EdenSpark KinderCare: Streamlined Excellence in Records and Resource Management

By

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A REPORT

SUBMITTED TO

Universiti Tunku Abdul Rahman

in partial fulfillment of the requirements

for the degree of

BACHELOR OF INFORMATION SYSTEMS (HONOURS)

DIGITAL ECONOMY TECHNOLOGY

Faculty of Information and Communication Technology
(Kampar Campus)

FEBRUARY 2025

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ACKNOWLEDGEMENTS

I extend my heartfelt gratitude to my supervisor, Mr. Lim Jit Theam, for entrusting me with the invaluable opportunity to contribute to this system development project. Your guidance, expertise, and unwavering support have profoundly shaped my skills and knowledge, marking a pivotal milestone in my journey toward a career in app and web development. I deeply appreciate the insights and encouragement you have provided throughout this process.

I also wish to express my sincere thanks to my moderator, Ms. Jin Tong, for her thoughtful feedback and dedicated support, which have been instrumental in refining my work.

Additionally, I am immensely grateful to my parents, family, and friends for their boundless love, steadfast encouragement, and belief in me. Your presence has been a constant source of strength, and I am truly blessed to have you by my side on this journey.

ABSTRACT

EdenSpark KinderCare is an innovative project situated within the fields of educational technology and administrative systems, aimed at transforming the way kindergartens manage their day-to-day operations. The project specifically addresses common administrative challenges such as fragmented record-keeping, ineffective financial management, and poor communication channels between staff and parents. These inefficiencies often hinder the smooth running of kindergartens and impact the quality of early childhood education delivery.

To tackle these issues, EdenSpark KinderCare adopts an iterative and user-focused development methodology, leveraging rapid prototyping and continuous feedback loops. The project utilizes FlutterFlow for front-end development, ensuring a responsive, aesthetically pleasing, and intuitive interface. For the backend, Firebase is employed to handle data operations, given its advantages in real-time synchronization, scalability, and robust security features. This technical stack allows for the seamless management of student records, staff profiles, attendance tracking, announcement posting, progress reporting and financial transactions, all in one unified platform.

The research process involved studying existing kindergarten management systems, gathering user input from educators and administrators, and integrating relevant pedagogical concepts to ensure that the system aligns with educational goals. By grounding the development process in actual user needs and educational frameworks, the project delivers a practical and sustainable solution tailored for real-world application in early education settings.

The results of the project show a marked improvement in administrative efficiency, enhanced data accuracy, and strengthened communication between stakeholders. The system's ability to provide real-time updates and centralized data access has simplified many complex processes, thereby reducing manual workload and improving decision-making for staff and management.

EdenSpark KinderCare introduces a novel approach to kindergarten management by merging modern technology with education-focused design. Its integration of FlutterFlow and Firebase not only enhances user experience but also ensures data integrity and operational scalability.

Area of Study: Kindergarten Management, Administrative Systems

Keywords: FlutterFlow, Firebase, Financial Management, Attendance Tracking, Real-Time Synchronization, User Interface Design, Cloud Database, Administrative Efficiency

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LIST OF ABBREVIATIONS

MIS	Management Information Systems
ETMIS	Education and Training Management Information Systems
ICT	leveraging Information and Communication Technology
CMS	Campus Management Systems
EMIS	Education Management Information Systems

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Chapter 1

Project Background

This chapter will briefly introduce the project's field, past research, problem statements, motivations, and contributions.

1.1   Introduction

The educational environment has undergone a significant transformation, marked by the growing integration of technology into its core frameworks. This shift is a direct response to the increasing challenges faced by educational institutions worldwide. Once reliant on conventional administrative methods, educational management systems have now embraced technological advancements as a catalyst for comprehensive change [1]. The pervasive influence of technology has reshaped educational institutions, challenged foundational practices, and redefined traditional approaches to management and administration. The importance of integrating technology into these systems has become evident, underscoring the urgent need for intelligent, adaptive, and user-friendly platforms to manage resources and information effectively. The transition from traditional methods to digitally driven solutions highlight the transformative power of modern systems. They are no longer merely repositories of data but have evolved into dynamic hubs that facilitate seamless coordination, resource optimization, and data-driven decision-making [2]. This advancement continues to foster an improved educational environment, where technology acts as an enabler, enhancing rather than replacing the human element.

1.2   Problem Statement

Previous research and observations in kindergarten management have revealed persistent challenges in resource management and data recording.

1.2.1 Lack of Financial Management Tools

Kindergartens frequently suffer from insufficient financial management tools, which is critical for ensuring a transparent and effective financial system. The fundamental difficulty is the lack of an integrated system for tracking spending, managing budgets, and creating financial reports.

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This lack of financial monitoring can result in budgeting errors, missing payments, and financial openness. Furthermore, without the right tools, the financial planning process becomes inefficient and prone to errors, making it difficult for administrators to make educated judgements on resource allocation and financial sustainability.

1.2.2 Scattered and Inconsistent Data Management

Traditional kindergarten administration often relies on scattered data collection procedures, resulting in disorganised student records, unreliable attendance monitoring, and ineffective communication among educators, administrators, and parents. The lack of an integrated platform for comprehensive data management results in inefficient information retrieval, delays decision-making, and impedes stakeholder cooperation.

1.2.3 Inadequate Integration of Administrative Processes

Kindergarten institutions have difficulty integrating multiple administrative operations such as student record-keeping, staff management, and curriculum development. The lack of a coherent system for combining various activities results in inefficient administrative workflows, which impedes the seamless coordination necessary for maximum resource utilisation, staff allocation, and curriculum alignment. Administrative procedures are disconnected, resulting in repeated efforts, inconsistencies in data management, and barriers to informed decision-making, all of which reduce the overall efficacy of educational operations.

1.2.4 Limited Parental Involvement and Engagement

Kindergarten facilities frequently fail to involve parents sufficiently in their children's educational path. The lack of interactive features or accessible communication channels limits parental engagement and impedes collaboration between parents and educators. Improving parental engagement through effective communication methods, achievement tracking, and participation in educational activities is still a significant problem for kindergarten management systems.

1.3 Motivation

This section outlines the key reasons behind the development of EdenSpark KinderCare. The idea for this project came from common problems faced by many kindergartens. These include poor financial management, scattered data storage, unorganized administrative tasks, and weak communication with parents.

One of the biggest issues is financial management. Many kindergartens struggle to manage budgets, track spending, and prepare financial reports. This project aims to create a system that helps administrators handle finances more easily and accurately, improving how resources are used and helping with better decision-making.

Another major problem is the way data is managed. Information like student records is often stored in different places, making it hard for educators and parents to work together. EdenSpark KinderCare plans to solve this by offering a single digital platform where all data is stored and accessed in one place. This makes it easier to share information and support every child's learning journey.

Administrative processes are also often disconnected and inefficient. Tasks like attendance tracking, curriculum planning, and staff management are handled separately, which leads to confusion and wasted time. This project aims to simplify and connect these tasks into one smooth system, making work more efficient and consistent.

Finally, the project recognizes how important parents are in their child's education. Many current systems do not provide enough tools for parents to stay involved. EdenSpark KinderCare will include features that help parents to track their child's progress and stay informed. The goal is to increase parental involvement, which can improve a child's development and academic success.

1.4 Project Scope

This section defines the scope of the EdenSpark KinderCare project, outlining the key features and components that will be developed. The goal of this project is to create and launch EdenSpark KinderCare, a comprehensive kindergarten management system that introduces several innovative features. The system aims to address the limitations of current school administrative systems by providing a fully functional software platform.

EdenSpark KinderCare will serve as a complete toolkit for kindergartens, optimizing financial management, streamlining data administration, and improving overall administrative operations. The project will deliver a full software package for kindergarten management, which will include a front-end interface, back-end features, and a well-structured database architecture.

Additionally, the project will provide detailed documentation that outlines the system's architecture, functionality and testing procedures. This documentation ensures that the system is adaptable and user-friendly, setting new standards for kindergarten administration technology.

1.5   Project Objectives

This section will outline the project's objectives, focusing on addressing these challenges by developing an efficient system that enhances financial tracking, student and staff management, and overall operational efficiency.

1.5.1 Provide Financial management

Develop and implement a comprehensive financial management system for EdenSpark KinderCare. This system aims to enhance financial tracking and reporting accuracy and transparency, streamline the budgeting process, and simplify expense management and payment tracking. The system will support administrators in effectively managing the institution's finances by providing tools for efficient financial planning and decision-making. Additionally, the user-friendly interface will maintain financial oversight, contributing to the kindergarten's long-term sustainability and optimal resource allocation.

1.5.2 Centralize and Streamline Data Management

Create a solution within EdenSpark KinderCare for comprehensive data management, integrating disparate student records, enhancing attendance monitoring, and promoting open communication among educators and parents. This goal is to improve information retrieval efficiency, encourage rapid decision-making, and develop practical stakeholder cooperation.

1.5.3 Integrate Administrative Processes

The goal is to develop an integrated system within EdenSpark KinderCare that seamlessly combines various administrative tasks, including student record-keeping, staff management, and student progress reporting. This system aims to improve administrative workflows by ensuring efficient use of resources, better collaboration among staff, and consistent curriculum alignment. By centralizing these functions, the system helps prevent duplication of efforts and inconsistencies in data handling.

1.5.4 Enhance Parental Involvement and Engagement.

Develop interactive features and transparent communication channels within EdenSpark KinderCare to foster robust parental engagement. This objective focuses on facilitating practical communication channel, enabling progress tracking, and promoting parental involvement in educational activities. The aim is to bridge the gap between educators and parents, creating an inclusive academic environment that encourages active participation in a child's educational journey.

1.6   Impact, Significance, and Contribution

This section explores the potential impact, significance, and contribution of EdenSpark KinderCare to kindergarten management.

EdenSpark KinderCare is designed to bring meaningful improvement to the way kindergartens are managed by offering a modern solution to long-standing challenges. The system enhances operational efficiency by streamlining financial processes and standardizing data management. At the same time, it encourages transparency and stronger collaboration between educators and parents. As a result, more time and attention can be directed toward supporting the development and well-being of young learners rather than managing routine administrative tasks.

The issues addressed by this project, such as poor financial management and unorganized data handling, can greatly affect the quality of education. EdenSpark KinderCare sets itself apart as a valuable tool that helps improve these processes and raise the overall standard of early education. It offers a practical and user-friendly solution that educational institutions can easily

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adopt. EdenSpark KinderCare is not just a software application. It is a transformative system that can enhance the learning experience for children and bring lasting benefits to all involved.

1.7 Project Background

Kindergarten administration plays a vital role in early childhood education by ensuring that schools operate smoothly while creating a nurturing environment for young learners. Traditionally, administrative tasks such as managing finances, recording student data, and communicating with staff and parents were handled manually. While these methods may work in smaller settings, they often become time-consuming and inefficient as student numbers and operational needs grow. The challenge of managing multiple data streams, including financial records, attendance tracking, and student progress has revealed the need for a more efficient and integrated system.

In recent decades, digital technologies have transformed many industries, including education. However, kindergartens have been slow to adopt these advancements due to a lack of systems tailored to their specific needs. While some institutions have tried general school management software, these tools often fall short when it comes to addressing unique kindergarten requirements, such as tracking developmental progress, managing teaching resources, and maintaining consistent communication with parents. These limitations highlight the need for a solution designed specifically for early childhood education settings.

EdenSpark KinderCare enters as a forward-thinking response to these challenges. It unifies financial management, data handling, and communication into one efficient platform, using modern tools like Flutter Flow for the front-end and Firebase for the back-end. Flutter Flow is a low-code tool that allows for the creation of intuitive user interfaces with little programming effort. Firebase, on the other hand, offers real-time data updates and secure storage, making it ideal for managing dynamic educational data. Together, these technologies empower EdenSpark KinderCare to simplify administrative work and improve the learning experience for both children and educators. Understanding these tools and the challenges they aim to solve helps reveal the importance and potential impact of this project.

CHAPTER 2

Literature Review

This chapter reviews relevant literature that underpins the project's development. It explores existing research, theories, and frameworks related to kindergarten management systems. The review aims to identify best practices, highlight gaps in current solutions, and provide a theoretical foundation for the design and implementation of EdenSpark KinderCare.

2.1   Master Soft

Master Soft is an educational system designed to improve administrative efficiency inside educational institutions. Its primary goals are to streamline administrative processes, optimise resource allocation, and encourage enhanced communication channels among educators, administrators, and perhaps parents [3].
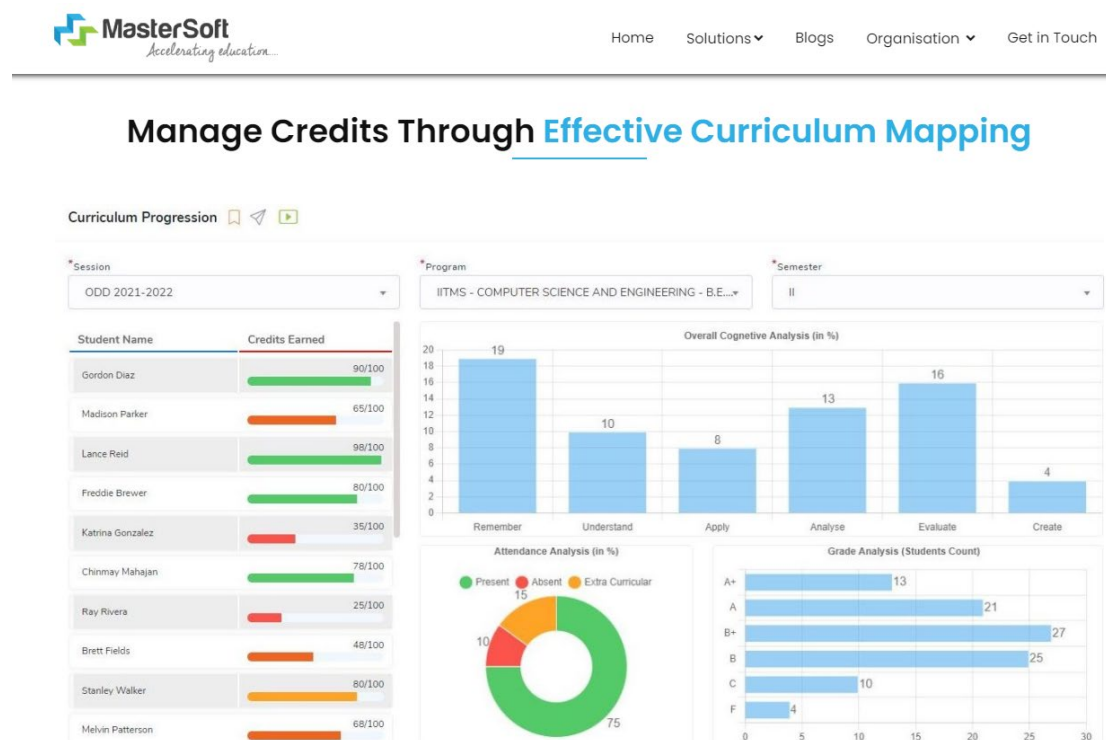
Figure 2.1 Example of Master Soft Educational System

Master Soft seeks to optimise resource allocation and improve administrative procedures in educational environments. It most likely includes tools for maintaining student records, organising timetables, processing staff information, and potentially enabling communication

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via specific portals or platforms. The platform focuses on providing a user-friendly interface created exclusively for educational administrative chores, aiming to simplify complicated procedures and increase overall administrative efficiency.

Its strength is in delivering a user-friendly interface and straightforward tools for successfully managing resources in educational settings. However, Master Soft may suffer scaling issues at larger academic institutions. Furthermore, it may lack some sophisticated capabilities other systems provide, thereby limiting its appropriateness for specific institutional purposes. Despite these restrictions, its emphasis on administrative simplicity and user-friendly design makes it viable for organisations looking for a simple solution to manage administrative activities.

2.2 OpenEMIS

OpenEMIS is a comprehensive educational management system designed to centralise education data management, enable data-driven decision-making, and enhance educational planning and monitoring processes [4].

Figure 2.2 Example of OpenEMIS Educational System

OpenEMIS' key goals are to centralise education data administration, enable data-driven decision-making, and improve educational planning and monitoring. It is anticipated to have features such as student information management, powerful data analytics tools for educational planning, customisable reporting capabilities, and system integration. It seeks to offer complete data management solutions to academic institutions.

OpenEMIS distinguishes itself as an open-source platform, making it accessible and adaptable to various educational situations. Its scalability and versatility are important features, allowing it to accommodate a variety of academic environments. However, establishing and maintaining OpenEMIS may necessitate technical knowledge, and the user interface may be complicated for non-technical users. While it provides complete data management solutions, its accessibility for individuals unfamiliar with technological systems might be a disadvantage.

2.3   Educational Horizons

Education Horizons is a system created to foster personalised learning experiences, use new teaching approaches, and accurately measure student progress. It focuses on creating a dynamic learning environment in which personalised learning routes can be developed and student progress can be effectively tracked [5].
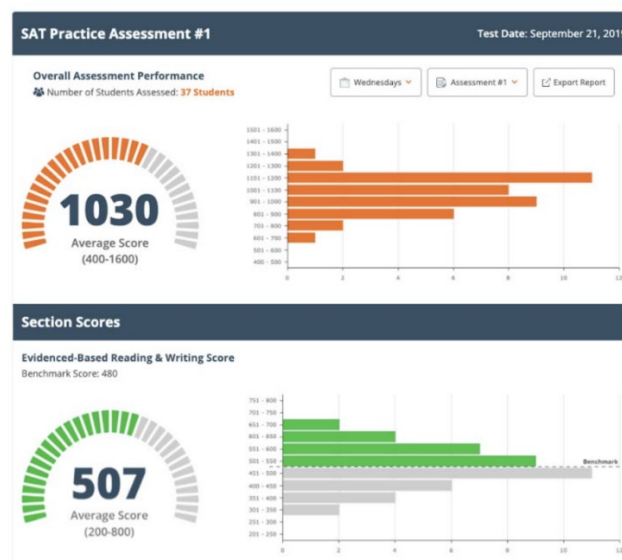
Figure 2.3 Example of Education Horizons Educational System

This system is designed to provide personalised learning experiences by providing tools that address the unique needs of each learner. It is expected to contain personalised learning aids, curriculum management systems, and effective assessment and progress monitoring procedures. Education Horizons emphasises the use of contemporary teaching approaches to provide students with current and new educational experiences. It attempts to provide educators with tools for effective curriculum management and evaluation in order to track student progress and development.

The system's strength is its emphasis on personalised learning and the powerful tools available to track student development. However, it may lack some administrative functions that other systems created expressly for administrative purposes may provide. Furthermore, its customisation possibilities may be restricted, impacting its suitability to various educational environments. Education Horizons stands out for its emphasis on current teaching methods and personalised learning experiences, although it may need additional tools to satisfy administrative demands fully.

2.4   Moodle

Moodle is a highly adaptable and customisable online learning management system that facilitates online learning and collaborative workspaces and offers various educational materials [6].
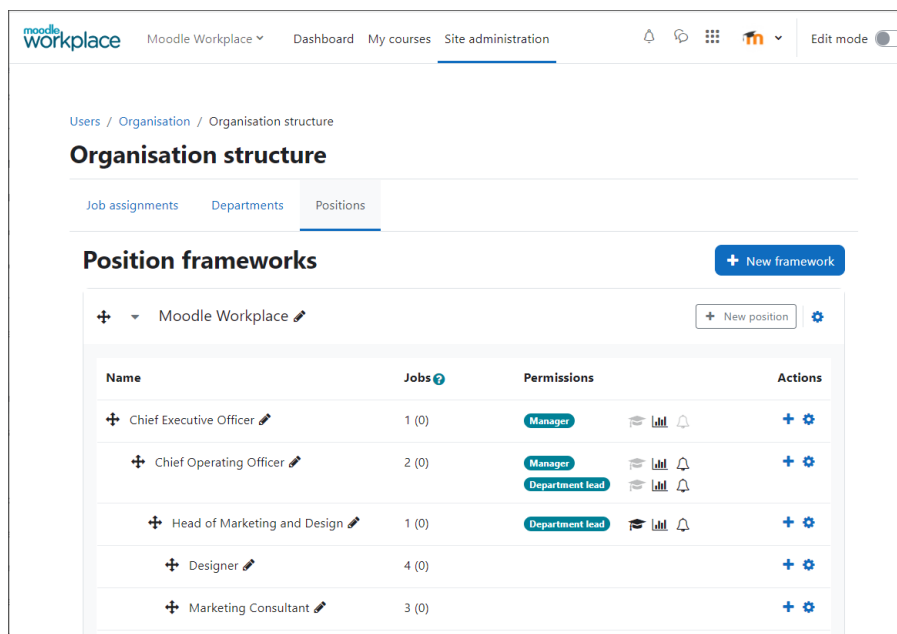
Figure 2.4 Example of Moodle Educational System

Moodle is used to build and administer online courses while also promoting collaborative learning settings. It frequently includes course administration tools, discussion forums, collaboration areas, and resource libraries, allowing instructors to design interactive online courses. Moodle also offers content production capabilities and supports a variety of educational resources, allowing users to access a diverse range of learning materials.

One of Moodle's key assets is its strong customizability and flexibility, which enables users to modify the platform for various educational environments. It has an active community support

system and several plugins, making it suited for a variety of educational settings. However, Moodle setup and maintenance may need technical skills, making it difficult for inexperienced users. Furthermore, because of its large list of capabilities, Moodle can often overwhelm novice users, necessitating some time to become acquainted with its functionalities.

