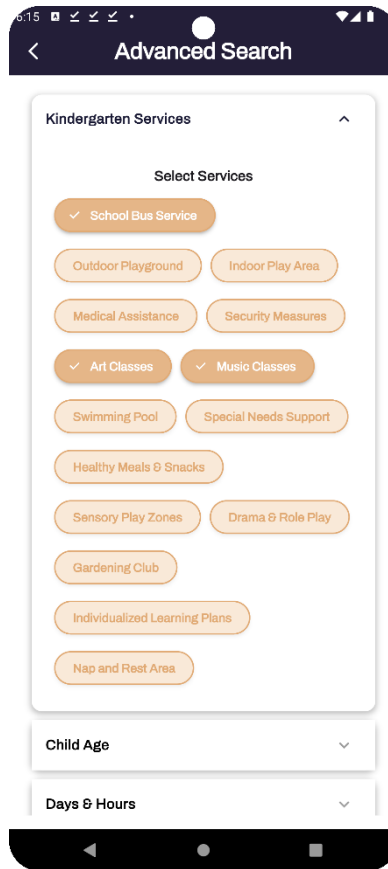


Figure 41: Services filter in advanced search

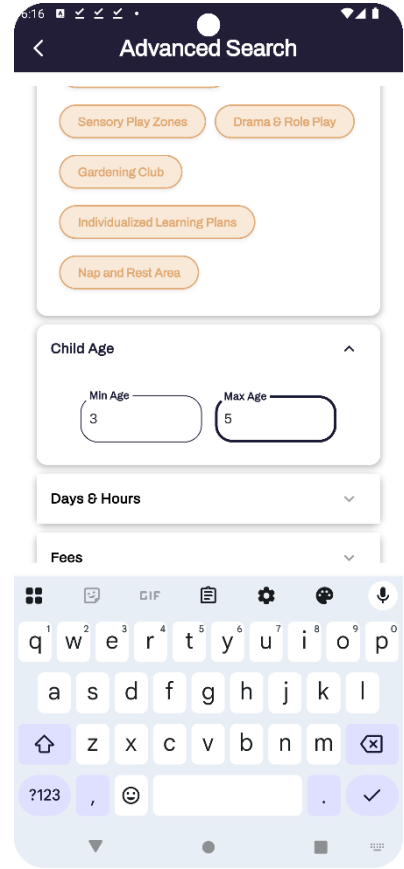


Figure 42: Child age filter

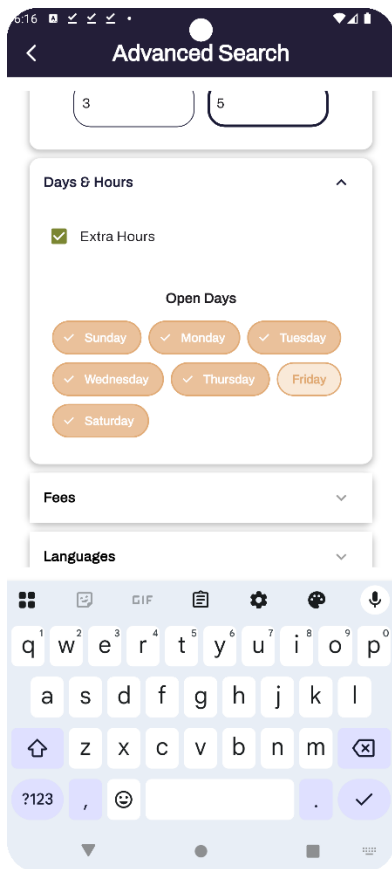


Figure 43: Days and hours availability filter

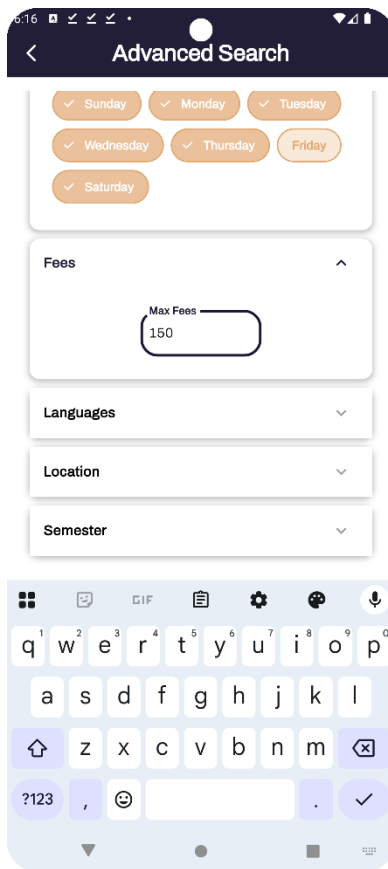


Figure 44: Fees filter

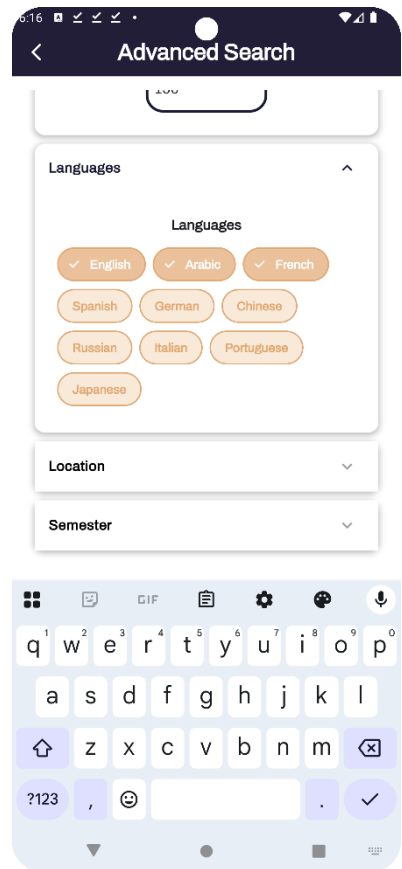


Figure 45: Languages filter

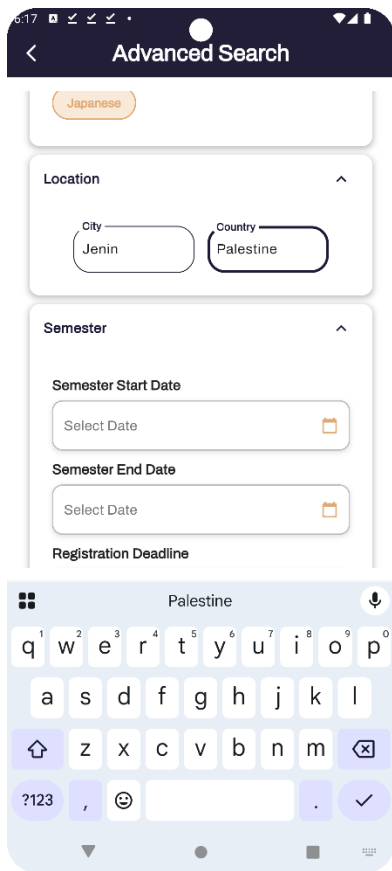


Figure 46: Location filter

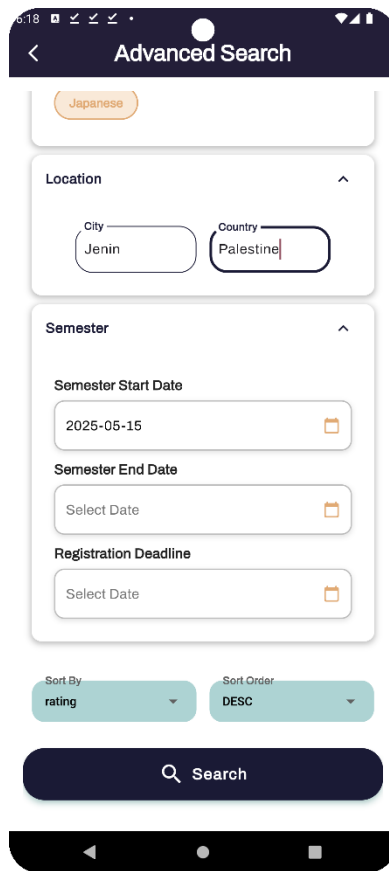


Figure 47: Semester filter

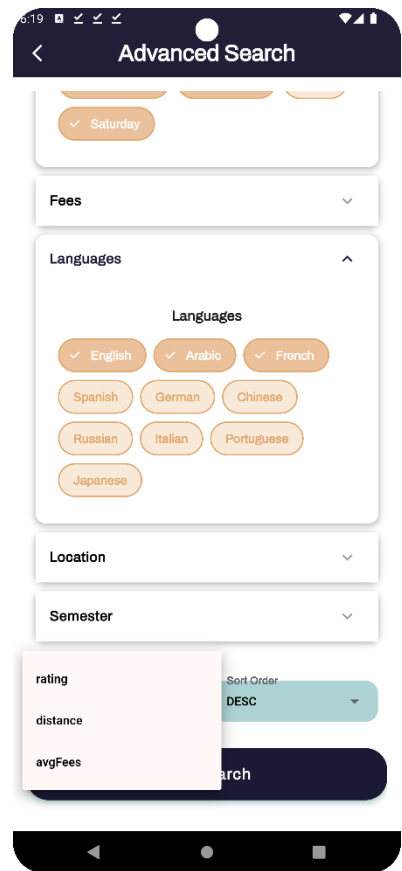


Figure 48: Filter results options

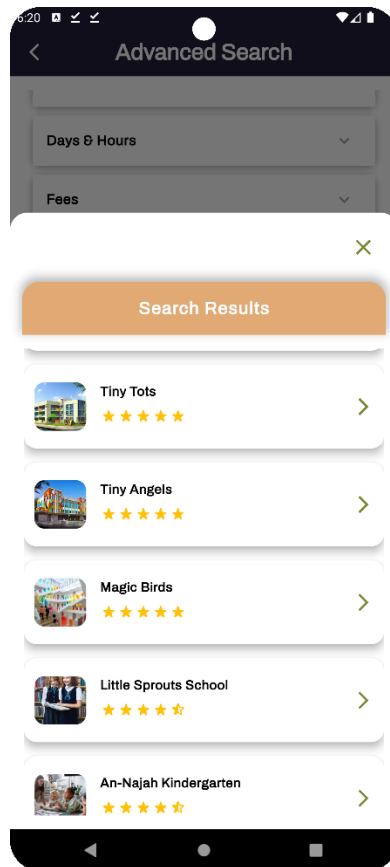


Figure 49: Advanced search results

Kindergarten Registration Process Screen

When a parent finds a suitable kindergarten through the search features, they can view the kindergarten's profile for more details, including services, ratings, and general information. If they wish to apply, they can click the "Register Now" button. The parent then selects the child they want to enroll and the desired level.

If the child's birth certificate was not previously uploaded when the child's profile was created, the parent will be required to submit it at this stage. Additionally, if this is the first time the parent is applying through the app, they must also upload a copy of their ID card. For future applications, the ID card will not need to be resubmitted. Once all the required documents are uploaded, the parent can proceed to send the application to the kindergarten.

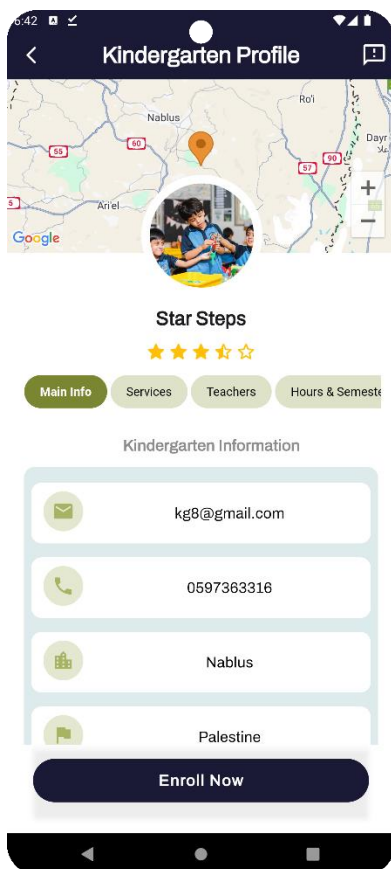


Figure 50: Kindergarten profile view for parent

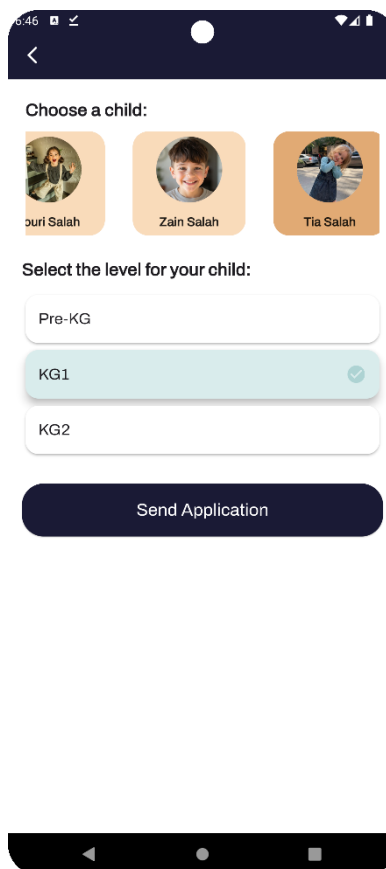


Figure 51: Child registration screen

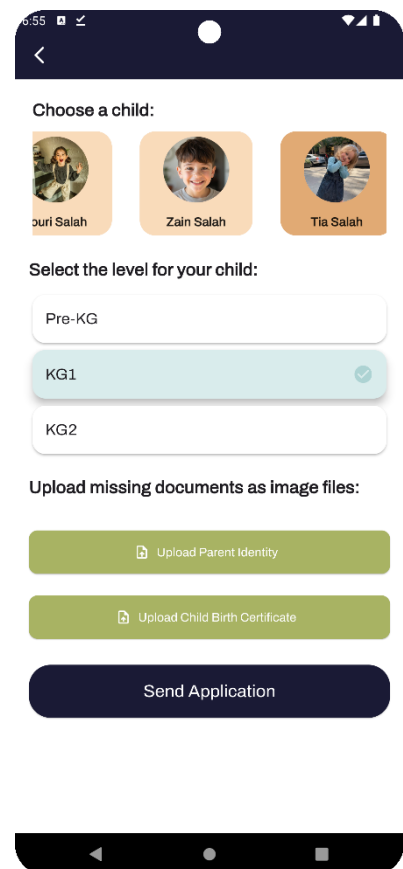


Figure 52: Upload missing documents

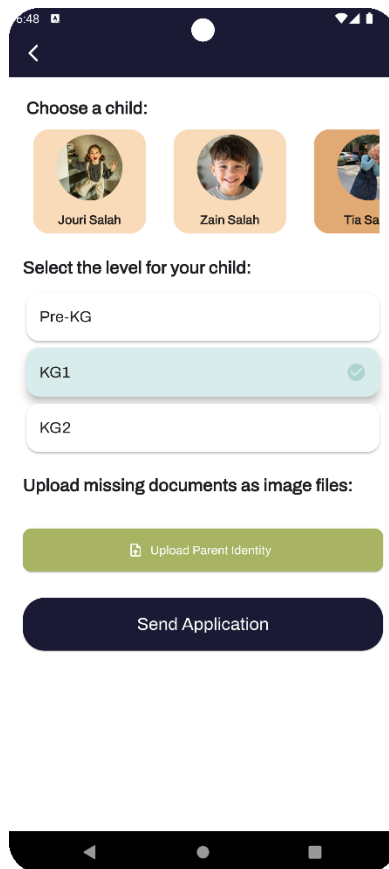


Figure 53: Upload missing documents (2)

Application Conditions and Restrictions

If there are no available seats for the selected level in the chosen kindergarten, a message will be displayed informing the parent that registration is currently not possible.

Additionally, if the selected child is already registered in that kindergarten, the system will prevent duplicate registration.

Furthermore, if the child is already enrolled as a student in another kindergarten, the system will not allow registration in a new one, ensuring that each child is enrolled in only one kindergarten at a time.

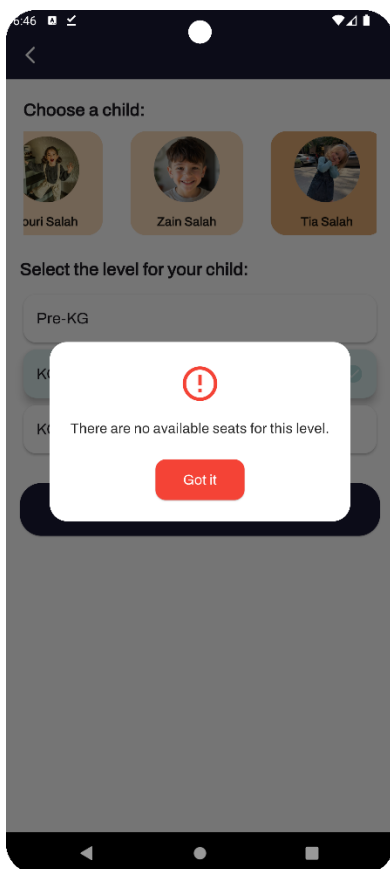


Figure 54: No seats available message

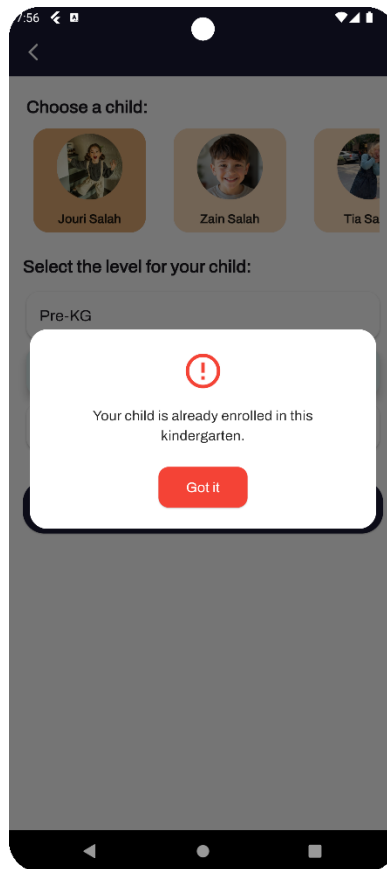


Figure 55: Duplicate registration prevented

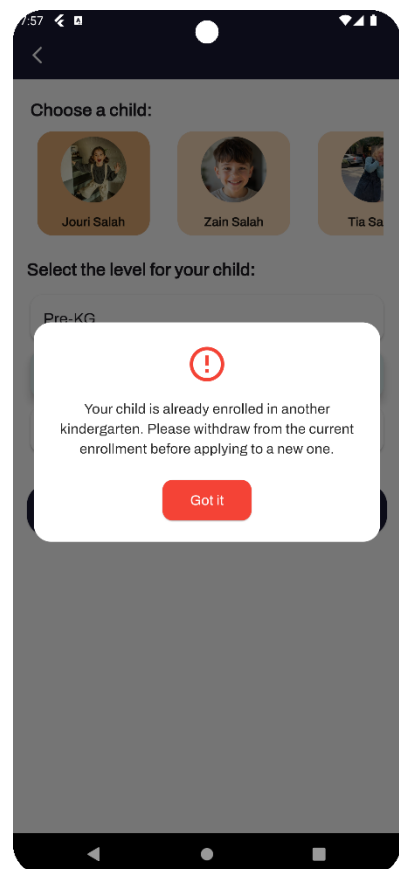


Figure 56: Child already enrolled elsewhere

Enrollment Progress Tracking Screen

Parents can track the progress of their children's applications through the "Enrollment Progress" tab in the sidebar. For each child, the parent can submit multiple applications to different kindergartens. Each application will have a status of Pending, Accepted, or Rejected.

Once a kindergarten takes any action on an application (such as accepting or rejecting it), the system automatically sends a notification to the parent to keep them informed.

If an application is accepted, the parent has the option to pay online to confirm the registration. After successful payment, all other applications submitted for that child to other kindergartens are automatically canceled, and the child is officially enrolled as a student in the selected kindergarten.

Additionally, parents can filter applications by status for each child to easily monitor and manage the enrollment process.

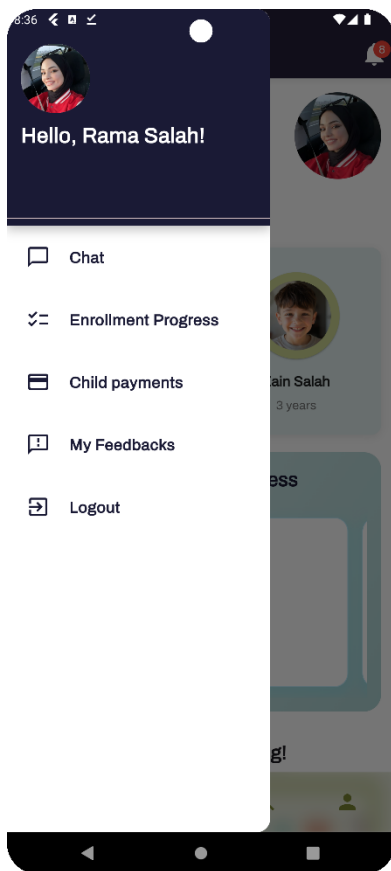


Figure 57: Parent sidebar menu

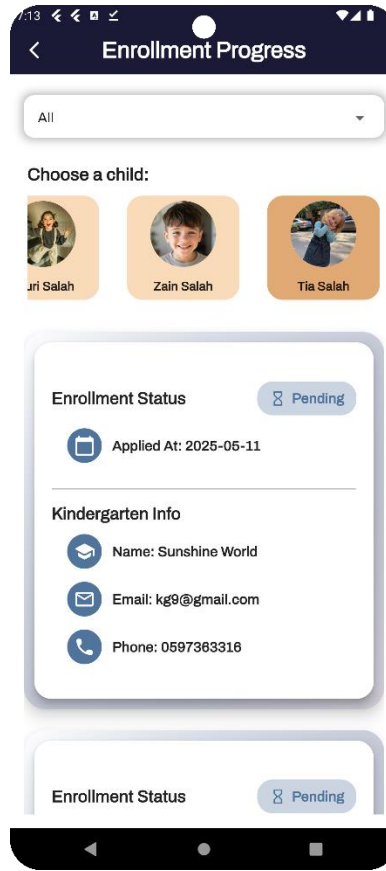


Figure 58: Child enrollment progress screen

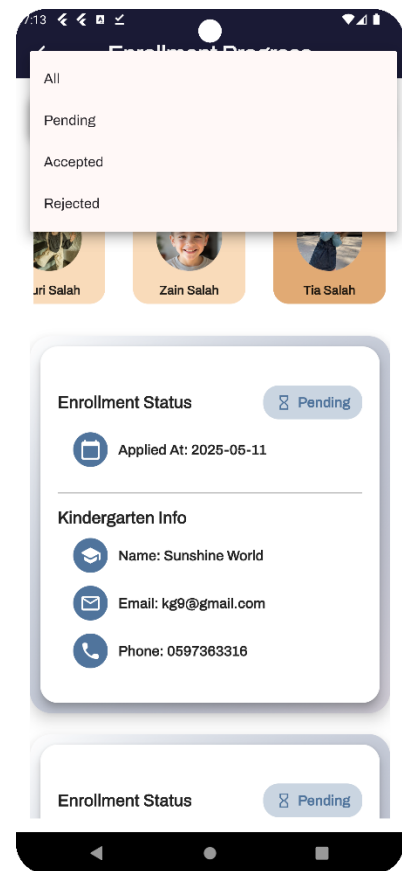


Figure 59: Filter options for child applications



Figure 60: Parent notifications screen

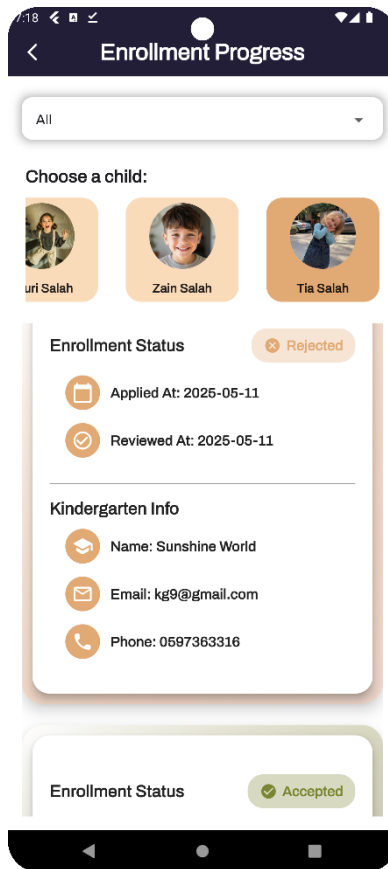


Figure 61: Child application marked as pending

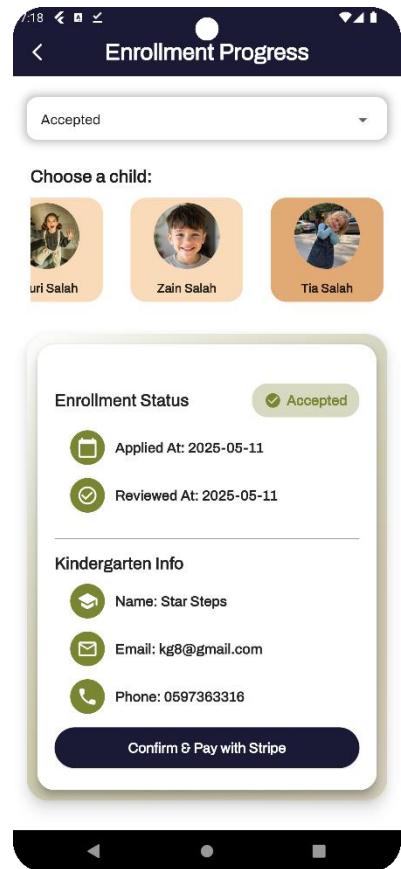


Figure 62: Accepted child application awaiting confirmation

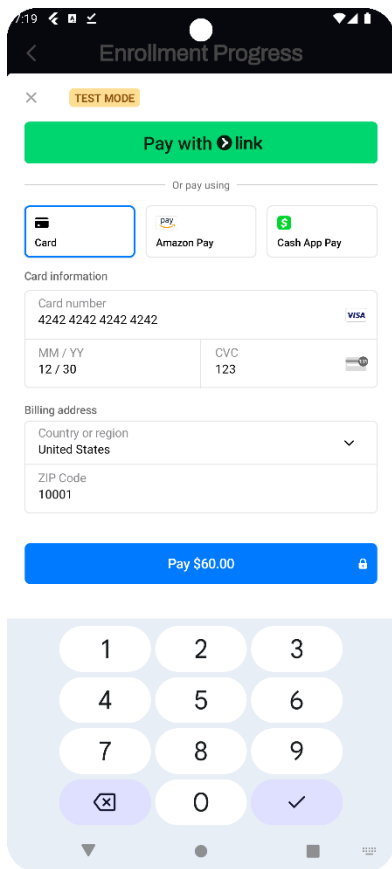


Figure 63: Stripe payment window

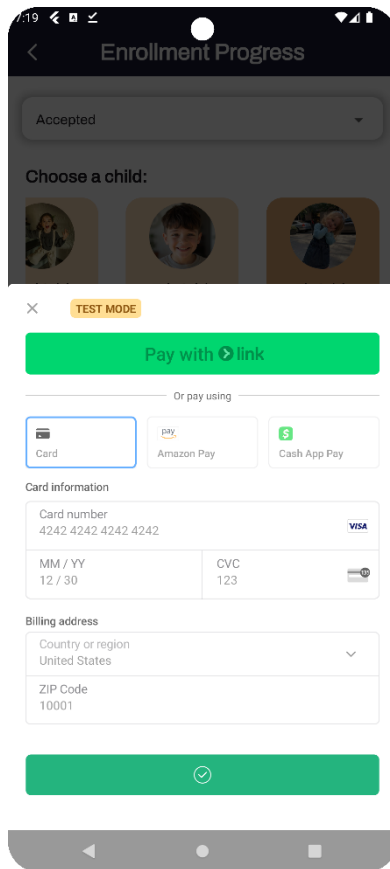


Figure 64: Payment successful confirmation

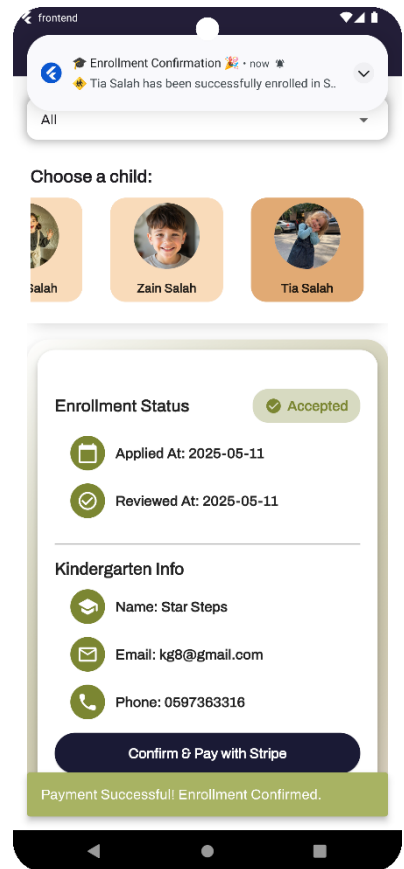


Figure 65: Payment done notification

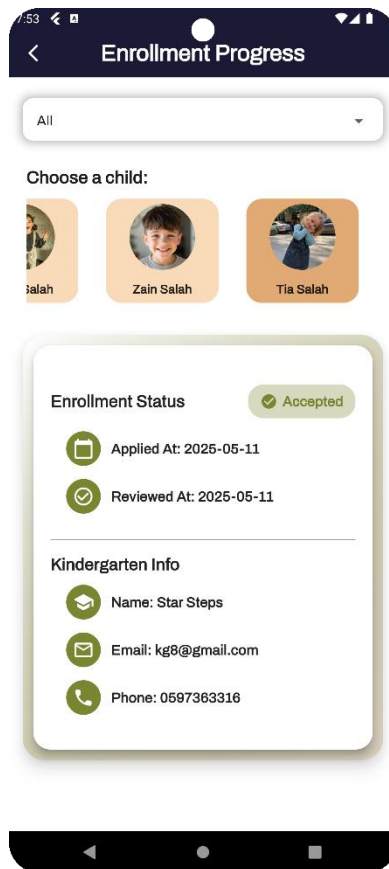


Figure 66: Application accepted and confirmed

Kindergarten Feedback System

Once a child becomes a student in a kindergarten, the kindergarten's profile is shown within the child's profile. After a certain period (e.g., one month) from the registration date, the parent can give feedback about their experience with the kindergarten. To ensure fairness, only parents of enrolled children can leave feedback, and each parent can submit one review per kindergarten.

Parents can also access a "My Feedbacks" section from the sidebar, where they can view all the kindergartens they've reviewed. If needed, they have the option to edit or update their feedback later. This helps keep reviews relevant and useful for other users.