System Name	Functionalities	Features	Strengths	Weaknesses
Master Soft [3]	- Streamline administrative tasks in educational institutions. - Enhance communication between stakeholders. - Provide efficient resource management.	- Administrative management tools. - Communication portals for stakeholders. - Resource allocation and tracking.	- User-friendly interface. - Tailored for educational administrative tasks. - Efficient resource management features.	- Limited scalability for larger institutions. - May lack certain advanced features found in other systems. -Financial management is not provided
OpenEMIS [4]	- Centralize education data management. - Enable data-driven decision-making. - Improve educational planning and monitoring.	- Student information management. - Data analytics for educational planning. - Customizable reporting tools. - Integration capabilities with other systems.	- Open-source platform. - Scalable and adaptable to various educational contexts. - Provides comprehensive data management solutions.	- Technical expertise is required for setup and maintenance. -User interface might be complex for non-technical users. -Financial management is not provided
Education Horizons [5]	- Foster personalised learning experiences. - Implement modern teaching methodologies.	- Personalized learning tools. - Curriculum management. - Assessment and progress tracking.	- Focus on personalised learning. - Robust tools for tracking student progress.	- Might lack certain administrative features. - Customization options might be limited.

| | - Track student progress effectively. | | - Embraces modern teaching methodologies. | -Financial management is not provided |
| Moodle [6] | - Facilitate online learning and course management. - Enable collaborative learning environments. - Provide a wide range of educational resources. | - Course management tools. - Discussion forums and collaboration spaces. - Resource repositories and content creation tools. | - Highly customisable and adaptable. - Active community support and extensive plugins. - Suitable for various educational contexts. | - Might require technical setup and maintenance. - Can be overwhelming due to its extensive features for new users. -Financial management is not provided |

Table 2.1 Overview of Three Existing Education Management Systems

2.5 The Education Management Information System (EMIS) and the Educational Information Management in Nigeria

Olayanju K. Taiwo and Charity C. Okwor's paper [7] examines the effects of the Education Management Information System (EMIS) on Nigerian tertiary institutions' usage of educational information management. The study investigated the difficulties in obtaining information because of the lack of an EMIS through a survey that involved 118 undergraduate and graduate students. The research, which included statistical analysis and self-developed tools, linked the challenges encountered in managing information in the school system to the absence of an EMIS.

		95% CI for B							
	B	LL	UL	SEB	β	R^2	t	Sig	
Model									
Constant	2.585	2.396	2.775	.096			27.056	.000	
Absence of EMIS	-.704	-.843	-.566	.070	-.683	.466	-10.066	.000	

Note. B = Unstandardized regression coefficient; CI = Confident Interval; LL = Lower Limit; UL = Upper Limit; SEB = Standardized error of the coefficient; β = Standardized coefficient; R^2 = Coefficient of determination.
[*]P<.000.

Figure 2.6 Results of the Simple Regression Analysis on the Absence of EMIS

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The issues in educational information management in Nigeria's educational sector seem to be significantly exacerbated by the lack of a strong EMIS. Regression analysis conducted for the study revealed that these issues were significantly impacted by the absence of EMIS, which accounted for over half of the variation in educational information management challenges [7]. This result is consistent with previous research highlighting the benefits of EMIS for school administration and management, and it raises the possibility that implementing such a system might resolve file and document access problems in postsecondary educational settings. To improve generalisability, the research notes that it is difficult to establish cause-and-effect linkages and recommends more reliable sample techniques for further research.

2.6 Management of the System Educational

The article explores the fundamentals of Management Information Systems (MIS) and the significance of information and data in the decision-making process [8]. It highlights how MIS is essential in forming plans and policies for educational progress, especially in the education sector, through Education Management Information Systems (EMIS). The essay looks at case examples from Zambia and Nigeria, drawing conclusions and suggesting the best EMIS to improve information management in the classroom. It distinguishes data and information, emphasising the latter's crucial significance in decision-making across industries and highlighting information's vital role in organisational success.

Figure 2.7 Decision areas and management levels

In addition, it uses instructional examples to classify information into four categories: descriptive, diagnostic, predictive, and prescriptive. These classes are then used to anticipate strategies, prescribe action plans, and assess scenarios. The article highlights the need to convert data into useful information using a scientific method and qualified staff, emphasising the necessity for pertinent, timely, and manageable information while warning against data overload. In the end, it highlights that the ability of organisations—including educational

institutions—to manage and use information efficiently for well-informed decision-making will determine their future success.

With several components, EdenSpark KinderCare will be a complete solution that streamlines and improves data management. These elements will consist of integrated staff, student, and financial management modules that cooperate to guarantee smooth information flow and accessibility. EdenSpark KinderCare aims to improve operational efficiency by providing administrators, teachers, and parents with real-time access to accurate and relevant information by consolidating data into a single platform. This will facilitate informed decision-making. Using an integrated strategy will lower the danger of data overload, and all stakeholders will have the tools they need to manage and use information for the benefit of the school and its pupils.
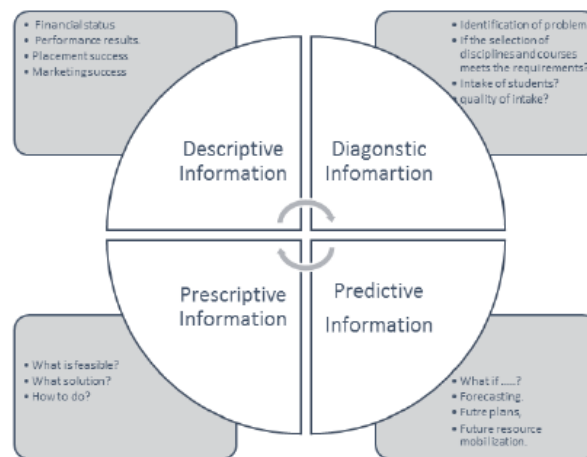
Figure 2.8 Classification of information – Examples of Education System

2.7 Financial Management Practices: Challenges for SMEs in Malaysia

The paper focuses on the financial management practices and challenges of Malaysia's small and medium enterprises (SMEs) [10]. In Malaysia, small and medium-sized enterprises (SMEs) play a vital role in the country's employment and economic development. However, they struggle with money management, which is essential to their survival and prosperity. The review emphasises the direct relationship between the success of SMEs and financial management techniques, such as financial accounting, planning, and strategy creation. Incompetent financial management frequently results in subpar organisational performance and limits SMEs' capacity to compete in the marketplace. The report also lists the main challenges SMEs have when handling their money, including managers' lack of formal

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financial management training, poor record-keeping, and restricted financing options [10]. External variables, such as economic instability and strict lending standards by financial institutions, aggravate these issues. SMEs find it challenging to obtain capital due to incomplete financial records, contributing to the industry's high failure rates.

businesses. It's not uncommon for SMEs to fail to preserve accurate financial records. How do they convince financiers that they are deserving of funding while they are unsure of their company's financial position?

For example, due to a lack of experience in management, inefficiencies in the financial record system, and a lack of collateral, the SME's survival time was usually relatively short. Furthermore, the banks had deduced that a small business was vulnerable to external business risks such as market volatility and exchange rate variations. As a result, their financial records did not meet the bank's requirements, and they had more difficult access to funds.

Figure 2.9 Importance of Financial Management Systems for SMEs

A thorough financial management system that will be implemented within EdenSpark KinderCare will significantly improve the efficacy and efficiency of money management. By streamlining procedures like financial reporting, monitoring expenses, and budgeting, this system will guarantee that timely and accurate financial data is easily accessible for well-informed decision-making.

2.8   Teacher Management in Early Childhood Education

The necessity of efficient administration in educational institutions, especially in early childhood education, is shown by the research on teacher management at Surya Ceria Aisyiyah Kindergarten [11]. The qualitative and descriptive study aimed to investigate the kindergarten's planning, hiring, coaching, and professional development of its teachers. The results show that educator planning entails a detailed work analysis to guarantee that instructors are a good fit for their positions, which helps minimise unanticipated difficulties and match their duties with the organisation's goals.

to work, and not easily move. Educators who are not qualified, are not comfortable carrying out assignments, and frequently move places will be an obstacle in educating children. Educating early childhood requires an appropriate management system, improving the quality of education must begin with professional educators. Therefore educator management becomes urgent.

Figure 2.10 Importance of Staff Management System

Based on the study results from Surya Ceria Aisyiyah Kindergarten, EdenSpark KinderCare will have a Staff Management system that will improve and simplify staff management. By combining these tasks into a single, centralised platform, EdenSpark KinderCare seeks to reduce administrative responsibilities and provide educators and administrators with a more efficient, adaptable, and professional environment.

2.9 Outlining Information Systems for Financial Management in Developing Nations

The study by Jack Diamond and Pokar Khemani emphasises the value of Financial Management Information Systems (FMIS) in developing nations where public expenditure management (PEM) has been seriously hampered by antiquated or manual budget execution and accounting procedures [12]. These inefficiencies result from poor budget management, excessive borrowing, misallocating resources, and a lack of accountability and transparency in government financial reporting. To improve transparency, strengthen financial controls, improve budgetary control, and improve economic forecasting and planning, FMIS projects are now a crucial part of budget reforms. They also improve the recording and processing of financial transactions. An integrated system that links budget development, implementation, and accounting across government agencies through the computerisation of PEM procedures is called an FMIS. It supports financial and non-financial decision-making, is a management tool that should adjust to changing demands for budget reform and has to be widely accessible to be used effectively.

In most developing countries (DCs), budget execution and accounting processes were/are either manual or supported by very old and inadequately maintained software applications. This has had deleterious effects on the functioning of their public expenditure management (PEM) systems, that are often not adequately appreciated. The consequent lack of reliable and timely revenue and expenditure data for budget planning, monitoring, expenditure control, and reporting has negatively impacted budget management. The results have been a poorly controlled commitment of government resources, often resulting in a large buildup of arrears; excessive borrowing, pushing up interest rates and crowding out private-sector investment; and misallocation of resources, undermining the effectiveness and efficiency of service delivery. Further, governments have found it difficult to provide an

Figure 2.11 Financial Management System in Developing Countries

A thorough financial management system will be developed within EdenSpark KinderCare, streamlining and improving the organization's handling of financial transactions. This system will document the budgeting, spending tracking, and financial reporting procedures,

guaranteeing that timely and accurate financial data is available for decision-making.

2.10   Web-based Student Data Management System

The design and deployment of a complete Student Information System (SIS) to replace conventional paper records is covered in the paper by S.R. Bharamagoudar, Geeta R.B., and S.G. Totad [13]. College staff members may safely monitor and control students' academic progress using an online interface linked to the college's website. User identification guarantees that users may only read or alter information pertinent to their responsibilities, and before any changes are made, the data is carefully examined and verified. Additionally, the system has a user interface for students to access information and submit requests, which minimises the need for paper records and speed processing. All data is safely stored on SQL servers by the SIS, which also has a logging system to monitor user access and ensure data access policies are followed. It is anticipated that installing this system would enhance the overall functioning of the college's information management, decrease the time and effort needed to handle student data and boost the efficiency of record management.

Previously, the college relied heavily on paper records for this initiative. While paper records are a traditional way of managing student data there are several drawbacks to this method. First, to convey information to the students it should

Figure 2.12 Traditional Student Management Systems

EdenSpark KinderCare will implement a Student Management System to improve the accuracy and efficiency of maintaining student data and academic achievement. With this system, staff members can safely see and update student information online, decreasing the need for manual processes and less dependence on paper records. In addition, parents and guardians can track their child's progress, get updates, and remain up to speed on their education using an easy-to-use interface. EdenSpark KinderCare hopes to increase parent communication, expedite administrative work, and guarantee the safe and effective management of all kid data by using this system.

2.11 Limitations of Previous Studies

This section will examine the limitations of previous studies related to kindergarten management systems.

1. Integrating Emerging Technologies

Earlier research on integrating new technology into Education Management Information Systems (EMIS) was insufficient. Given the rapid development of technology, there may not be enough research on using more recent technologies, such as blockchain, artificial intelligence, or machine learning, to improve information management in educational institutions.

2. In-depth Examination of Implementation Challenges

There may be a lack of knowledge regarding the complex difficulties in implementing EMIS in various educational contexts. While earlier research has discussed the value of EMIS, it has not gone into great detail on the real-world difficulties that arise in its implementation, such as a lack of resources, inconsistent infrastructure, or institutional resistance.

3. Sustainability and Long-Term Effects

Previous studies did not fully analyse the sustainability and long-term effects of EMIS projects. One area where prior research lacked thorough investigation was understanding these systems' long-term efficacy in light of changing governmental frameworks, shifting educational demands, and technological advancements.

4. Optimal Information Utilization and Decision-Making

Prior studies may not have thoroughly examined the useful use of data from EMIS in making informed educational decisions at several levels—national, regional, or institutional—while highlighting the significance of information in decision-making.

2.12   Proposed Solutions

This section will outline the proposed solutions to address the limitations identified in previous studies on kindergarten management systems.

1. Comprehensive Implementation Strategy

Create an implementation strategy that addresses the unique difficulties of implementing EdenSpark KinderCare in various school environments. This strategy should contain

techniques to overcome infrastructural obstacles, training modules for stakeholders, and methods to lessen resistance to change to ensure smoother system adoption.

2. Long-term Impact Assessment

Create an analytical framework for evaluating EdenSpark KinderCare's long-term efficacy and flexibility. This framework should assess its influence on educational results, scalability, and conformity to changing technology and educational trends to ensure its long-term relevance.

3. Inclusivity and Accessibility Enhancement

Make EdenSpark KinderCare available to all students in all learning situations. To encourage greater accessibility, provide features that may be customized to meet changing infrastructure requirements and ensure usability in remote or underdeveloped environments.

4. Data Utilization for Informed Decision-making

Provide the system with strong data analytics features that will give administrators and teachers practical insights. Ensure that reports and data visualization tools that are easy to use and customized for different levels of educational management are provided by EdenSpark KinderCare to enable informed decision-making.

5. User-Friendly Design and Accessibility

Give user-friendly interfaces and user-centric design a priority. A system's usability is ensured by extensive user testing and the integration of input during the development process. Adopt responsive design concepts to make content accessible on various devices, giving parents, administrators, and educators easy access.

6. Thorough Documentation and Training

 Provide comprehensive documentation detailing system architecture, functionalities, and implementation guidelines. Concurrently, provide inclusive training for kindergarten personnel to ensure seamless system adoption and use while reducing resistance to change.

CHAPTER 3

Proposed Method/Approach

This section will explain the methodology used to develop EdenSpark KinderCare. It will cover the overall approach, tools, and techniques to ensure the system meets the project's objectives.

3.1 Methodology

The development and deployment of EdenSpark KinderCare's management system adopts the Rapid Application Development (RAD) methodology. This approach is selected for its dynamic and iterative nature, which accelerates the development process, encourages collaboration, and allows the system to adapt effectively to evolving requirements. RAD supports quick prototyping, frequent iterations, and continuous feedback, aligning well with the project's goal of transforming resource management in early childhood education [13].

RAD is particularly suitable for its flexibility, as it allows rapid transformation of user requirements into functional features. The process promotes ongoing enhancements based on real-time feedback, ensuring that the system remains relevant and effective throughout its development. This section explores the practical application of RAD principles in building a user-friendly and efficient learning material management system tailored to the unique needs of EdenSpark KinderCare.

By emphasizing teamwork, iterative progress, and user satisfaction, RAD provides a strong foundation for successfully implementing this innovative solution. The ultimate aim is to enrich the educational experience of both students and educators within the EdenSpark KinderCare environment.
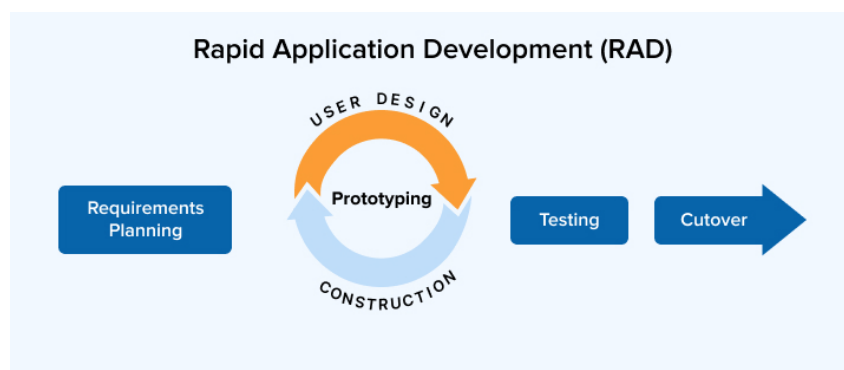

Figure 3.1 Rapid Application Development Diagram

3.2 Gannt Chart
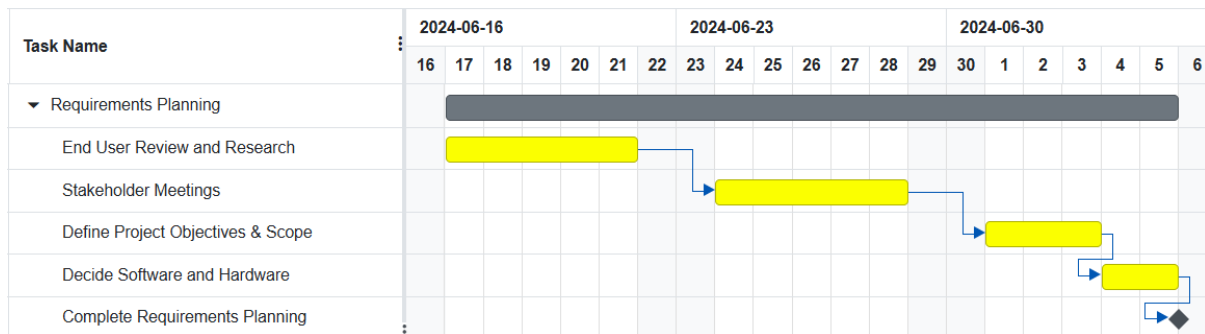
Figure 3.2 Gannt Chart for Proposal Writing

During the proposal writing, the Requirements Planning phase was completed. This included conducting end user reviews, holding stakeholder meetings, defining the project objectives and scope, and selecting the appropriate software and hardware for the system.

The requirements planning phase will focus on identifying and outlining the project's goals and stakeholder requirements.
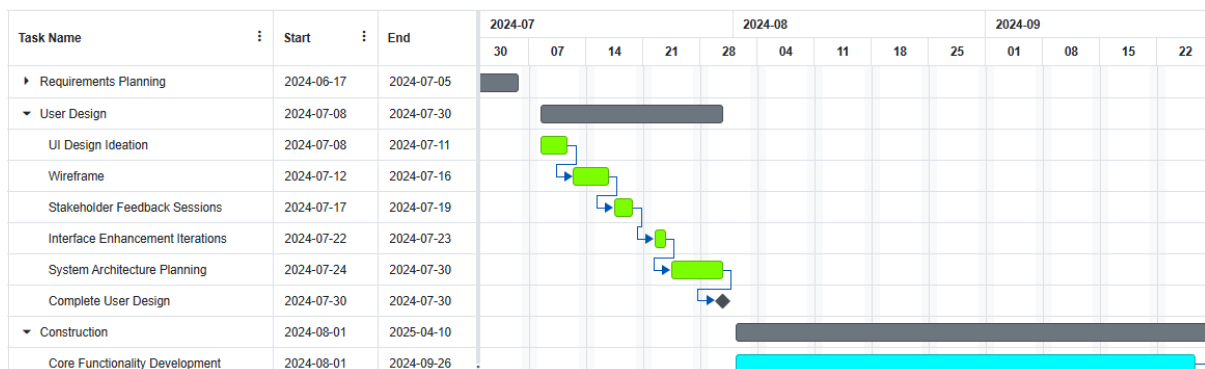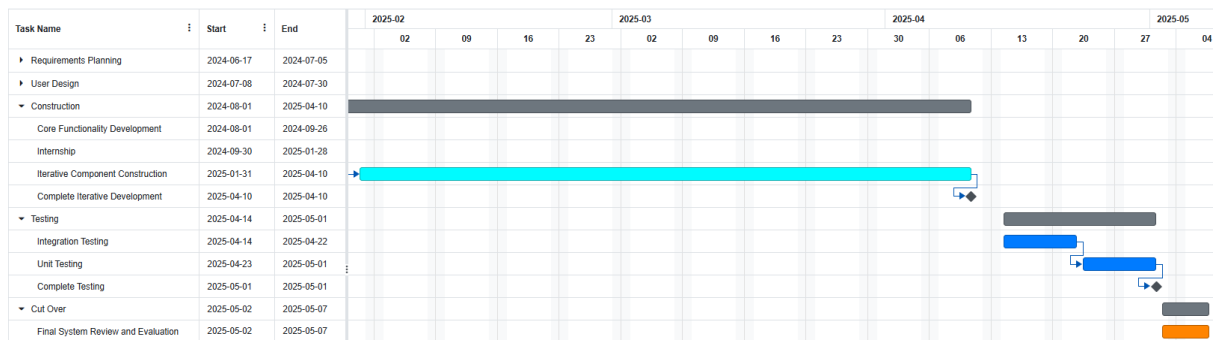

Figure 3.3 Gannt Chart for FYP1
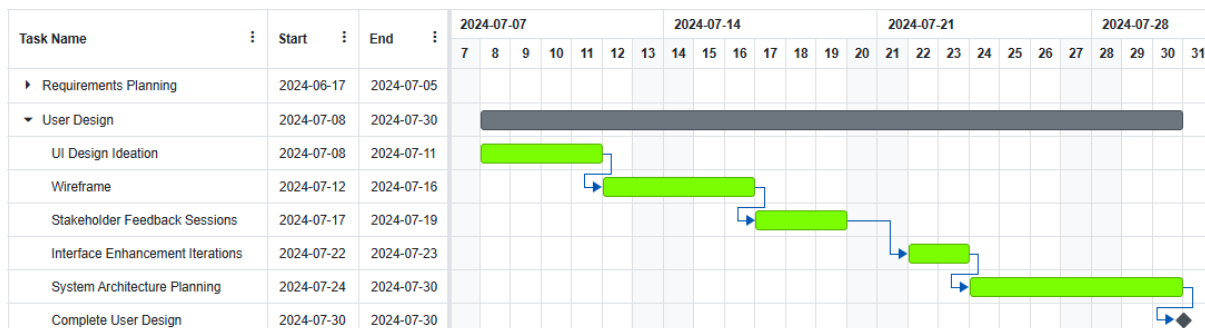
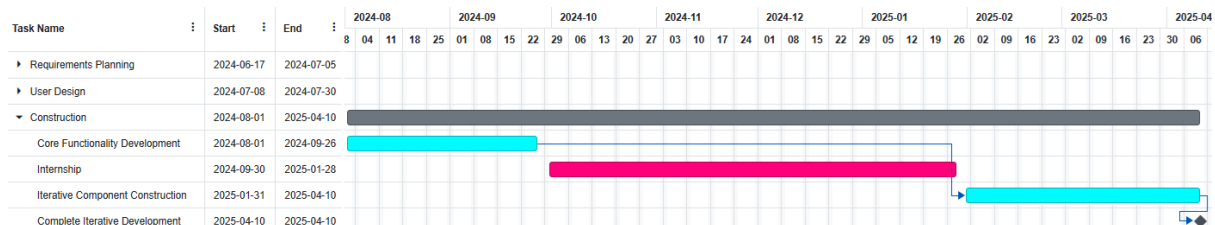**Figure 3.3.1 User Design Gannt Chart**

In Final Year Project I, the focus was on completing the User Design phase and progressing into the Construction phase up to the Core Functionality Development. This involved designing the user interface, creating wireframes, conducting stakeholder feedback sessions, and initiating the foundational development of the system's main features.
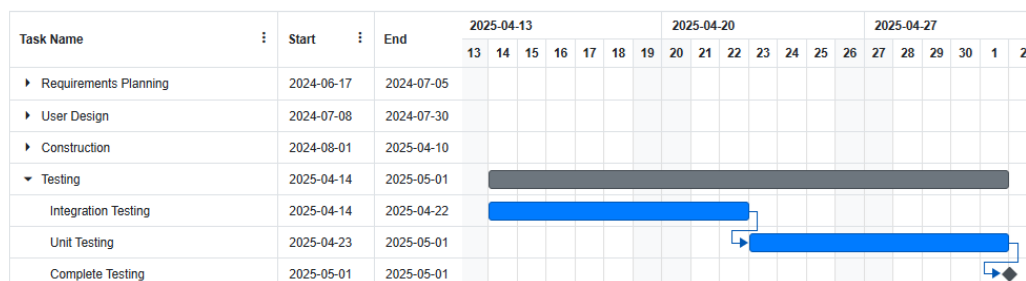
During the design stage, the system's layout and structure will be conceptualized. Tasks will include UI design ideation, wireframing, and gathering feedback from stakeholders to guide improvements. The system architecture will also be planned to determine how different modules will integrate. This phase will conclude with the completion of the finalized user interface design.

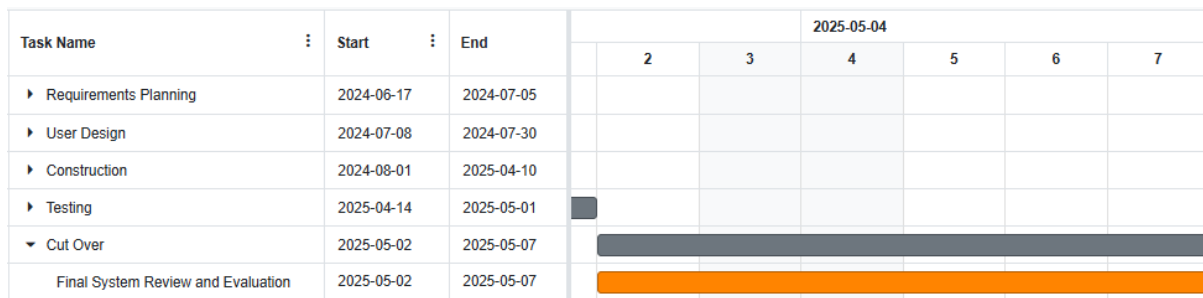**Figure 3.4 Gannt Chart for FYP2**

Figure 3.4.1 Construction Gannt Chart

Figure 3.4.2 Testing Gannt Chart

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Task Name	Start	End	2025-05-04					
			2	3	4	5	6	7
▸ Requirements Planning	2024-06-17	2024-07-05						
▸ User Design	2024-07-08	2024-07-30						
▸ Construction	2024-08-01	2025-04-10						
▸ Testing	2025-04-14	2025-05-01						
▾ Cut Over	2025-05-02	2025-05-07						
Final System Review and Evaluation	2025-05-02	2025-05-07						

Figure 3.4.3 Cut Over Gannt Chart

During Final Year Project II, work continued from the Iterative Component Construction phase through to the final phase. This included completing iterative development, performing integration and unit testing, and conducting the final system review and evaluation. The system is now fully functional and currently accessible to a closed group, with a public release planned as future work.

The construction stage will involve the actual building of the system. Development of key modules such as student and staff profiles, attendance tracking, announcement creation, and progress report generation will be completed. An internship period will also take place during this phase, providing the opportunity to work intensively on the system. Iterative development will be used to refine components based on ongoing feedback.

The testing stage will be conducted after major development milestones. Integration testing will be performed to ensure modules function well together, while unit testing will verify the functionality of individual components. These efforts will help to identify and correct bugs to ensure system reliability and performance.

The final stage will be the system review and evaluation. The system will be assessed based on its functionality and alignment with project objectives. Although the system will be fully developed and ready, it will initially be released only to a closed group. Public deployment will be considered as part of future work.

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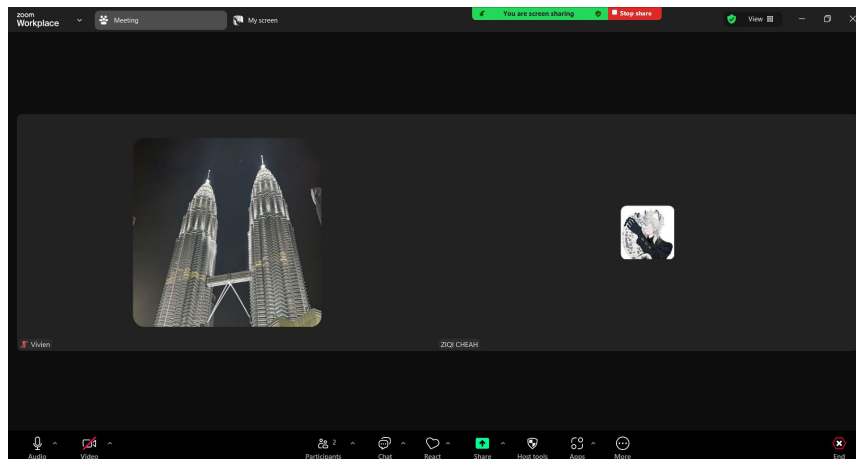
CHAPTER 4

Phase 1: Requirements Planning

This chapter outlines the initial phase of the EdenSpark KinderCare development process, which focuses on gathering essential requirements and setting a solid foundation for the project. During this phase, thorough research was conducted to understand current practices, stakeholder expectations were gathered through direct engagement, and the project's objectives and scope were clearly defined. Decisions regarding the appropriate software and hardware were made to ensure smooth implementation. Additionally, a Gantt chart was developed to provide a visual timeline and guide the project's progress throughout each stage of development.

4.1   End User Review and Research

The initial phase of the project involved a comprehensive review process through research. The primary focus during this period was to gain a deep understanding of end user needs, expectations, and challenges in kindergarten administration. Gathering insights through research was essential to inform the project direction and ensure the solution was tailored to real-world usage. This phase helped establish the project's foundation by identifying current trends, challenges, and innovations in the educational technology sector.

4.2   Stakeholder Meetings

On June 24, there was a meeting with the principal of Jelutong Methodist Kindergarten. This meeting was essential for getting the parties' direct feedback, expectations, and requirements. Early stakeholder engagement in the project enabled a deeper comprehension of the demands and difficulties encountered by the end users. The knowledge gained from these conversations was crucial in determining the project's goals and guaranteeing that the finished product would meet the actual world's demands.

Figure 4.1 Zoom Meeting with the Principal of Jelutong Methodist Kindergarten

4.3 Define Project Objectives & Scope

Chapter 2 formally defined the project objectives and scope. This activity was pivotal in identifying the project's key deliverables, constraints, and boundaries.

4.4 Decide on Software and Hardware

Software Used

Flutter Flow

FlutterFlow is the primary software used to build the front end of EdenSpark KinderCare. As a low-code development platform, it allows developers to create user interfaces with minimal coding, which greatly accelerates the design and prototyping stages. Its drag-and-drop interface makes it easier to adjust layouts and iterate quickly during development. Built on the Flutter framework, FlutterFlow ensures that the final application is natively compiled, offering smooth performance on both iOS and Android devices. This platform provides several benefits, including cross-platform compatibility, faster development timelines, and an intuitive design process. Additionally, its seamless integration with Firebase enhances the overall workflow by simplifying the connection between the front end and backend services.

Firebase

EdenSpark KinderCare's backend is Firebase, which provides a full range of technologies for real-time synchronisation, authentication, and data management [14]. Its cloud-based architecture offers scalability to accommodate the application's expansion as user demand rises, guaranteeing that data is safely kept and easily accessed. Firebase's real-time database is one of its best advantages; it enables rapid data synchronisation between devices, giving users access to the most recent information at all times. Additionally, the platform protects sensitive student and financial data with rigorous security measures and authentication choices. Firebase's affordable pay-as-you-go strategy makes it a desirable option for startups or smaller organisations with tighter resources. EdenSpark KinderCare has a safe, scalable, and effective backend thanks to Firebase, essential for running kindergarten operations smoothly.

Hardware Used

Eden Spark KinderCare's software development and operation are primarily carried out on a laptop, which is the central hardware for running the necessary tools and applications. The laptop runs Firebase for backend administration and Flutter Flow for frontend design, making it capable of handling software development demands.

Because of its mobility, the laptop allows for flexible work arrangements, which facilitates ongoing testing and development. Its ability to execute many applications at once guarantees seamless development and integration of both the frontend and backend components. Furthermore, the laptop's processing power and storage can handle the demands of debugging code, testing the program in real-time, and running emulators, all of which help to guarantee that the product runs well as it is being developed.

Description	Specifications
Model	Acer Aspire 5
Processor	11th Gen Intel(R) Core (TM) i5-1135G7 @ 2.40GHz
Operating System	Windows 11
Graphic	Intel ® Iris ® Xe Graphics
Memory	16 GB RAM
Storage	475GB

Table 4.1 Specifications of laptop

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CHAPTER 5

Phase 2: User Design

5.1   UI Design Ideation

The user interface (UI) design ideation process served as a foundational step in shaping the visual and functional aspects of the EdenSpark KinderCare system. This stage involved a series of brainstorming sessions and design explorations aimed at establishing a clear visual direction for the platform. Various elements were considered during this process, including layout structure, color schemes, iconography, typography, and interactive components. The primary objective was to create a user interface that is not only visually appealing but also practical and easy to navigate for all users, including administrators, educators, and parents. Special attention was given to ensuring that the design aligns with user needs and expectations. By prioritising intuitive navigation and clean aesthetics, the goal was to enhance the overall user experience and reduce the learning curve for new users.

5.2   Wireframe

After the UI design ideation phase, the next critical step was the development of wireframes. Wireframes served as the blueprint for the system's interface, providing a clear and structured layout for each screen within the EdenSpark KinderCare system. They outlined the placement of key components such as buttons, menus, and content sections, helping to visualise the overall user experience. The wireframes were designed to be simple yet comprehensive, focusing on the functional aspects of the interface rather than detailed aesthetics.

By establishing this clear framework early in the design process, the wireframes ensured that the user interface would be intuitive and easy to navigate, with each screen logically structured to support smooth interactions. The wireframe phase was essential for aligning the development team and stakeholders on the system's flow and layout before moving on to high-fidelity designs and interactive prototypes. This allowed for early detection of potential design flaws or inconsistencies, enabling necessary adjustments to be made before further development commenced. Ultimately, the wireframes laid the foundation for a user-centered design, ensuring that all essential features were strategically positioned for optimal usability.
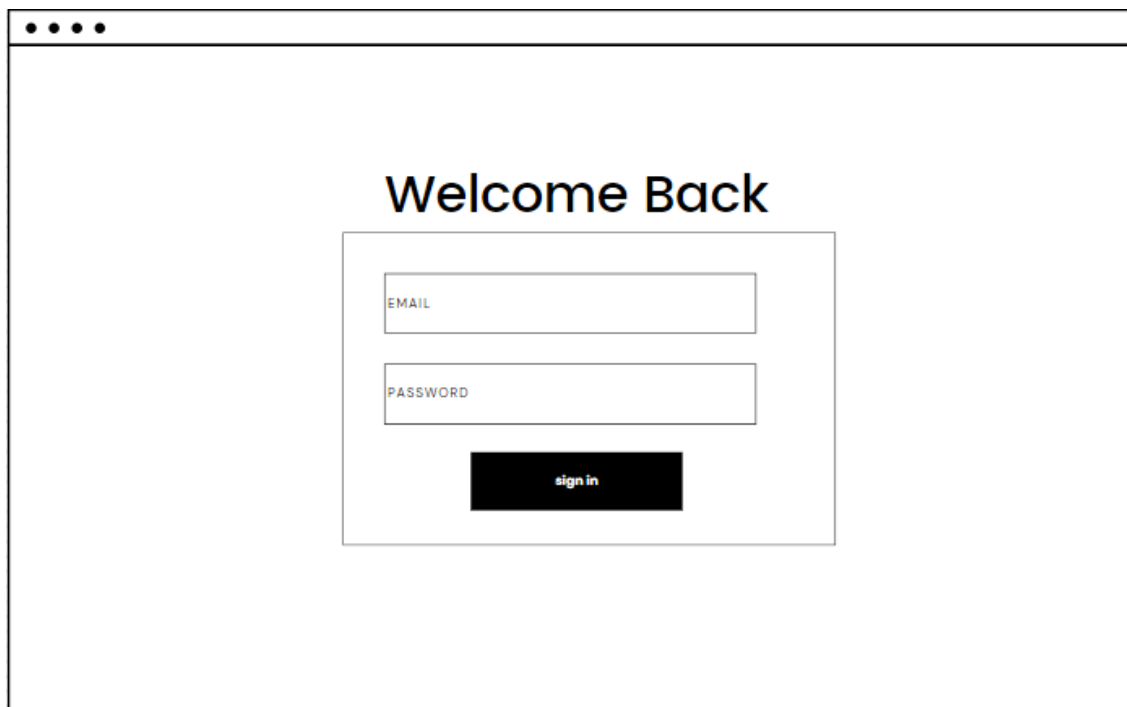
5.2.1 Log In Page Wireframe

Figure 5.1 Log In Page Wireframe
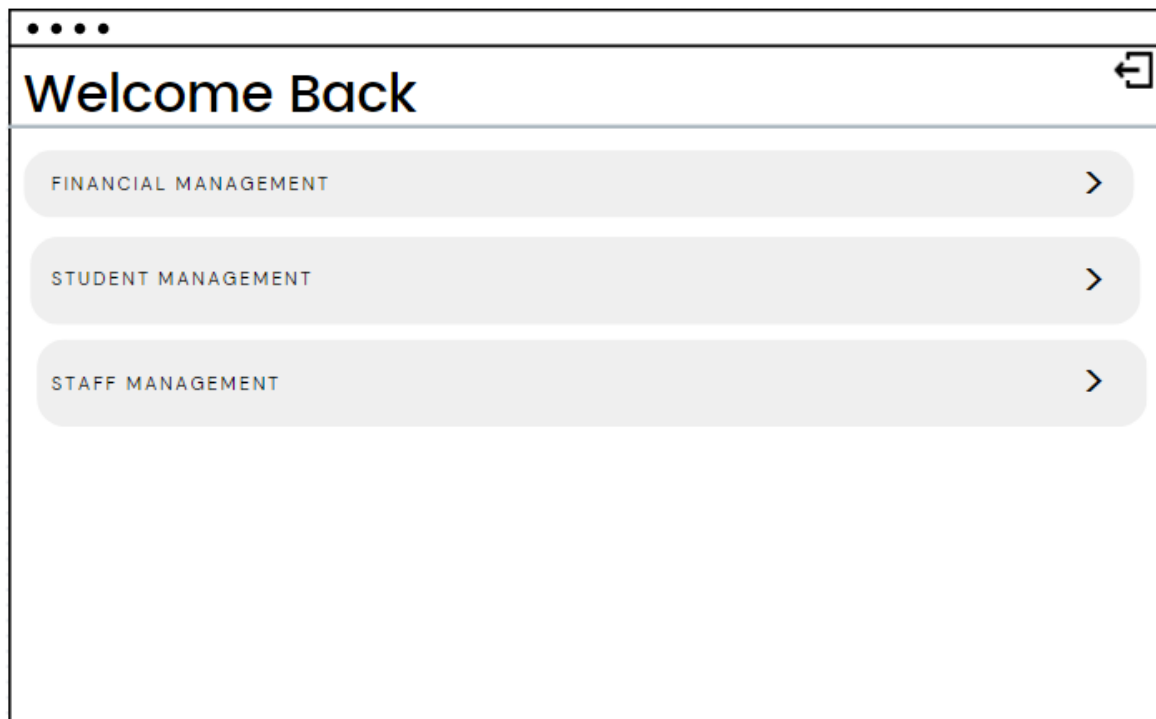
5.2.2 Admin Home Page Wireframe

Figure 5.2 Admin Home Page Wireframe

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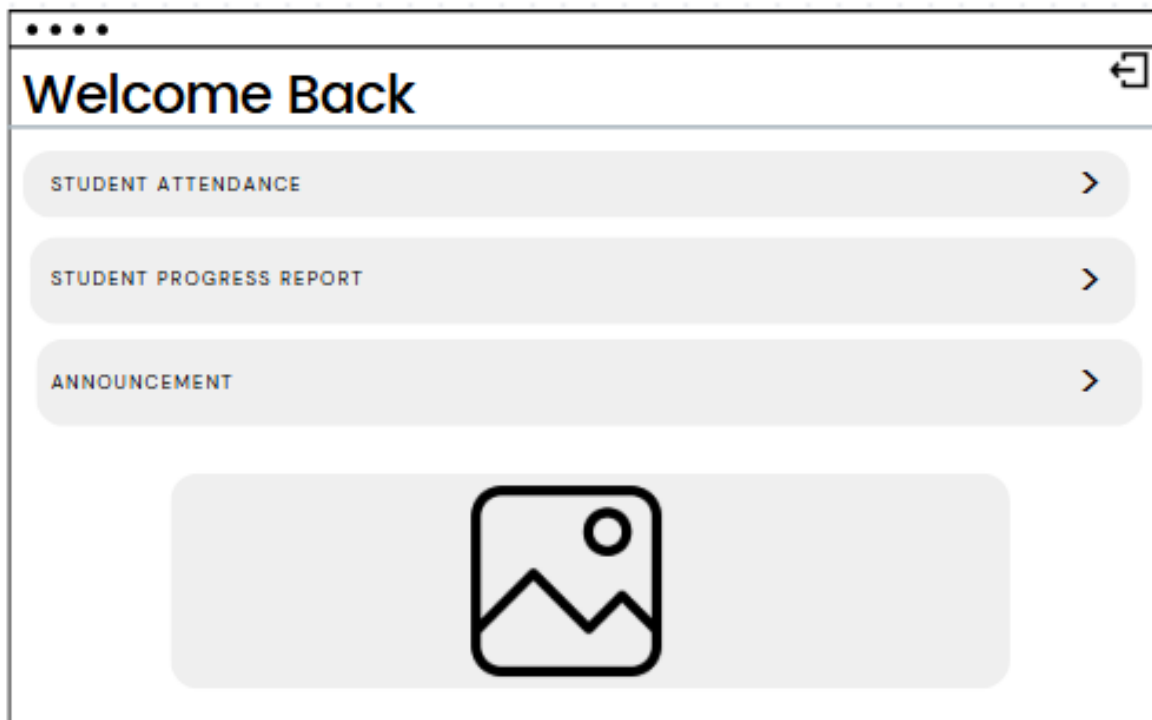
5.2.3 Parent Home Page Wireframe

Figure 5.3 Parent Home Page Wireframe
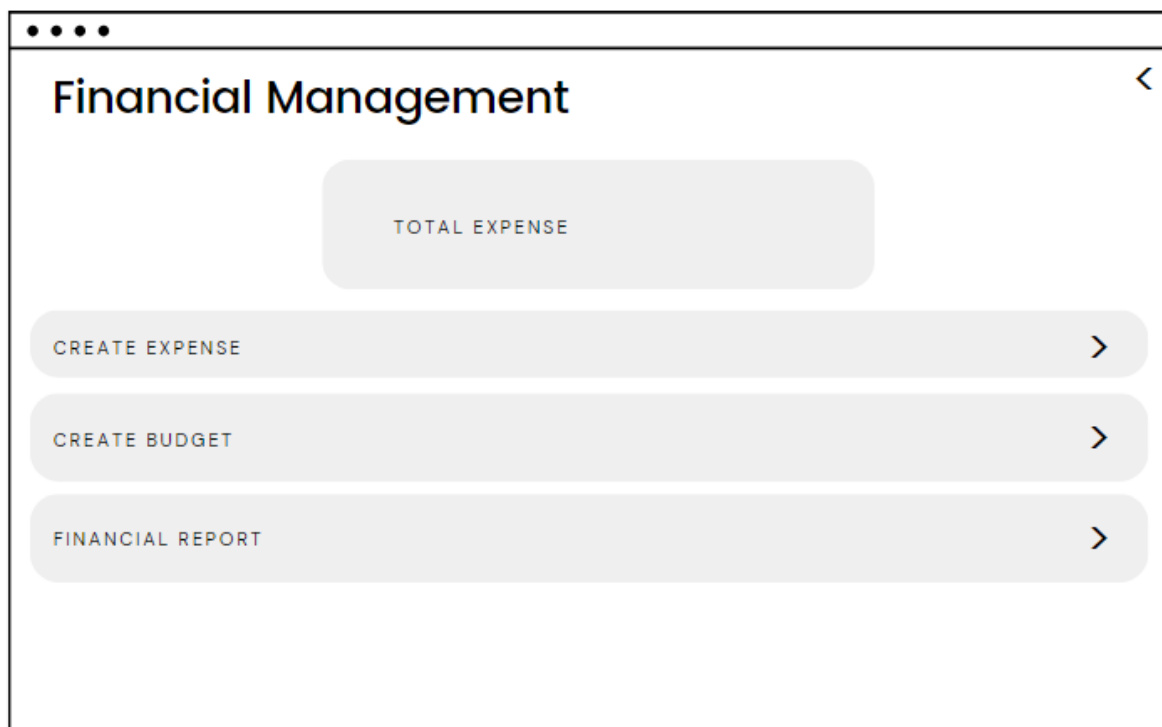
5.2.4 Financial Management Page Wireframe

Figure 5.4 Financial Management Page Wireframe

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5.2.5 Create Expense Page Wireframe