Figure 67: Registered child profile view



Figure 68: Button to provide feedback

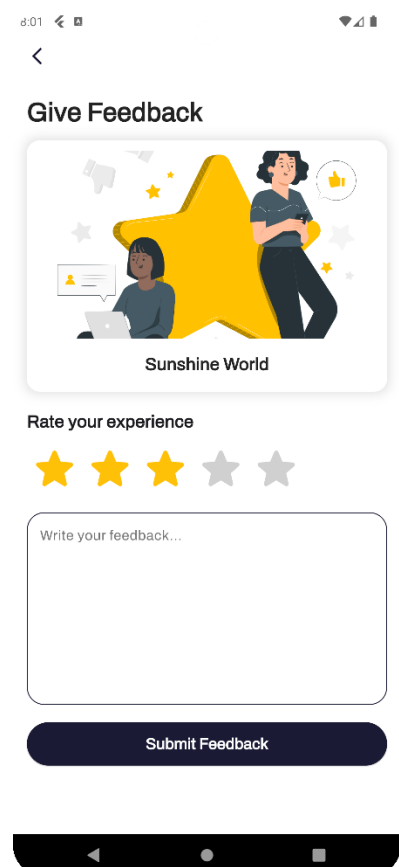


Figure 69: Feedback form view

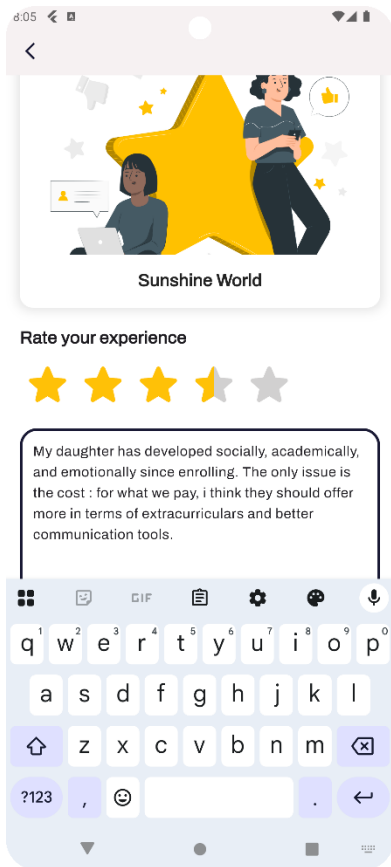


Figure 70: Feedback form with entered data

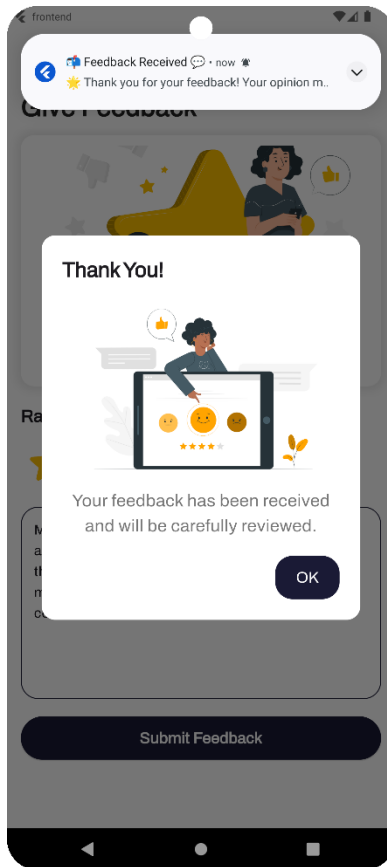


Figure 71: Confirmation and appreciation screen

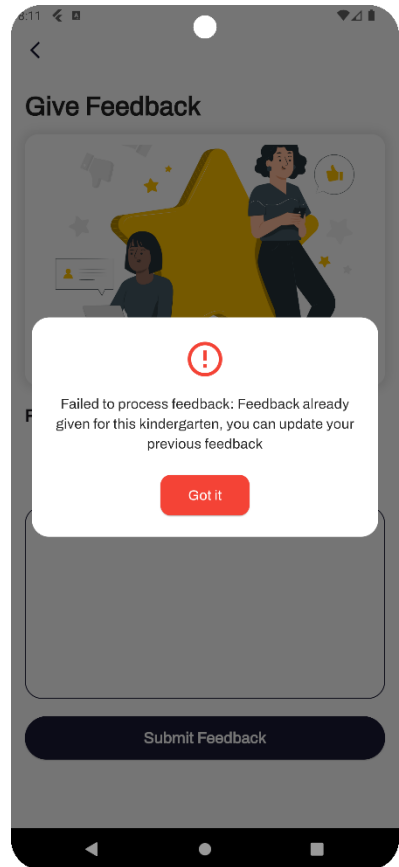


Figure 72: Warning – Duplicate feedback not allowed

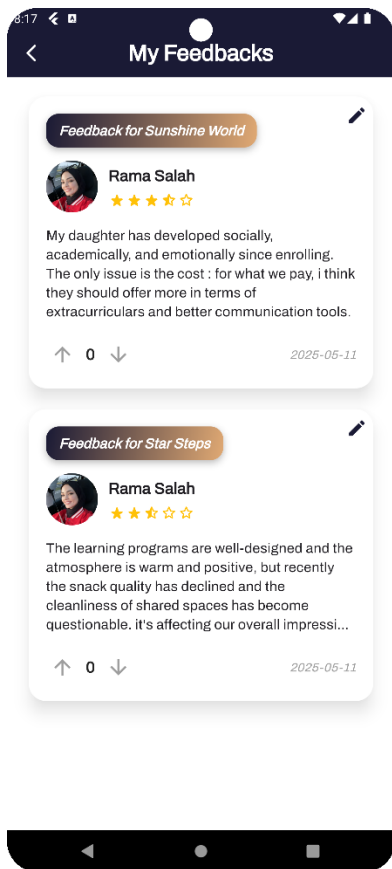


Figure 73: User's submitted feedback list

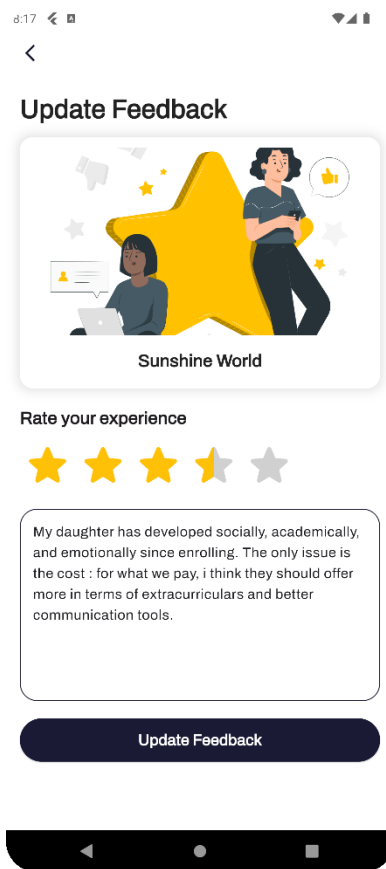


Figure 74: Feedback update screen

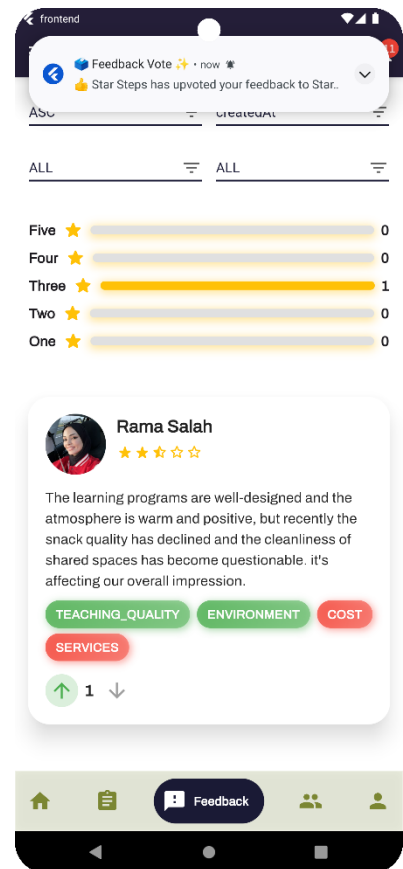


Figure 75: Kindergarten feedback view

Chatting System

The application includes a built-in chatting system that allows parents to communicate directly with the kindergarten where their child is enrolled. This feature makes it easier for parents to stay updated, ask questions, and receive quick responses from the kindergarten. It helps improve communication and build a stronger connection between parents and kindergartens.

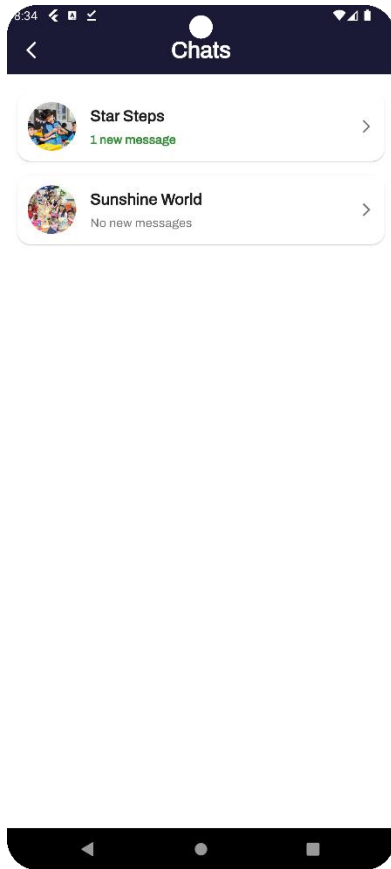


Figure 76: Messaging interface for parents and KGs



Figure 77: Chat screen with specific kindergarten

Payments Screen

In this screen, parents can manage each child's payments. It shows a list of payments from the first payment up to the upcoming month's payment. Each payment includes information such as the payment status (Pending or Completed), amount, due date, semester, kindergarten name, and phone number. Parents can make payments directly through the app using Stripe integration.

The platform ensures the following:

- At the start of the month, a reminder notification is sent to parents.
- Starting five days before the due date, a daily reminder notification is sent.
- If the payment becomes overdue, a daily reminder notification continues to be sent to the parent.

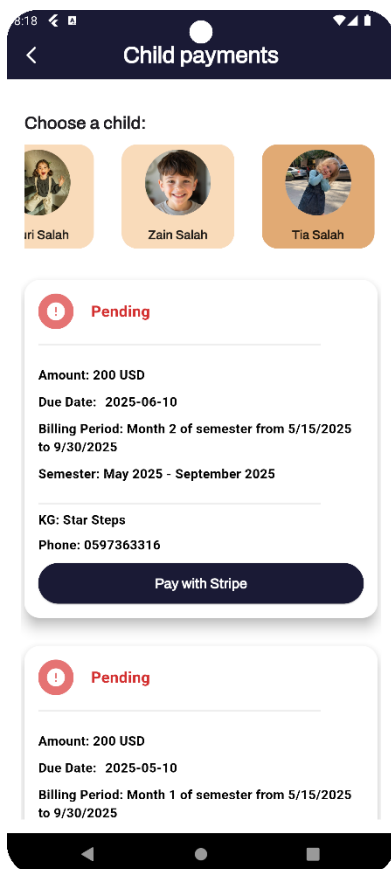


Figure 78: Child payment history screen

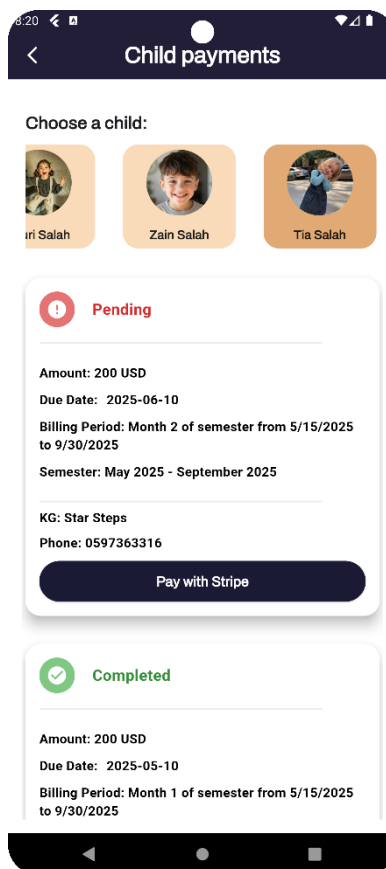


Figure 79: Pending and completed payments overview

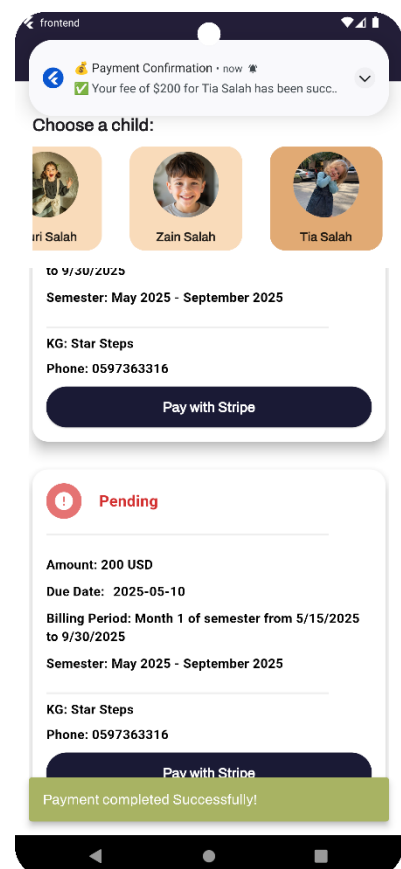


Figure 80: Payment confirmation notification

Community Screens

The application provides a community space where parents can view general posts shared publicly by all kindergartens in the system. In addition, parents can also see posts shared by the kindergartens their children are enrolled in. Each post may include important updates, announcements, or events. Parents can interact with posts by liking and commenting. They also have the ability to edit or delete their own comments. Furthermore, if a kindergarten announces an event, parents can book attendance for the event directly through the application.



Figure 81: Parent community interaction screen

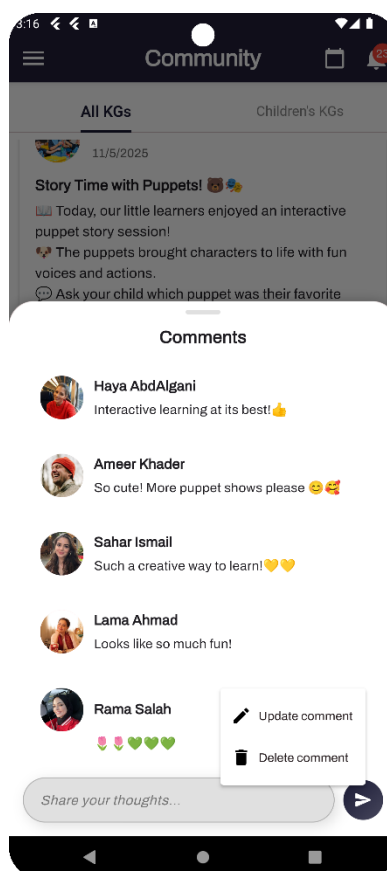


Figure 83: Comments section view

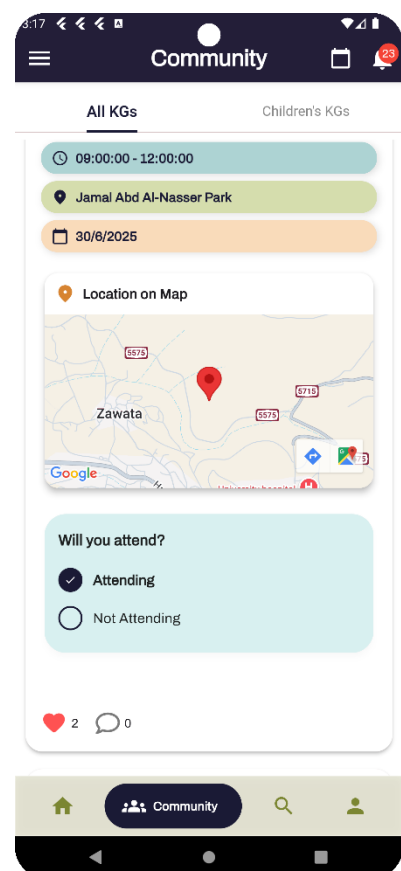


Figure 82: Screen showing event attendance voting

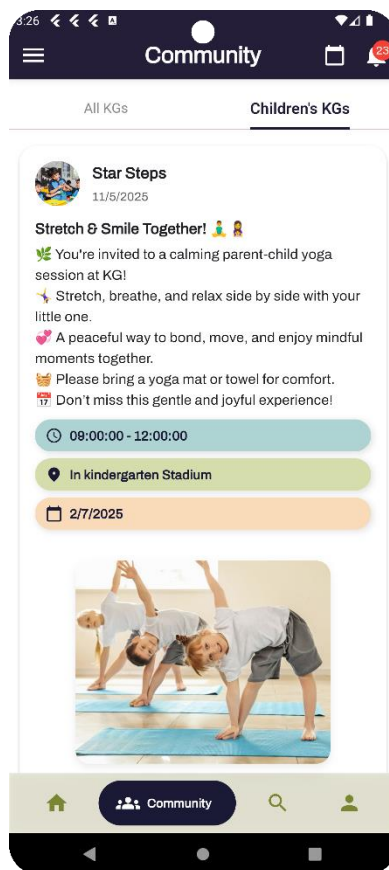


Figure 84: Kindergarten posts related to children

Event Calendar Screen

The application includes an event calendar feature that helps parents keep track of all events they have registered for. When a parent books attendance for a specific event, it is automatically added to their calendar within the app. This calendar organizes upcoming events clearly and helps parents manage their schedule. Additionally, the system sends reminder notifications as the event date approaches. If there are any changes to important event details such as time or location, the system promptly notifies the parent to keep them informed.

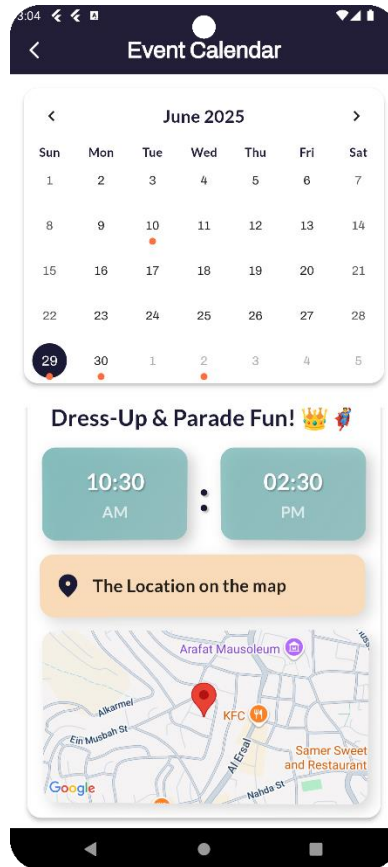


Figure 85: Parent's event schedule screen

Parent Home Screen

Child Progress Tracking Section

In this section, the parent can view a list of their children, and by selecting a specific child, detailed progress is displayed. The child's performance is shown across three quiz categories: letters, digits, and shapes. For each category, the parent can see the total number of attempts, the number of correct answers, the total points scored, as well as the top mistakes and how frequently each mistake occurred. This section helps parents monitor their child's learning progress and better understand the areas that need more focus.



Figure 86: Parent home page with child's letter quiz progress



Figure 87: Child's shape quiz progress

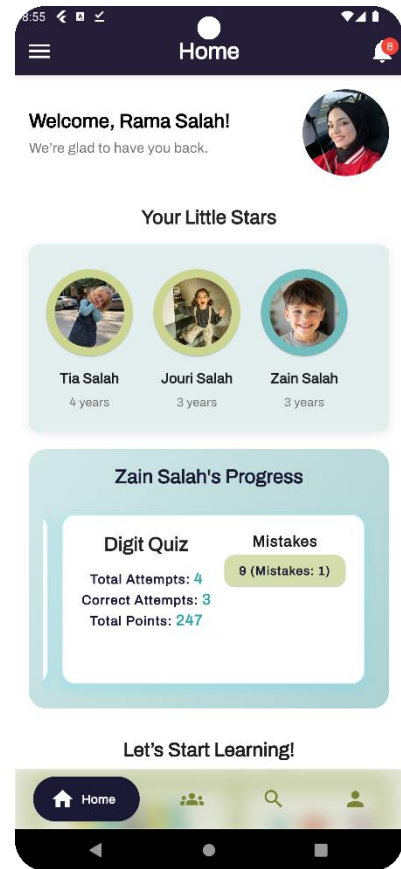


Figure 88: Child's digit quiz progress

Generate Quizzes Section

In this section, the parent can create quizzes customized specifically for the selected child. There are three types of quizzes available: Letters, Digits, and Shapes. To create a quiz, the parent first selects the quiz type and then chooses the child, ensuring that the quiz is tailored to the child's individual learning needs. Each quiz consists of five questions, with three based on the child's most frequent mistakes to help reinforce areas that need improvement, and two introducing new content for further practice. For each question, the child is asked to draw the letter, digit, or shape and can also hear its pronunciation, supporting both visual and auditory learning styles.

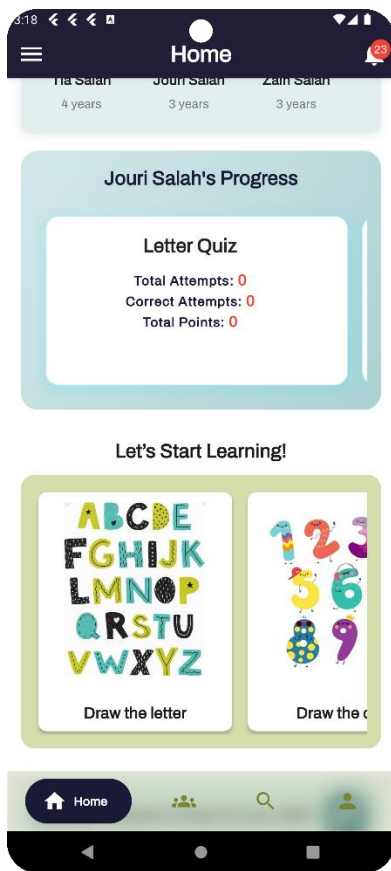


Figure 89: Child practicing letter drawing

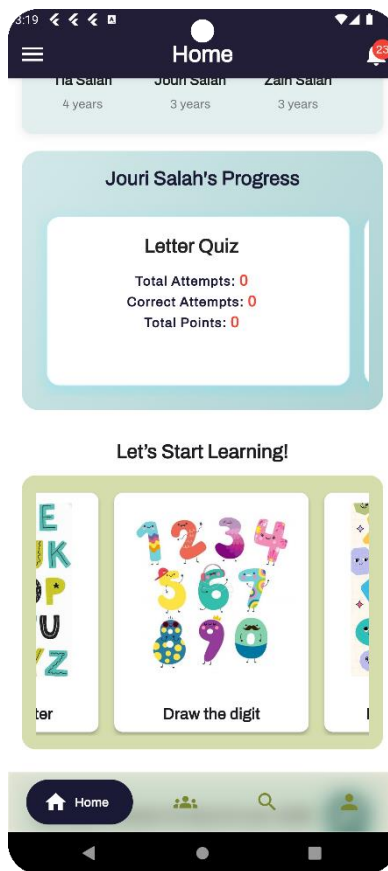


Figure 90: Child practicing digit drawing

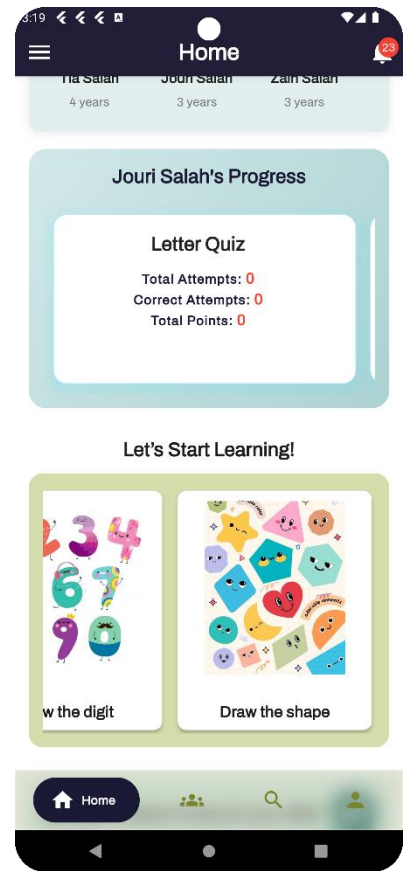


Figure 91: Child practicing shape drawing

The results of each quiz are evaluated using task-specific machine learning models. For shape recognition, a model was fine-tuned from google/siglip2-base-patch16-224. Letter recognition is handled by a model trained on the EMNIST Letters dataset, while digit recognition uses a model trained on the standard MNIST dataset. Each model performs classification to determine the most probable class of the input drawing. Based on the prediction, the system assigns a score according to how closely the user's drawing matches the expected result. If the drawing is incorrect, the model provides feedback by predicting what was actually drawn.

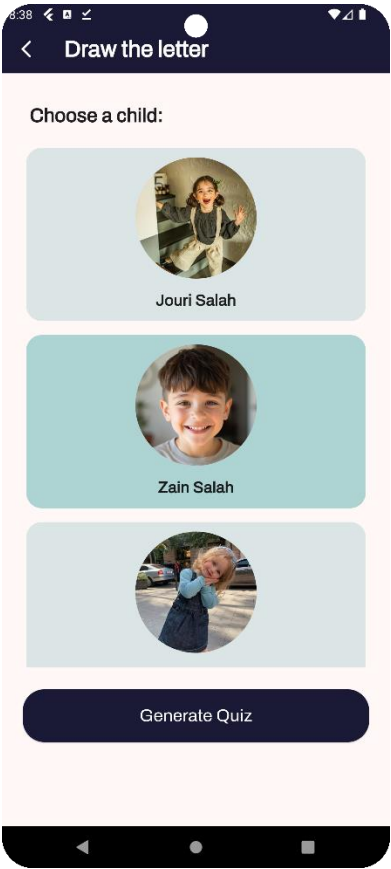


Figure 92: Child selection before starting letter quiz

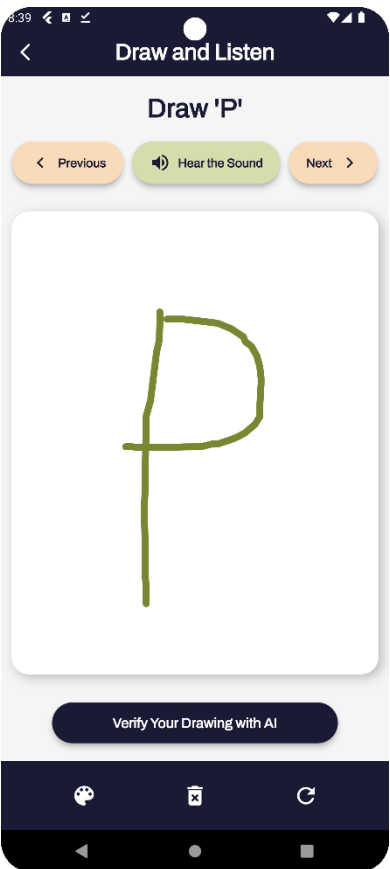


Figure 94: Correct letter drawing

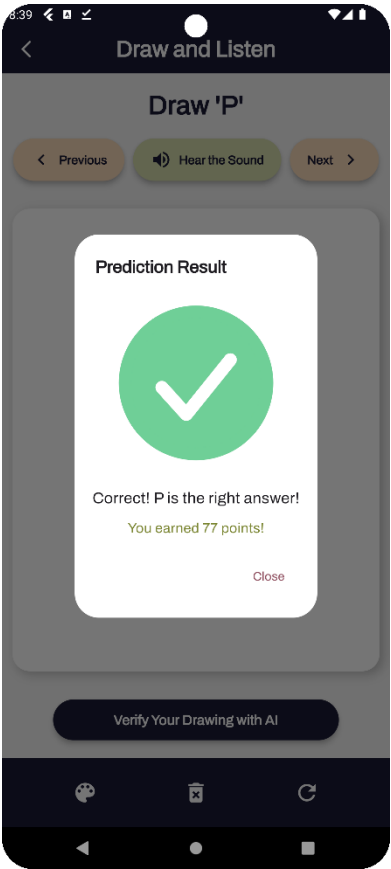


Figure 93: Correct letter predicted by AI

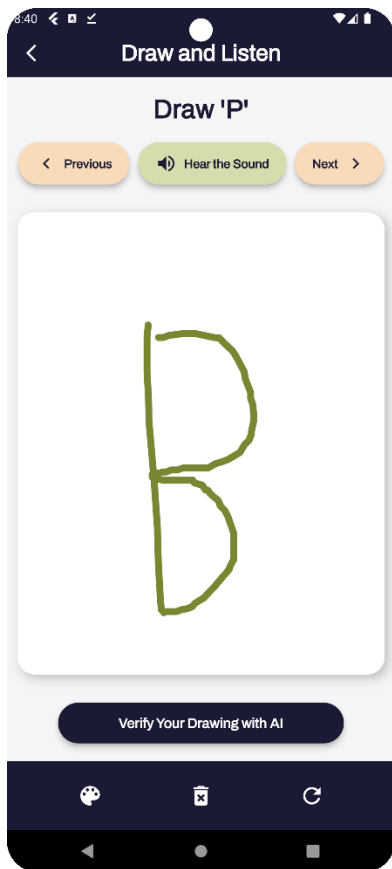


Figure 95: Incorrect letter drawing

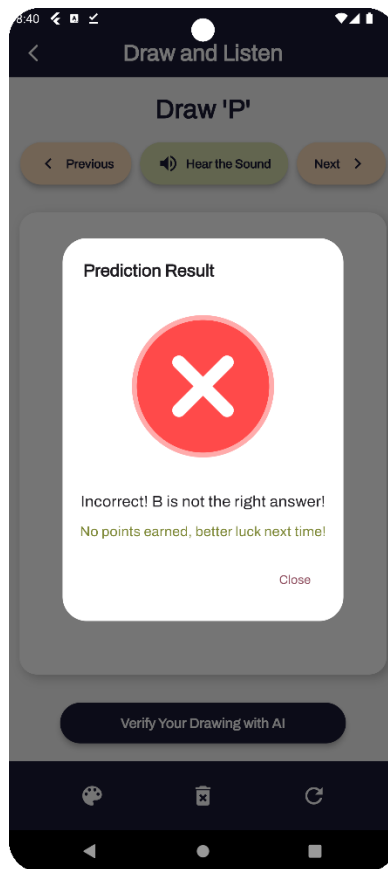


Figure 96: Incorrect letter predicted by AI

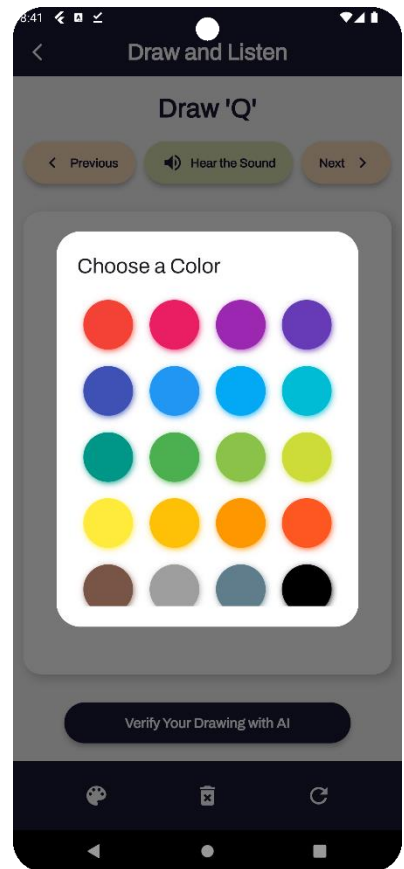


Figure 97: Drawing tool with color selection options

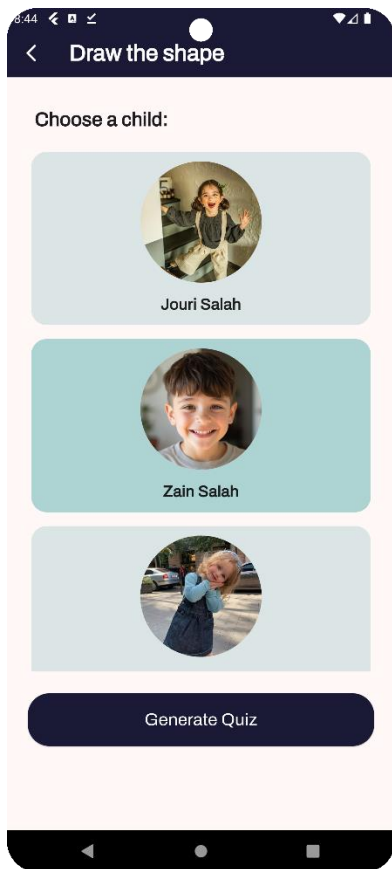


Figure 98: Child selection before starting shape quiz

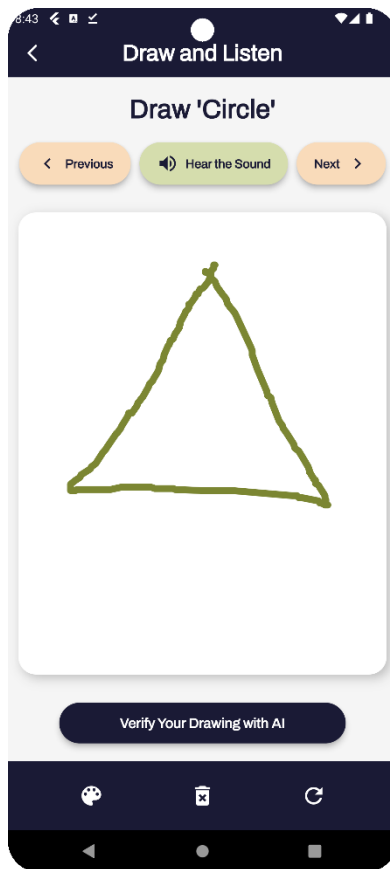


Figure 99: Incorrect shape drawing

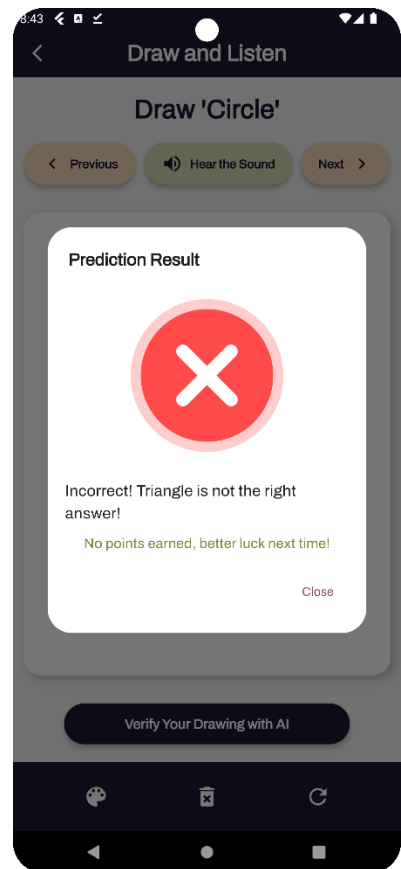


Figure 100: Incorrect shape predicted by AI

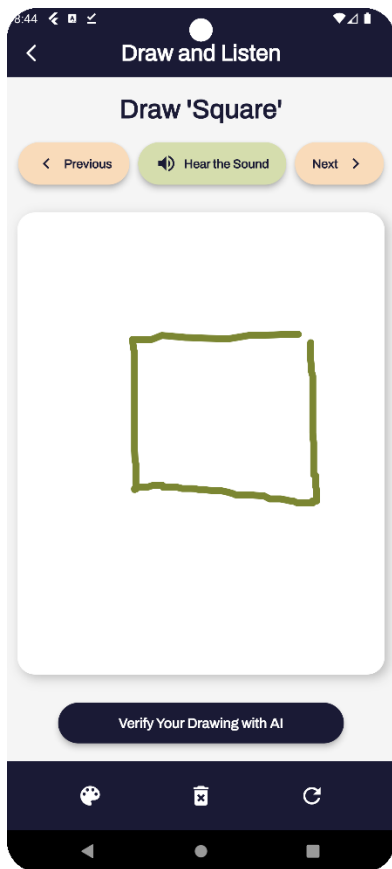


Figure 101: Correct shape drawing

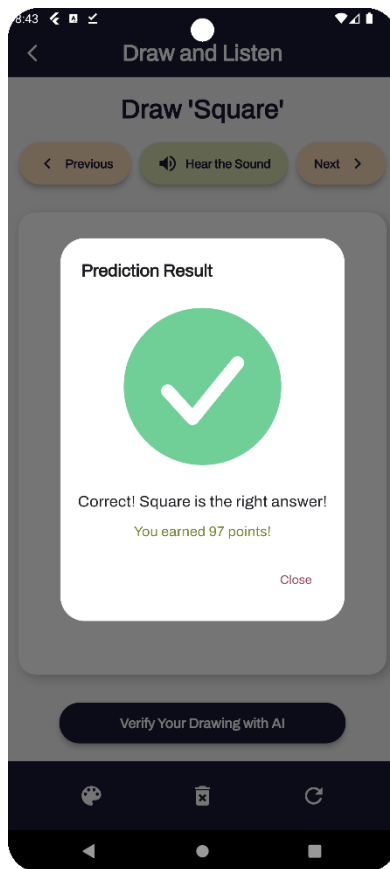


Figure 102: Correct shape predicted by AI

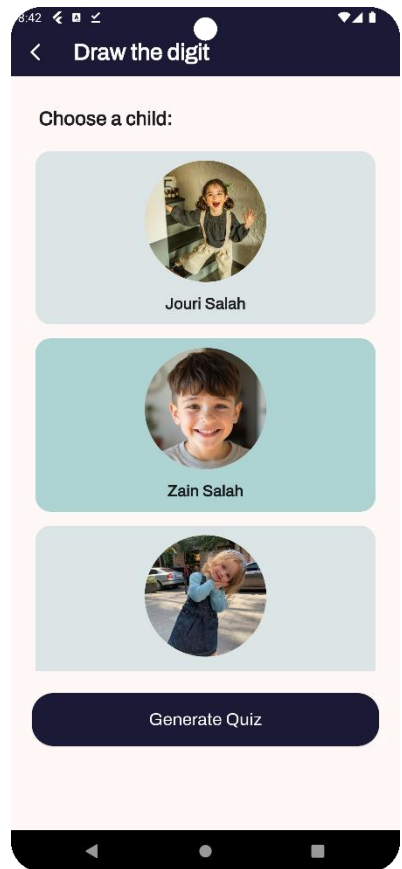


Figure 103: Child selection before starting digit quiz



Figure 104: Correct digit drawing

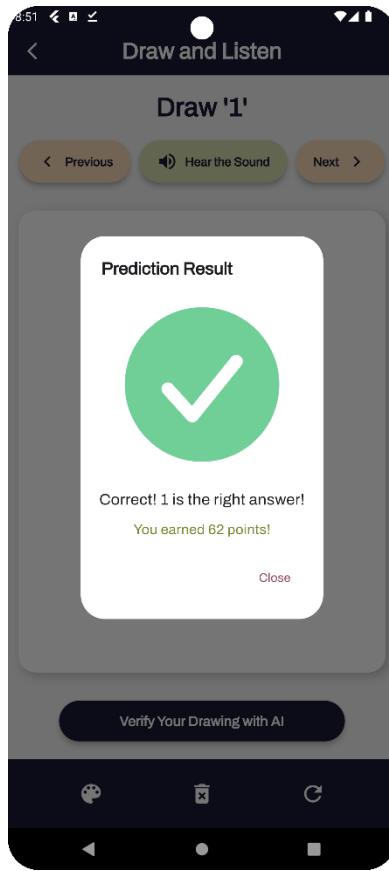


Figure 105: Correct digit predicted by AI

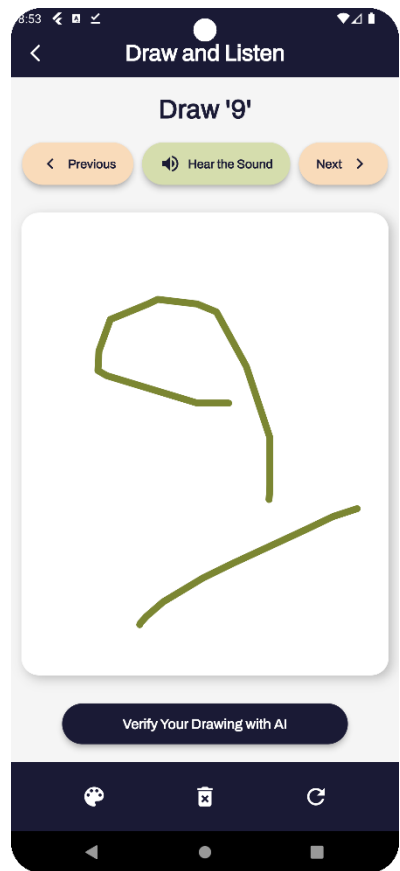


Figure 106: Incorrect digit drawing

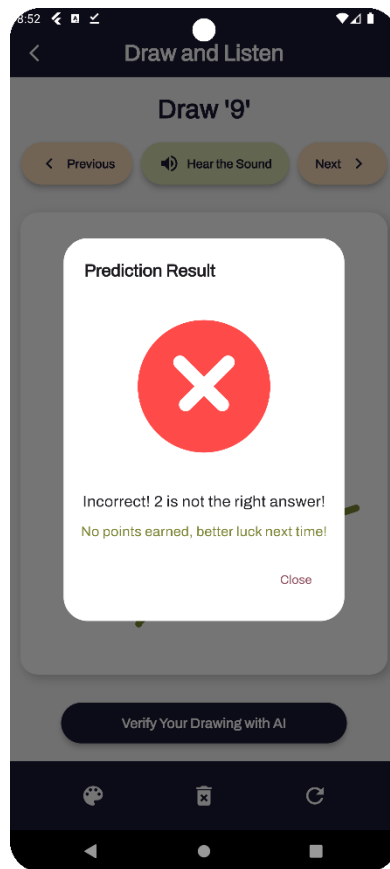


Figure 107: Incorrect digit predicted by AI

Customized Story Generation

In this section, the parent can create a special story for their child using AI. They just need to enter a story title, choose a theme, and write the name of the main character. Then, the system will create a fun story with a picture that matches the theme, making the story more exciting and enjoyable for the child.