Figure 5.5 Create Expense Page Wireframe

5.2.6 Create Budget Page Wireframe

Figure 5.6 Create Budget Page Wireframe

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5.2.7 Financial Summary Page Wireframe
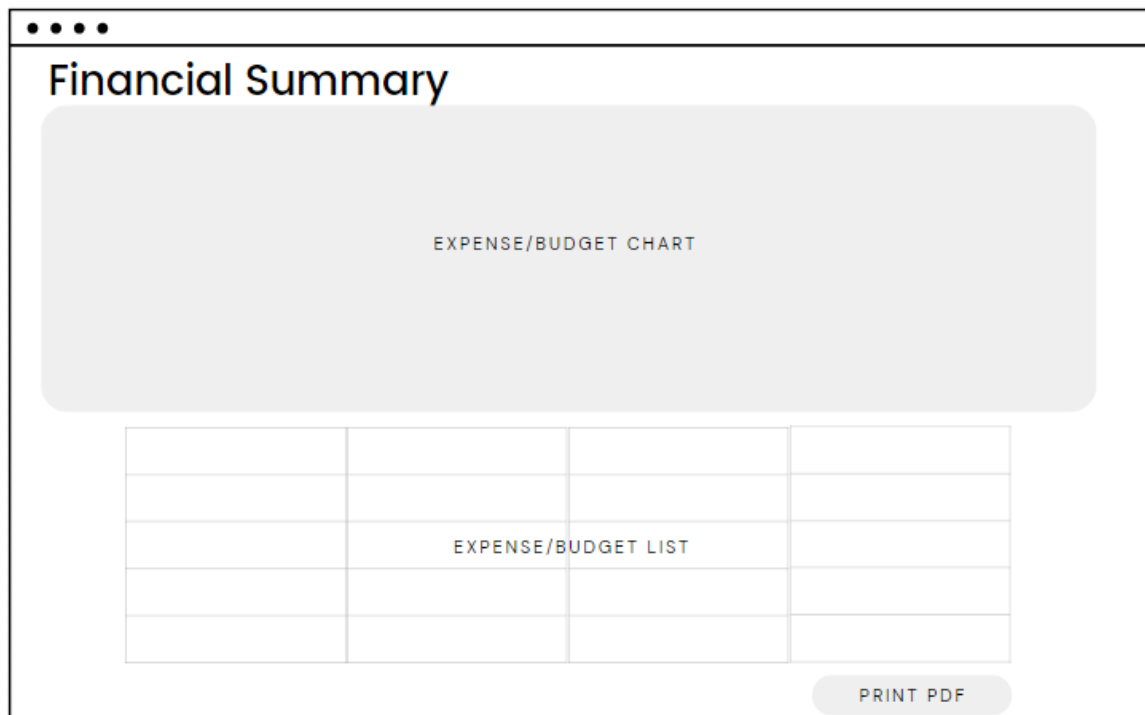
Figure 5.7 Financial Summary Page Wireframe

5.2.8 Student Management Wireframe
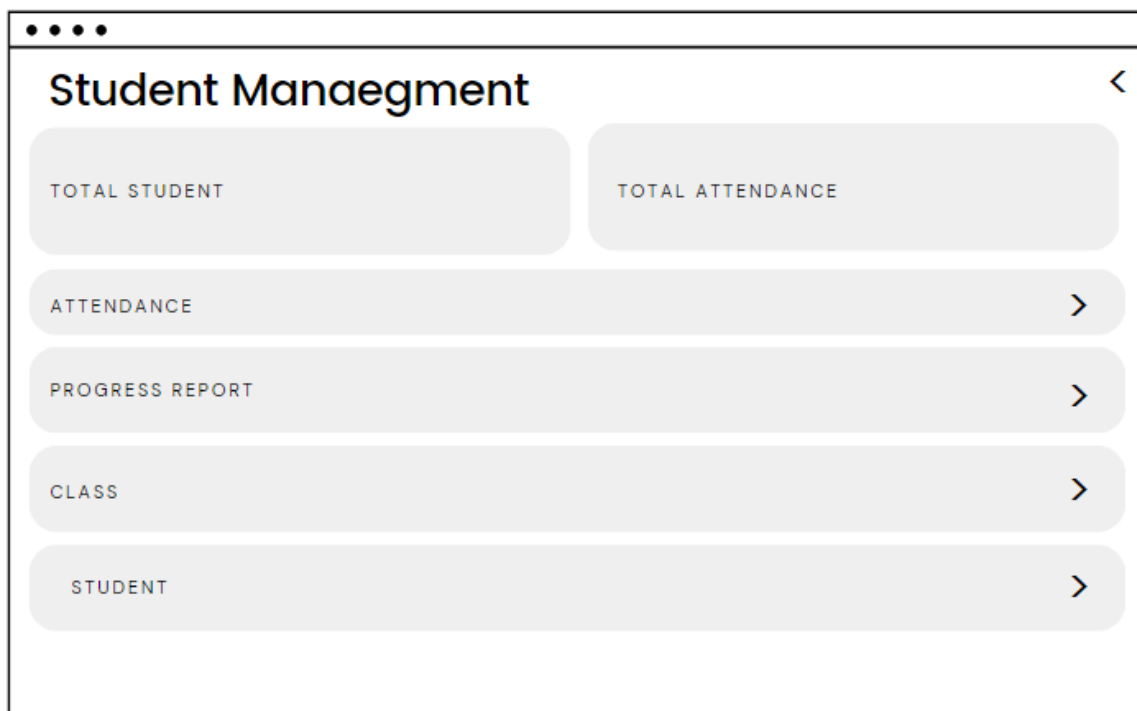
Figure 5.8 Student Management Page Wireframe

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5.2.9 Student List Page Wireframe
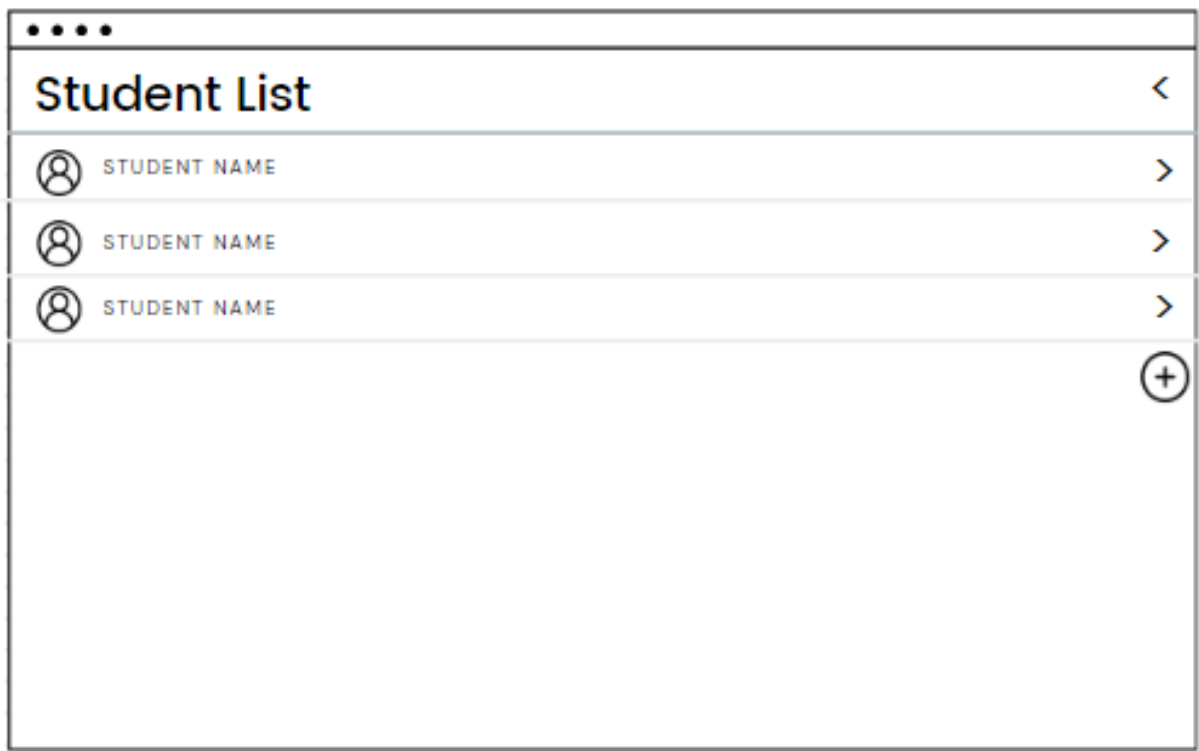
Figure 5.9 Student List Page Wireframe

2.2.10 Create Student Page Wireframe
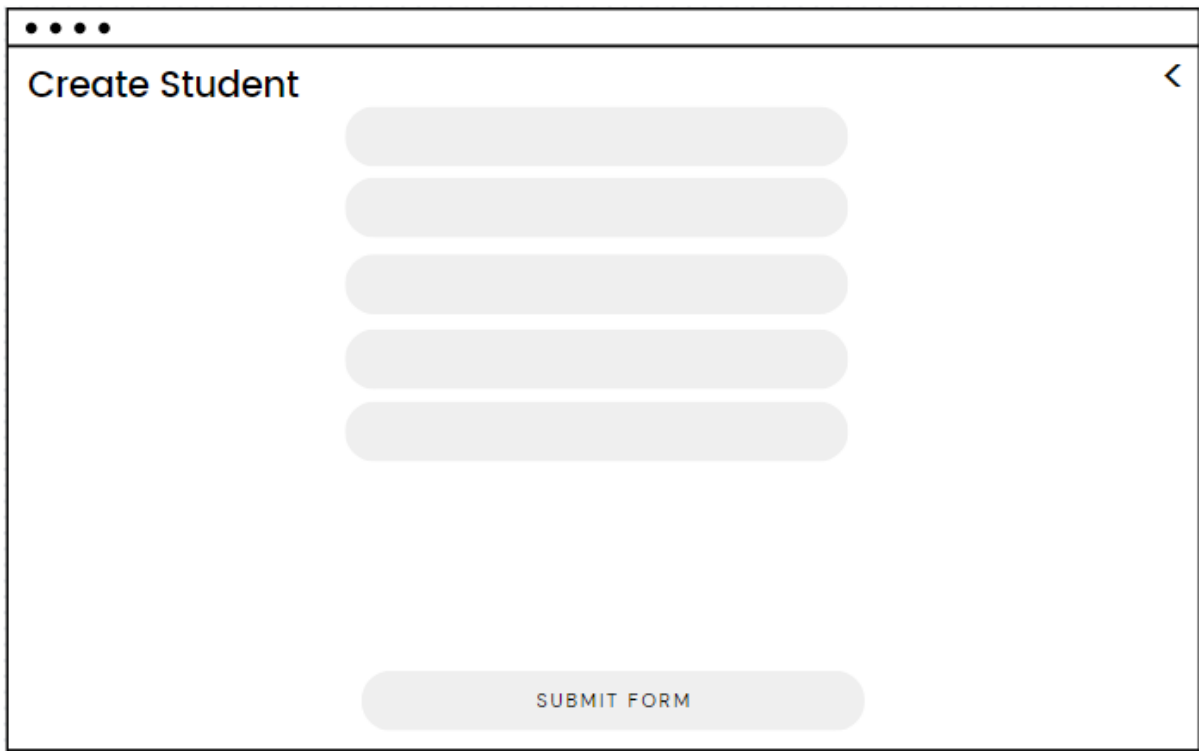
Figure 5.10 Create Student Page Wireframe

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5.2.11 View Student Profile Page Wireframe
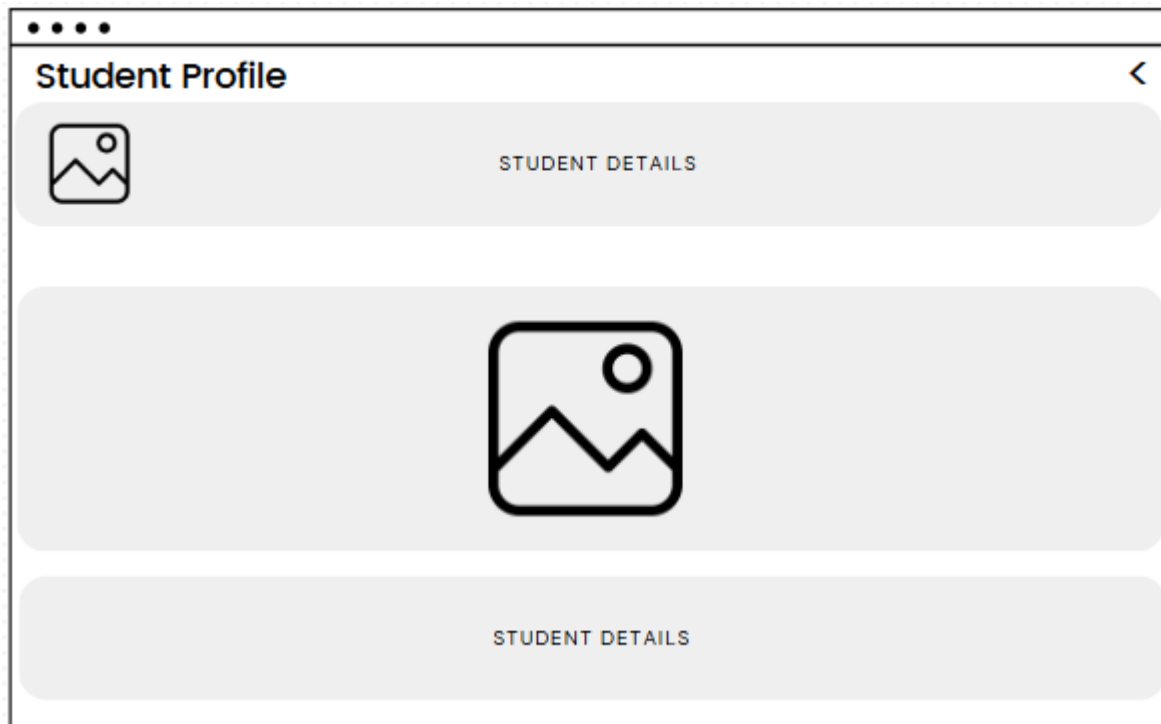
Figure 5.11 View Student Profile Page Wireframe
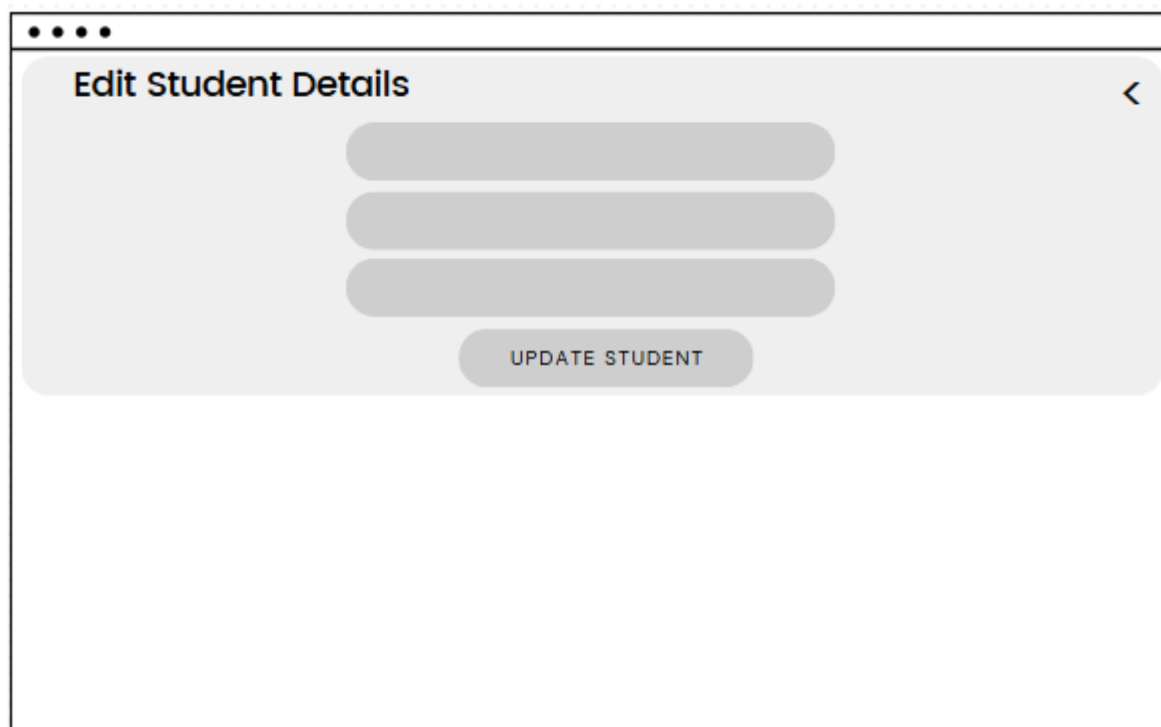
5.2.12 Edit Student Details Page Wireframe

Figure 5.12 Edit Student Details Page Wireframe

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5.2.13   Update Student Profile Image Page Wireframe
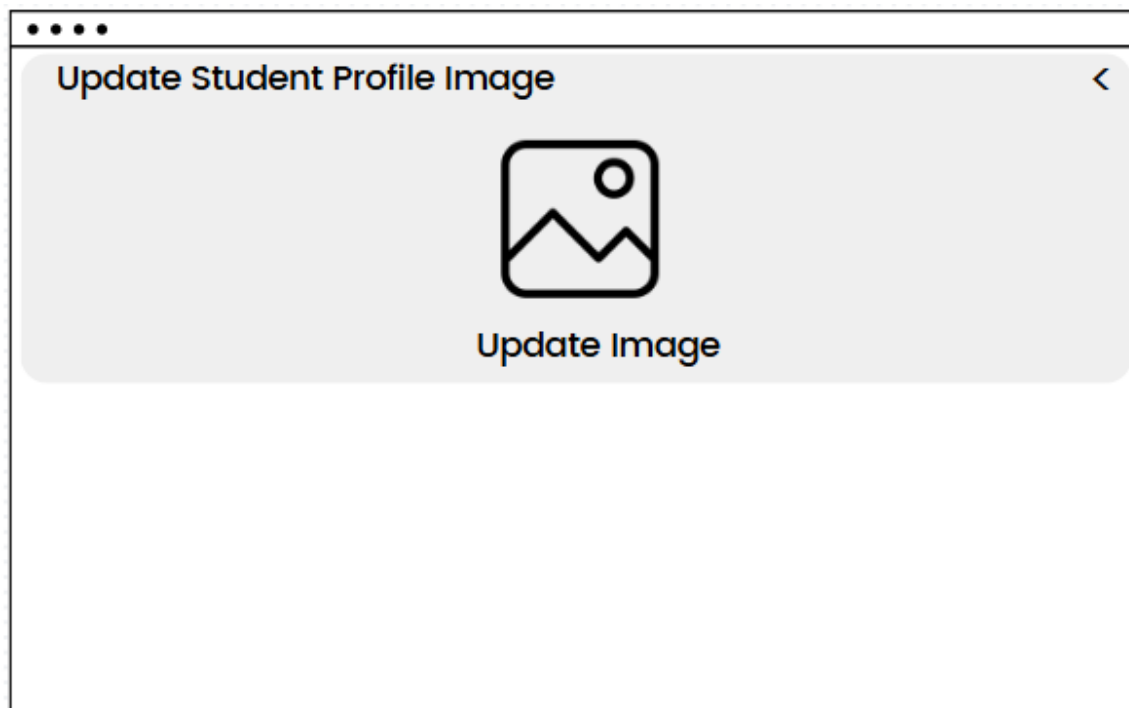
Figure 5.13 Update Student Profile Image Page Wireframe

5.2.14   Update Student Birth Certificate Image Page Wireframe
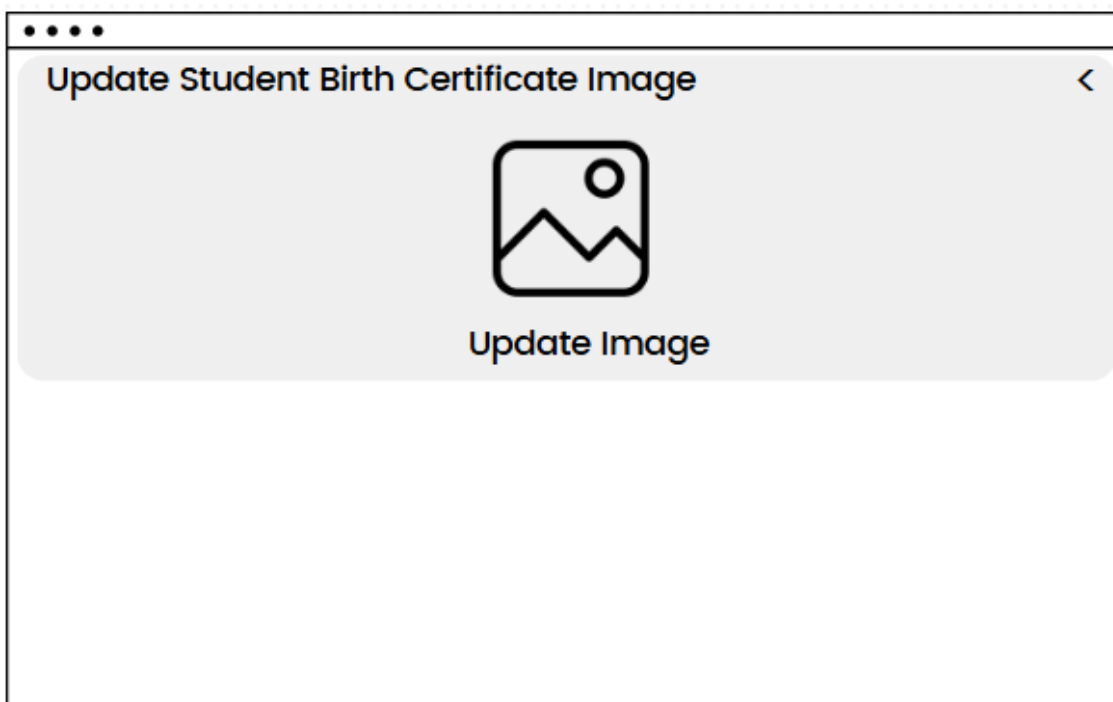
Figure 5.14 Update Student Birth Certificate Image Page Wireframe
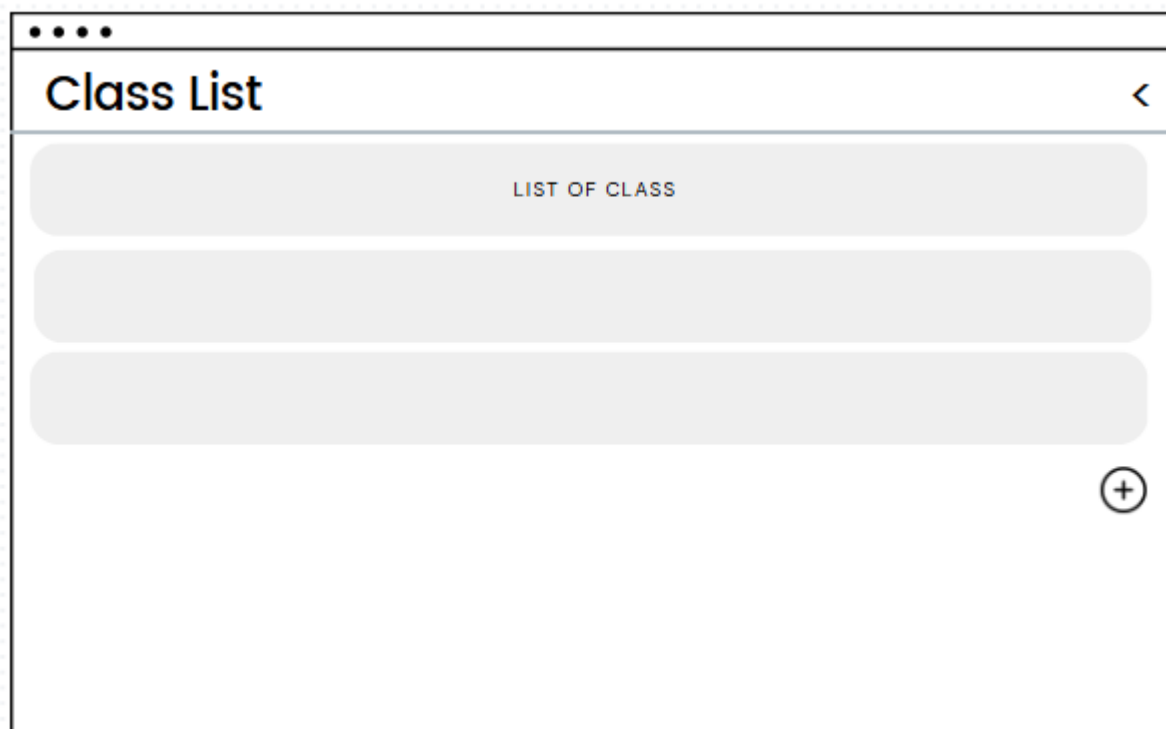
5.2.15   Class List Page Wireframe