Educational Articles Section

This section provides new articles related to childhood and education. Parents can read helpful tips, expert advice, and the latest information to support their child's learning and development.

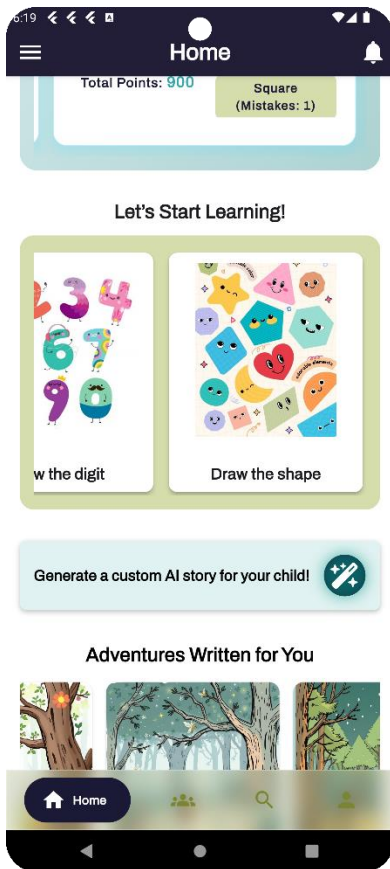


Figure 109: Personalized story created by AI for the child

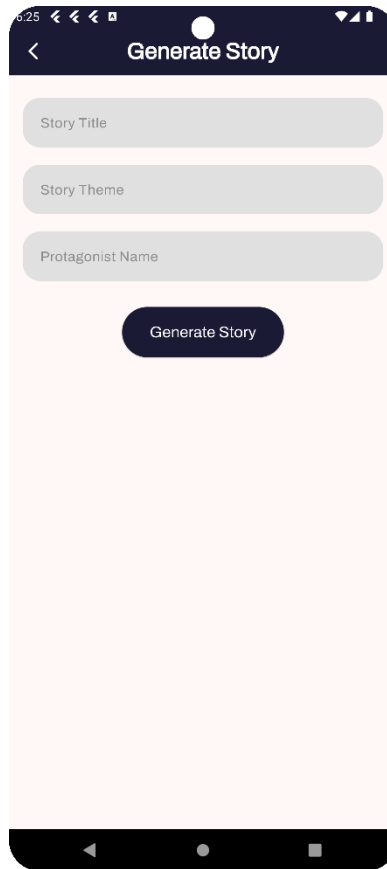


Figure 108: Story setup form

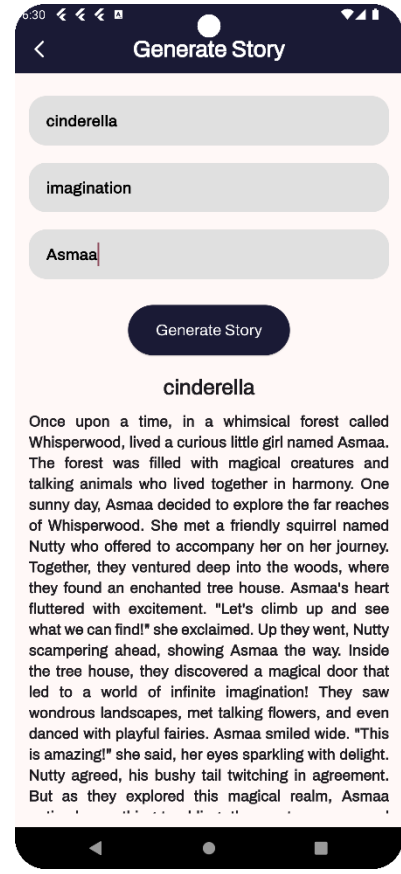


Figure 110: AI-generated story displayed

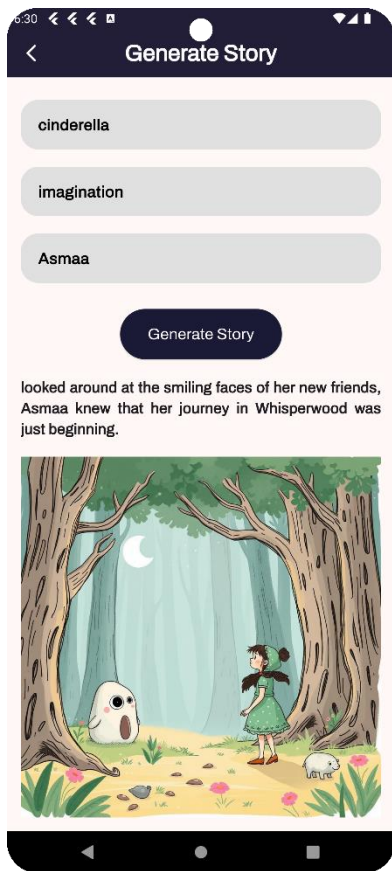


Figure 111: AI-generated story displayed (2)

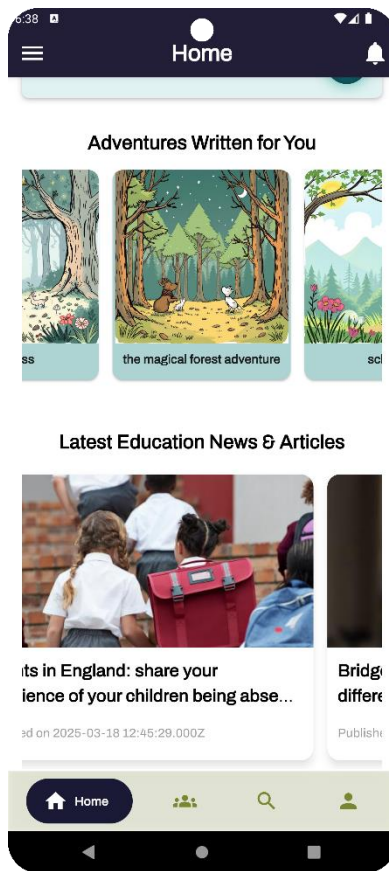


Figure 112: Articles section on the home screen

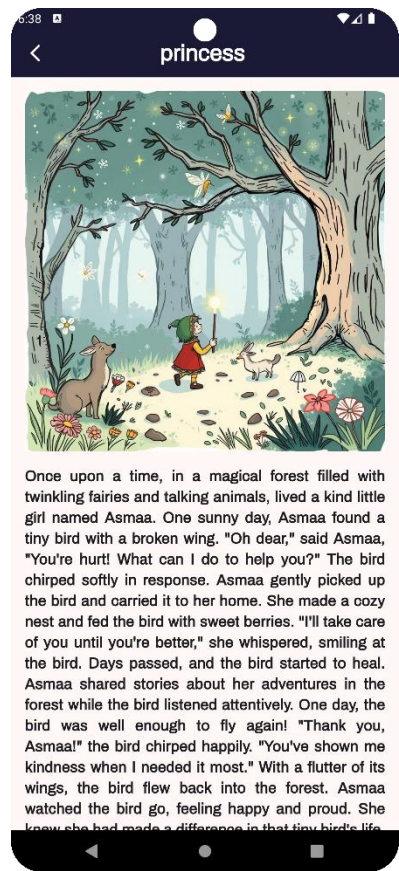


Figure 113: Story display screen with image

4. Kindergarten Screens

Profile Setup Screens

When a kindergarten is verified by the admin, a confirmation email is sent, and the kindergarten user can then log in successfully. During the first login, they are required to complete their profile by providing details such as a profile picture, curriculum type, student-to-teacher ratio, average fees, operating hours, available extra hours, operating days, and the languages spoken.

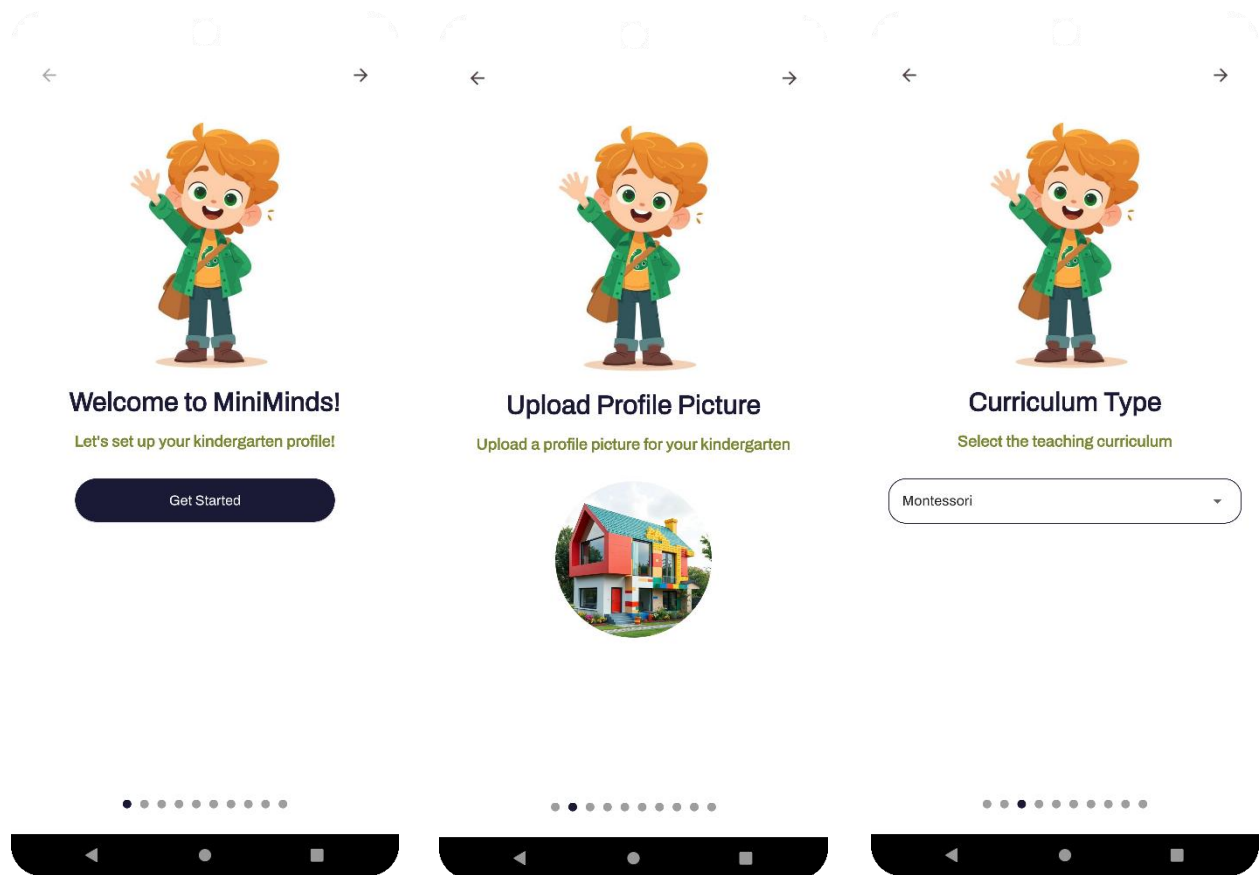


Figure 114: Welcome screen for kindergarten profile creation

Figure 115: Uploading kindergarten profile photo

Figure 116: Choose curriculum type for the kindergarten

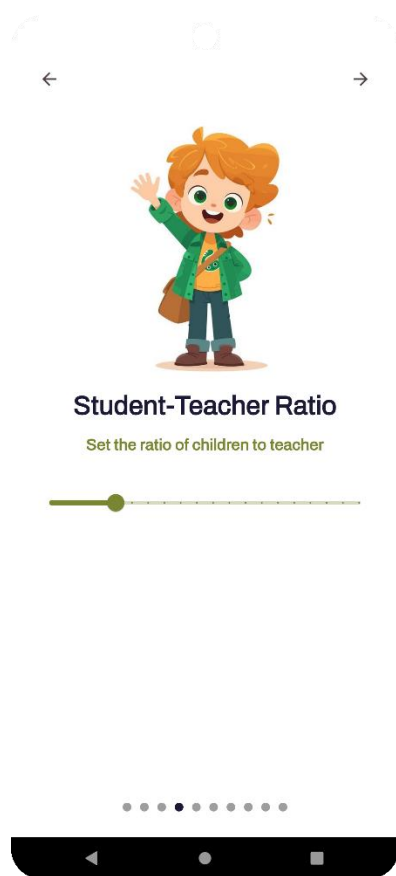


Figure 117: Student-to-teacher ratio entry screen

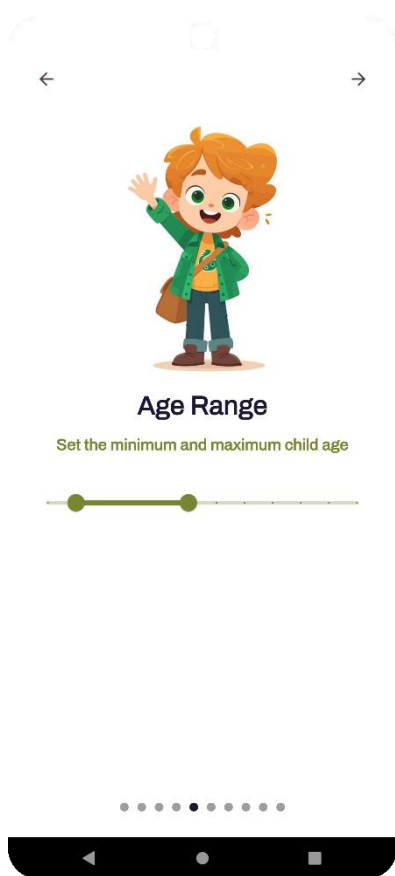


Figure 118: Set children's age range for the kindergarten

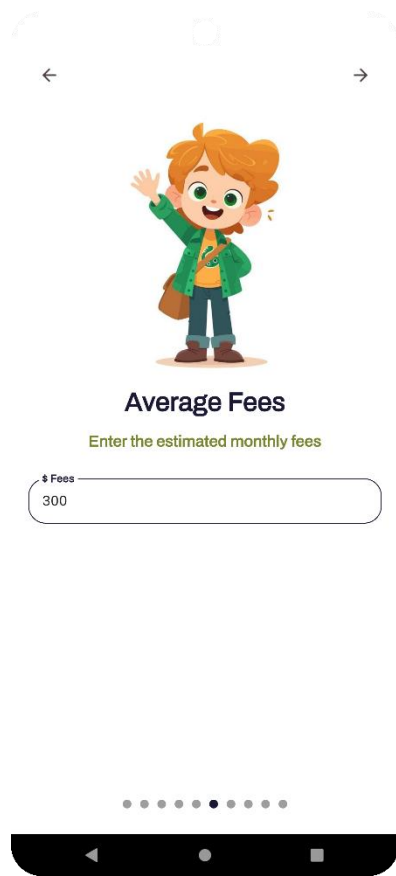


Figure 119: Input average fees for kindergarten

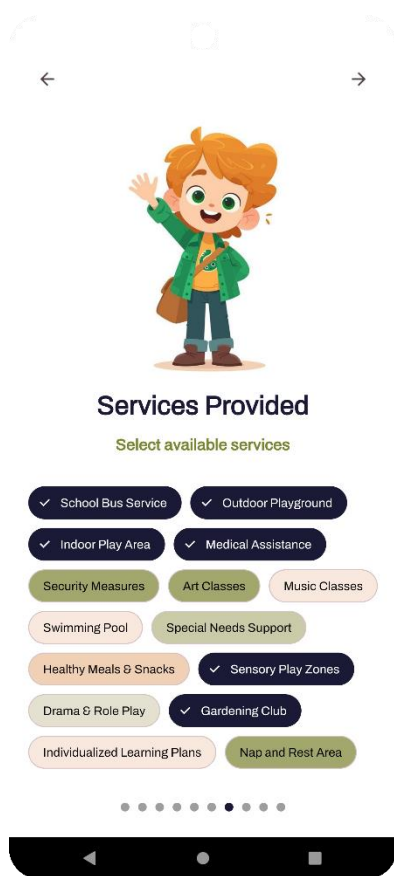


Figure 120: Select services provided by the kindergarten

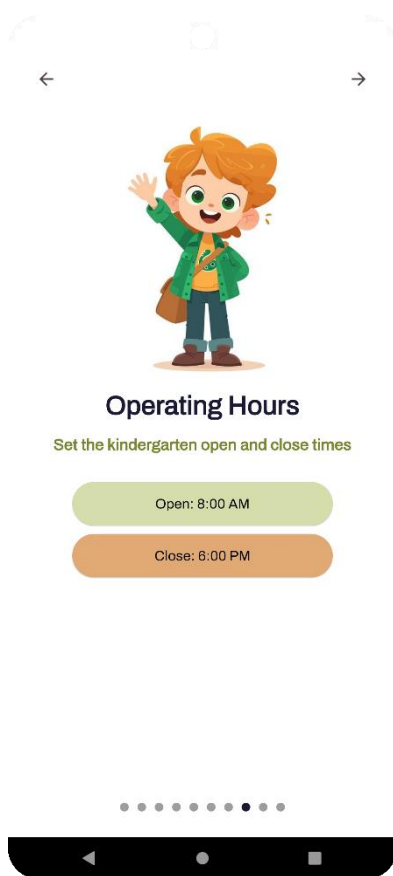


Figure 121: Set regular operating hours for the kindergarten

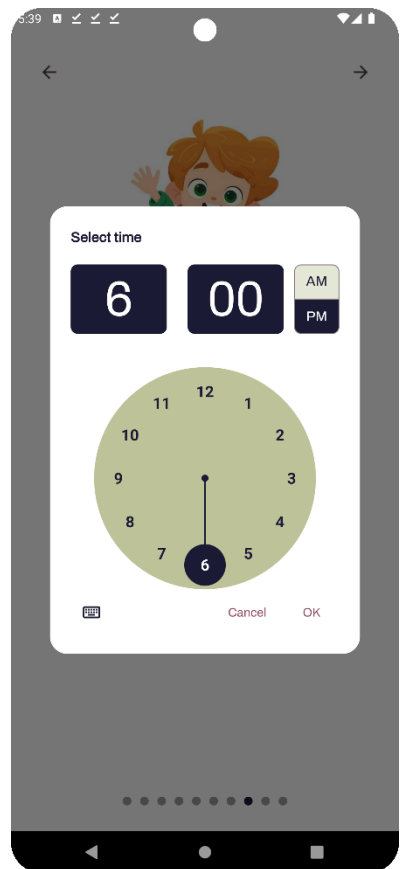


Figure 122: Time picker for selecting operating hours

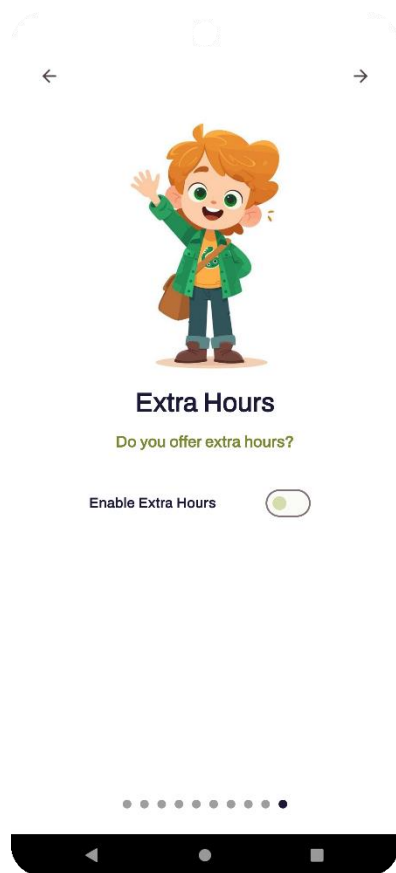


Figure 123: Set additional operating hours option

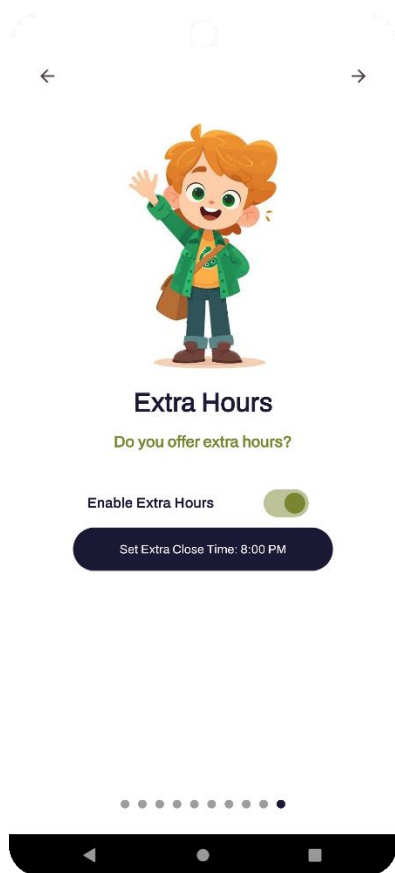


Figure 124: Toggle to enable extra hours for kindergarten



Figure 125: Select operating days for the kindergarten



Figure 126: Select languages offered by the kindergarten

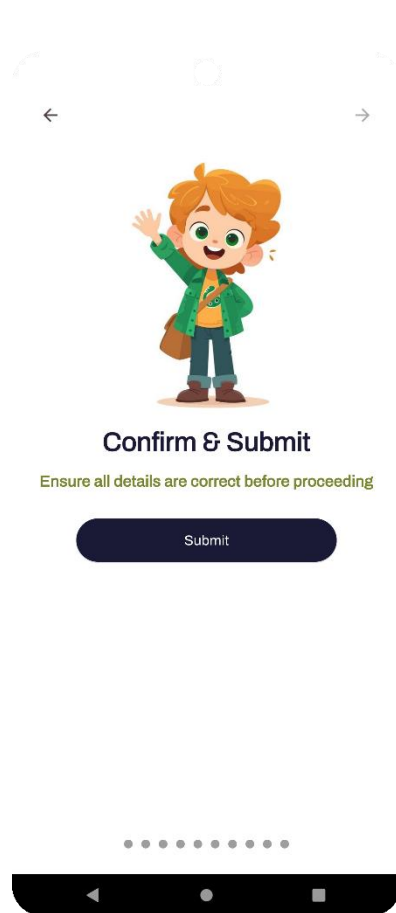


Figure 127: Submit and save profile information

KG Profile Screen

After setting up the profile, the kindergarten user's profile becomes active and accessible. The user can edit the kindergarten name and profile information.

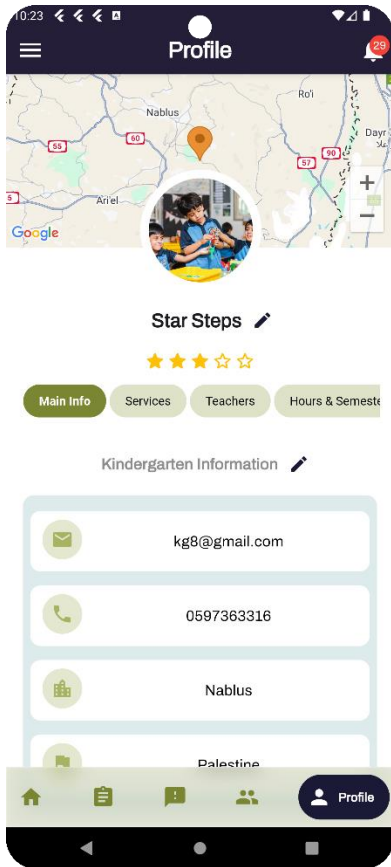


Figure 128: Main information tab in kindergarten profile

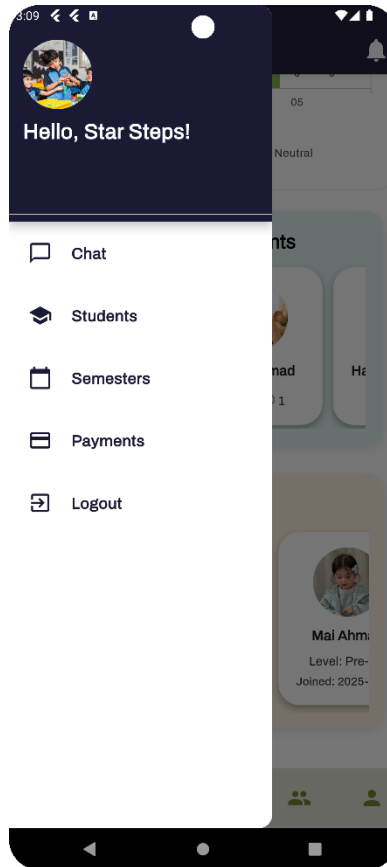


Figure 129: Sidebar options for kindergarten

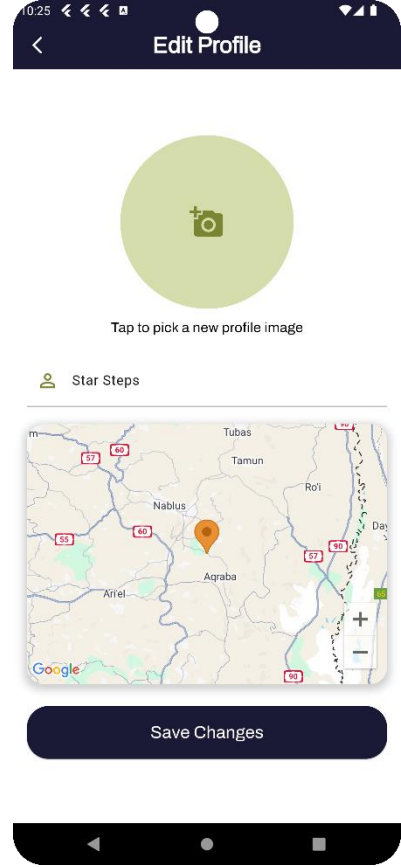


Figure 130: Edit form for kindergarten main information

The profile includes all necessary details about the kindergarten, organized into different tabs, with each tab presenting specific pieces of information.

- **Main information tap:** this tab contains the kindergarten’s contact details (phone number, email, and address), curriculum type, average fees, student-to-teacher ratio, and the age range accepted by the kindergarten. All information in this section can be edited.

Additionally, it includes the languages offered by the kindergarten, which can be added or removed as needed.

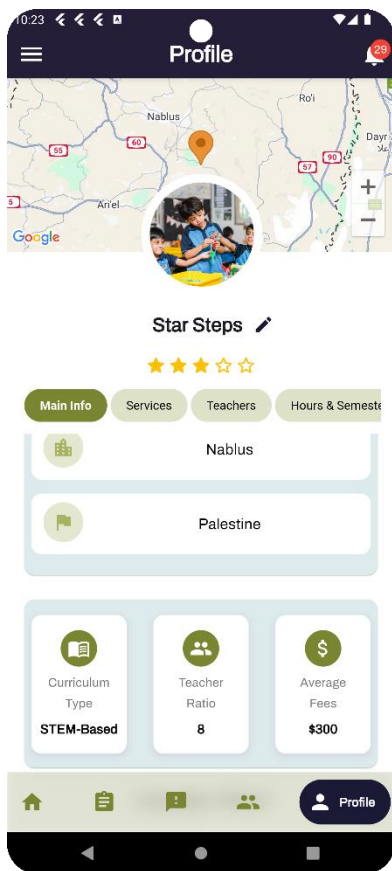


Figure 131: Main information tab in kindergarten profile (2)

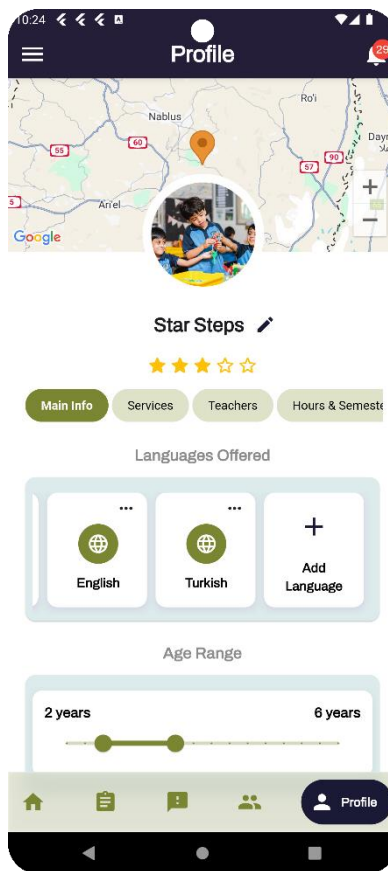


Figure 132: Main information tab in kindergarten profile (3)

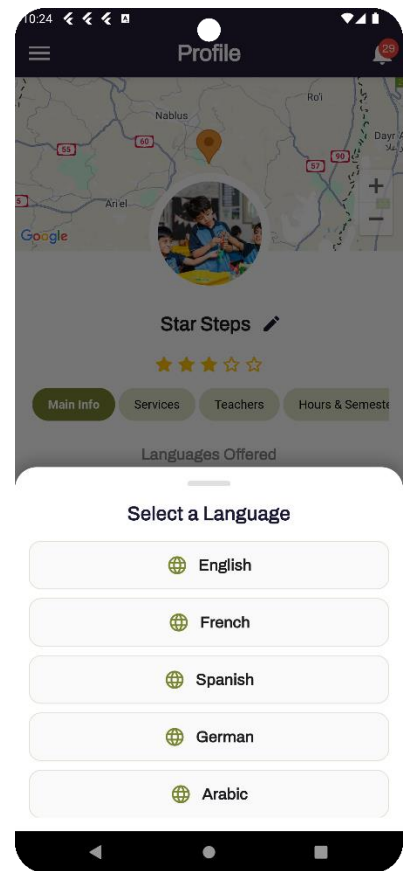


Figure 133: Add a new language to the offered list

The screenshot shows a mobile application interface for editing main information. The title bar at the top is dark blue with a white back arrow and the text 'Edit Main Information'. The status bar above shows the time 10:25 and various icons. The form consists of several input fields, each with a horizontal line below it: a green people icon followed by the number '8'; a green dollar sign followed by '300'; a green telephone icon followed by the number '0597363316'; a green building icon followed by the text 'Nablus'; a green flag icon followed by the text 'Palestine'; a green dropdown menu with a book icon and the text 'STEM-Based'; and a green slider control with two dots and the text 'Age Range: 2 - 6'. At the bottom of the form is a dark blue rounded rectangular button with the text 'Save Changes'. The bottom of the screen shows the standard Android navigation bar with back, home, and recent apps icons.

Figure 134: Update form for KG details

- **Services tap:** this tab lists the services provided by the kindergarten. Services can be added or removed as needed.

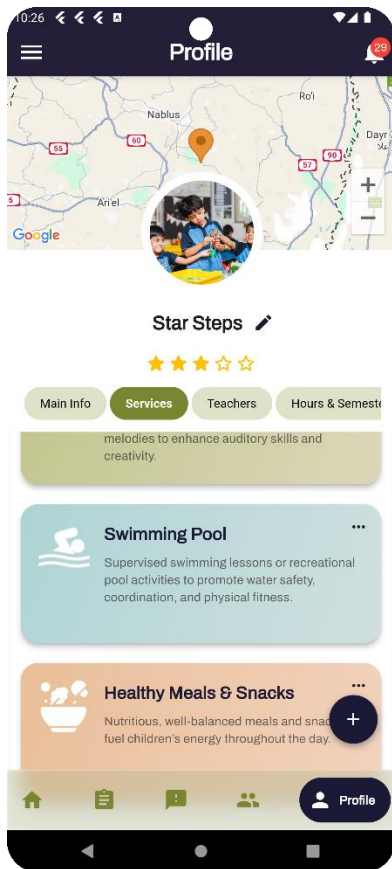


Figure 135: Services view tap

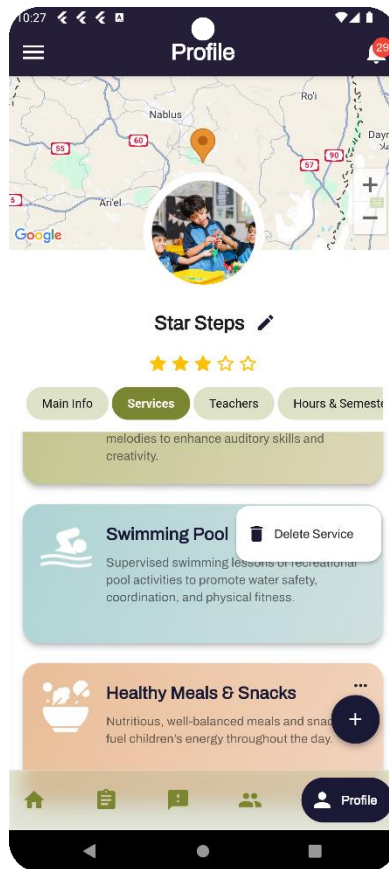


Figure 136: Services view tab with delete option.

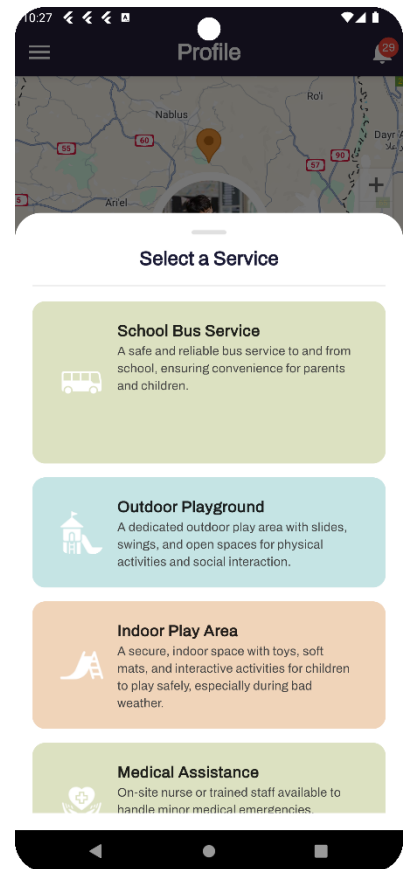


Figure 137: Selecting a new service offered by the kindergarten.

- **Teacher tap:** this tab contains a list of the kindergarten’s teachers, including details such as name, profile picture, phone number, qualifications, and years of experience. Teacher information can be edited, and teachers can also be removed from the list.

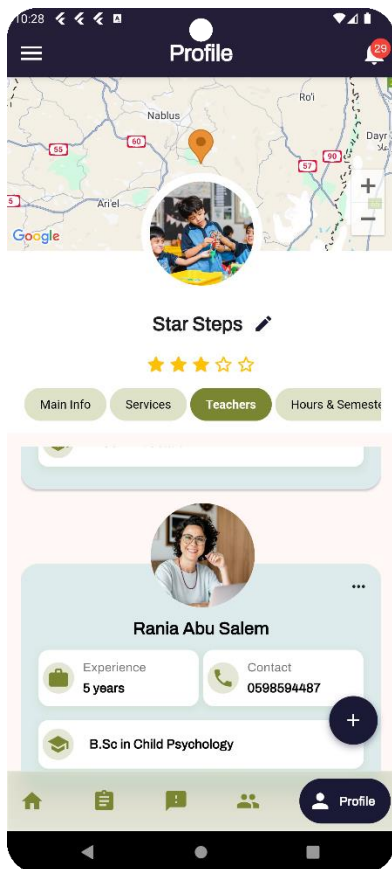


Figure 138: Teacher information tab displaying all teachers.

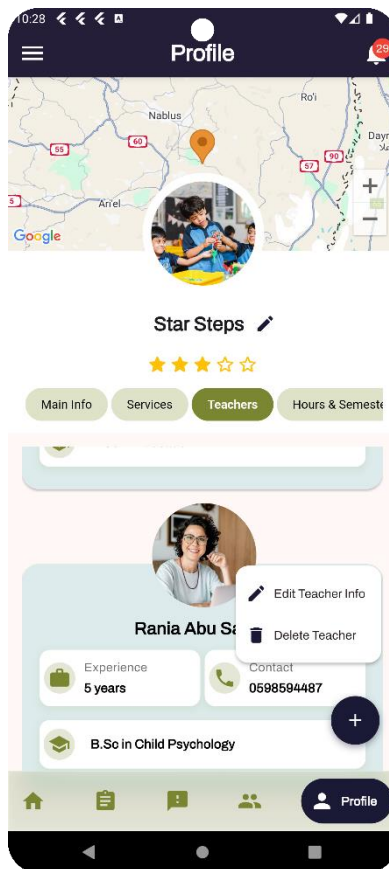


Figure 139: Teacher tab with delete and edit options.

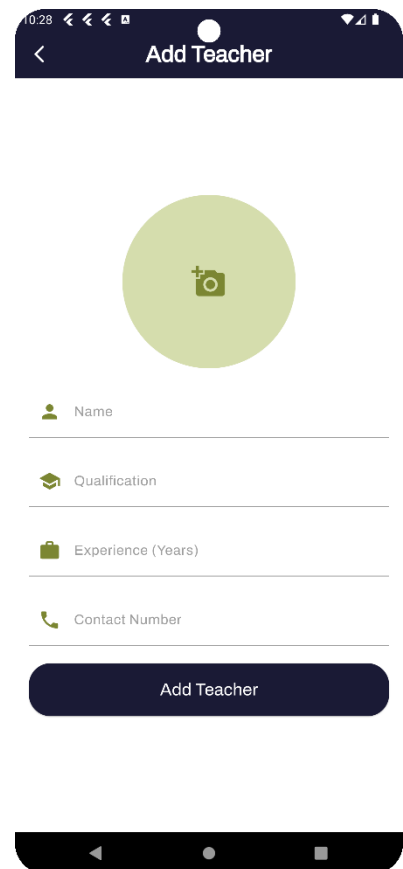


Figure 140: Add teacher form.

- Hours and Semesters tap:** this tab contains information about working days, operating hours, and extra hours, all of which can be edited. It also includes details about the current semester, such as the start and end dates, and the registration deadline.

When editing operating hours, the system ensures that the start time is always set before the end time to maintain logical consistency.

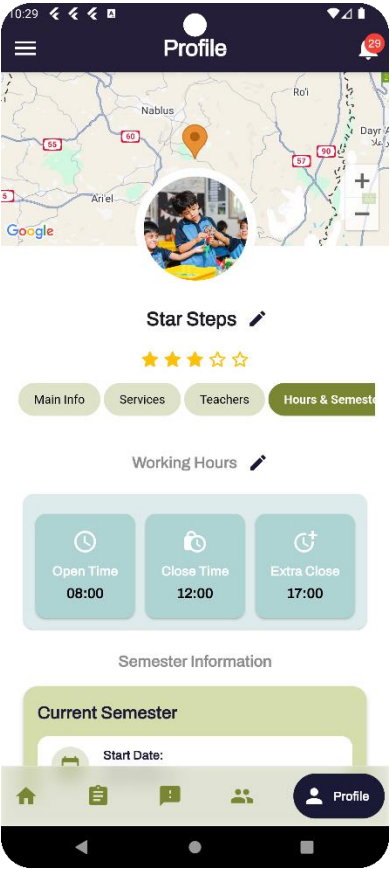


Figure 143: Hours & Semester information tap (1).

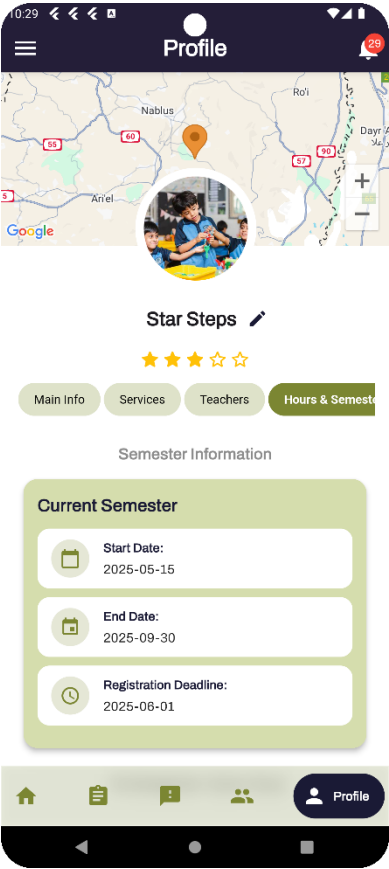


Figure 142: Hours & Semester information tap (2).

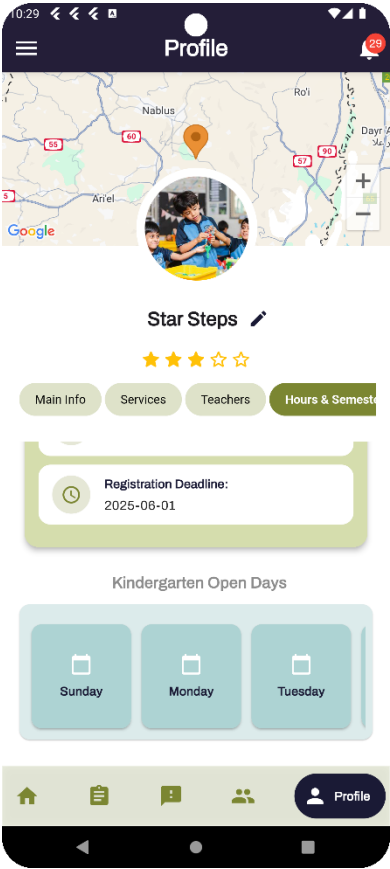


Figure 141: Hours & Semester information tap (3).

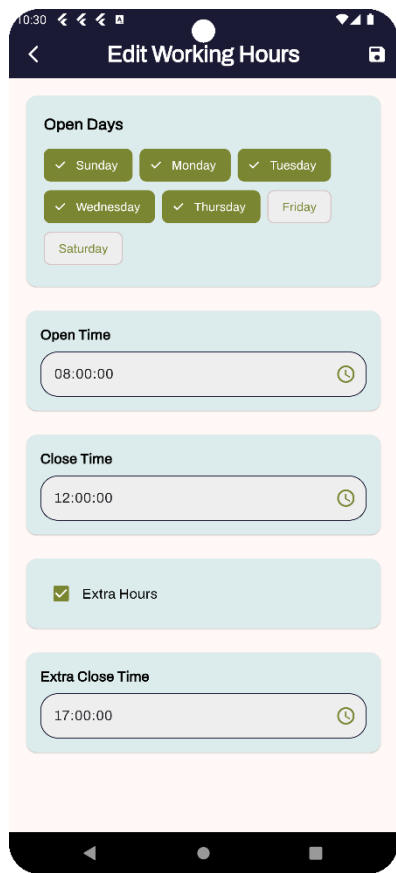


Figure 145: Edit working hours form.

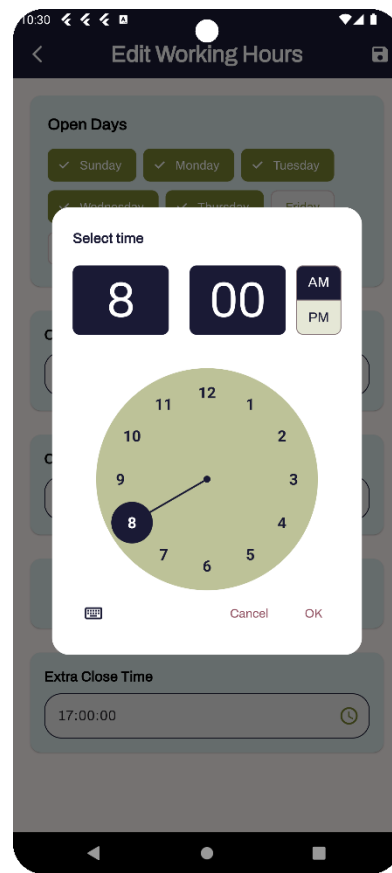


Figure 144: Clock for editing hours input.

- **Levels tap:** this tab includes a list of levels offered by the kindergarten, such as Pre-KG, KG1, and KG2. Each level displays information like the name, registration fees, monthly fees, and semester fees. Levels can be edited or deleted, and new ones can be added as needed.

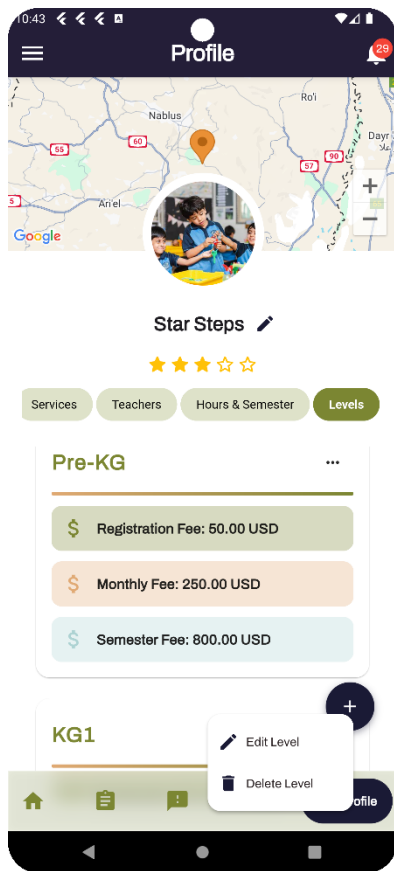


Figure 146: Levels information tap.

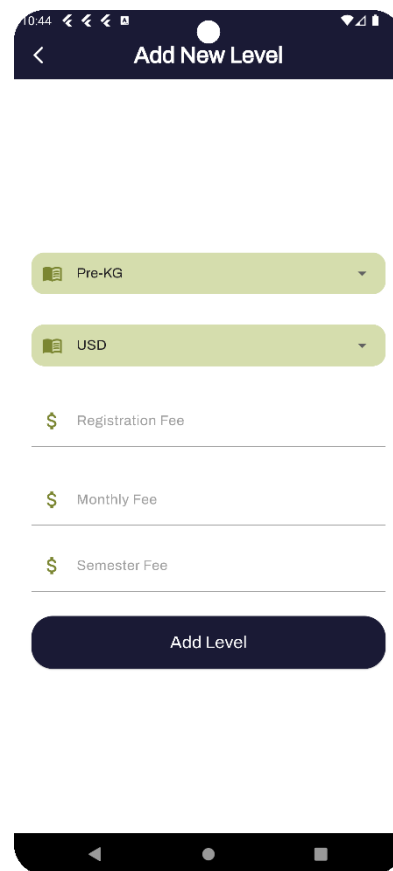


Figure 147: Add new level form.

Feedback Screen

This screen allows kindergartens to browse feedback and ratings provided by parents whose children are enrolled, each feedback is analyzed using AI-based sentiment analysis and topic targeting, which enables the platform to classify it as **positive**, **neutral**, or **negative** for each topic in the feedback.

In order to help other parents to find the most useful feedback, any parent user can upvote or downvote a feedback.

Feedback can be **sorted** in different ways:

- By date (ascending or descending)
- By reactions (most upvoted or downvoted)
- By topic like:
 - Cost
 - Teaching Quality
 - Services
 - Environment
 - Activities
- By sentiment (positive, negative, or neutral)

Additionally, rating statistics (ranging from 0 to 5 stars) are displayed on the screen, showing how many parents gave each rating level.

How is feedback processed?

The backend analyzes parent feedback using a machine learning model:

- **Model Loading**

For sentiment classification, Twitter-roBERTa-base model for sentiment analysis, is used for sentiment classification by evaluating the feedback and outputs probabilities for positive, neutral, or negative sentiment.

- **Text Preprocessing**

Feedback text is cleaned and lemmatized by removing the stop words, except for important contrast words (e.g., “but”, “however”), which help identify changes in sentiment.

- **Topic Detection**

By matching terms from a topic dictionary, each feedback is assigned one or more predefined topics (e.g., words like “fees”, “expensive”, “payment” map to the "cost" topic).

- **Clause Analysis**

To more accurately assign sentiment per topic, if feedback includes contrastive structures, the text is divided by contrast words (e.g., “The teachers are great, but the environment is noisy”).

- **Per-Topic Sentiment Classification**

For each topic detected in the feedback, a relevant clause is analyzed for sentiment, to determine whether the sentiment is: POSITIVE, NEGATIVE, or NEUTRAL.

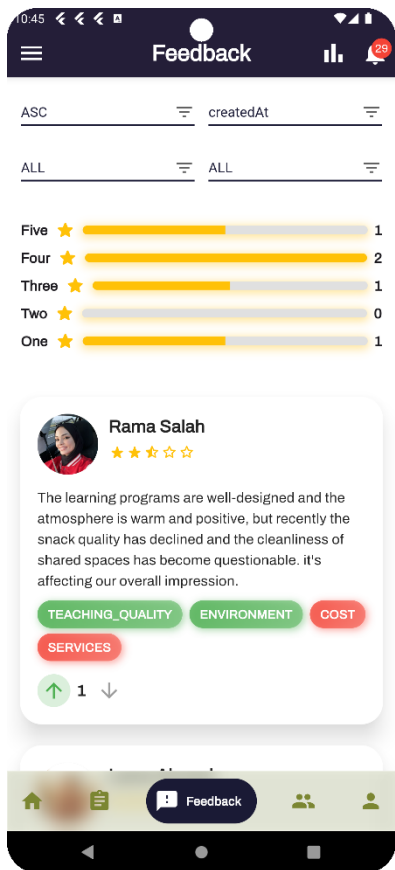


Figure 148: Feedbacks display (1).

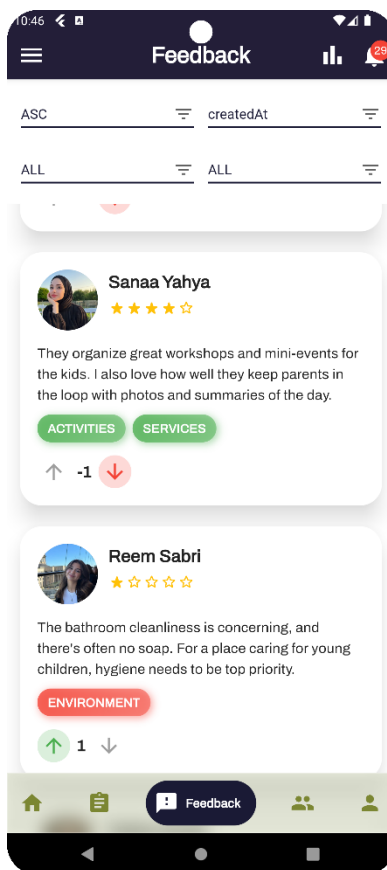


Figure 149: Feedbacks display (2).

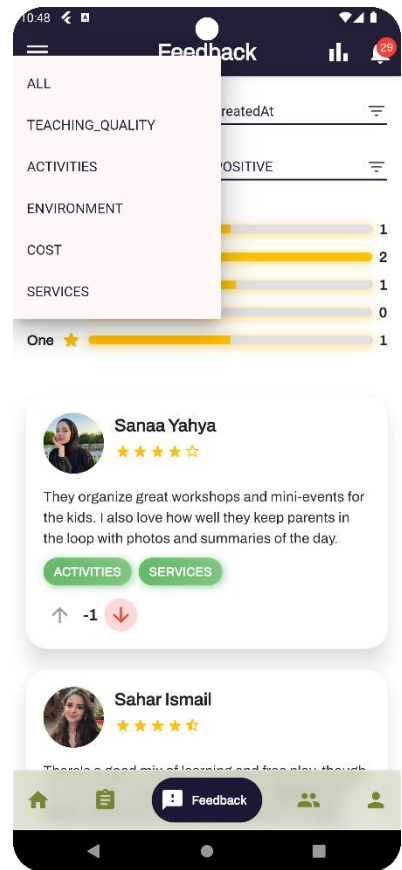


Figure 150: Filtering feedback by topic.

Feedback statistics also provide an overview of the feedback. A pie chart shows the number of feedbacks by sentiment, and a bar chart shows the number of each sentiment of feedback per topic.

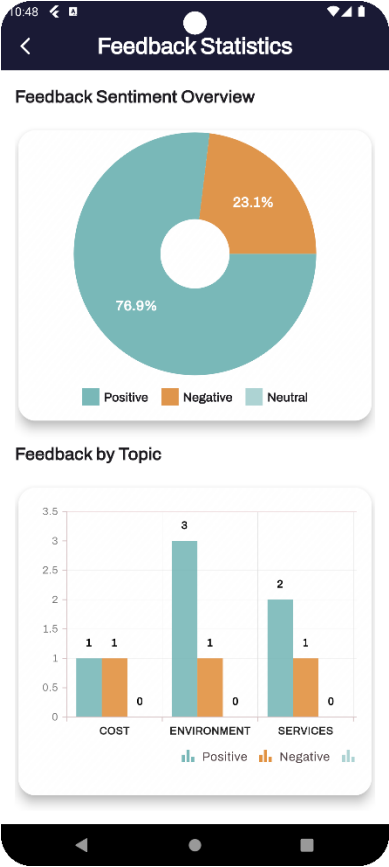


Figure 151: Statistics of feedback.

Enrollments Screen

This screen allows for the management of enrollment requests. The following actions can be performed:

- View enrollment application details:
 - Child Information: Name, age, level to enroll in, birth certificate
 - Parent Information: Name, phone number, email, identity document
 - Enrollment Details: Semester to enroll in, application date, confirmation status, and current enrollment status.

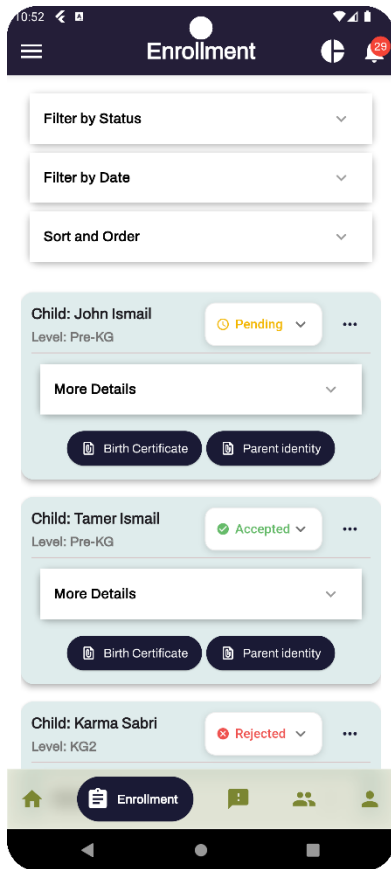


Figure 152: List of enrollment requests.

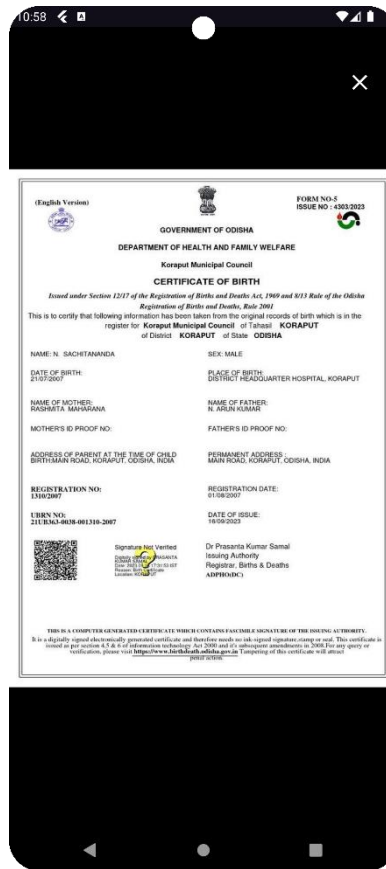


Figure 153: Birth certificate of the child.



Figure 154: Identity card of the parent.

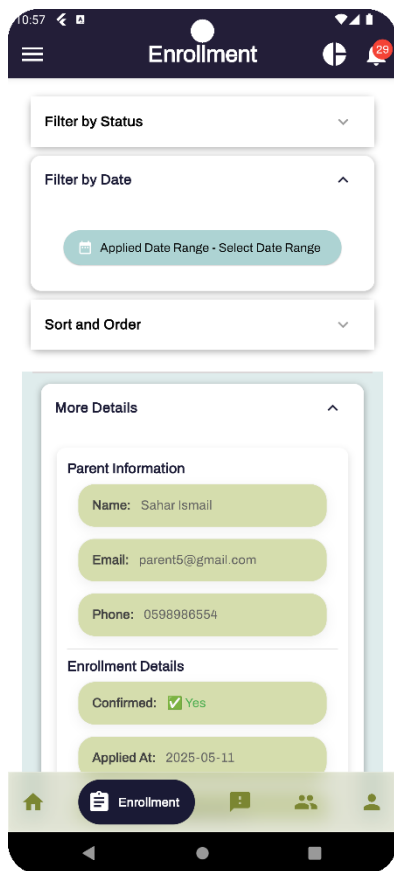


Figure 155: Information on enrollment requests (1).

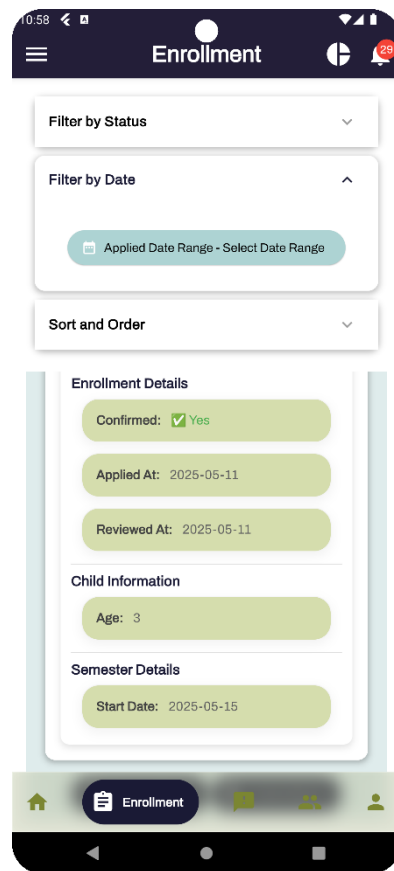


Figure 156: Information on enrollment requests (2).

- **Edit the status of enrollments:**

- Changing an application status from Pending or Rejected to Accepted is only allowed if there is available capacity in the requested level and the child is not already enrolled and confirmed at another kindergarten. Once the application is accepted, a seat is reserved for the child.
- The application status can be updated from Pending to Rejected.
- Accepted to Rejected is only allowed if the enrollment is not being confirmed by the parent.

Once an enrollment application is accepted, a notification is sent to the parent. The parent must confirm whether they wish to enroll their child in the kindergarten within 3 days.

- If no confirmation is received within this period, the application will be automatically rejected and a new seat will be available.
- A reminder notification is sent to the parent one day before the automatic rejection deadline.

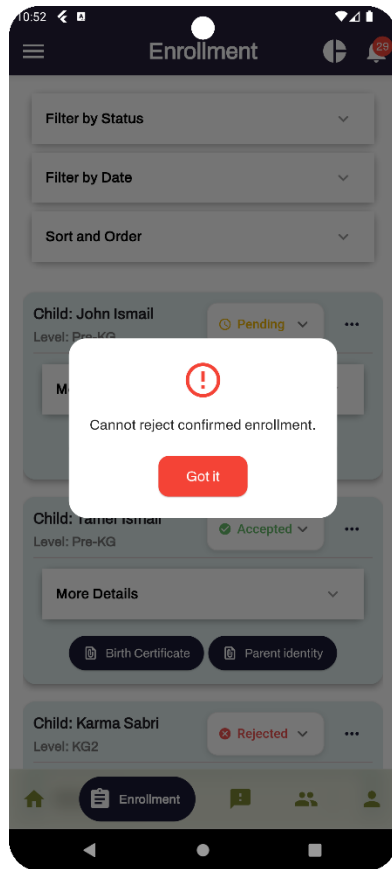


Figure 157: Warning message for rejecting confirmed enrollment.

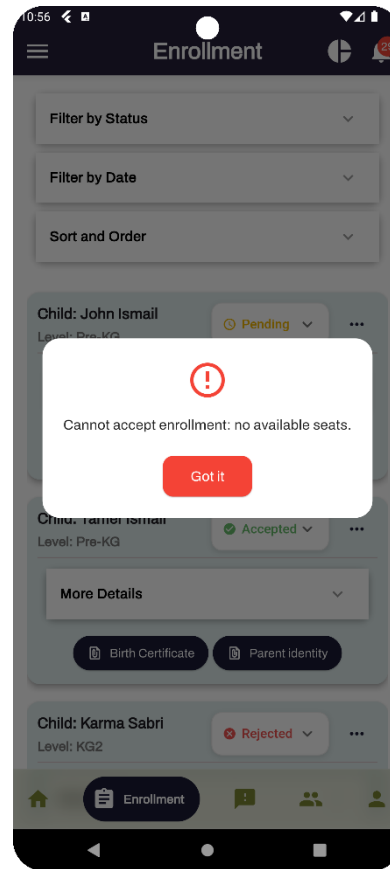


Figure 158: Warning message when seats are unavailable.

- **Sort the enrollment in multiple ways:**
 - By Status:
 - Acceptance Status: Accepted, Rejected, or Pending.
 - Confirmation Status: Confirmed or Not Confirmed
 - Withdrawal Status: Withdrawn or Not Withdrawn.
 - Review Status: Reviewed or Not Reviewed.
 - By Date (in Ascending or Descending Order):
 - Reviewed At.
 - Applied At.
 - Withdrawn At.

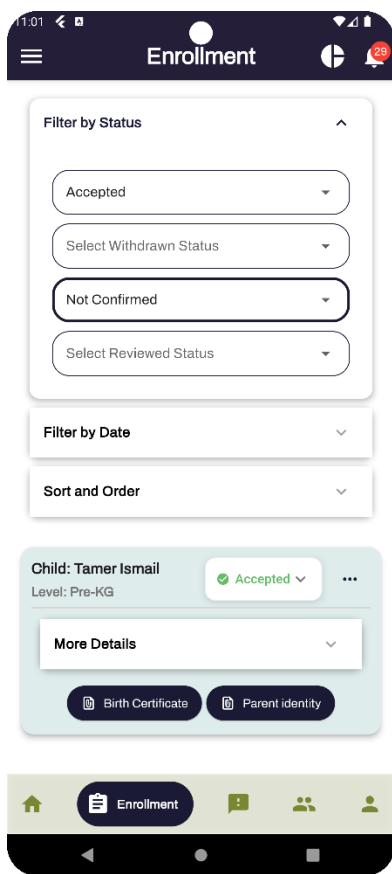


Figure 159: Filter options by enrollment status.

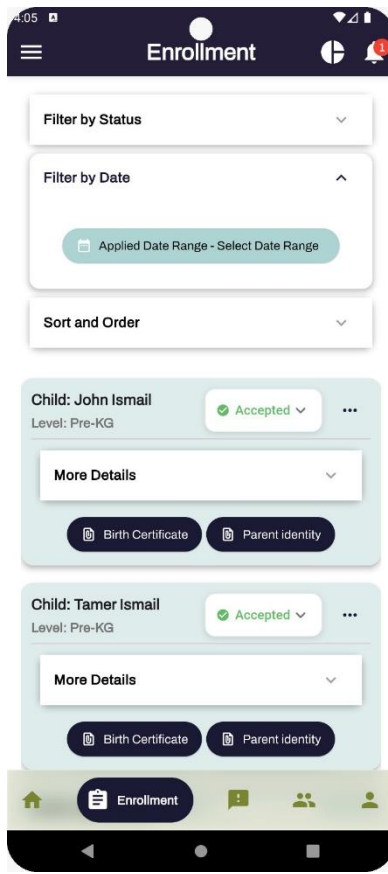


Figure 160: Filter by enrollment request date.

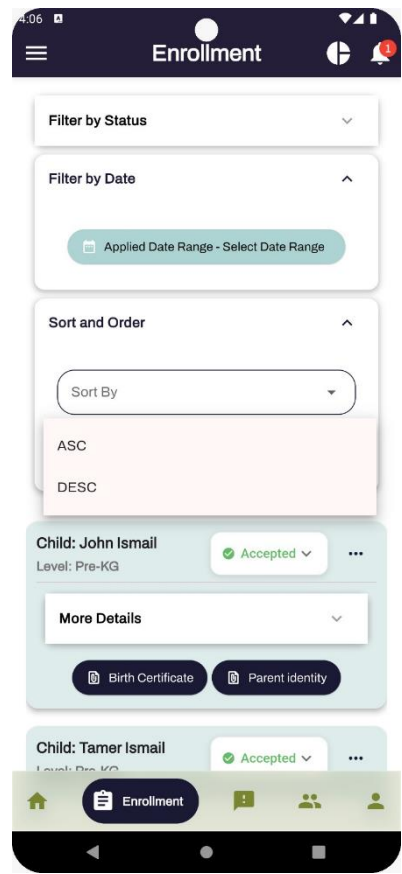


Figure 161: Enrollment sort order.

- View an overview of enrollment applications using a pie chart. This chart displays the number of applications categorized by acceptance status: Accepted, Rejected, or Pending.