Figure 5.15 Class List Page Wireframe

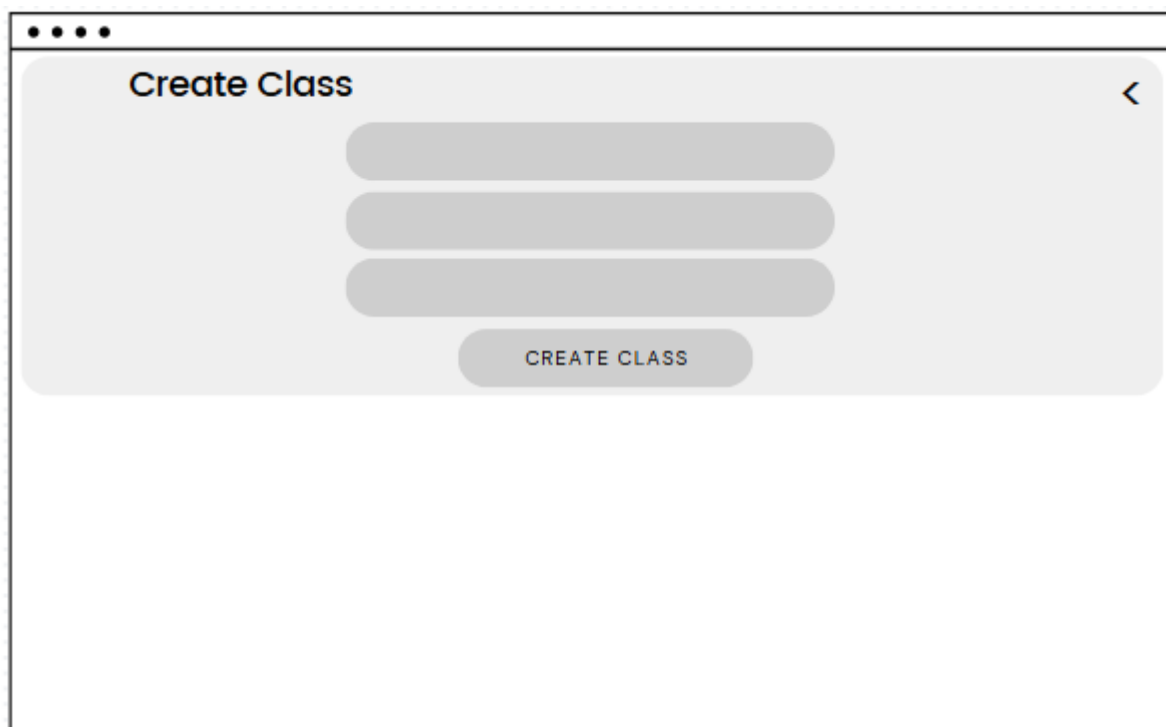**5.2.16   Create Class Page Wireframe**

Figure 5.16 Create Class Page Wireframe
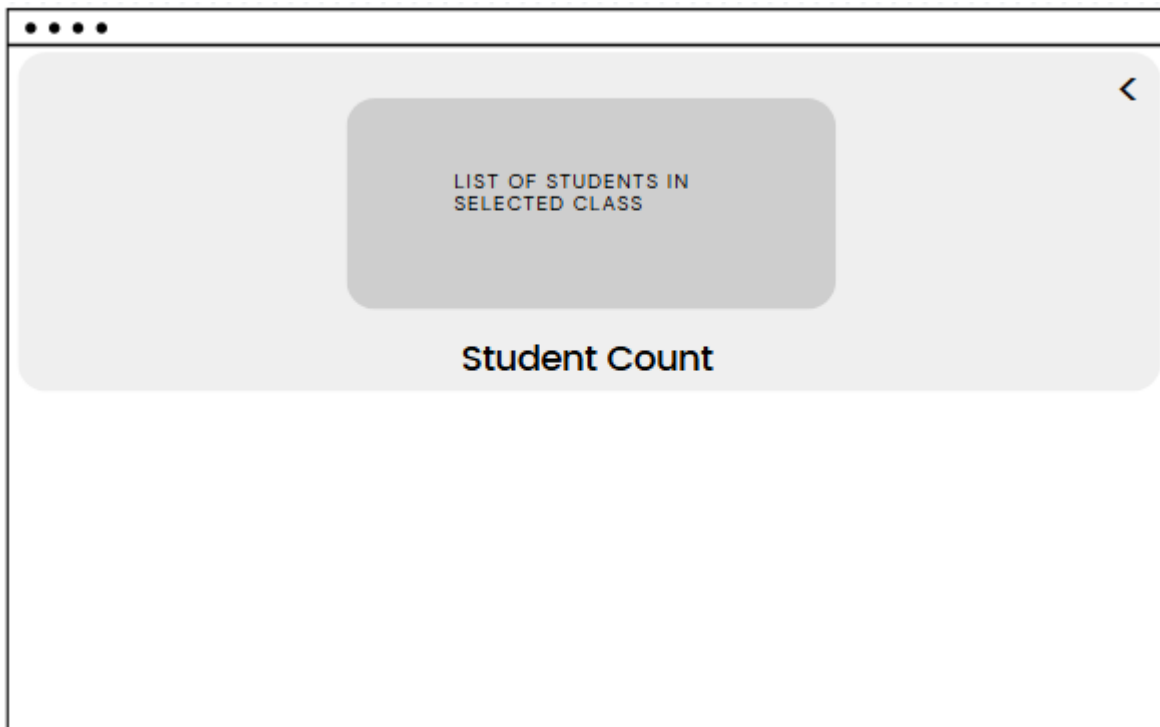
5.2.17 Selected Class Detail Page Wireframe

Figure 5.17 Selected Class Detail Page Wireframe
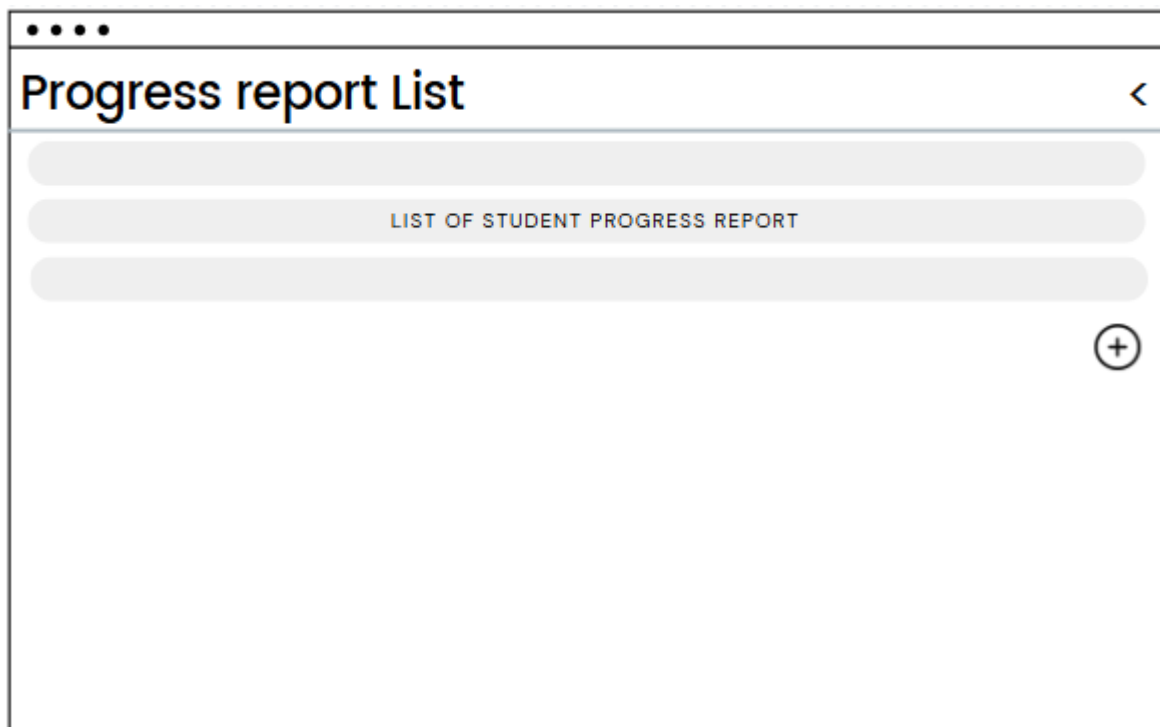
5.2.18 Progress Report List Page Wireframe

Figure 5.18 Progress Report List Page Wireframe

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5.2.19 Create Progress List Report Page Wireframe
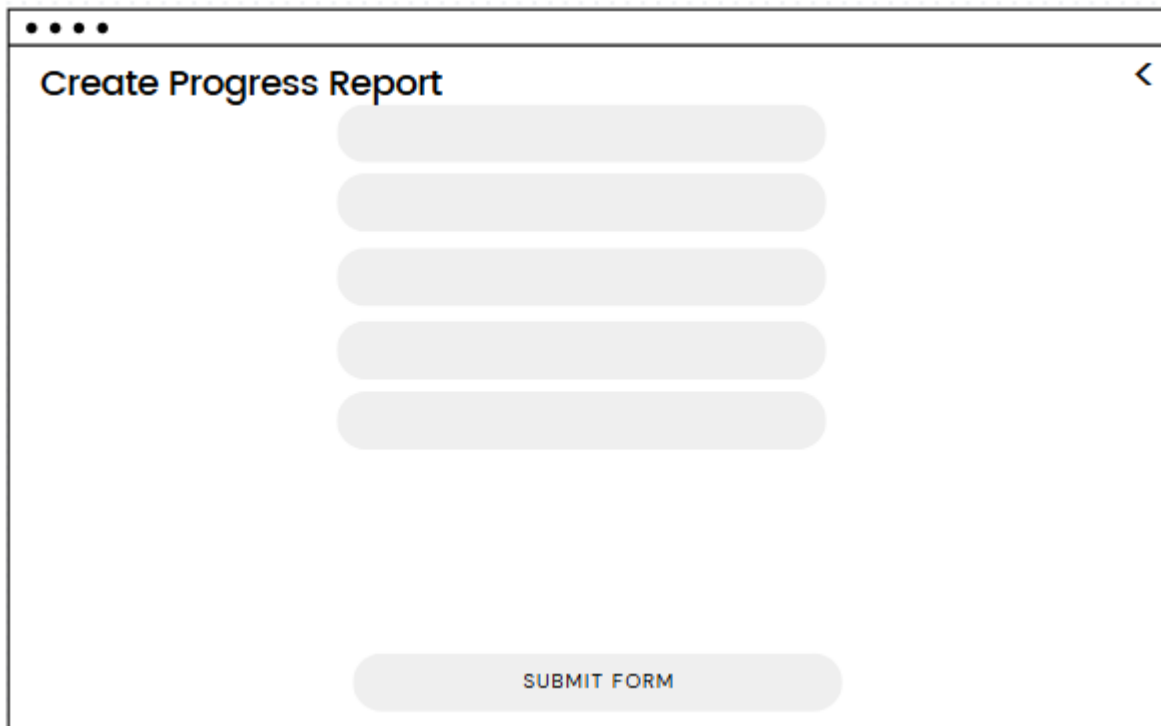

Figure 5.19 Create Progress Report Page Wireframe
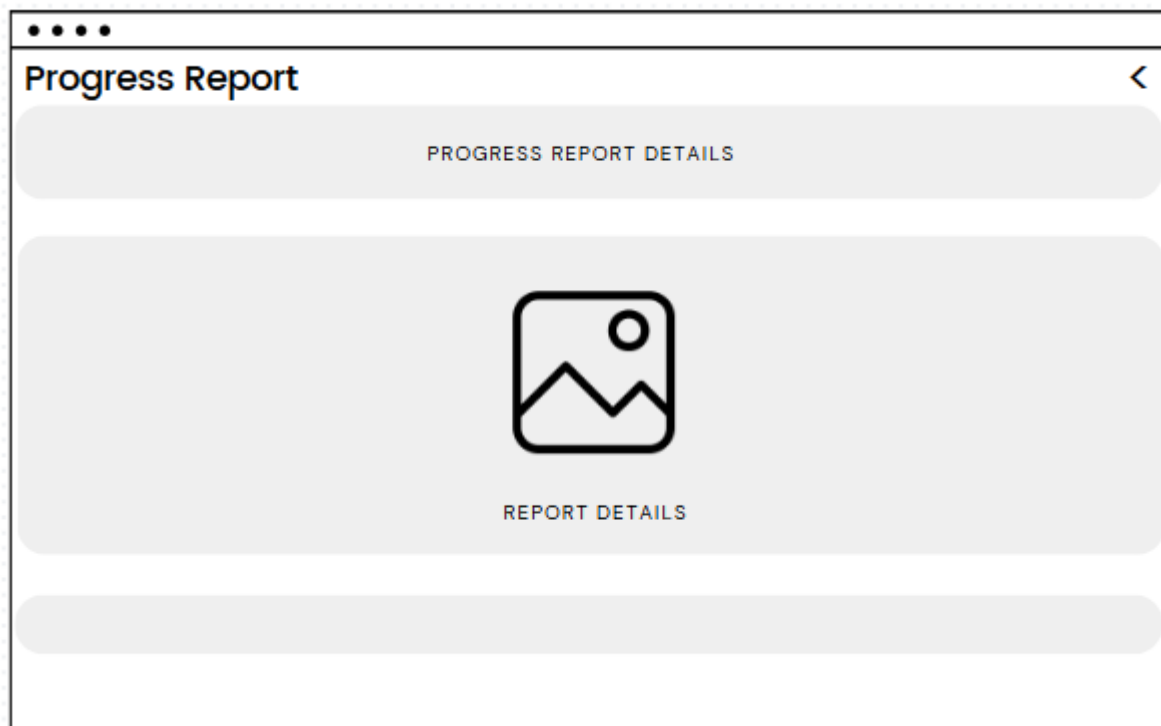
5.2.20 View Selected Progress Report Page Wireframe

Figure 5.20 View Selected Progress Report Page Wireframe

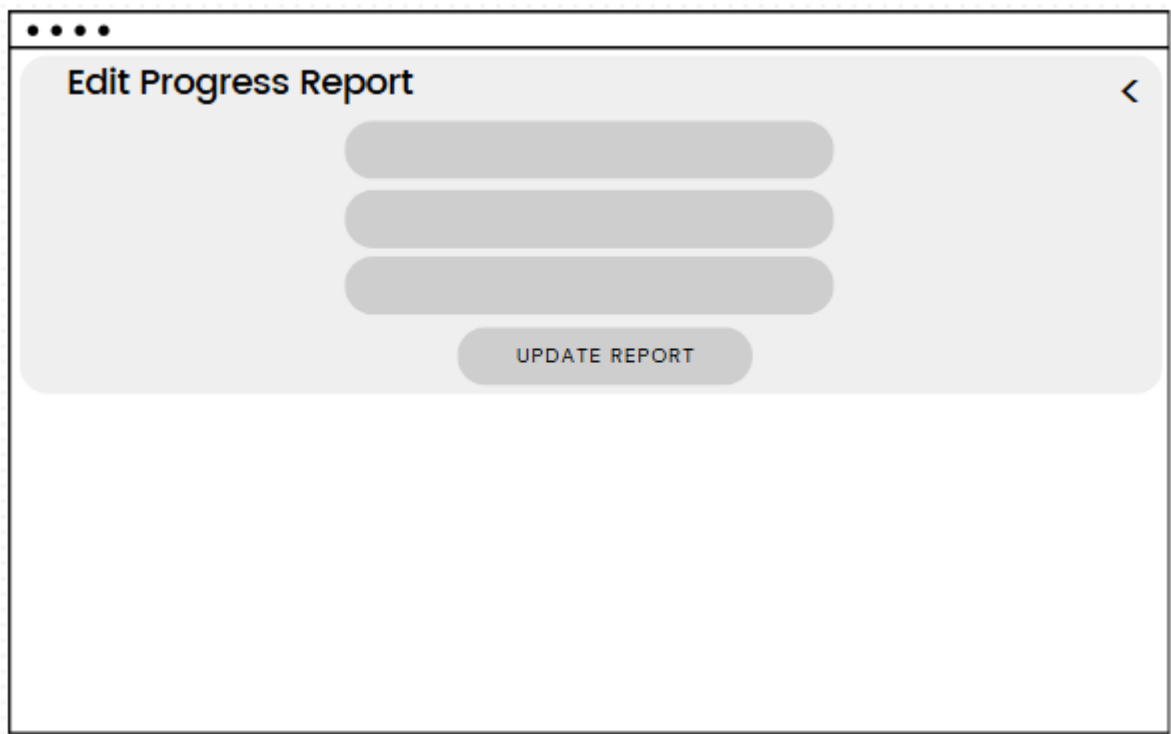### 5.2.21   Edit Progress Report Page Wireframe

Figure 5.21 Edit Progress Report Page Wireframe

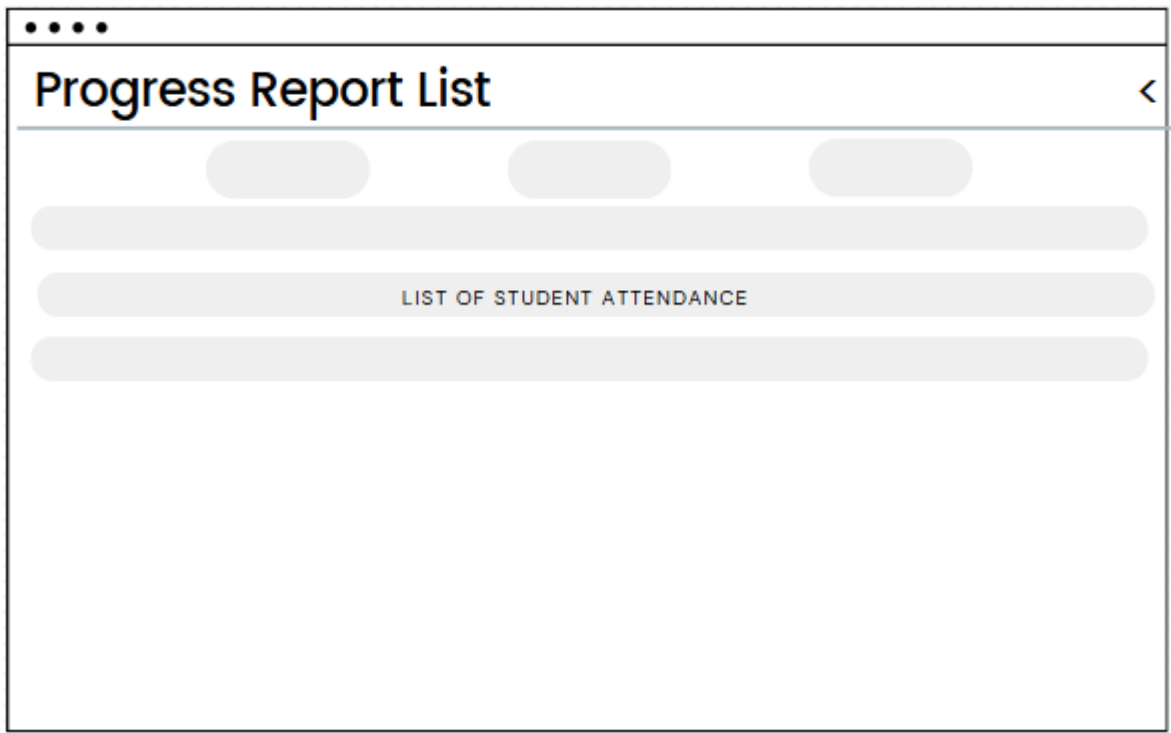### 5.2.22   Parent View of Associated Student Progress Report List Page Wireframe
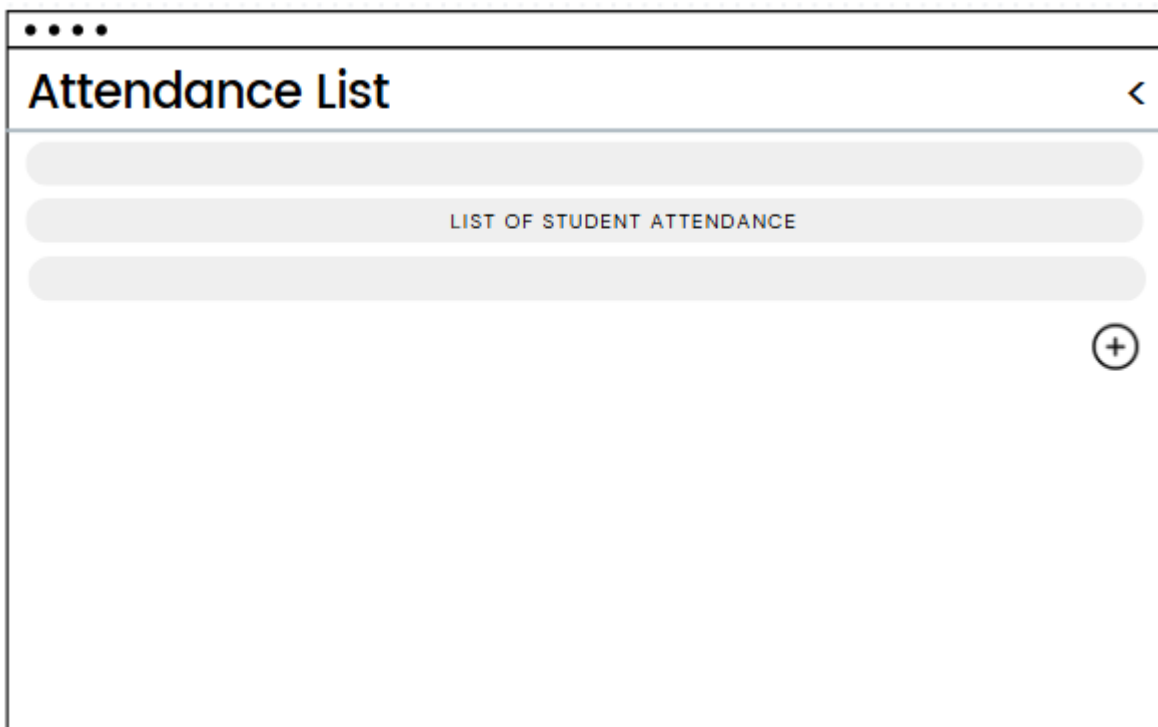