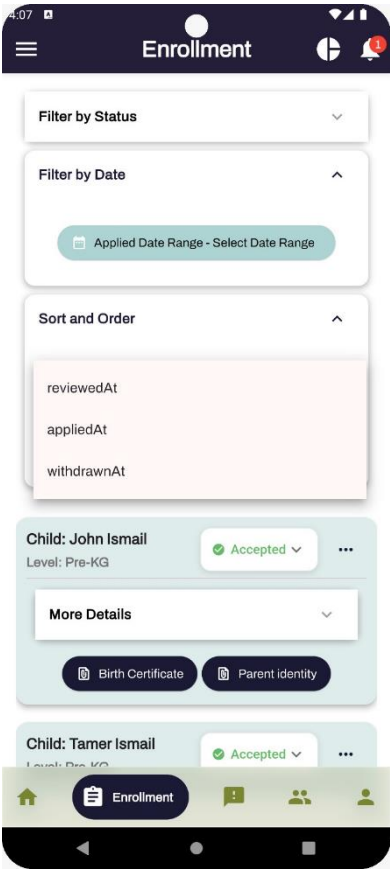


Figure 162: Sort enrollment requests by.

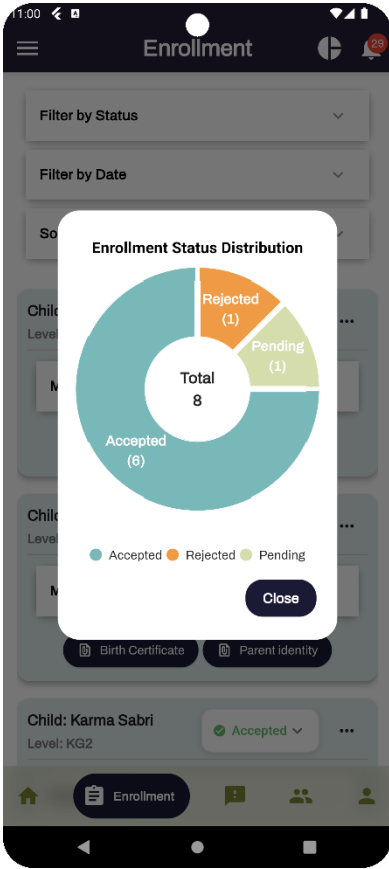


Figure 163: Enrollment status distribution pie chart.

Students Screen

This screen displays all kindergarten students categorized by their level. Each student entry includes information such as the student's name, admission date, and status (Active, Inactive, or Graduated), along with the parent's name, phone number, and email. Additionally, the screen allows viewing the payment records associated with each student. A student is automatically added to this list when the parent confirms their enrollment.

Student information can be edited, and students can be soft-deleted, meaning they are marked as withdrawn from the kindergarten and set to inactive. In this state, they can be enrolled in another kindergarten. If the student is not enrolled elsewhere, their status can later be changed back to active, allowing re-enrollment in the same kindergarten.

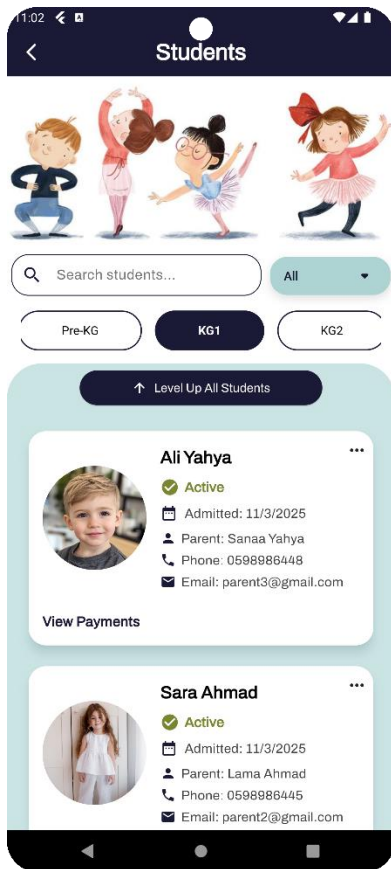


Figure 164: List of students (1).

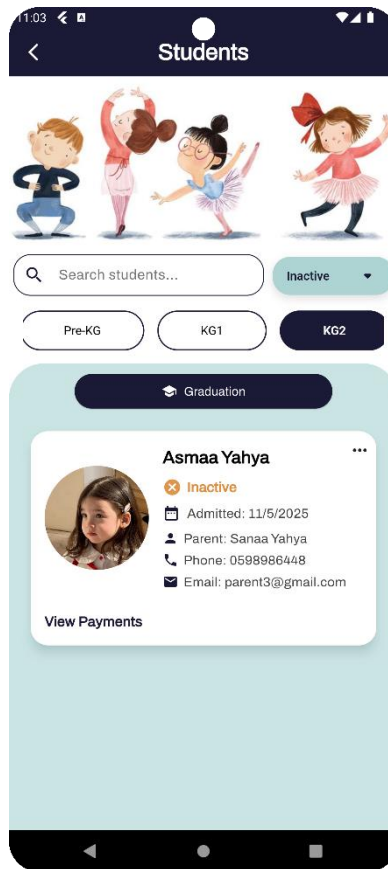


Figure 165: List of students (2).

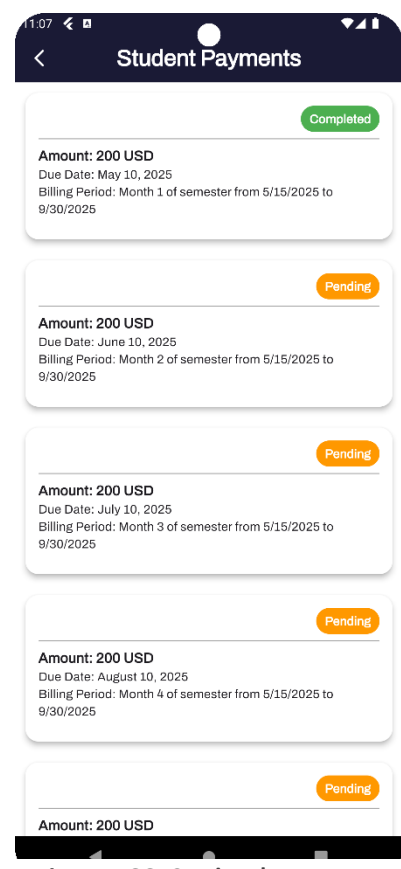


Figure 166: Student's payment information.

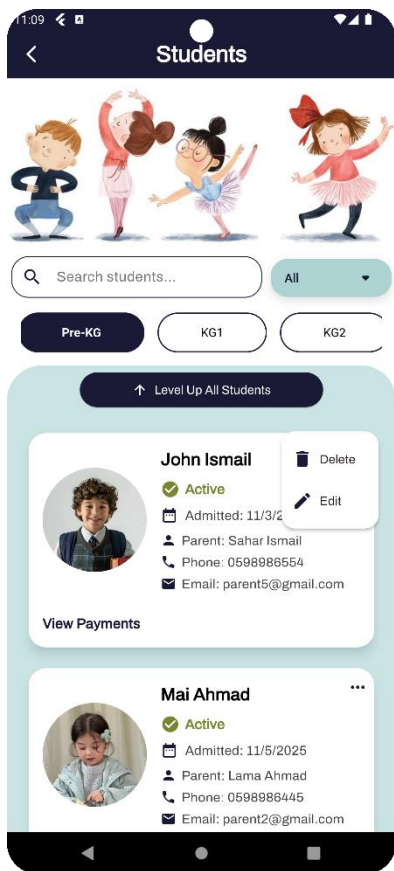


Figure 167: Students with options to edit and delete.

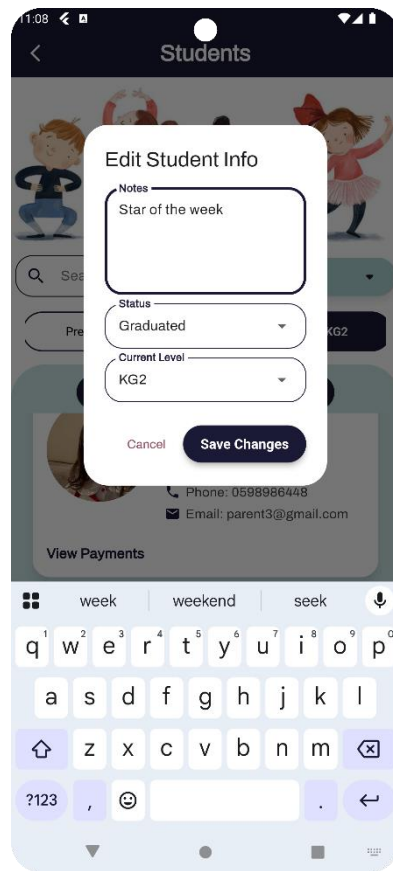


Figure 168: Edit student form.

The system allows searching for students by name and filtering them according to their status: Active, Inactive, or Graduated.

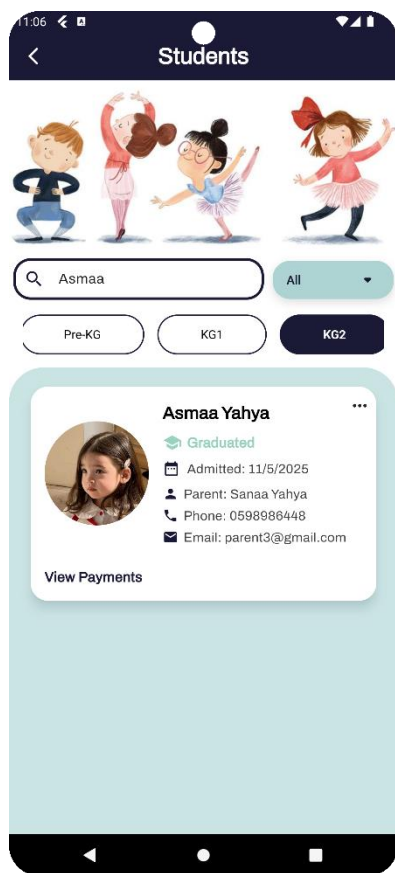


Figure 169: Search for student by name.

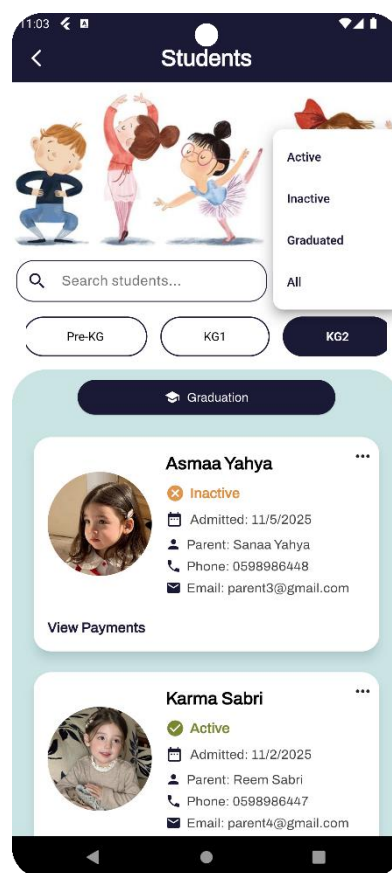


Figure 170: Student status filter options.

To make the management of student-level transfers easy, a one-click feature allows upgrading a student's level to the next, such as from Pre-KG to KG1, from KG1 to KG2, or graduating them from KG2. When a student's level is updated, a notification is sent to the parent to inform them of the change.

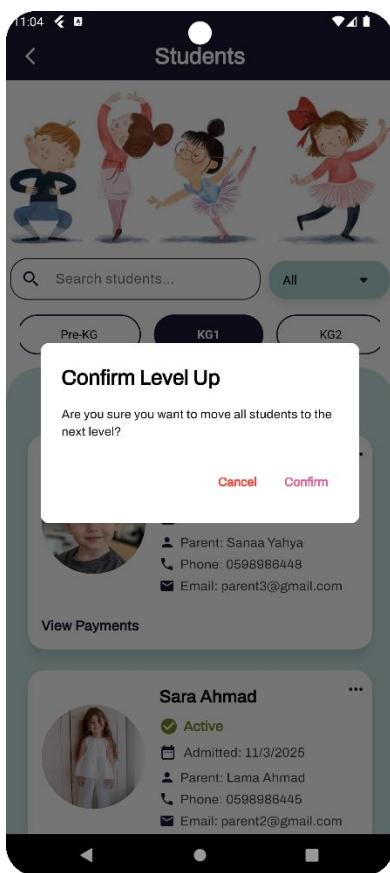


Figure 171: Confirmation message for level up from KG1.

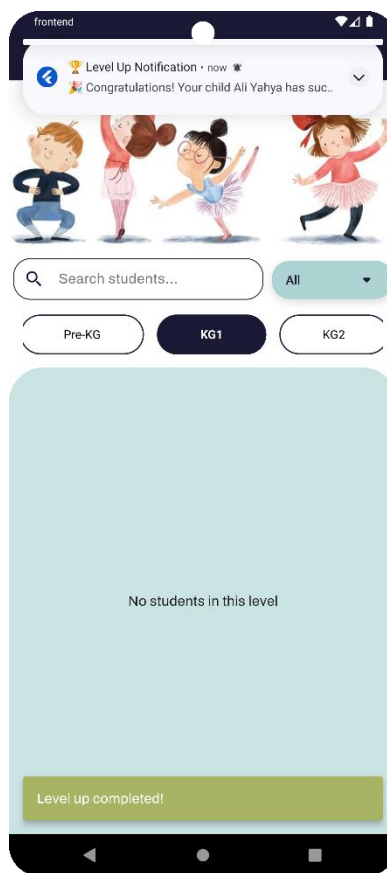


Figure 172: Students after level up from KG1.

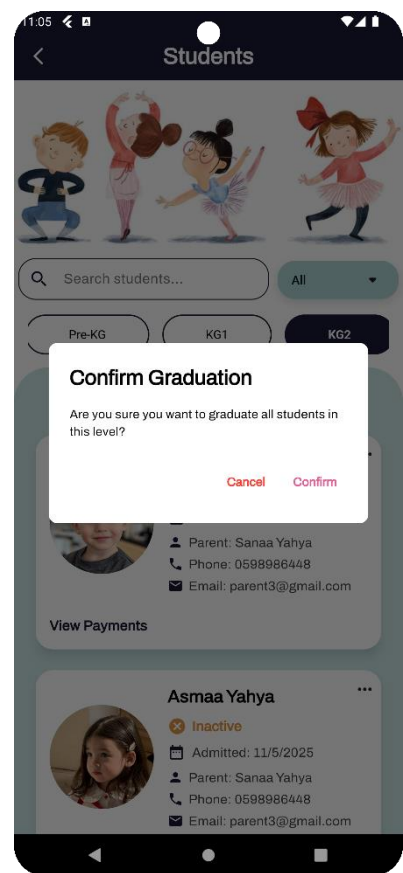


Figure 173: Confirmation message for graduation from KG2.

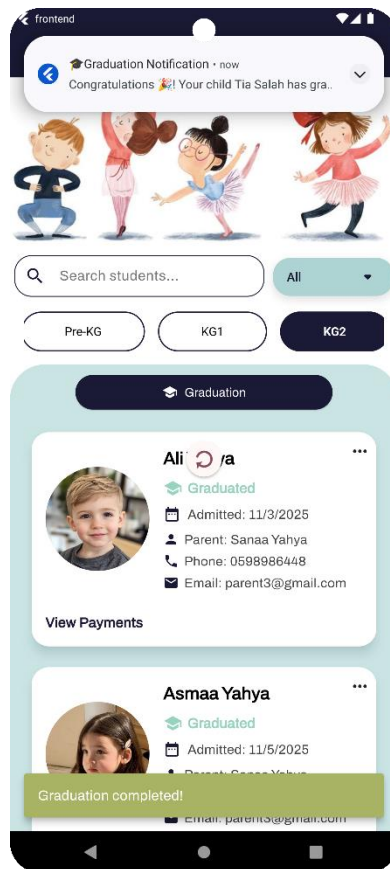


Figure 174: Students after graduation from KG2.

Chat Messaging Screen

This screen allows kindergarten owners to communicate with parents who have enrolled their kids, or with platform admins. Two types of messages can be sent: text or images. When a new message is received, a notification is sent if the user wasn't active. Also, when opening the screen, it shows the number of unread messages, and the user list is ordered by recent communication. This screen helps parents and kindergartens stay in touch in an easy and convenient way.

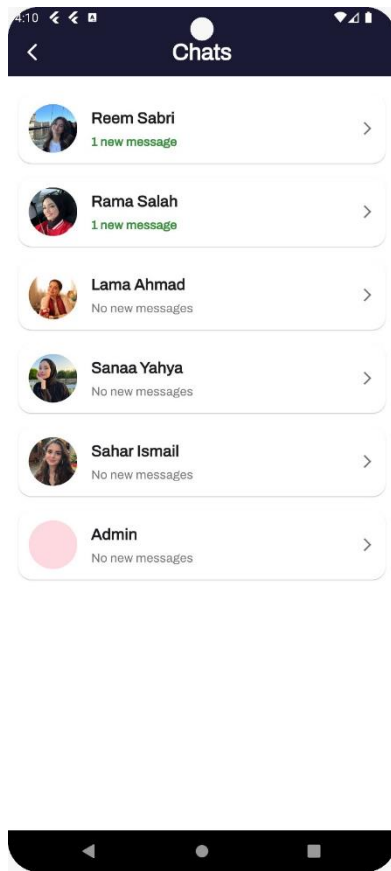


Figure 175: Contact screen for chatting with admin and parents.

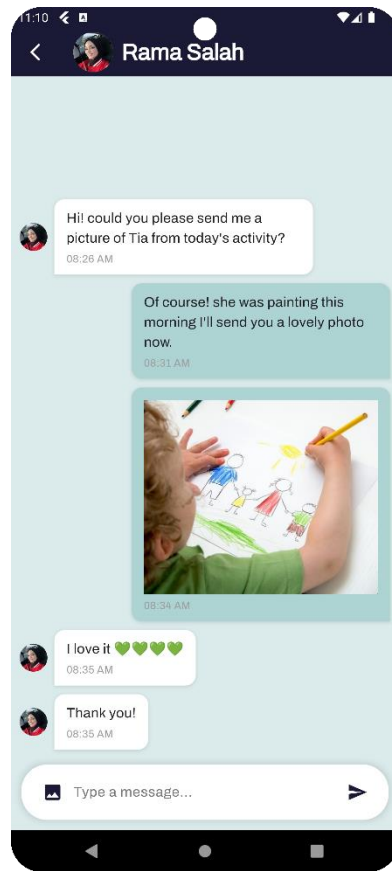


Figure 176: Sample conversation with a parent.

Semester Screens

This screen allows the kindergarten to manage semesters. It can add a new semester by specifying the start date, end date, registration deadline, and payment option—either monthly or for the full semester. It also sets the available capacity for each level provided by the kindergarten, so that enrollment is managed according to these limits. Semester details and level capacities are editable, giving full control to the owner. When the kindergarten owner wants to start receiving payments for a semester, a single click will automatically create the payment process—either monthly or full semester, as specified—and notifications will be sent accordingly.

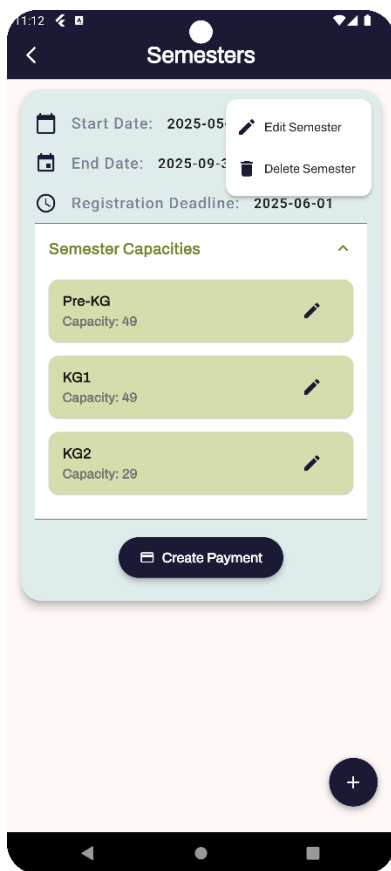


Figure 177: List of semester information.

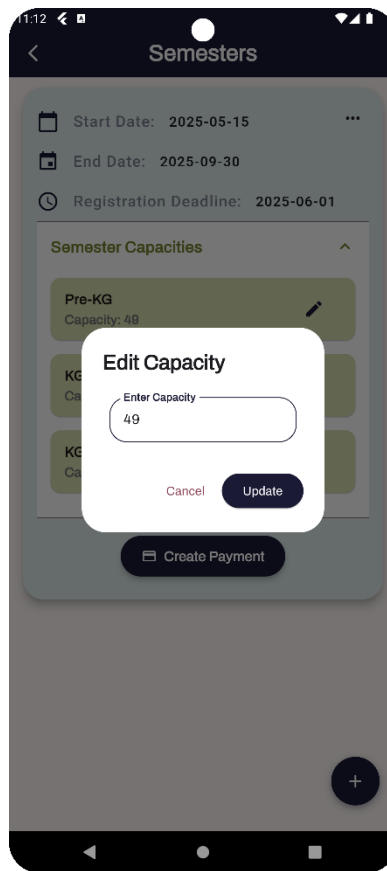


Figure 178: Edit semester level capacity.

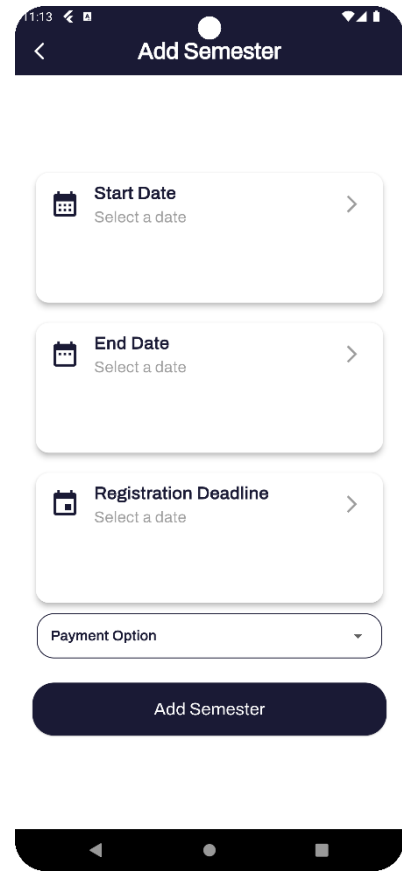


Figure 179: Add new semester form.

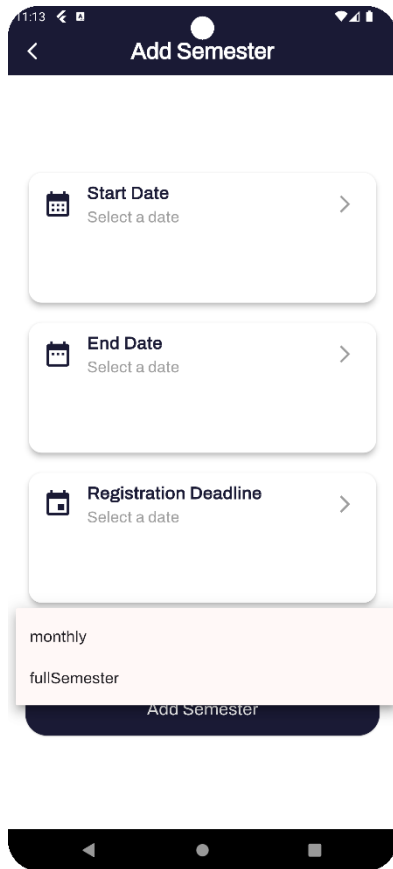


Figure 180: Add semester form with payment options.

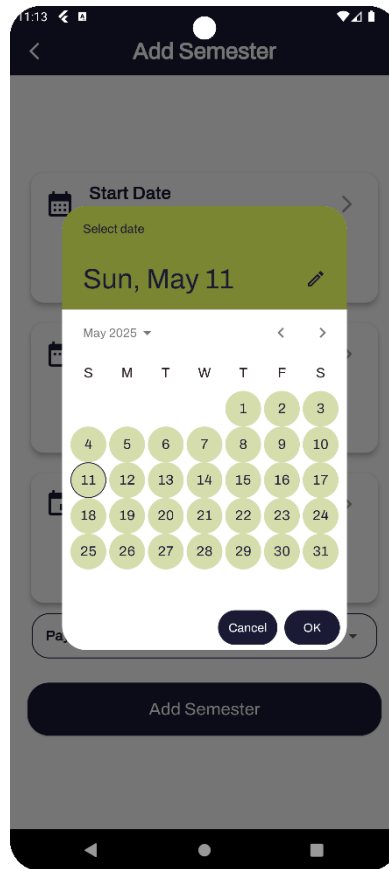


Figure 181: Calendar-style date input.

Payments Screen

On this screen, the kindergarten owner can view payments with different statuses, such as completed, pending, upcoming, or late. Payments can be marked as completed manually by clicking in case the parent paid outside the app. The owner can also filter payments based on their status—upcoming, late, pending, or completed. Each payment includes details such as the student’s name, due date, semester name, billing period, and parent information, including name, phone number, and email.

Additionally, the kindergarten owner can view a statistics table showing each semester's information about the amount of revenue and overdue.

The platform ensures the following:

- At the start of the month, a reminder notification is sent to parents.
- Starting five days before the due date, a daily reminder notification is sent.
- If the payment becomes overdue, a daily reminder notification continues to be sent to the parent.

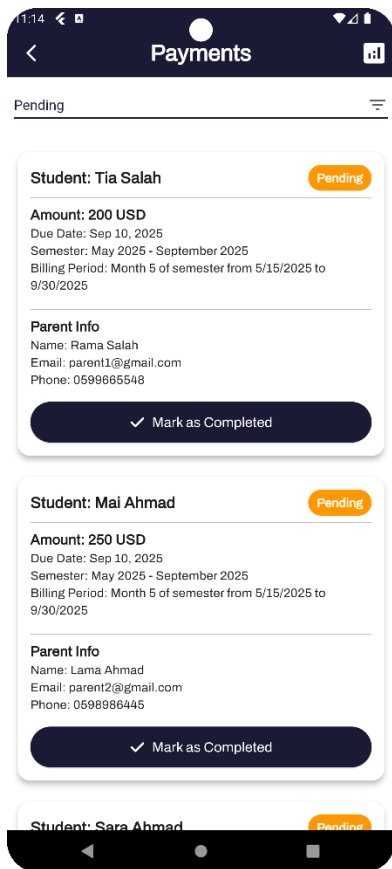


Figure 182: Payments filtered by pending status.

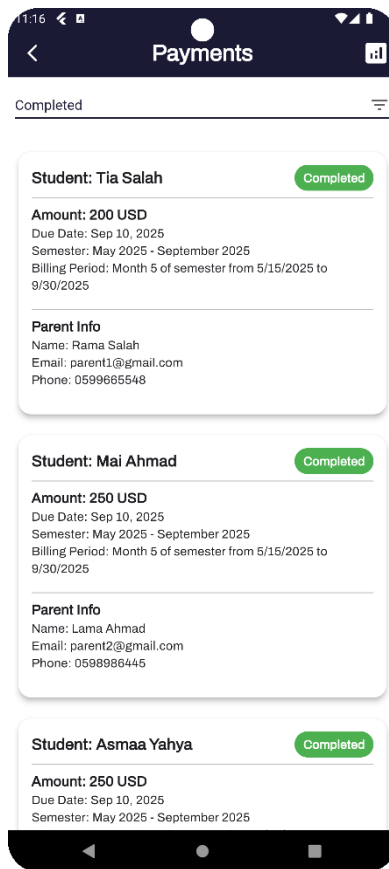


Figure 183: Payments filtered by completed status.

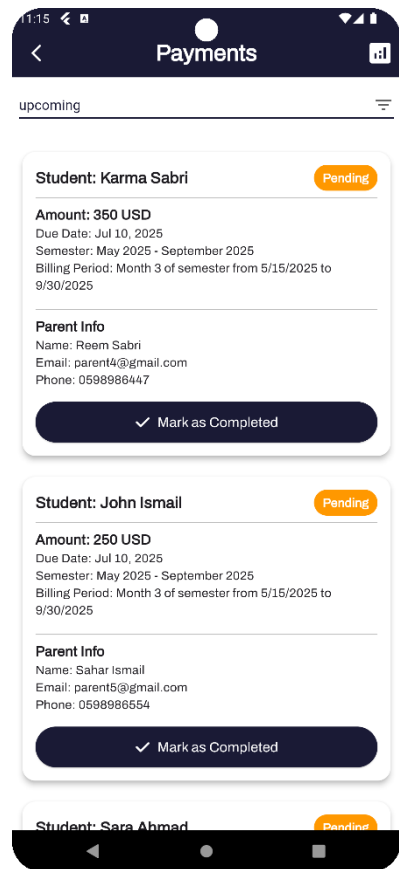


Figure 184: Payments filtered by upcoming status.

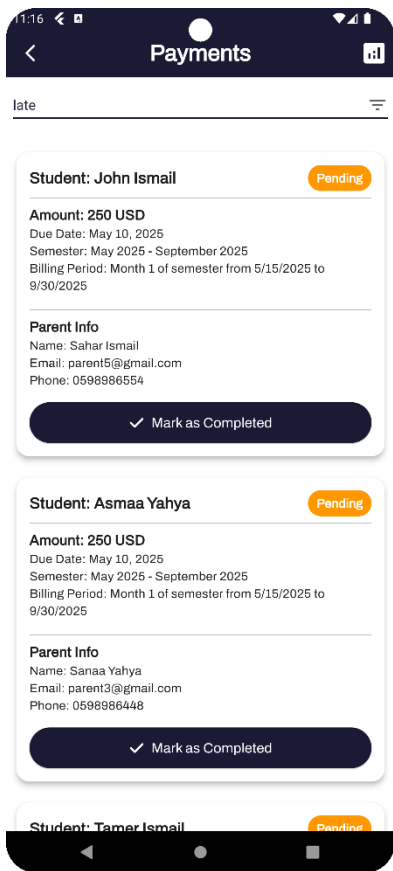


Figure 186: Payments filtered by late status.



Figure 185: Semester analytics: payment overdue and revenue.

Community Screen:

Kindergartens can create different types of posts to engage with parents and share important updates. Post types include Event, Announcement, Activity, or Other. While creating a post, the kindergarten can choose to save it as a draft or publish it directly. They can also set the visibility level to reach different audiences: public, enrolled parents, or specific levels (in this case, the kindergarten must select the intended level).

Each post includes a title and content, and there is an option to generate the content using AI by simply entering the post type and title. The system uses Ollama with a structured prompt to create a short, parent-focused social media post.

Additionally, kindergartens can attach images, upload documents, add a location (by name or selecting it from the map), and set a start and end time and date. If the post is an event, the kindergarten can choose to require confirmation so that parents must book attendance. Tags can also be added along with a maximum number of participants.

All posts can be edited or deleted, and during the editing stage, everything remains fully adjustable. The post status can be changed to published or archived as needed. If the post's start or end time, date, location, or maximum number of participants changes, a notification is sent to the target audience informing them of updates.

Furthermore, the kindergarten can like posts, comment, and filter posts based on type, status, order, visibility, or popular tags for better management and organization.

Each event created by the kindergarten is automatically added to its event calendar. This allows the kindergarten to efficiently manage and view all scheduled events in one place, keeping track of important dates and ensuring organized planning.

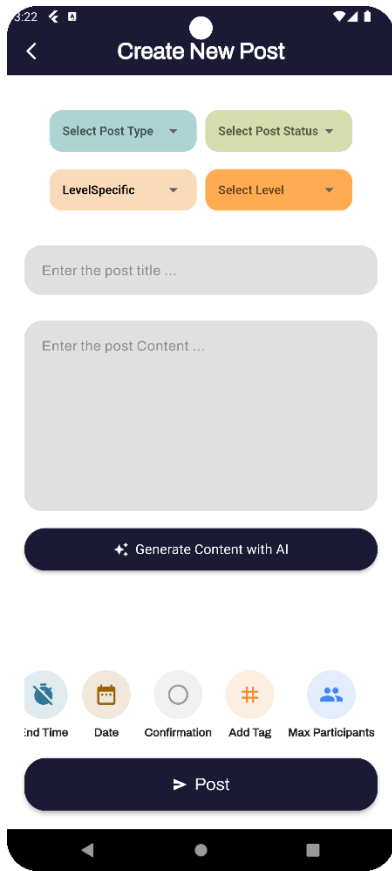


Figure 189: Add new post form.

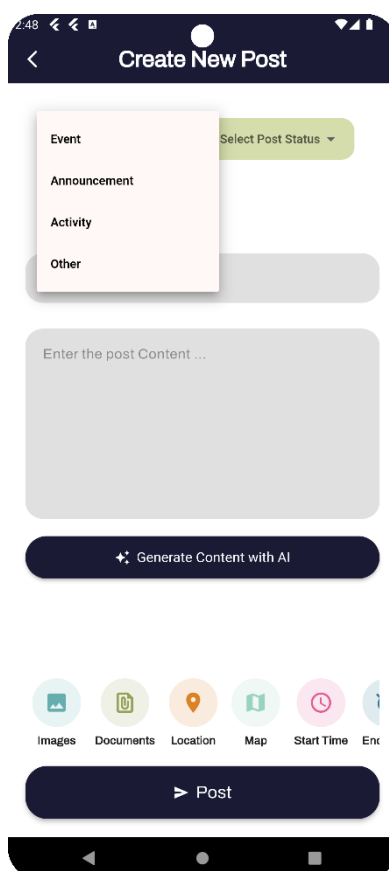


Figure 188: Post type dropdown in add post form.

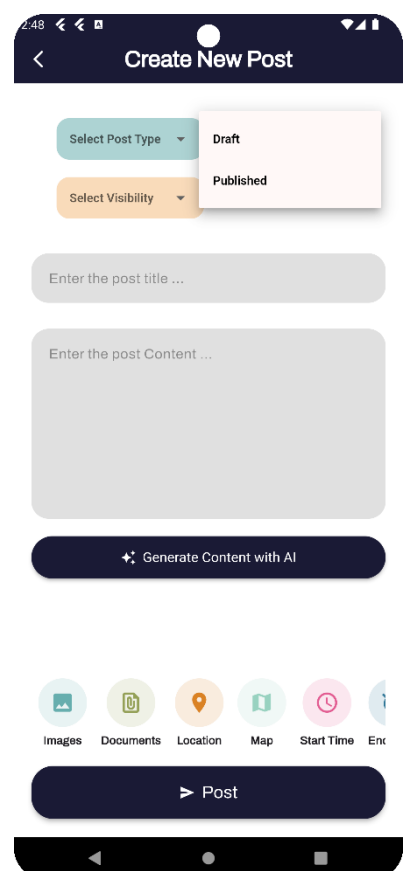


Figure 187: Post status dropdown in add post form.

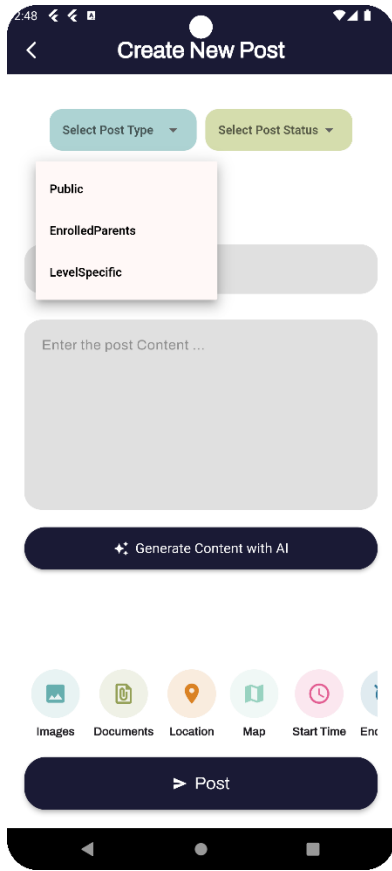


Figure 190: Post visibility dropdown in add post form.

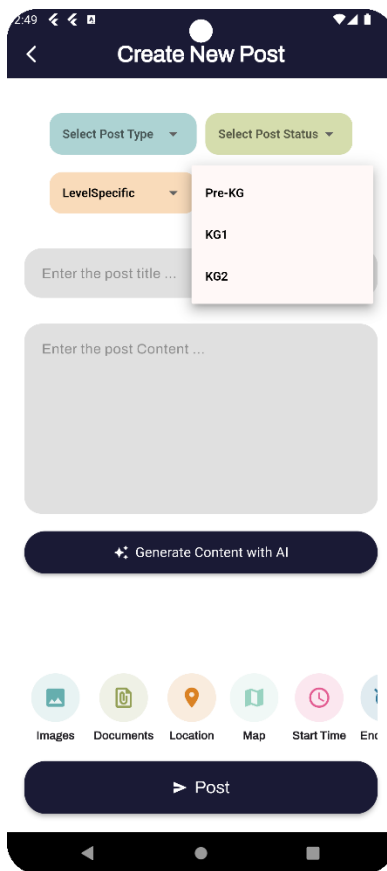


Figure 191: Post levels dropdown in add post form.

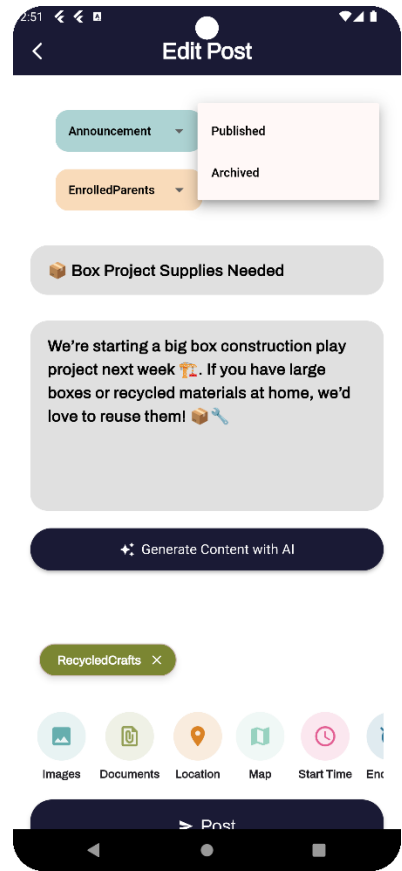


Figure 192: Post status dropdown in edit post form.

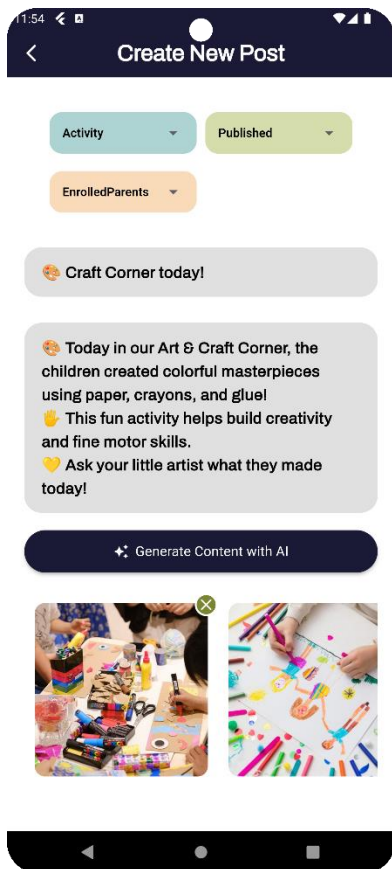


Figure 195: Post form with AI-generated content.

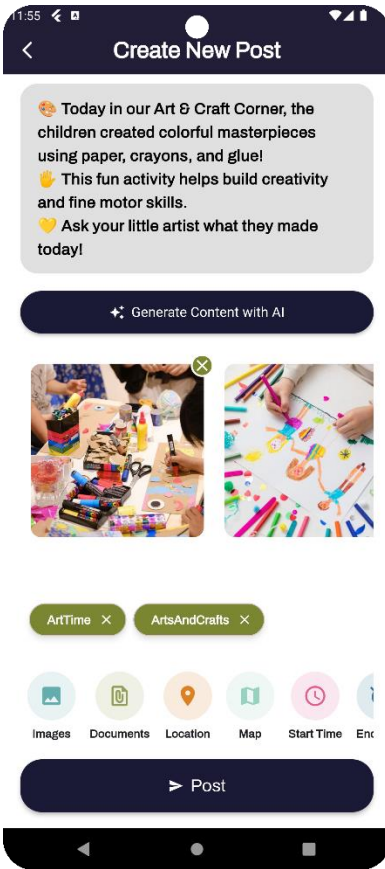


Figure 194: Post form with images and tags.

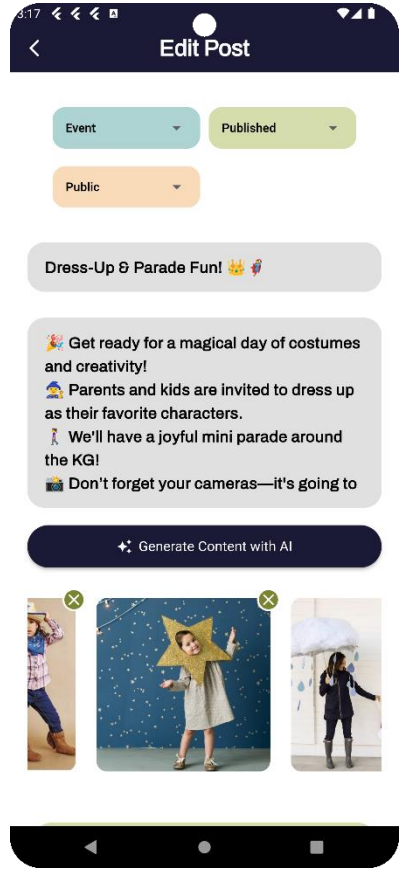


Figure 193: Edit post form (1).



Figure 196: Edit post: pick location on map.

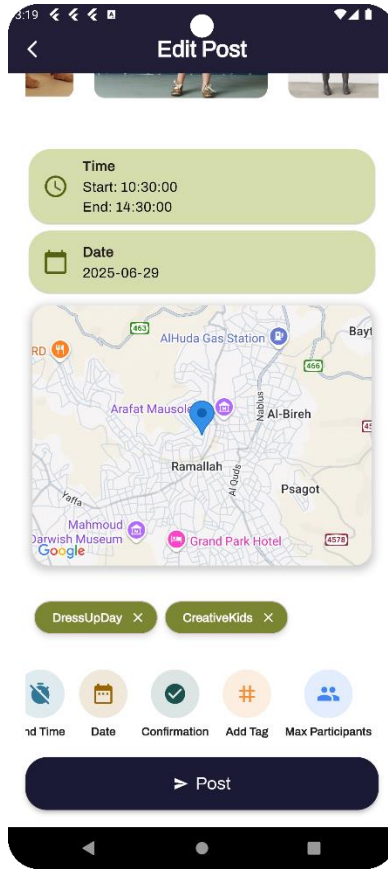


Figure 197: Edit post form (2).

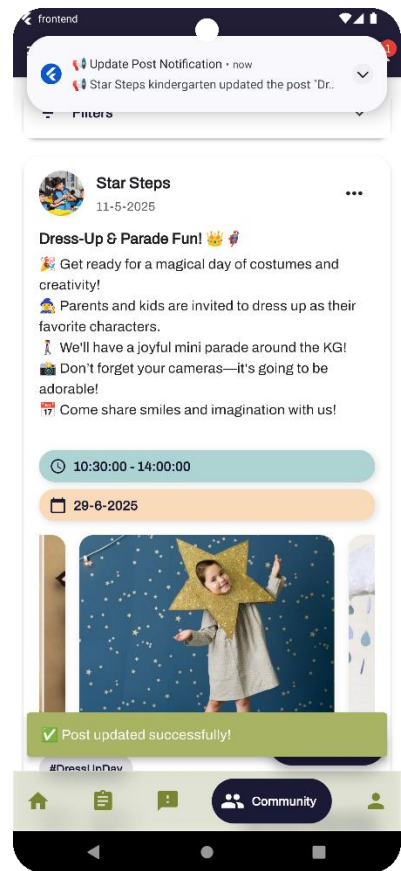


Figure 198: Post after edit.

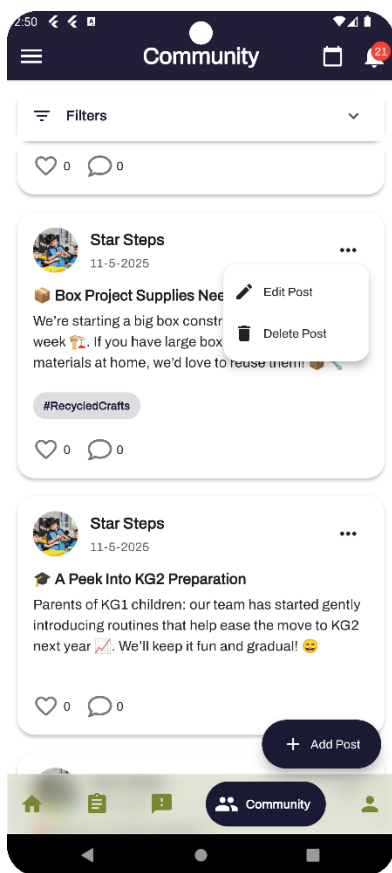


Figure 201: Post with edit and delete options.

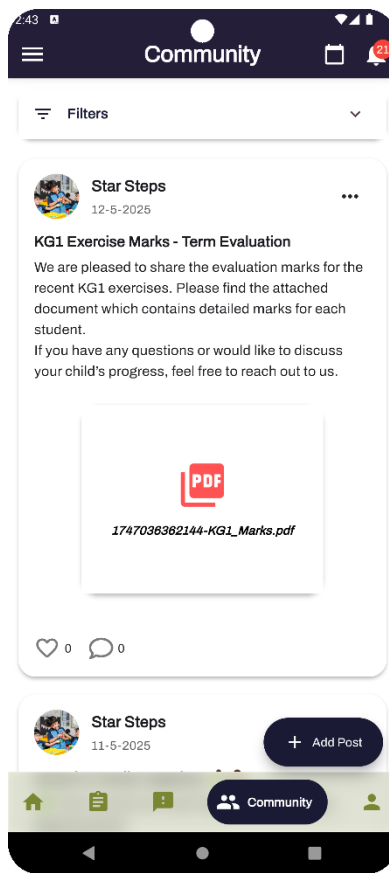


Figure 200: Post with document.



Figure 199: Post with images and tags.



Figure 203: Comments on post.

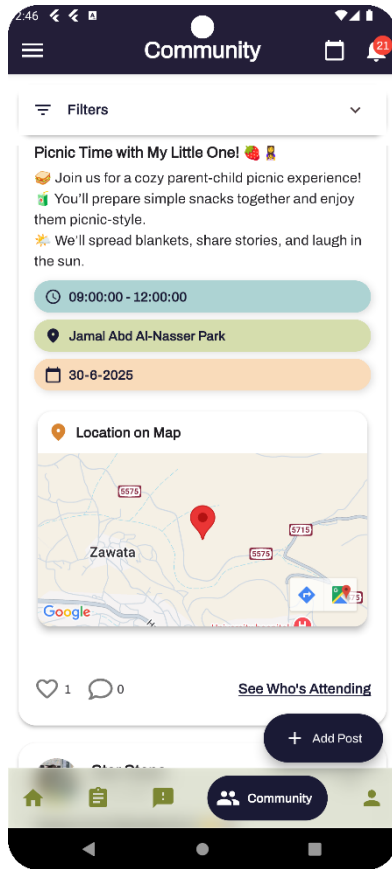


Figure 202: Post with event time and location.

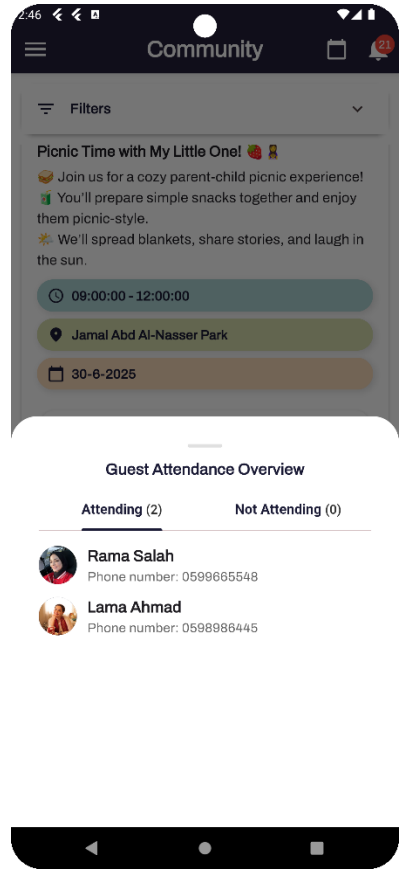


Figure 204: Attendance list for event.

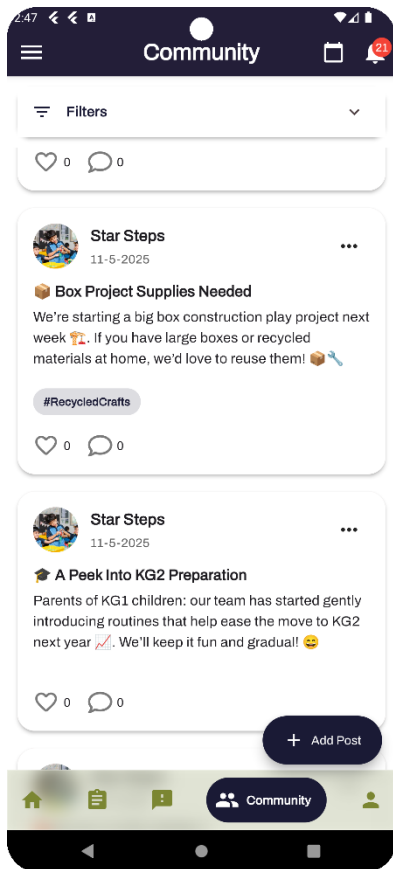


Figure 205: Announcement post

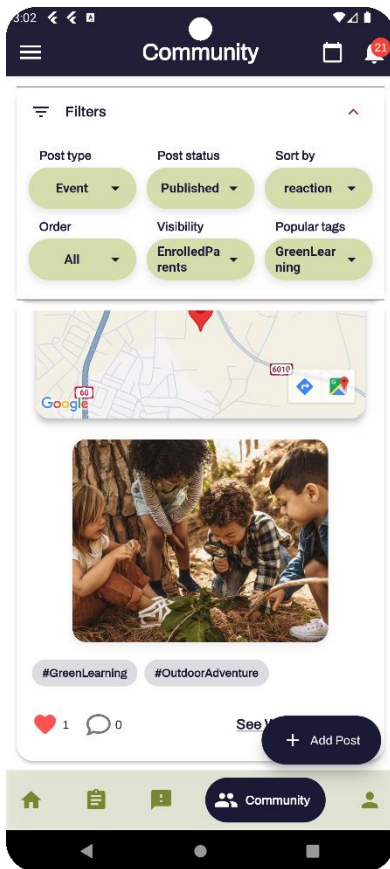


Figure 206: Posts filter options.

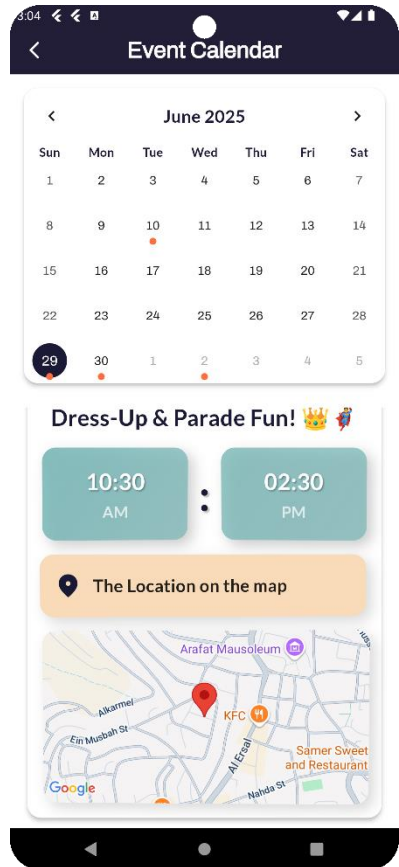


Figure 207: Event calendar with time and location.

Home Screen

In this screen, there is a dashboard that helps the kindergarten get an overview of key information, including the number of graduated students, new students, feedbacks, posts, and the amount of overdue payments and revenue for the current month.

Additionally, two pie charts show Active and Inactive students on each level of kindergarten.

Furthermore, this screen displays the top-engaged posts and parents, as well as the newly enrolled students.

A bar chart displays the number of feedbacks analyzed as positive, negative, or neutral for each month of the selected year, based on the chosen topic (teaching quality, services, costs, environment, or activities). This helps the kindergarten owner gain an overview of areas that may need improvement.

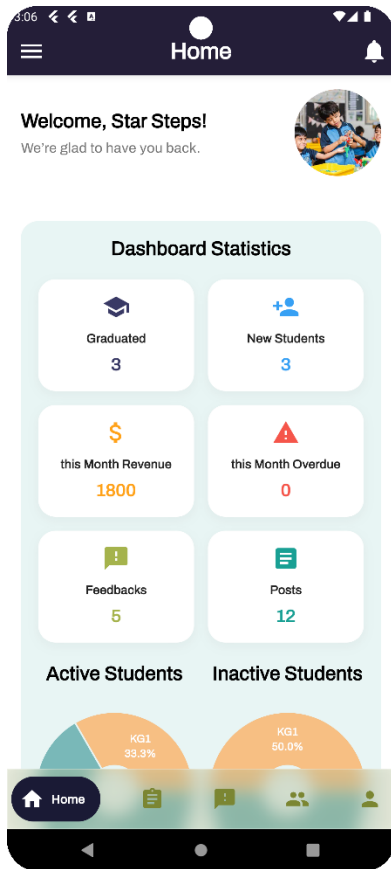


Figure 210: Kindergarten homepage dashboard statistics.

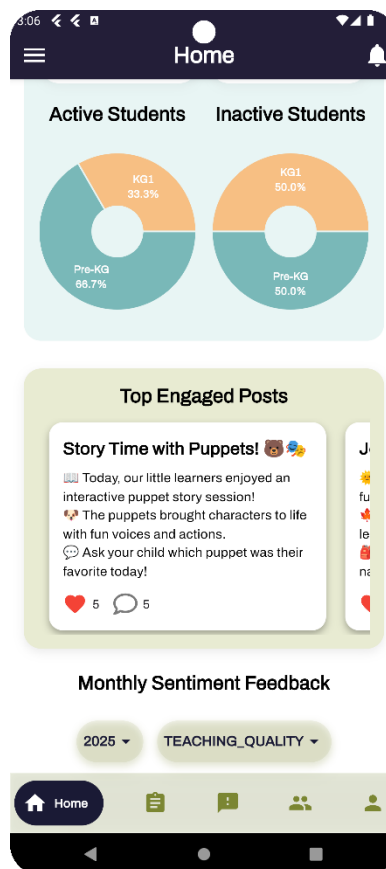


Figure 209: Kindergarten homepage top engaged posts.

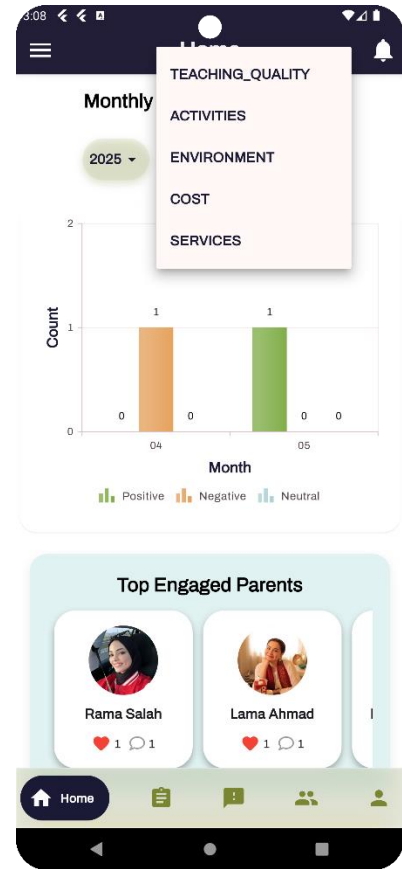


Figure 208: Kindergarten homepage monthly feedback sentiment chart.

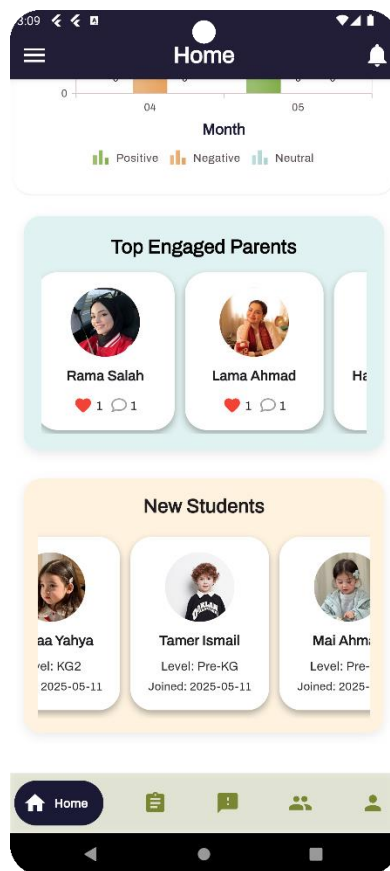


Figure 211: Kindergarten homepage new students & top engaged parents.

Notifications

As mentioned before, notifications are sent or received based on specific actions. An icon displays the number of new notifications, and when opened, it highlights the unread ones. Old notifications are automatically deleted after one month to maintain platform efficiency. Firebase is used to deliver real-time pop-up notifications.

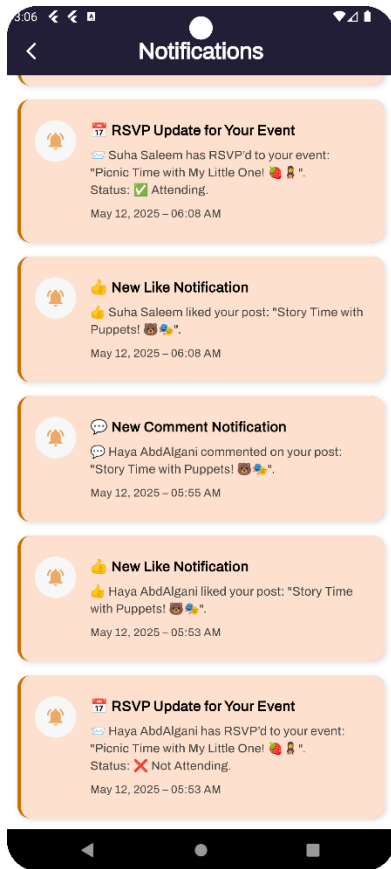


Figure 212: Kindergarten notifications (1).

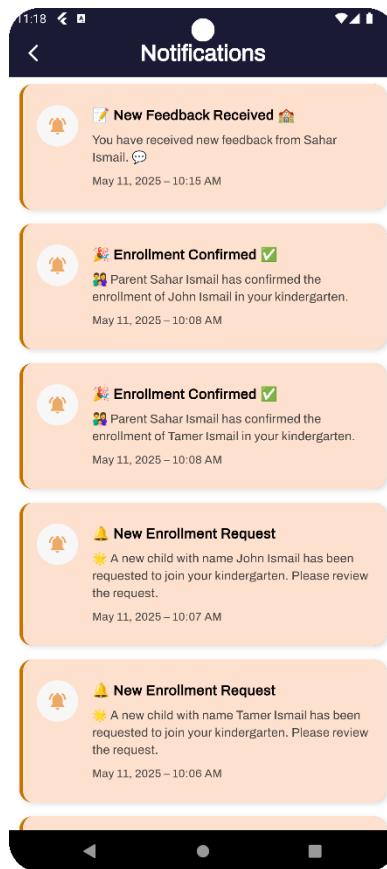


Figure 213: Kindergarten notifications (2).

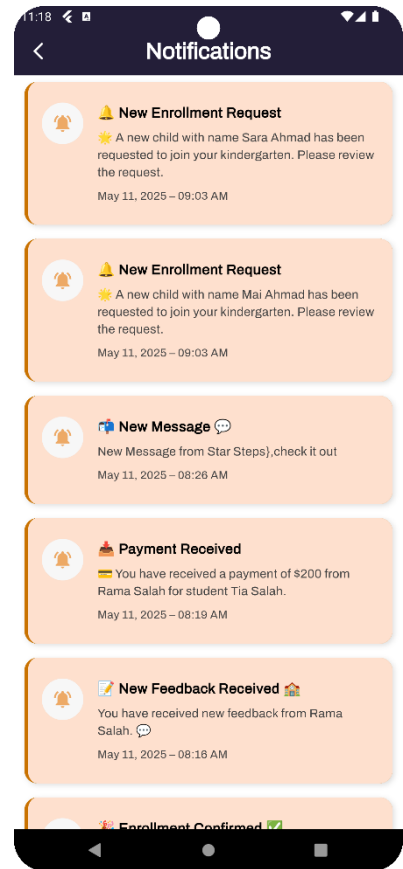


Figure 214: Kindergarten notifications (3).

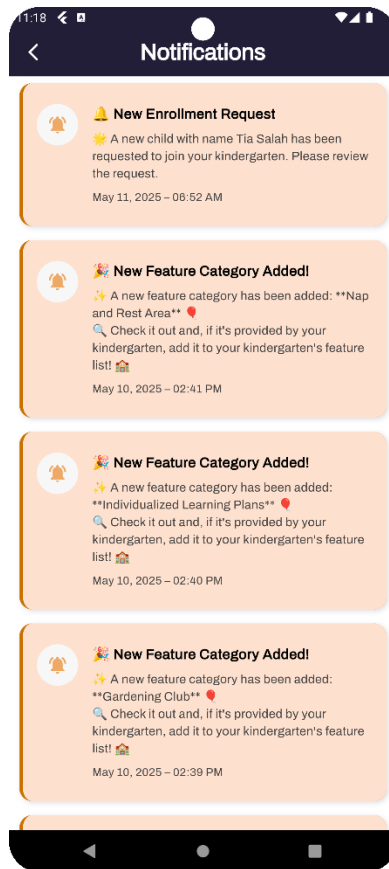


Figure 215: Kindergarten notifications (4).

5. Admin Web Screens

Login Screen

This screen is for admin login, it's only for the admin role.

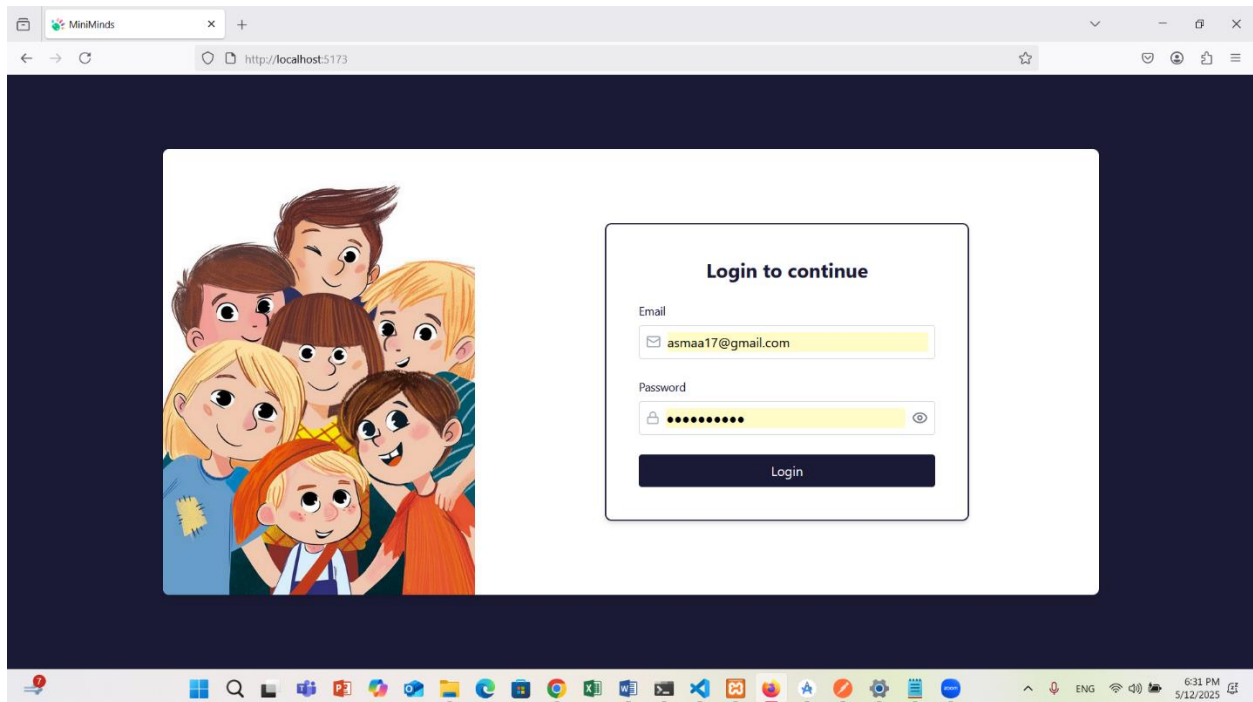


Figure 216: Admin login.

Home Screen:

This screen provides the admin with an overview of the app through the following:

- Dashboard statistics. It displays the number of verified and unverified kindergartens, the number of parents using the app, the total number of children, the average number of children per parent, the number of children enrolled in kindergartens through the app, the average number of enrolled children per kindergarten, and the number of students categorized as active, inactive, or graduated.

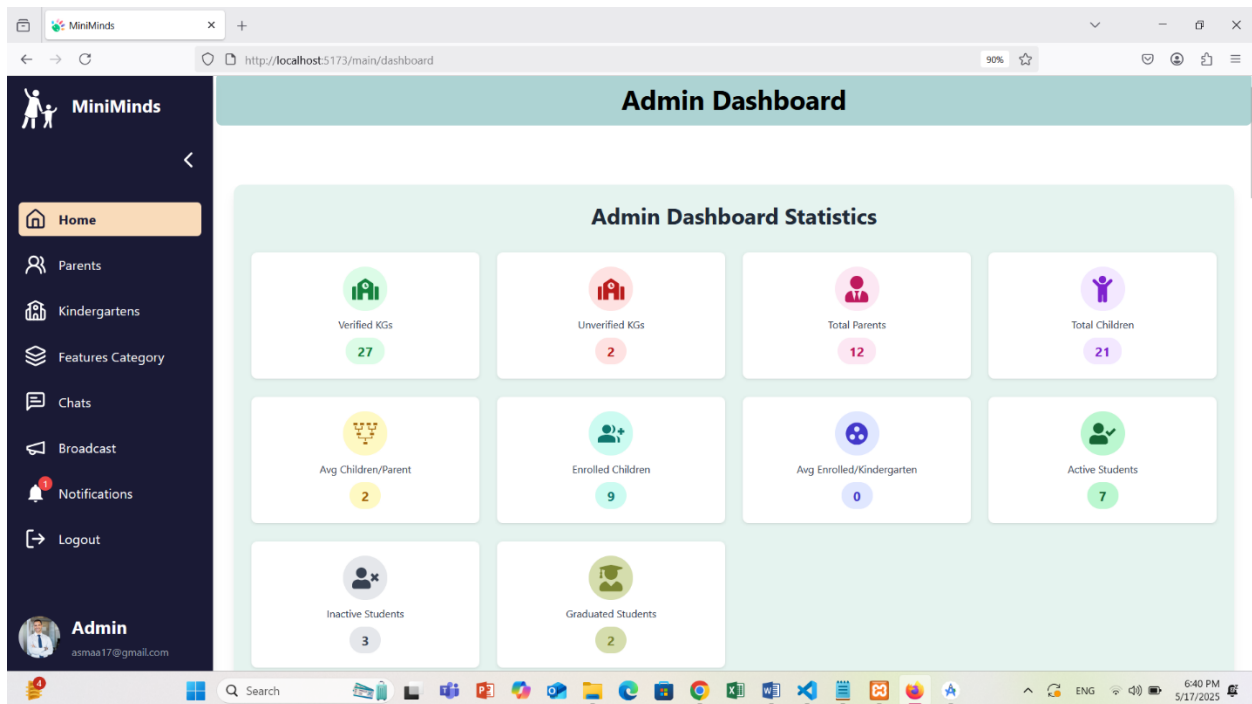


Figure 217: Admin homepage dashboard statistics.

- A pie chart displays the distribution of male and female students. By selecting a country, city, and student status (Active, Inactive, or Graduated), the kindergarten's name and number of students are displayed on the chart.