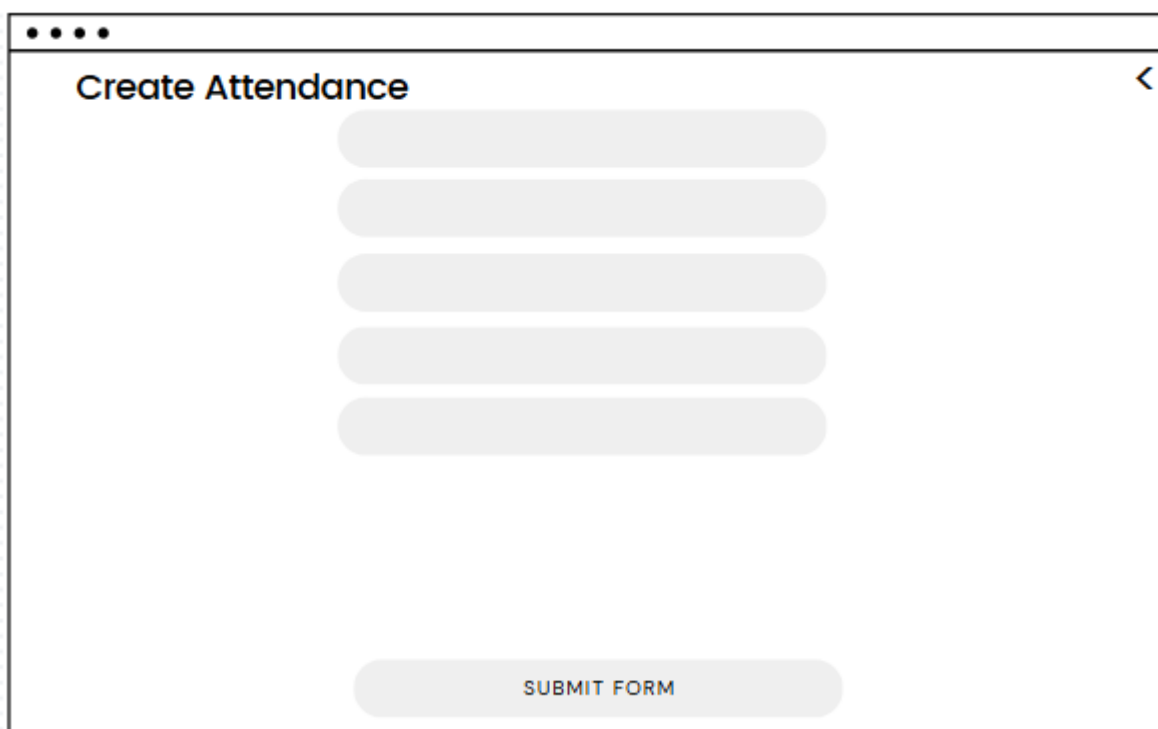**Figure 5.22 Parent View of Associated Student Progress Report List Page Wireframe**

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5.2.23   Attendance List Page Wireframe

Figure 5.23 Attendance List Page Wireframe

5.2.24   Create Attendance Page Wireframe

Figure 5.24 Create Attendance Page Wireframe

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5.2.25 View Attendance for Selected Student Page Wireframe
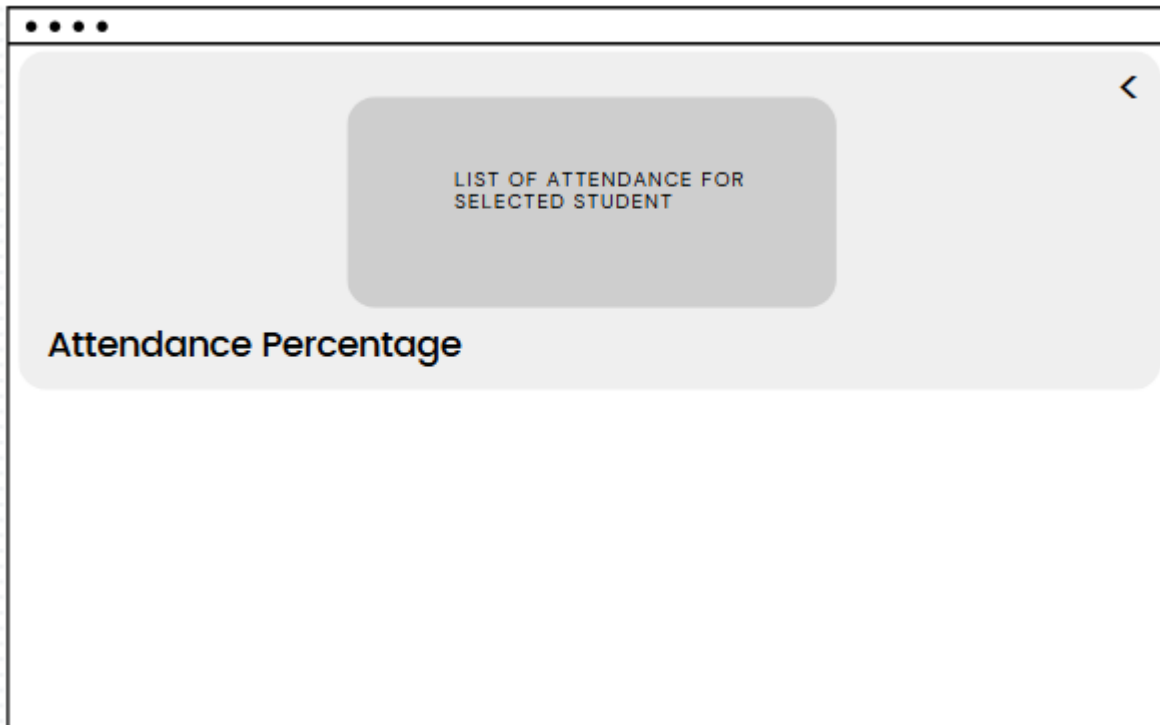

Figure 5.25 View Attendance for Selected Student Page Wireframe
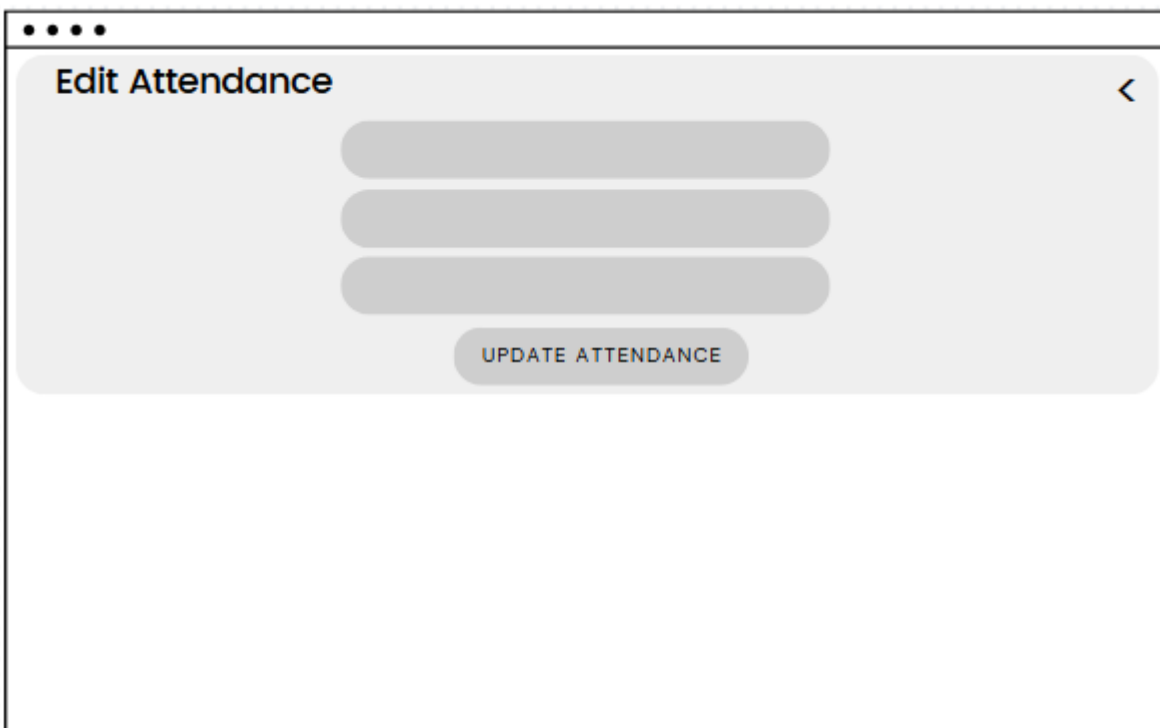
5.2.26 Edit Attendance Page Wireframe

Figure 5.26 Edit Attendance Page Wireframe

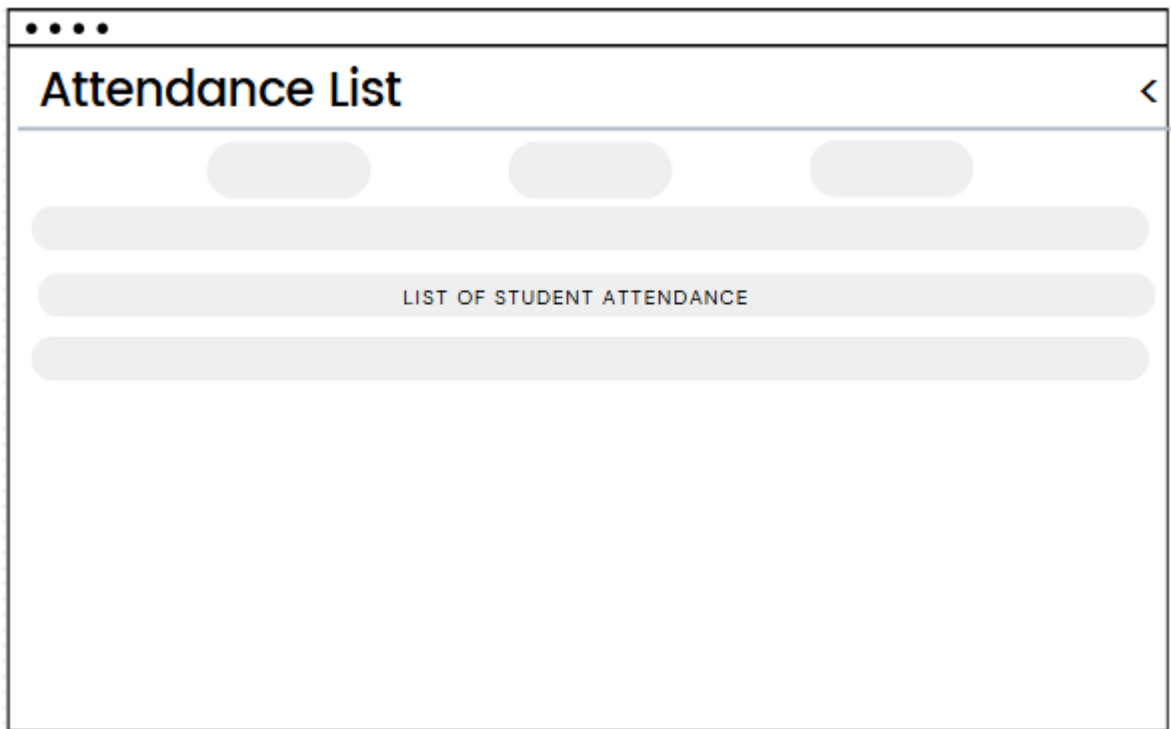**5.2.27 Parent View of Associated Student Attendance List Page Wireframe**

Figure 5.27 Parent View of Associated Student Attendance List Page Wireframe

5.2.28 Announcement List Page Wireframe
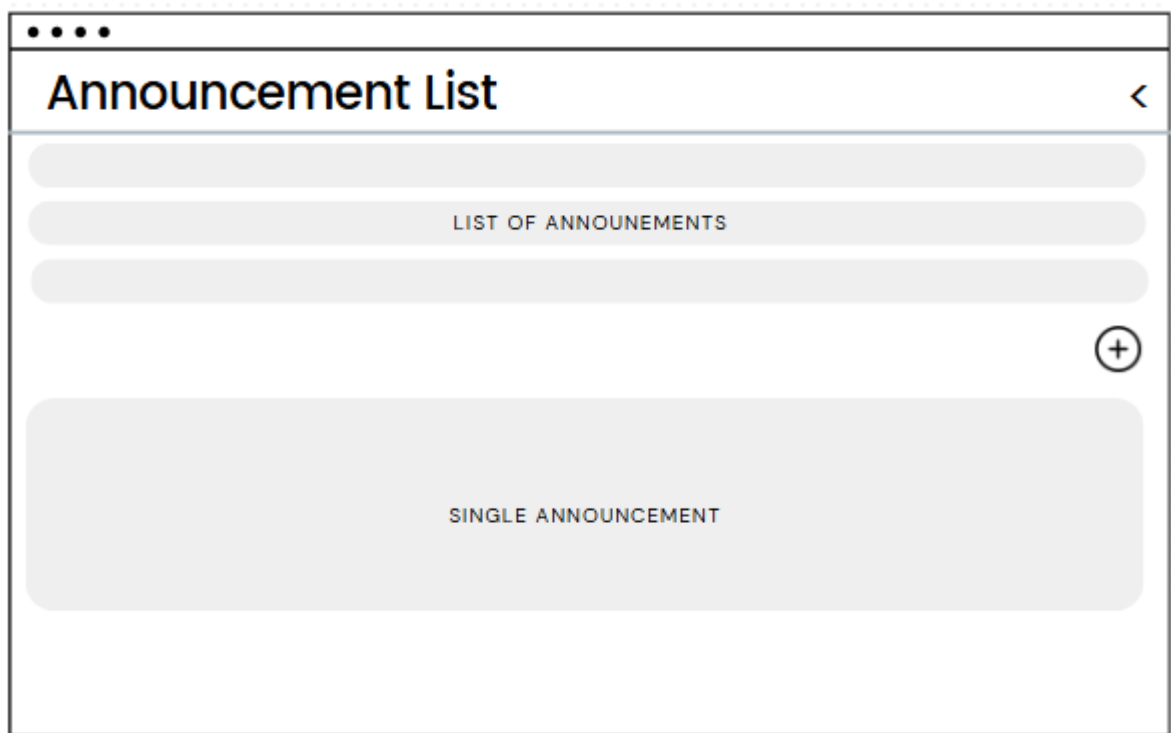
Figure 5.28 Announcement List Page Wireframe

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5.2.29 Create Announcement Page Wireframe
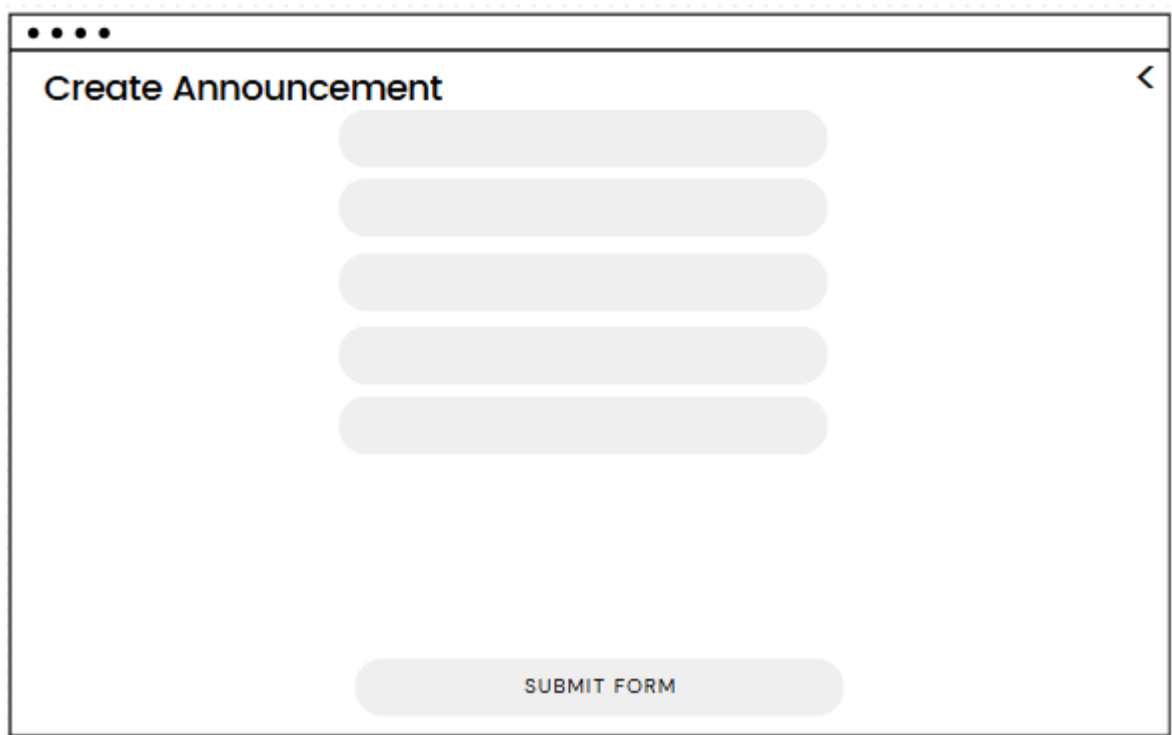

Figure 5.29 Create Announcement Page Wireframe

5.2.30 Selected Announcement Detail Page Wireframe
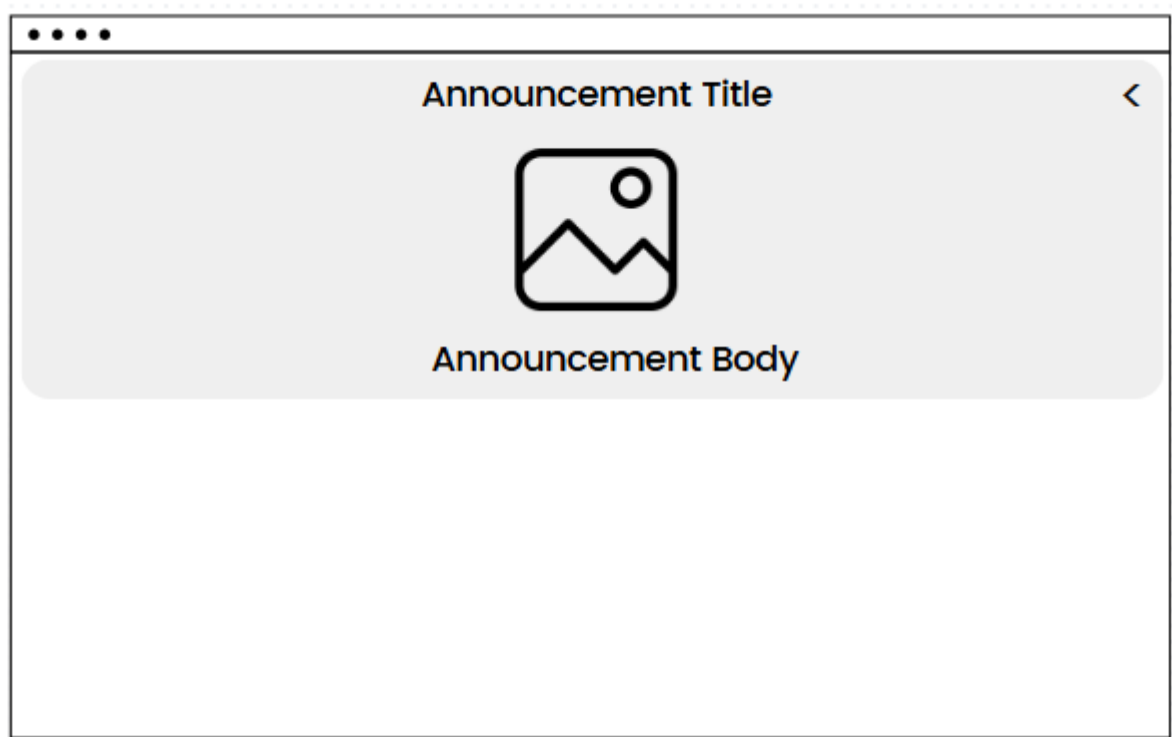
Figure 5.30 Selected Announcement Detail Page Wireframe