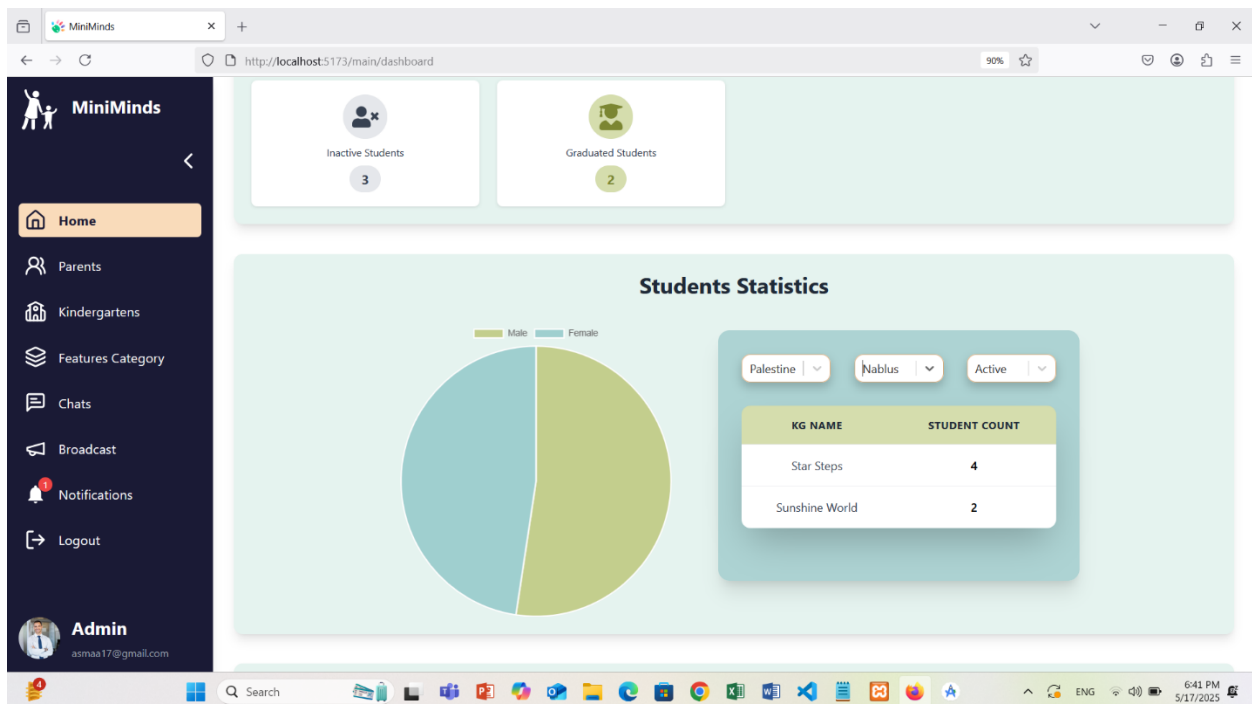


Figure 218: Admin homepage students statistics.

- A feature category insight is also provided for each service. It shows the service name, the number of children who selected it as a preference, the average weight assigned to the service, and the number of kindergartens offering it.

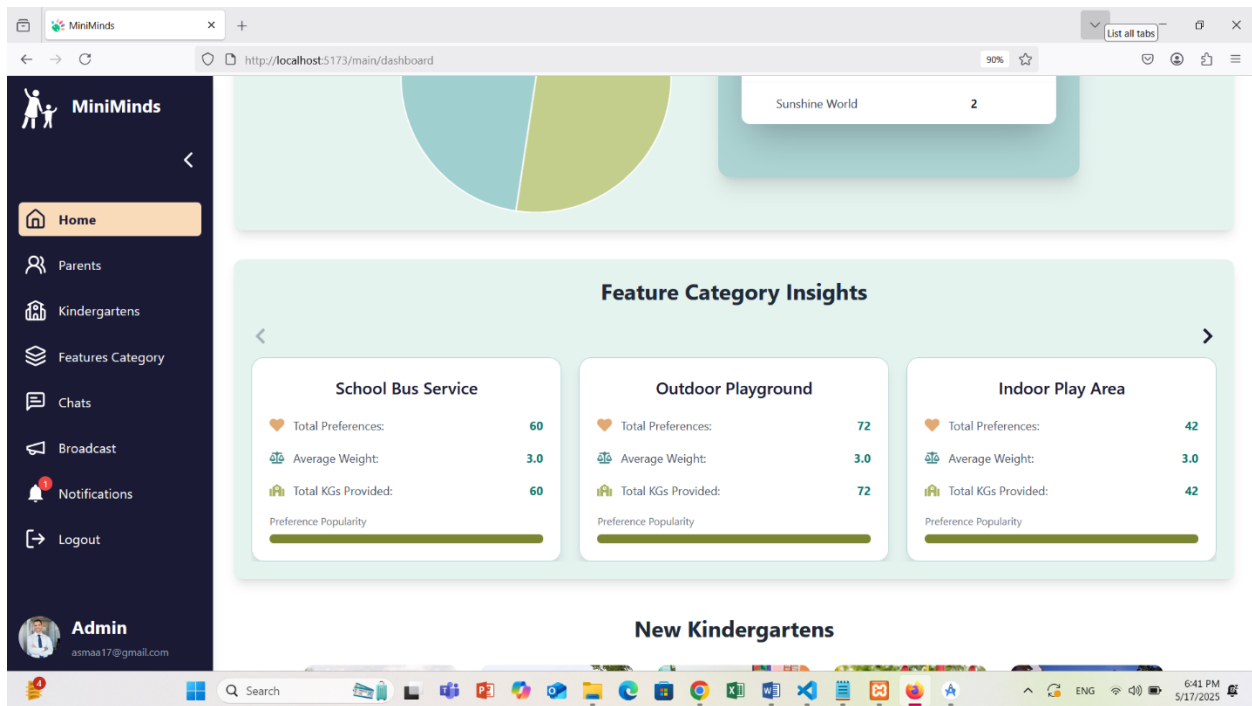


Figure 219: Admin homepage featue category insights.

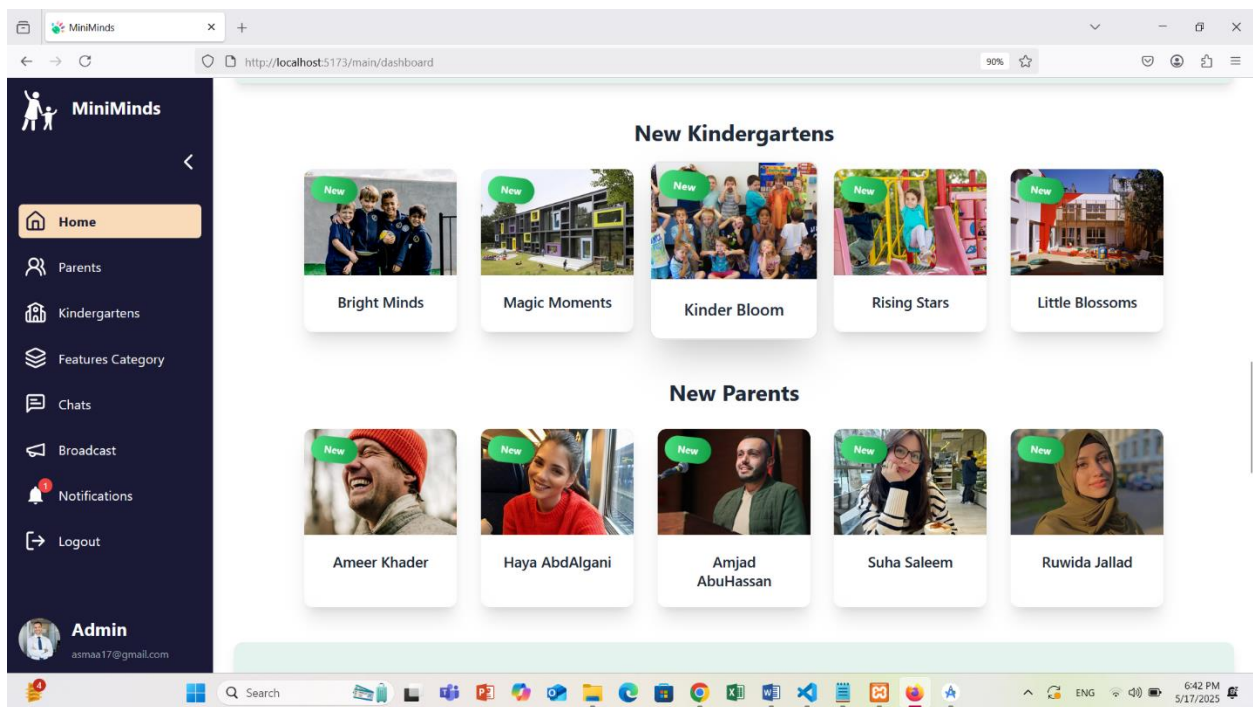


Figure 220: Admin homepage new kindergartens & parents.

- A chart displays the distribution of user registrations, which can be filtered by role (parents, kindergartens, or all users), year, country, and city. This chart helps the admin understand the app's popularity over the years across different regions.

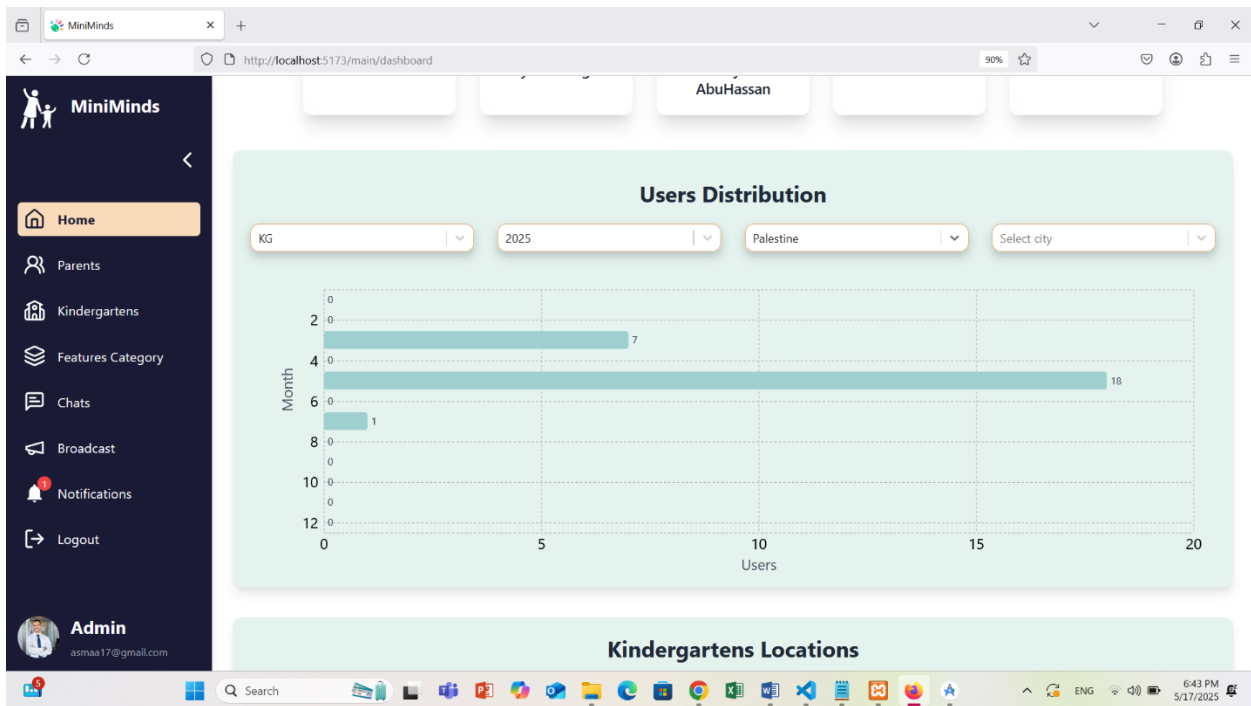


Figure 221: Admin homepage users distribution chart.

- A map displays the locations of kindergartens, and when clicking on a plot, the kindergarten's name and profile are shown. This provides an overview of the regions where the app is being used by kindergartens.

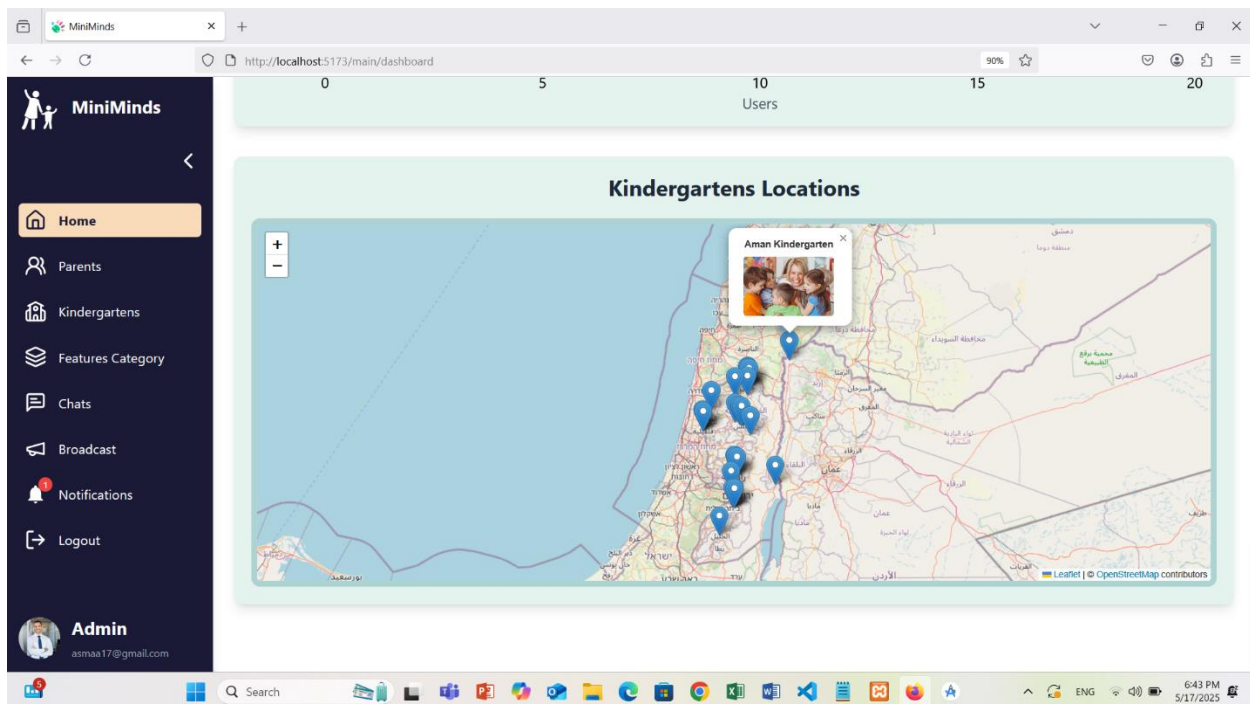


Figure 222: Admin homepage, kindergarten locations map.

Parent Management Screen

This screen allows the admin to manage parent users by viewing a list of parents, including each parent's name, phone number, email, number of children, and address. The admin can search for a parent by name, city, or country, and sort the list in ascending or descending order. Additionally, the admin can add a new parent to the system, and the adding process is validated to ensure accuracy and completeness, or delete an existing one.

The screenshot displays the 'Parents Management' interface. On the left is a dark sidebar with navigation options: Home, Parents (selected), Kindergartens, Features Category, Chats, Broadcast, Notifications, and Logout. The main content area has a teal header 'Parents Management'. Below the header is a search bar with the placeholder 'Search by name or email'. To the right of the search bar are sorting controls: 'Sort by: Name' (with a dropdown menu open showing 'Name', 'City', and 'Country'), 'Order: Ascending' (with a dropdown arrow), and a 'Reset' button. An 'Add Parent' button is located on the right side of the table. The table lists four parents with the following data:

#	Image	Name	Email	Phone	Address	#Children	Actions
1		Ameer Khader	parent9@gmail.com	0598987748	Bethlehem - Palestine	2	
2		Amjad AbuHassan	parent8@gmail.com	0598987448	Nablus - Palestine	2	
3		Haya AbdAlgani	parent10@gmail.com	0598979985	Ramallah - Palestine	0	
4		Lama Ahmad	parent2@gmail.com	0598986445	Ramallah - Palestine	2	

Figure 223: Parents Management.

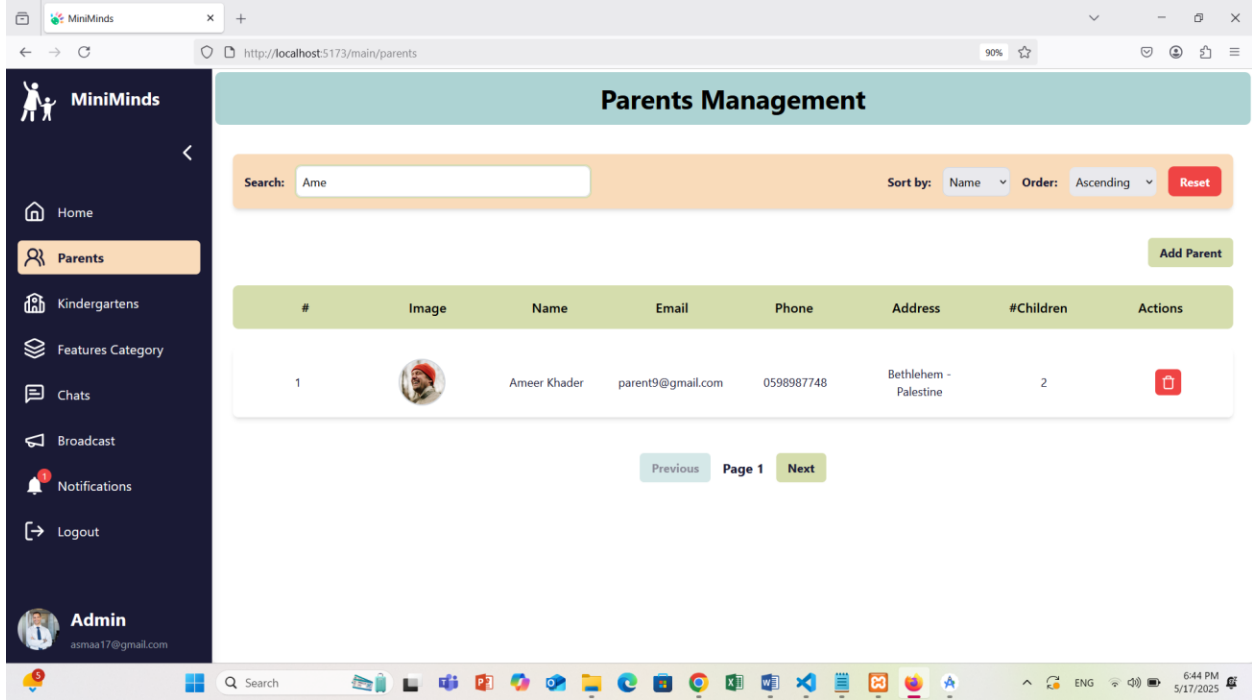


Figure 224: Parents management with search filters.

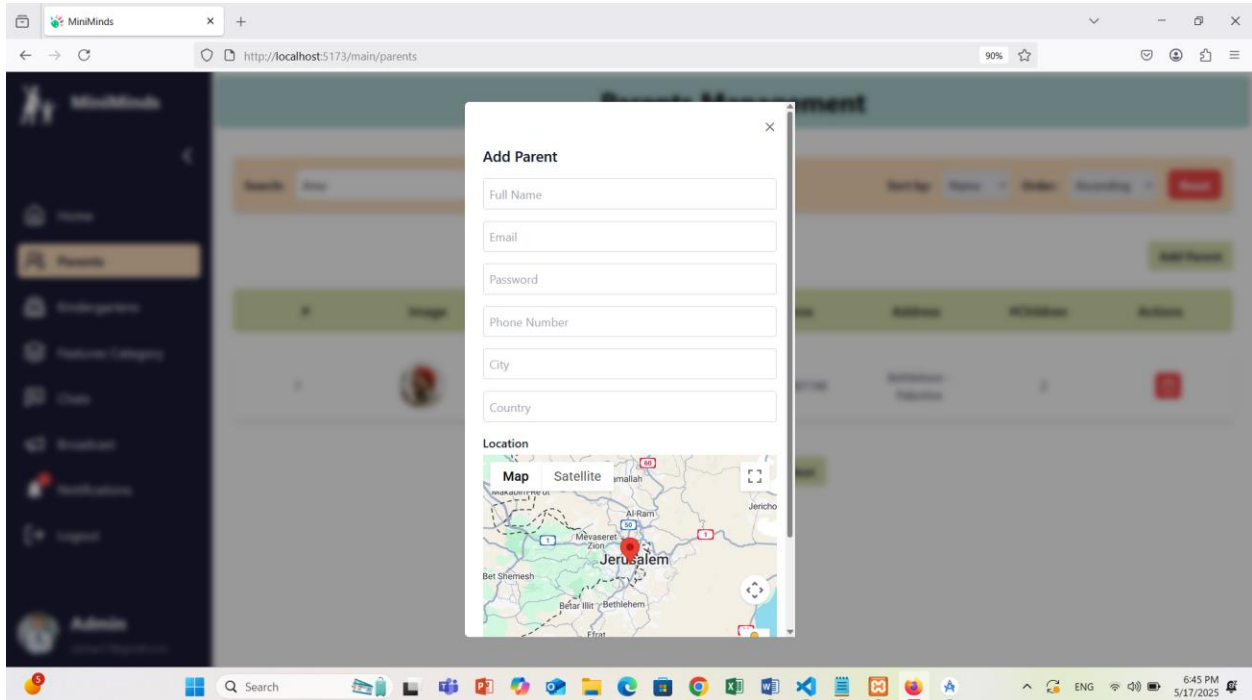


Figure 225: Add new parent form.

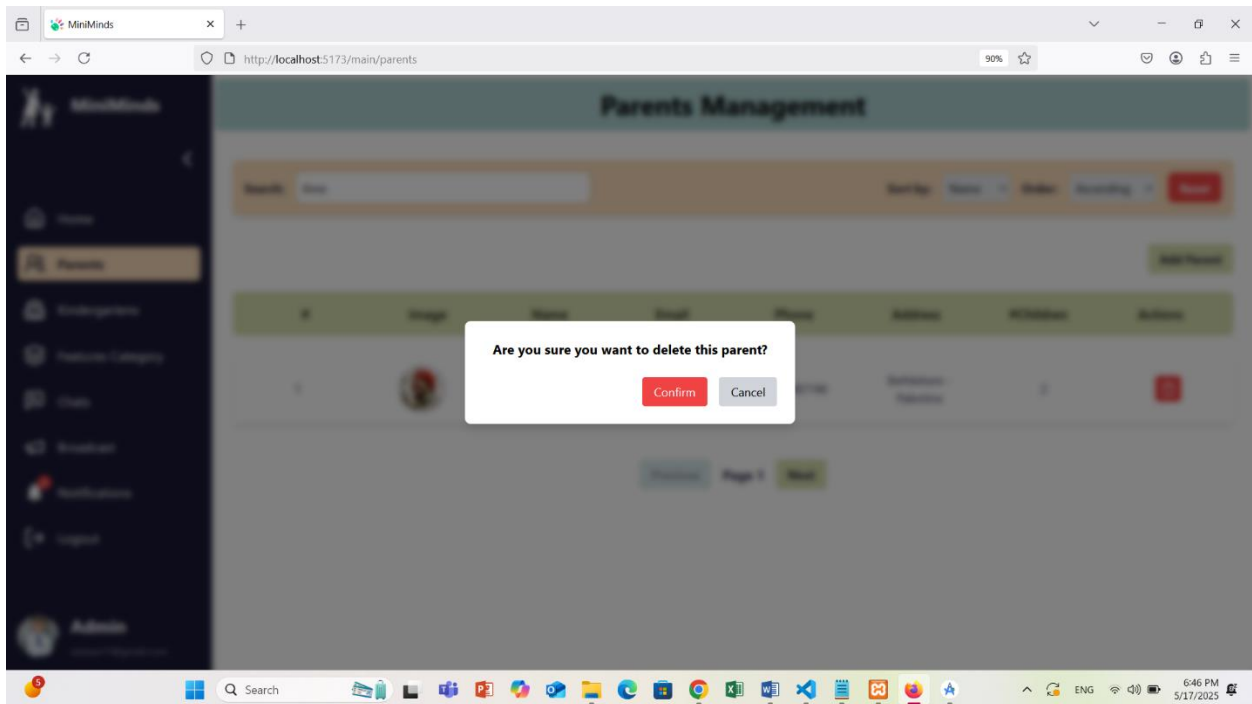


Figure 226: Confirmation message to delete parent.

Kindergartens Management screen

This screen allows the admin to manage kindergarten users by viewing a list that includes each kindergarten's name, phone number, email, number of enrollments, license, verification status (verified or unverified), and address. The admin can search for kindergartens by status, name, city, or country, and sort the list in ascending or descending order. Additionally, the admin can add a new kindergarten to the system—this process is validated to ensure accuracy and completeness—or delete an existing one. The admin can also verify or unverify a kindergarten, and when a kindergarten is verified, a notification email is sent to the user to grant them access to the app.

The screenshot displays the 'Kindergartens Management' interface. On the left is a dark sidebar with navigation options: Home, Parents, Kindergartens (selected), Features Category, Chats, Broadcast, Notifications, and Logout. The user is logged in as 'Admin' (asmaa17@gmail.com). The main content area has a teal header and a search bar. The search bar contains 'Search by name or email'. To the right of the search bar, the account status is 'Verified', and the sort options are 'Name' (selected), 'City', and 'Country'. The order is set to 'Ascending'. There is an 'Add Kindergarten' button. Below this is a table with the following data:

#	Image	Name	Email	Phone	Address	Status	#Enrollments	License	Actions
1		Aman Kindergarten	asmaa1@gmail.com	05989864454	Jenin - Ps	Verified	4	License	
2		An-Najah Kindergarten	asmaa555@gmail.com	0598986445	jenin - ps	Verified	0	License	
3		Bright Minds	kg10@gmail.com	0597363316	Jenin - Palestine	Verified	0	License	

Figure 227: Kindergartens Management.

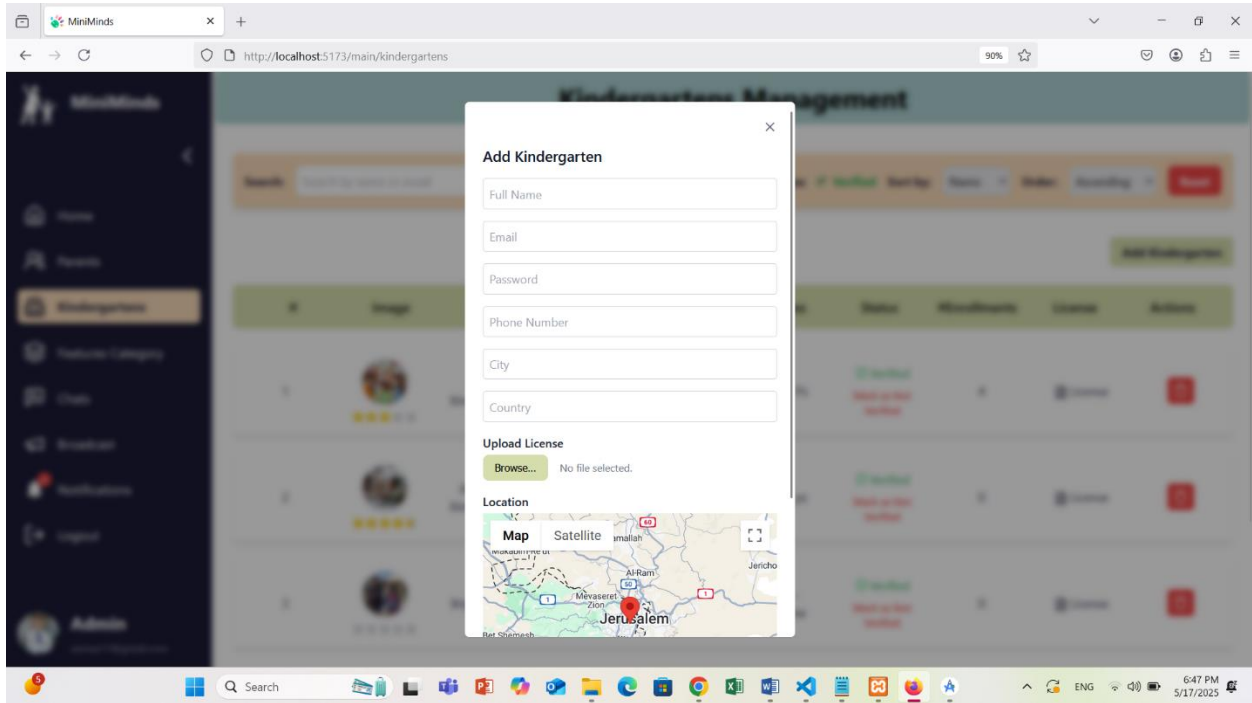


Figure 228: Add new kindergarten form.

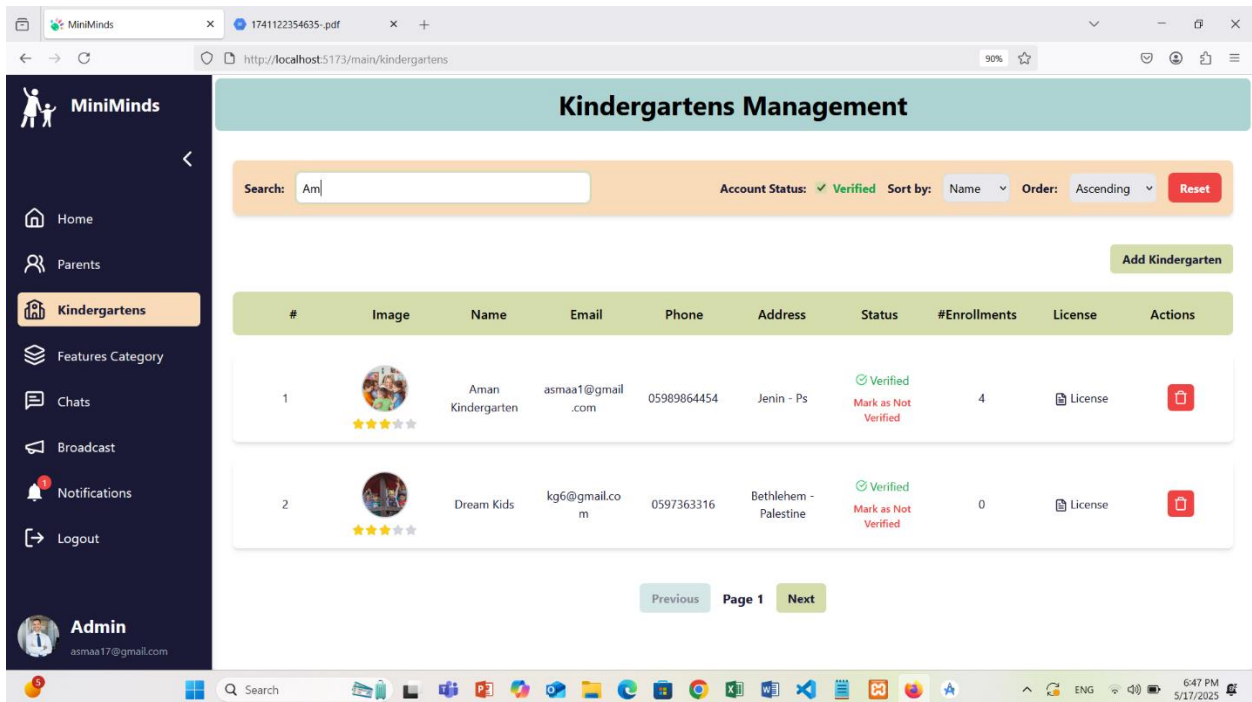


Figure 229: Kindergartens management with search filters.

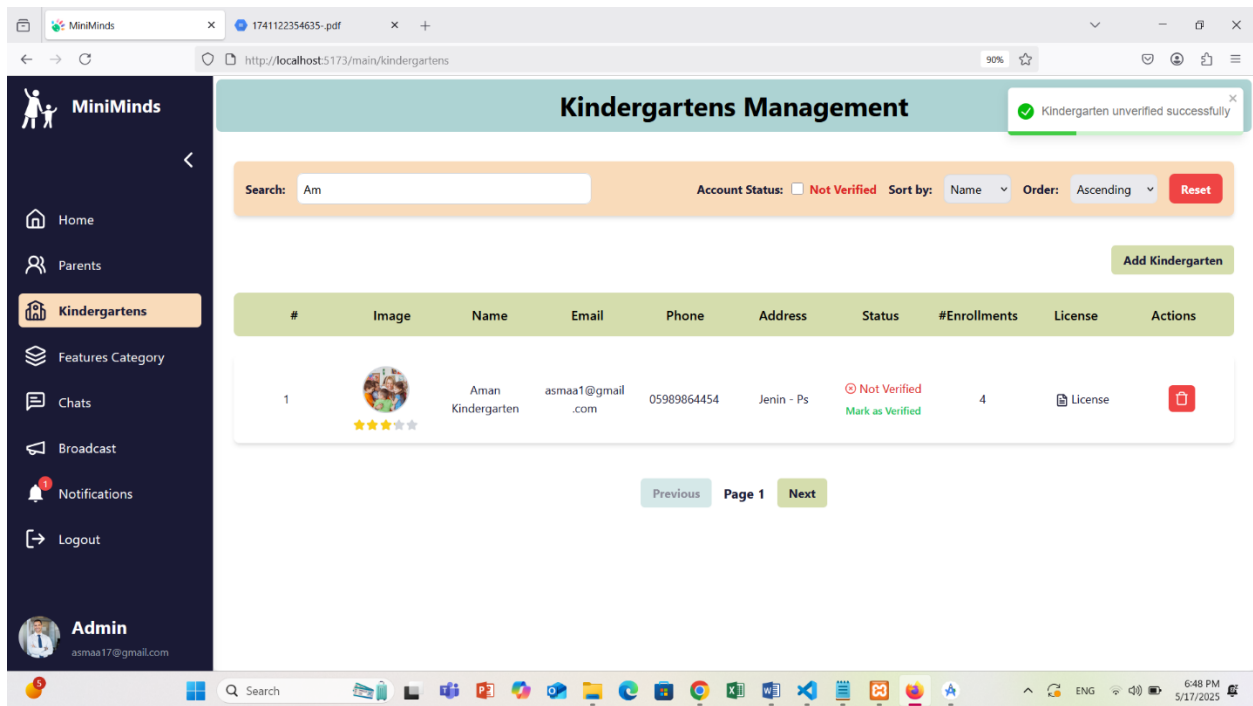


Figure 230: Verified kindergarten.

Feature Category Screen

This screen allows the admin to manage the list of services that children can select as preferences and kindergartens can offer. The admin can view all services with their details, including name, icon, and description, and has full control to add, edit, or delete any service. When a new service is added, a notification is sent to users, enabling kindergartens to update their offered services and parents to adjust their children's preferences accordingly.