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5.2.31 Parent View of Announcement List Page Wireframe
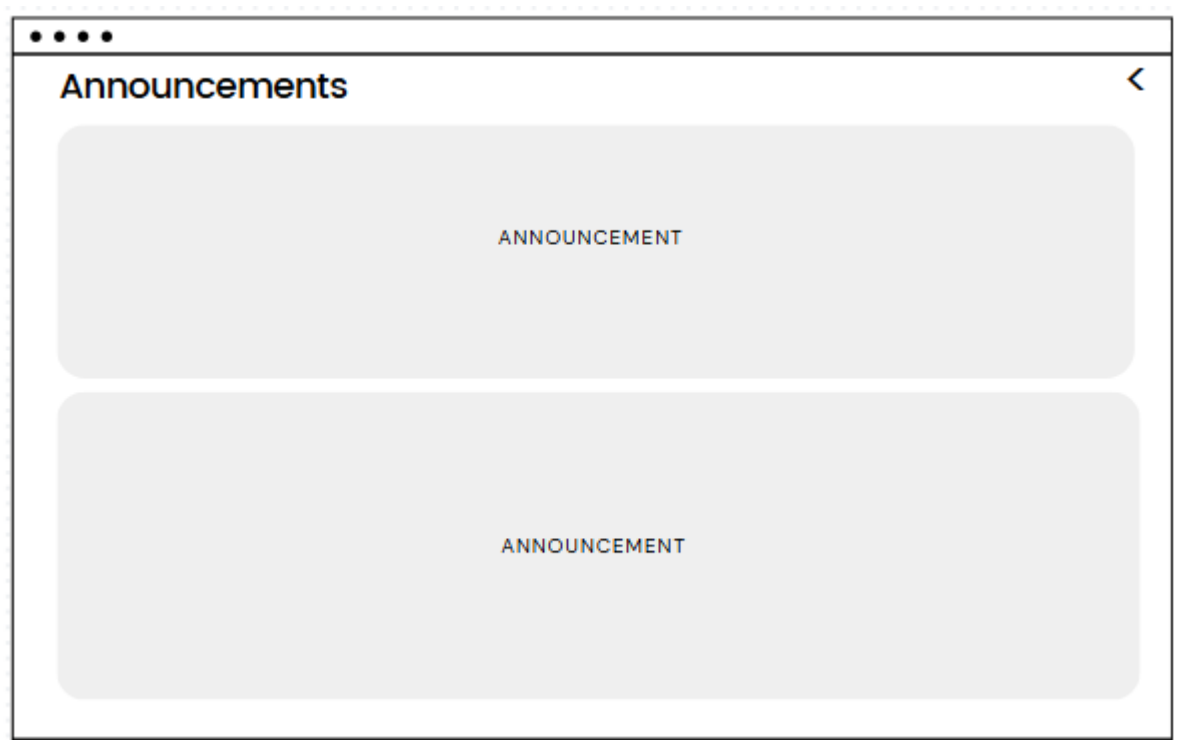
Figure 5.31 Parent View of Announcement List Page Wireframe

5.2.32 Staff List Wireframe
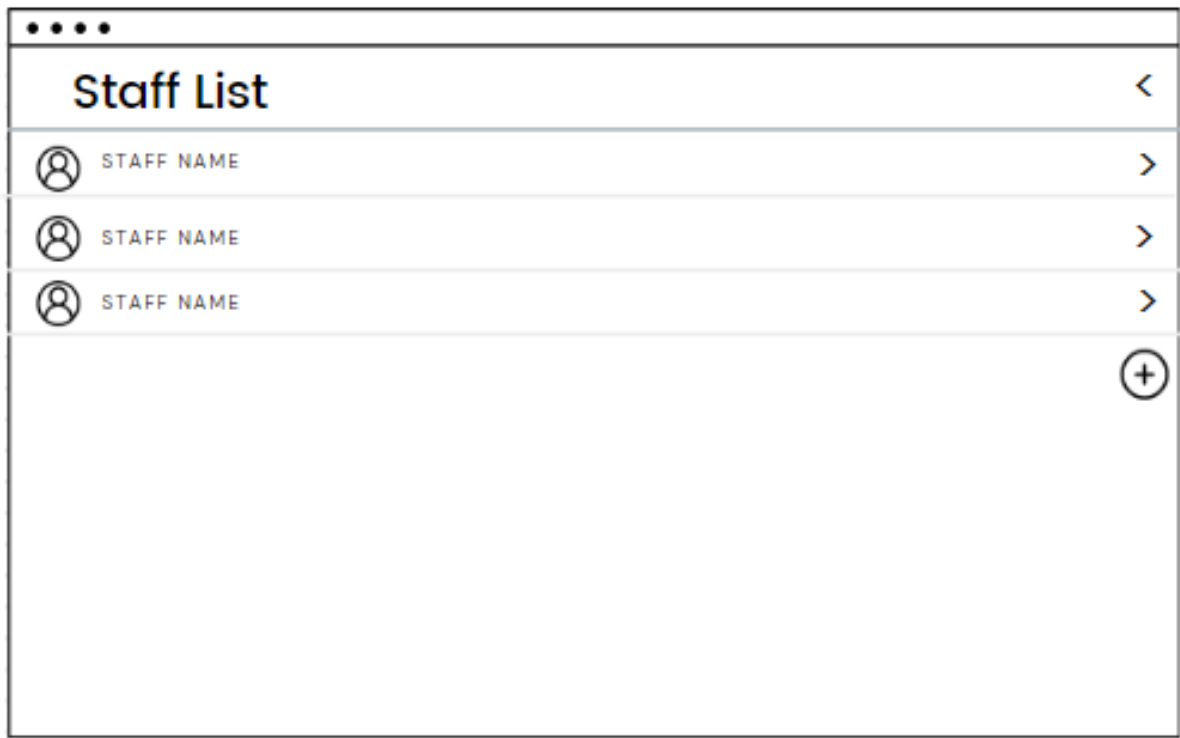
Figure 5.32 Staff List Page Wireframe

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5.2.33 Create Staff Page Wireframe
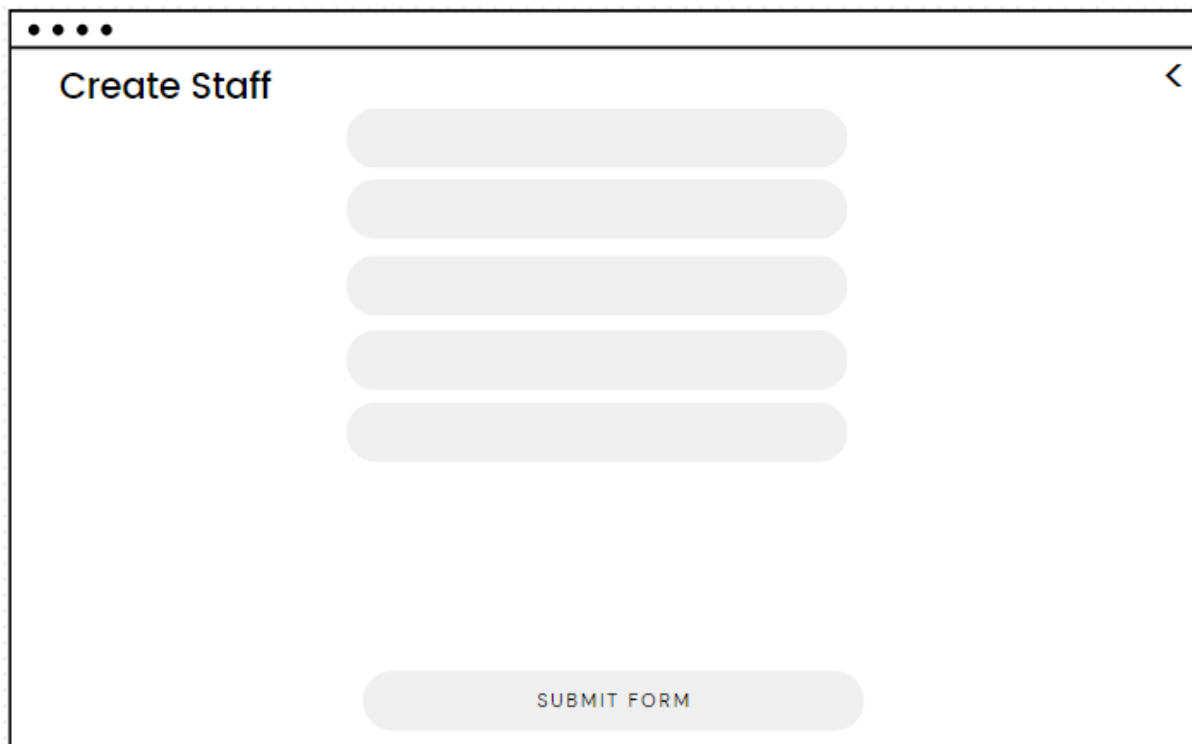
Figure 5.33 Create Staff Page Wireframe

5.2.34 Staff Profile Page Wireframe
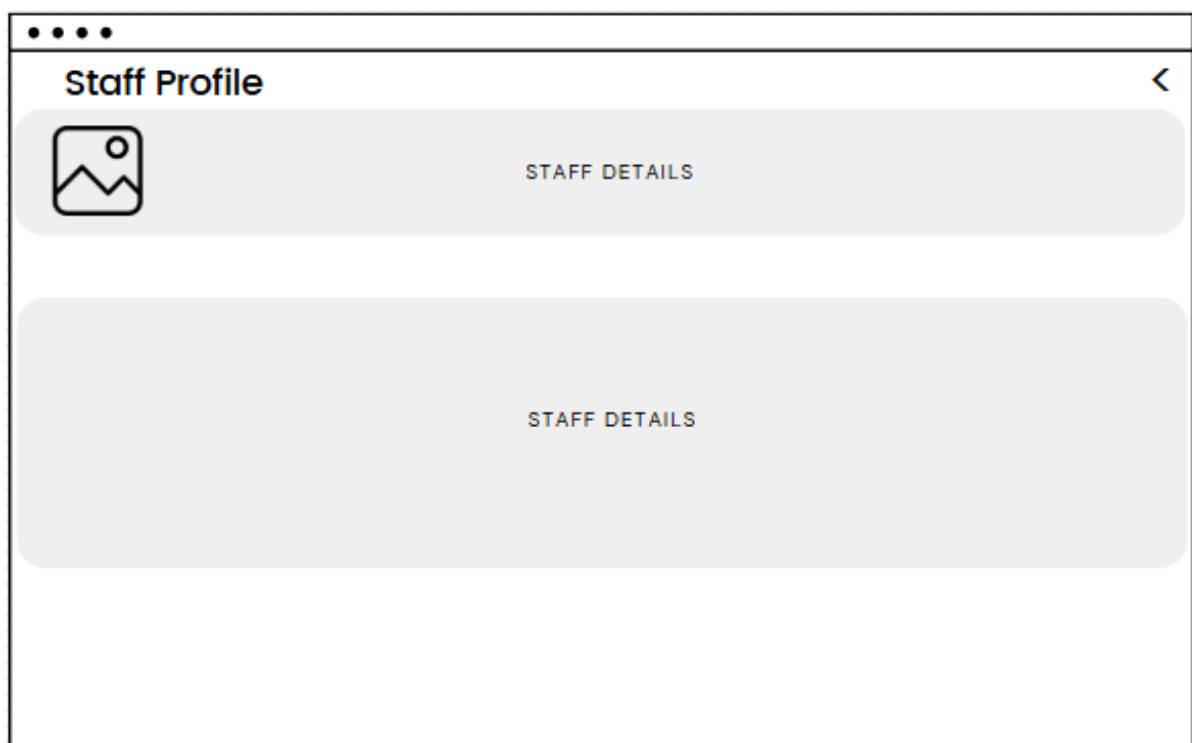
Figure 5.34 Staff Profile Page Wireframe

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5.2.35 Edit Staff Page Wireframe
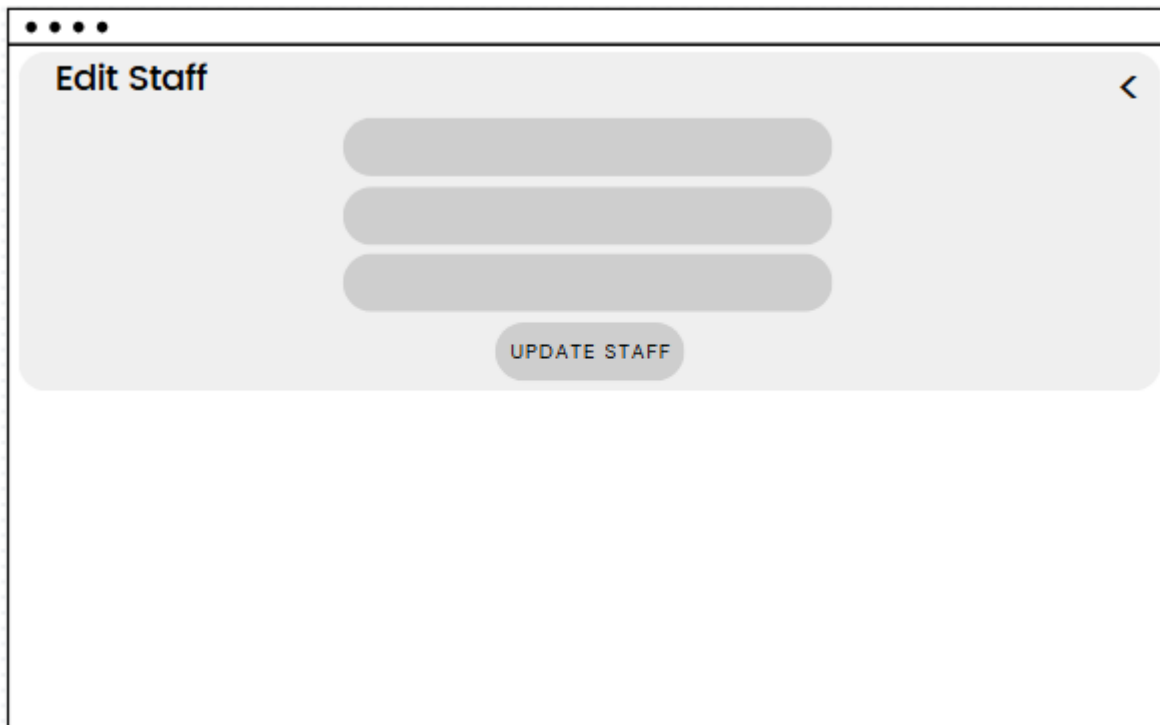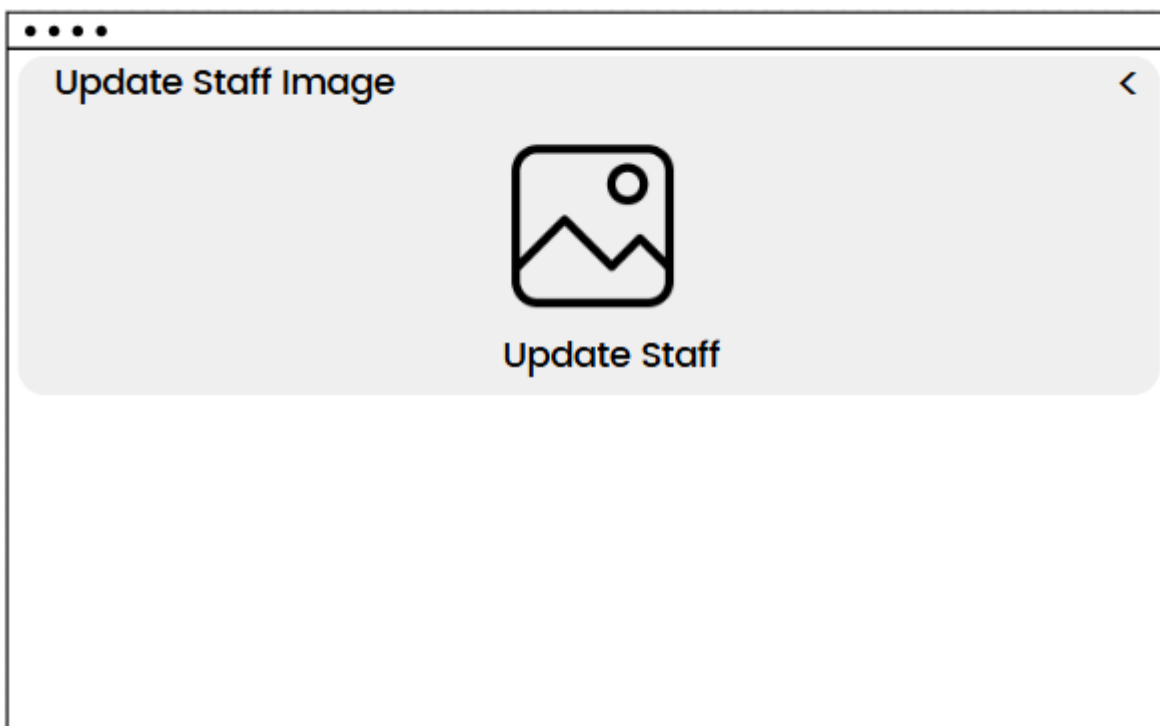

Figure 5.35 Edit Staff Page Wireframe

5.2.36 Update Staff Image Page Wireframe

Figure 5.36 Update Staff Image Page Wireframe

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5.3   Stakeholder Feedback Sessions

There were stakeholder feedback meetings. The wireframes were shown during these meetings to get feedback from those who will eventually use or be impacted by the system. The input was constructive, pointing out possible problems and areas that needed work so that the finished product would meet consumer expectations.
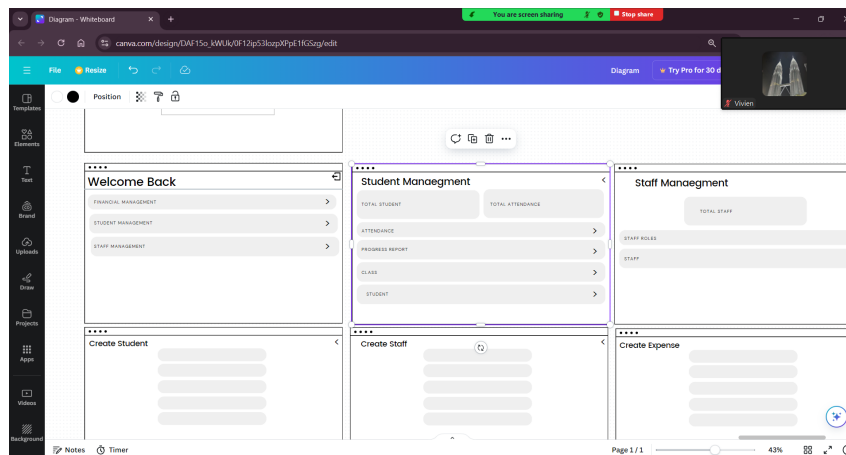
Figure 5.37 Meeting with the Principle to discuss about designed wireframes

5.4   Interface Enhancement Iterations

The insights and feedback gathered from the stakeholder meetings were instrumental in enhancing the interface design. This phase was marked by a series of iterative design improvements, where each round of revisions focused on refining the user experience, increasing usability, and ensuring the functionality aligned with the project's objectives.

These iterative changes were critical in fine-tuning the design to meet the specific needs of the end users. The process involved revisiting the layout, adjusting visual elements, simplifying navigation paths, and ensuring that key features were easily accessible and actionable. The goal was not just to create a visually appealing interface, but one that was functional and efficient, enabling users to complete tasks quickly and with minimal confusion.

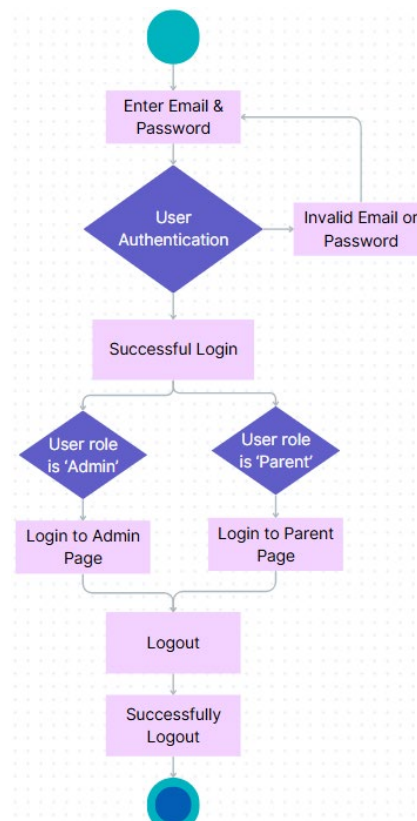## 5.5   System Architecture Planning

During the system architecture planning phase, the focus shifted to designing the foundational structure of the EdenSpark KinderCare system. Block diagrams were created to visually represent the system's architecture, outlining the key components and their interactions. This

step was crucial in establishing the overall framework, ensuring that the system would be both scalable and efficient as it grew over time.

The planning process involved defining the relationships between various modules, such as the user interface, database management, backend services, and communication channels. Each element was carefully mapped to ensure smooth data flow, minimal latency, and optimal performance. The system's architecture was designed with flexibility in mind, allowing for easy updates and expansions to meet future needs.

This phase was vital for aligning the system's technical structure with the project's objectives, ensuring that the final product would not only meet immediate requirements but also be adaptable to future developments. By taking the time to plan the architecture thoroughly, the project team was able to set a strong foundation for the development and deployment phases, reducing risks and improving long-term sustainability.

### 5.5.1   Authentication and Role Based Log In Block Diagram

Figure 5.38 Authentication and Role Based Log In Block Diagram

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Users are required to log in using their registered email and password. If the entered credentials are incorrect, they will be prompted to re-enter the correct information. When users successfully log in, the system will retrieve the user's role. If their role is an 'Admin', they will be directed to the Admin Page. If the user's role is a 'Parent' they will be directed to the Parent Page. Users can also log out of the system when not in use.

5.5.2 Admin Home Page Navigation Block Diagram
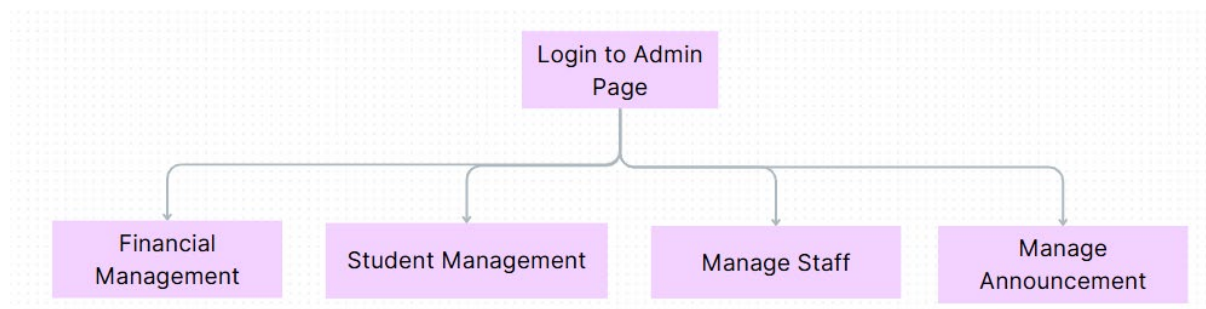
Figure 5.39 Admin Home Page Navigation Block Diagram

When the user with role 'Admin' successfully logs in to the Admin Page, user can access to 4 different pages with their functions. The user can access to the Financial Management page, Student Management page, Manage Staff page and Manage Announcement page.