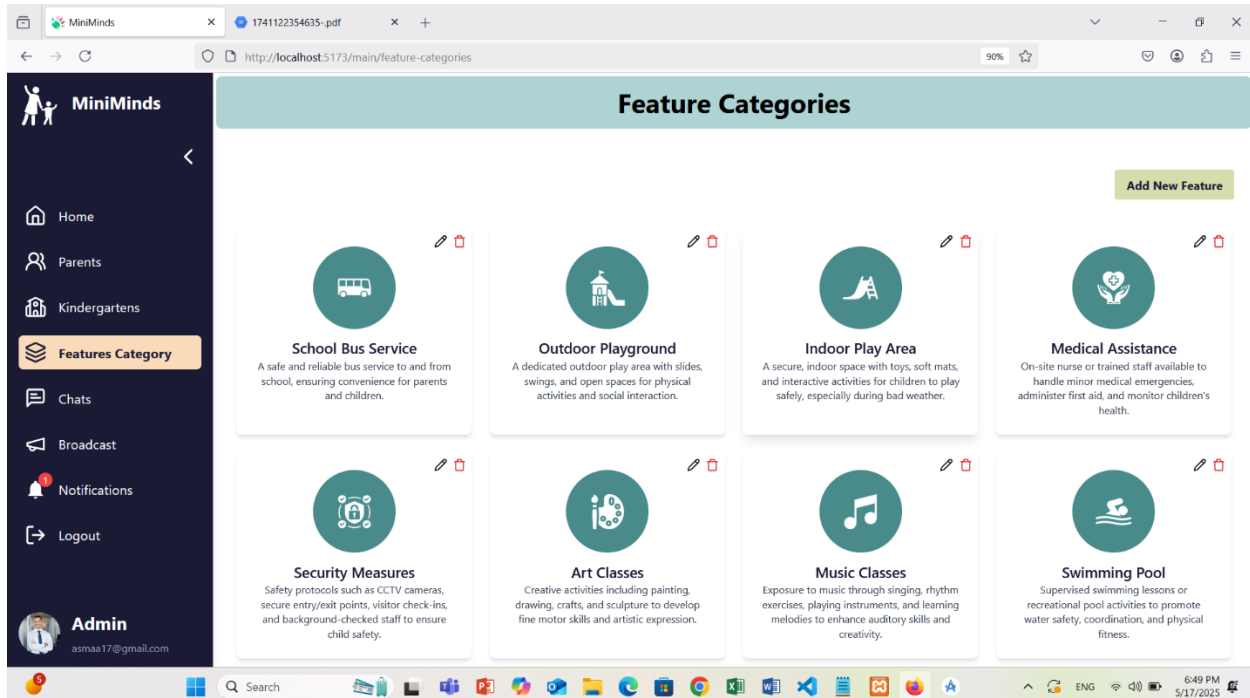


Figure 231: Feature Categories Lists.

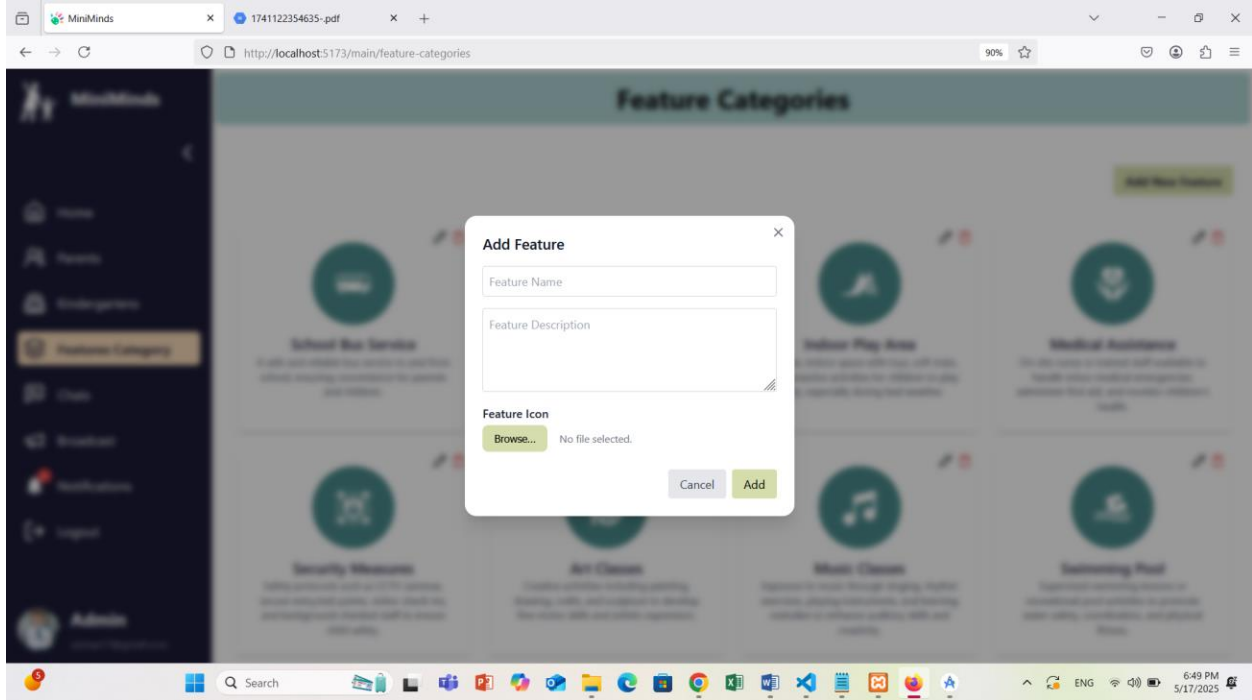


Figure 232: Add new feature form.

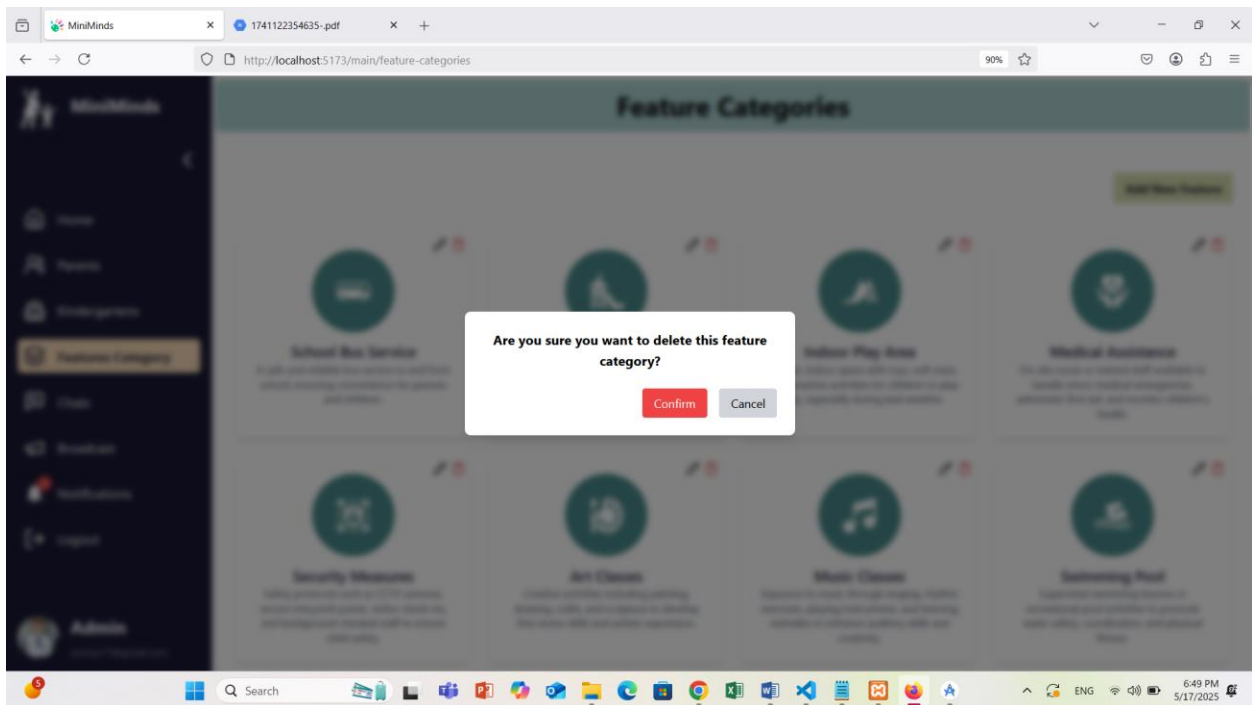


Figure 233: Confirmation message to delete a feature.

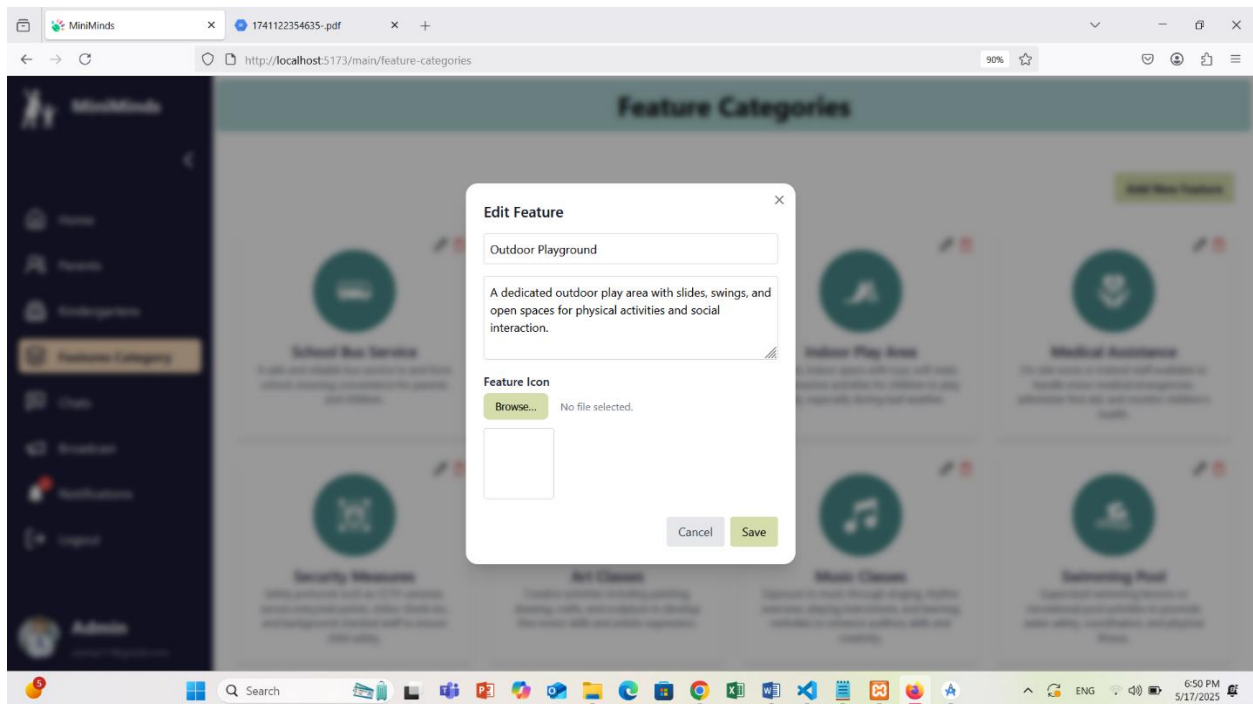


Figure 234: Edit feature form.

Chat Messaging screen

This screen allows the admin to chat with kindergartens. A list of registered kindergartens is displayed with their name and profile pictures, sorted by recent conversations. It also shows if there are any unread messages. Two types of messages can be sent: text or image. This feature enables easy communication between the admin and kindergartens, helping them stay connected.

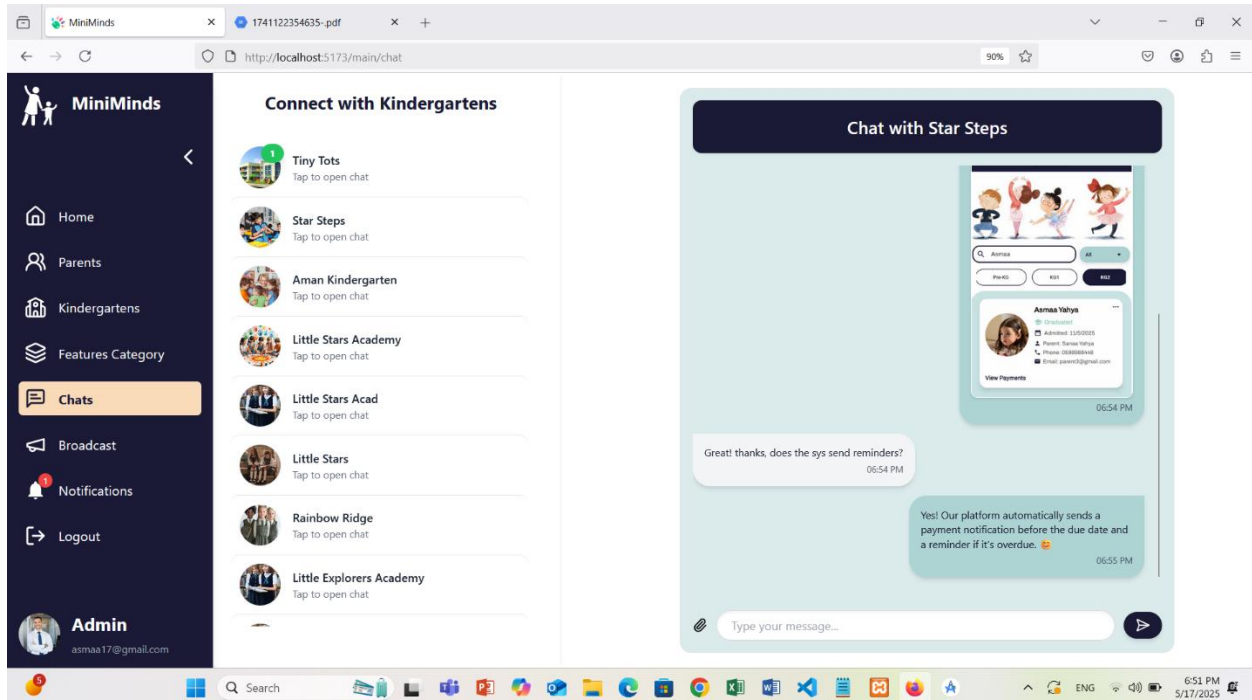


Figure 235: Chat messages between admin and kindergartens.

Broadcast Message screen

This screen allows the admin to send broadcast messages by specifying the target users—kindergartens, parents, or all users—the type of message (email or notification), and the country and city. This feature is important as it makes it easy for the admin to share any updates or important information quickly.

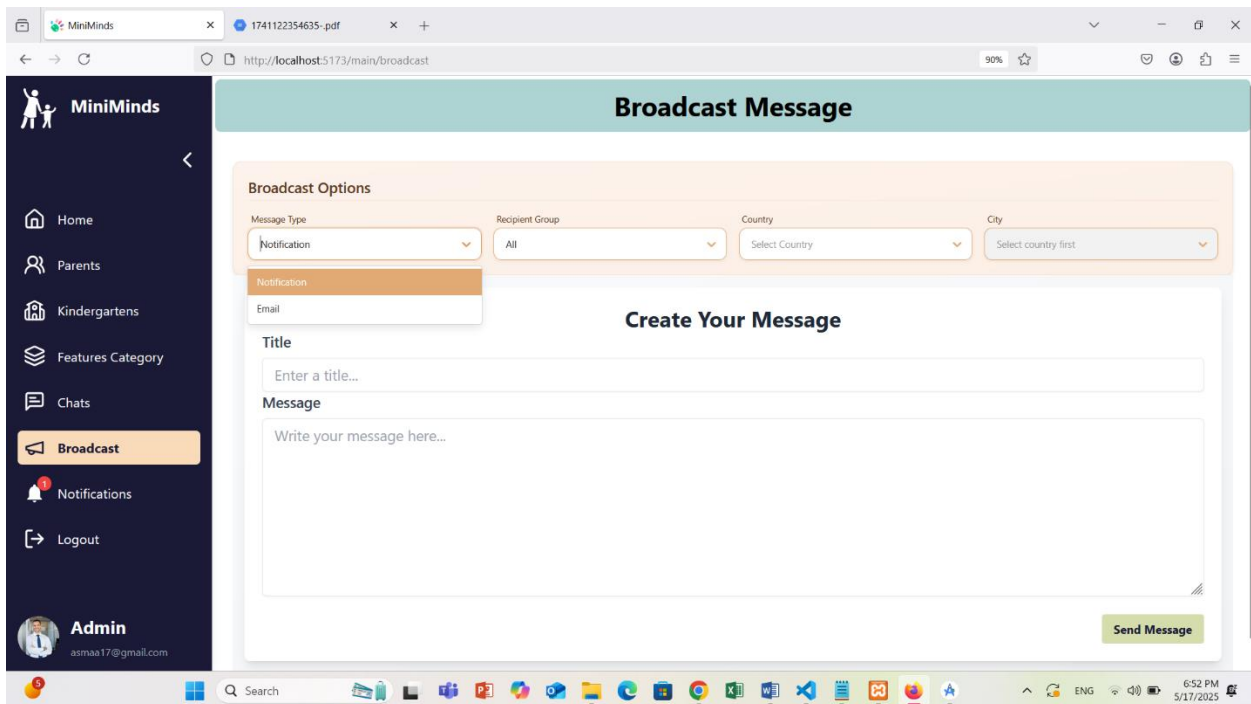


Figure 236: Broadcast message with type selection dropdown.

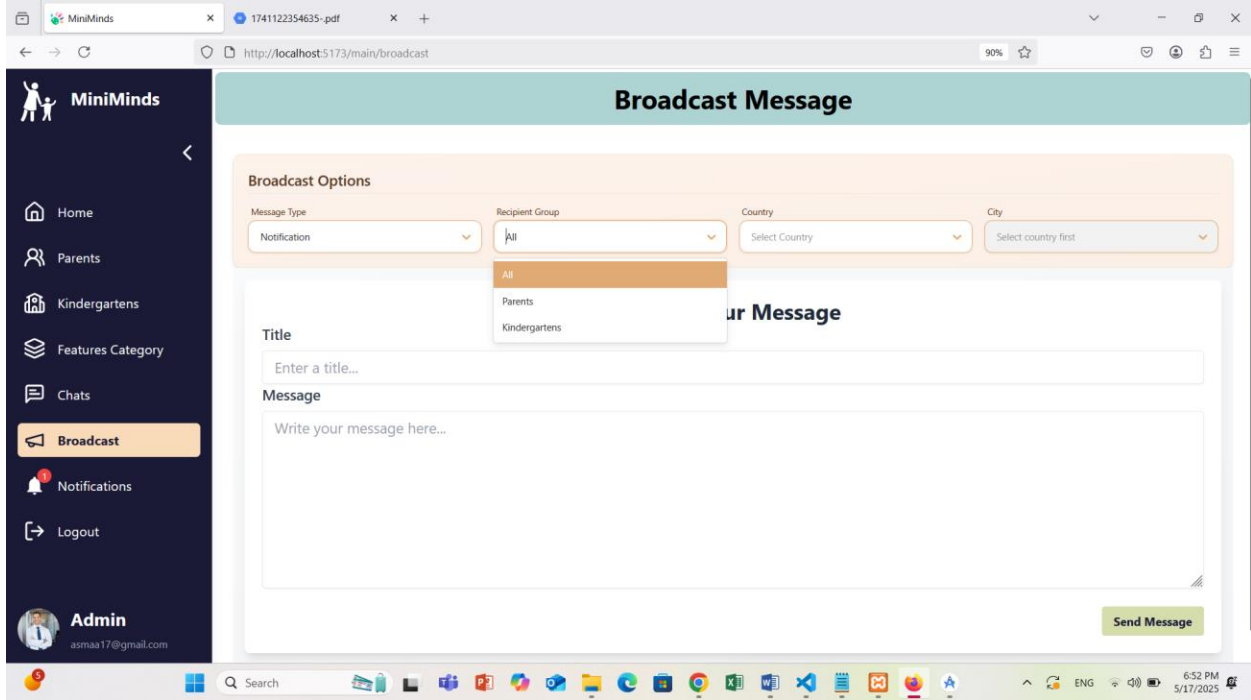


Figure 237: Broadcast message with target group selection dropdown.

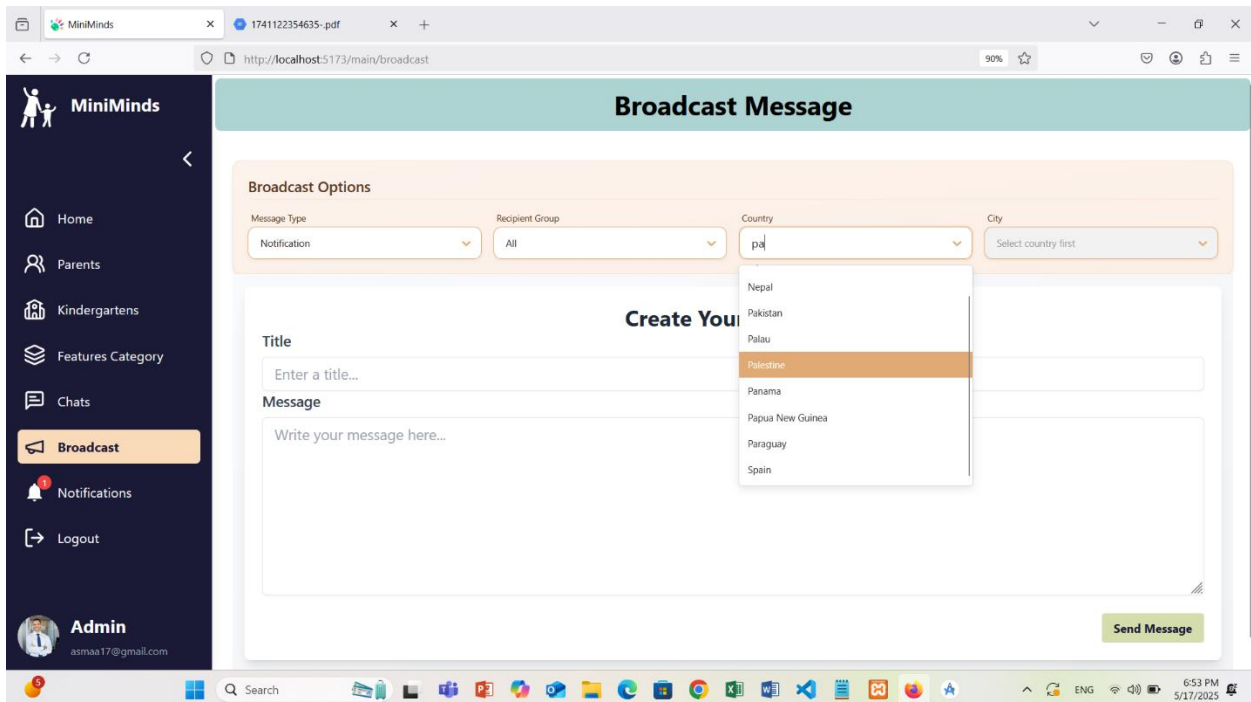


Figure 238: Broadcast message with country selection dropdown.

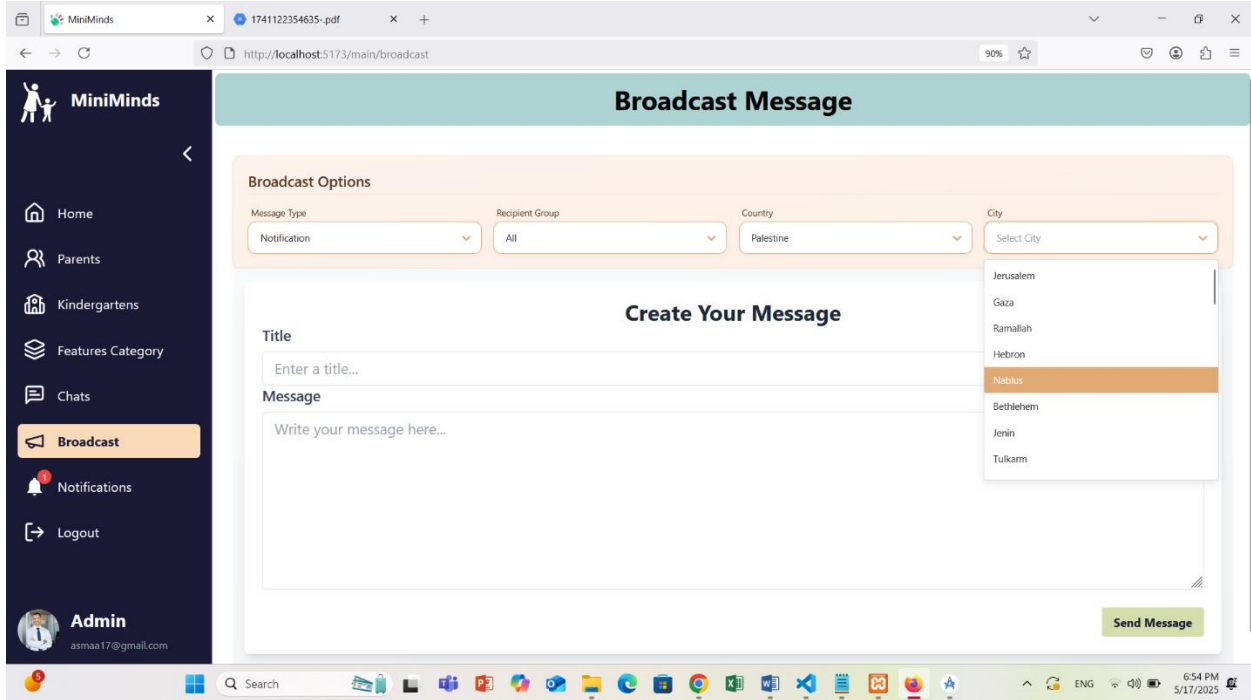


Figure 239: Broadcast message with city selection dropdown.

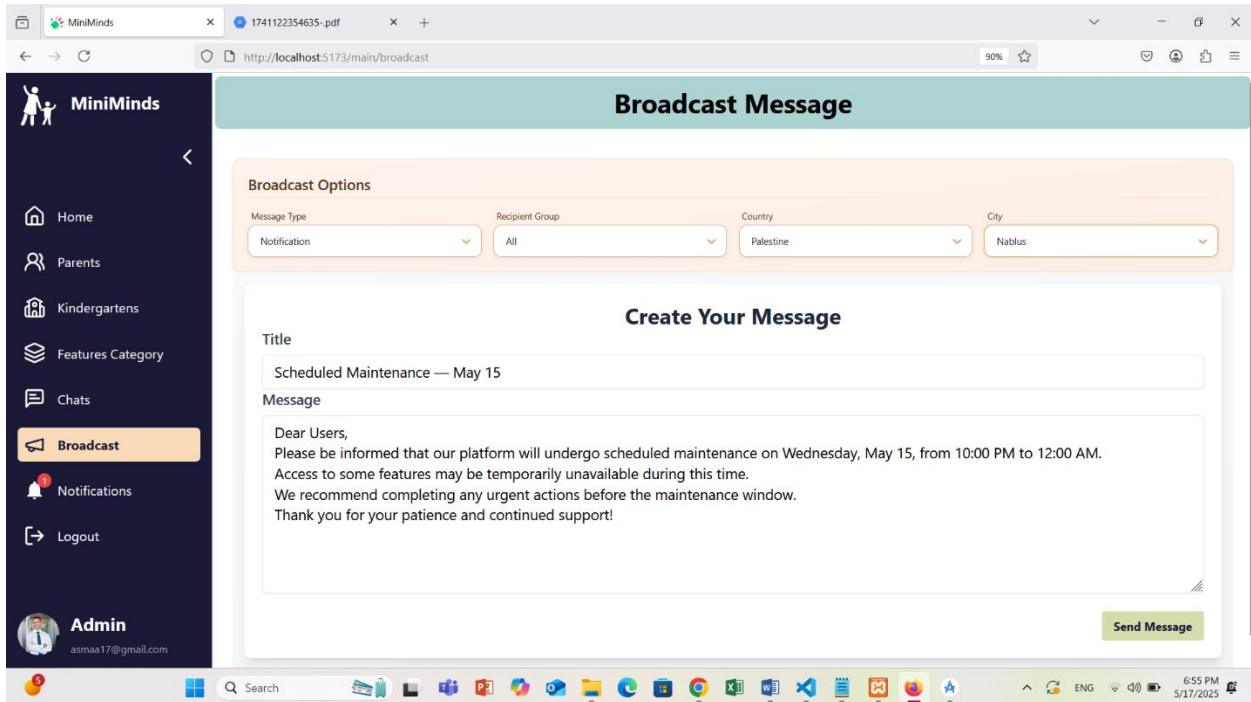


Figure 240: Broadcast message.

Notifications screen

This screen shows the list of notifications received by the admin. A notification is triggered when a new user registers—either a parent or a kindergarten—or when a kindergarten sends a message while the admin is not active. New notifications are highlighted for easy visibility.

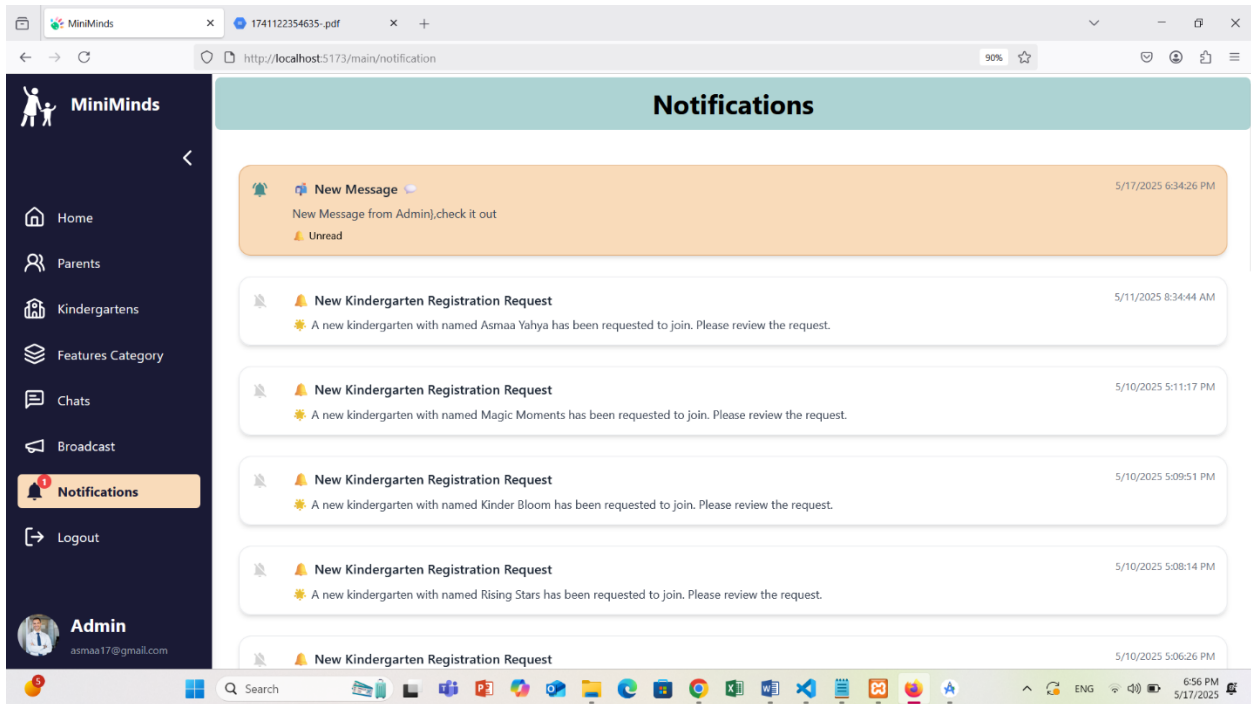


Figure 241: Admin Notifications.

Chapter 5: Results and Discussion

MiniMinds was developed to provide seamless interaction between parents and kindergartens by providing a centralized platform for enrollment, communication, and payment management. Prototype testing and simulated data analysis demonstrated that the system effectively reduces enrollment processing time, improves communication through real-time messaging, and enhances payment tracking with automated reminders.

Besides the main features, a community section was included to help parents and kindergartens stay connected. Through posts, comments, likes, and event RSVPs. Community features can successfully encourage ongoing involvement, as during testing, a high level of participation was observed, especially in response to notifications and updates.

The sentiment analysis of parental feedback, aided by AI, showed promising accuracy in identifying important themes and satisfaction levels. Even though the platform has yet to be deployed in a live setting, these initial results suggest MiniMinds has strong potential to improve early childhood education management for both parents and kindergartens while enhancing community engagement.

Challenges are still faced before full deployment, like the need for performance validation under real-world conditions, making sure data is secure, and following the privacy rules. These issues must be resolved to ensure the platform runs smoothly and keeps people's trust.

Looking ahead, there's room to grow that could help MiniMinds better serve a wider range of users and have a stronger impact on early childhood education by expanding AI-driven customization, offering support for different languages, and improve platform usability for users with disabilities through features like screen reader support, high contrast modes, and voice commands.

Chapter 6: Conclusion

MiniMinds has emphasized how well-designed digital tools can make a real difference in managing early childhood education. By focusing on simplifying tasks like enrollment, communication, and payments, the project aligns with varied user needs and everyday realities, including those of parents and administrative staff.

One important takeaway from this work is that while technical functionality is essential, what is important is how well the system works in real-life settings, as the success depends on listening to users, adapting to their feedback, and adjusting as the needs of schools and families change.

Recommendations:

To truly make a difference, MiniMinds should work closely with real kindergartens and educational groups to test the platform in everyday settings. This would help show how well it fits into daily routines and point out what needs fixing or improving. Making sure the platform can meet local and national education rules will be important if it's going to grow. Lastly, improving accessibility and ease of use should continue, so that everyone, no matter their tech skills or needs, can use it comfortably.

References:

- [1] K. K. Rose and J. Elicker, "Parental decision making about child care," *J Fam Issues*, vol. 29, no. 9, pp. 1161–1184, Sep. 2008, doi: 10.1177/0192513X07312103.
- [2] M. S. Bekele and A. Kenea, "DETERMINANTS OF PARENTAL SCHOOL CHOICE: A SYSTEMATIC REVIEW OF THE LITERATURE," *IJIET (International Journal of Indonesian Education and Teaching)*, vol. 8, no. 1, pp. 20–34, Jan. 2024, doi: 10.24071/ijiet.v8i1.7296.
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- [4] M. Davis, "How Parents and Administrators Both Win With an Online Student Registration System." Accessed: May 23, 2025. [Online]. Available: <https://www.macroconnect.net/how-parents-and-administrators-both-win-with-an-online-student-registration-system/>