5.5.3 Parent Page Navigation and Executable Modules Block Diagram
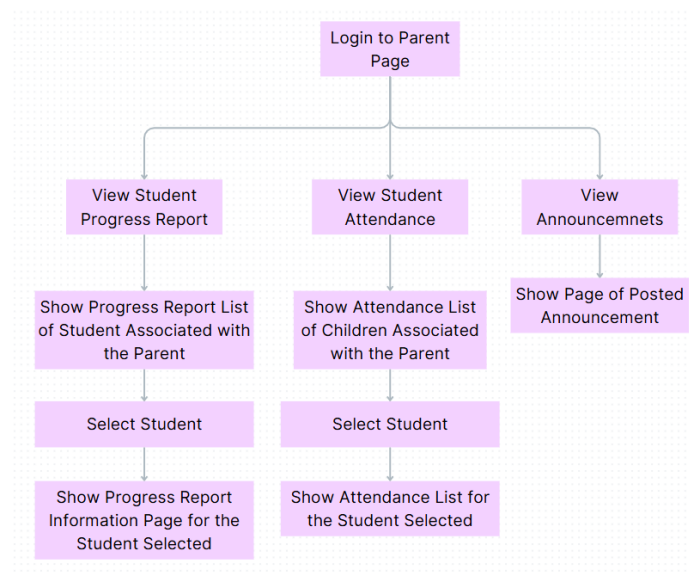
Figure 5.40 Parent Page Navigation and Executable Modules Block Diagram

This block diagram illustrates the workflow for a user with the role of 'Parent' to manage and monitor their child's educational information through three main modules, View Student Progress Report, View Student Attendance, and View Announcement.

Upon successful login to the Parent Page, the user gains access to all three sections. In the View Student Progress Report module, the parent can view a list of progress reports linked to their child. Each report offers detailed insights into the student's academic performance across various subjects. The View Student Attendance module allows the parent to view attendance records for their child. They can examine individual entries for more in-depth information on specific dates and attendance statuses. Finally, the View Announcement module presents a list of official announcements posted by Admin users.

5.5.4 Financial Management Block Diagram
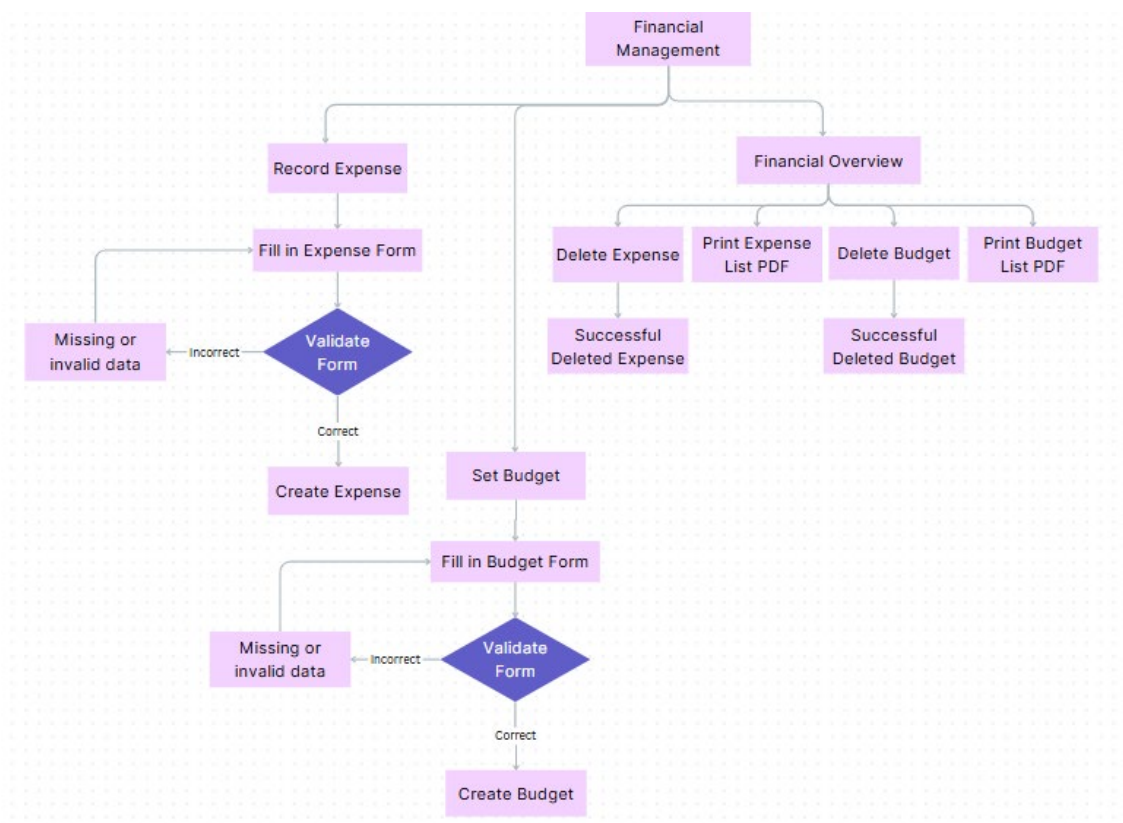
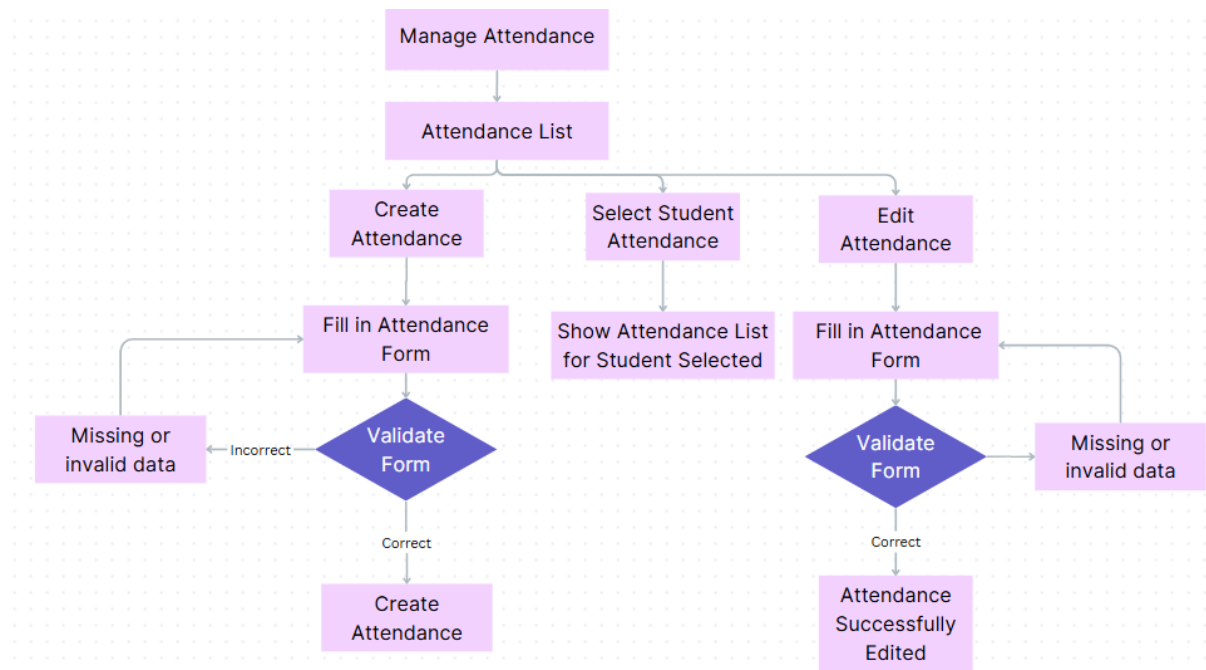

Figure 5.41 Financial Management Block Diagram

This block diagram outlines the workflow for managing finance under the Financial Management module. It consists of three main processes, Record Expense, Set Budget and View Financial Overview.

In the Financial Management module when users record expenses, they are required to fill in the Expense Form. Once completed, the system performs form validation. If the form contains missing or invalid data, the process is halted, and the user is prompted to correct the errors. If the form is valid, the expense is then successfully created and saved through the Create Expense process.

Users can create budgets. Users will be guided to fill in the Budget Form. Similar to the expense process, the system validates the form. If any data is missing or incorrect, the process stops and users must fix the issues. If the form passes validation, the budget is then successfully saved via the Create Budget step.

Users can navigate to the Financial Overview section where users are able to perform key actions such as Delete Expense, Print Expense List PDF, Delete Budget, and Print Budget List PDF.

5.5.5 Manage Attendance Module Block Diagram

**Figure 5.42 Manage Attendance Module Block Diagram**

This block diagram outlines the workflow for managing student attendance under the Manage Attendance module. It consists of three main processes, creating attendance, viewing student attendance, and editing attendance

In the Manage Attendance module, users can create attendance by filling up the Attendance Form. This input is then passed through a form validation step. If the data is incomplete or invalid, the system halts the process and prompts the user to correct the errors. Once the data is verified to be correct, the system proceeds to create and store the attendance record.

Users are able to update existing attendance records. User must fill in the Attendance Form, which then goes through validation. If the form contains missing or invalid data, the system returns an error and requires correction. When the form is correctly filled, the system proceeds to successfully edit and save the updated attendance record.

Users can choose a specific student from the attendance list. Upon selection, the system displays the relevant attendance records for that student. This step is mainly for viewing and does not require data input or validation.

5.5.6 Manage Progress Report Module Block Diagram
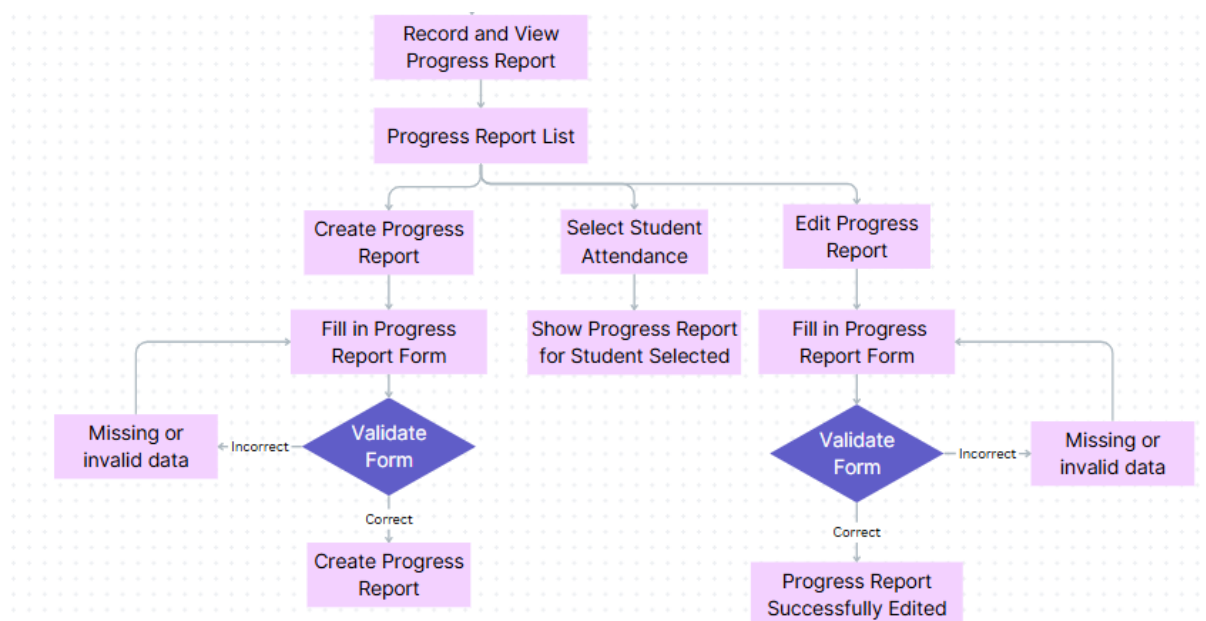
Figure 5.43 Manage Progress Report Module Block Diagram

This block diagram illustrates the workflow for managing progress reports. Users can create progress reports, view report, or edit an existing report.

The users are able to create a new report by filling out a form with relevant details. The system then validates the form to ensure the data is accurate and complete. If issues like missing or
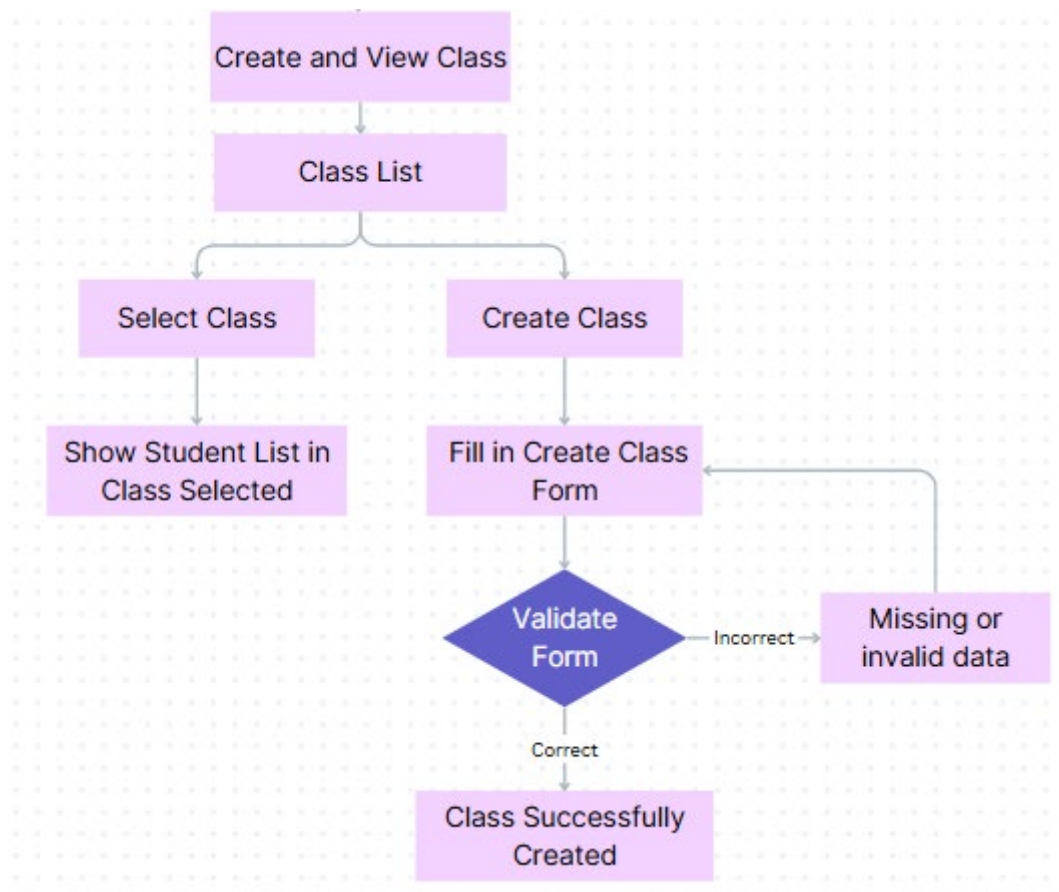
invalid data are detected, users are prompted to correct the errors before resubmitting. Once the form passes validation, the system proceeds to create and store the progress report record.

Users can choose a specific student from the progress report list. Upon selection, the system displays the progress report for that student. This step is mainly for viewing and does not require data input or validation.

Users are allowed to update the progress with new or corrected information. The data undergoes validation to ensure the data is accurate and complete. If issues like missing or invalid data are detected, users are prompted to correct the errors before resubmitting. Once the form passes validation, the system proceeds to update the progress report.

5.5.7 Manage Class Module Block Diagram

Figure 5.44 Manage Class Module Block Diagram

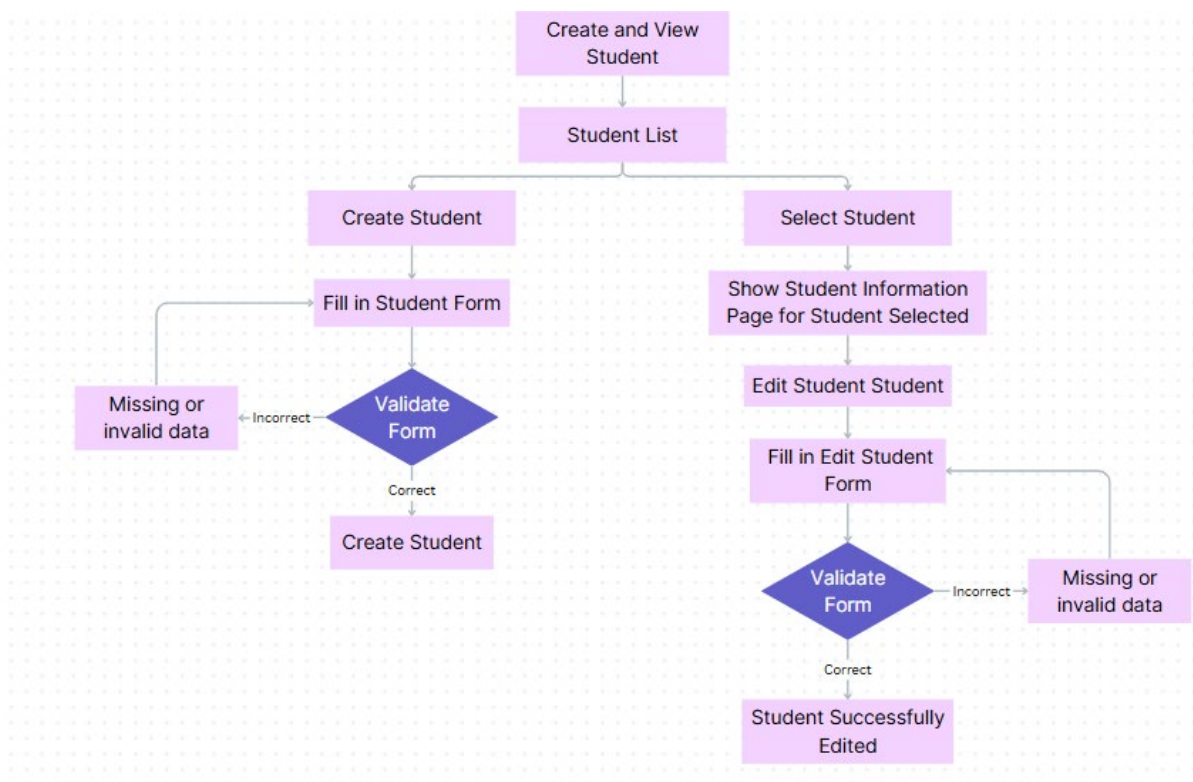This block diagram illustrates the workflow for managing class records within a system. Users can create new class or view student lists within an existing class. Users are directed to the Class List, where they can create a new class or select an existing class to view its student list.

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User can create a new class by filling a create class form with necessary details. The system then performs a validation check to ensure the data is accurate and complete. If issues such as "Missing or Invalid Data" are detected, users are prompted to correct the errors before resubmitting. Once the form passes validation, the system finalizes the process and adds the new class to the system.

Users can choose a specific class from the class list. Upon selection, the system displays the class with its students. This step is mainly for viewing and does not require data input or validation.

5.5.8 Manage Student Module Block Diagram

Figure 5.45 Manage Student Module Block Diagram

This block diagram illustrates the workflow for managing student record. Users are directed to the Student List, where they can create a new student profile or selecting an existing student to view or edit their information.
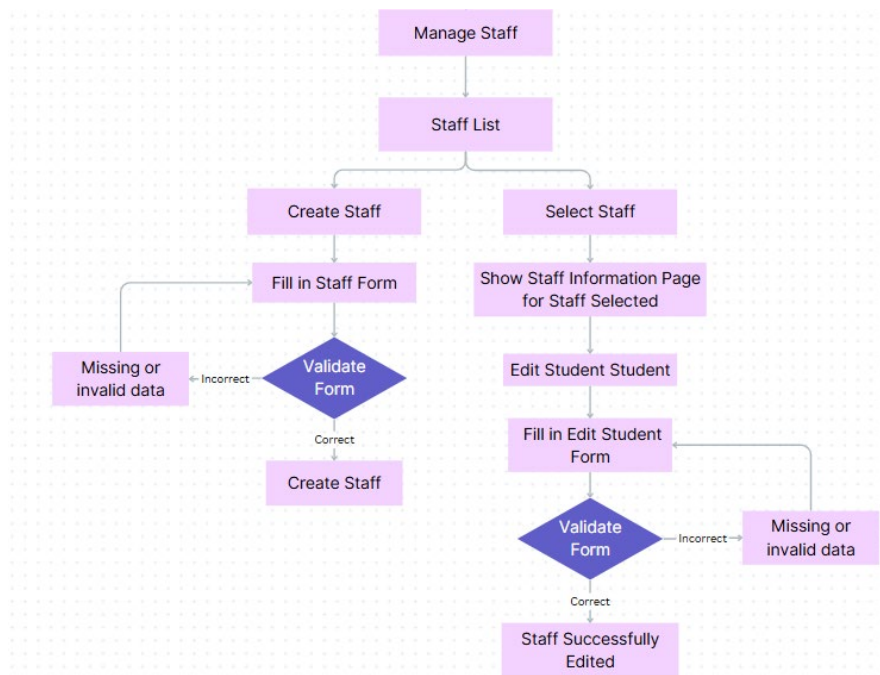
Users can add a new student by filling out a form with details needed. The system then performs a validation check to ensure the data is accurate and complete. If issues such as "Missing or Invalid Data" are detected, users are prompted to correct the errors before resubmitting. Once

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the form passes validation, the system finalizes the process and store the new student to the records.

Users can choose a specific student from the student list. Upon selection, the system displays the student details for the student selected This step is mainly for viewing and does not require data input or validation.

Users are allowed to update an existing student detail with new or corrected information. The data undergoes validation to ensure the data is accurate and complete. If issues like missing or invalid data are detected, users are prompted to correct the errors before resubmitting. Once the form passes validation, the system proceeds to update the student's details.

5.5.9 Manage Staff Module Diagram

Figure 5.46 Manage Staff Module Block Diagram

This block diagram illustrates the workflow for managing staff records. Users are directed to the Staff List, where they can create a new staff profile, select an existing student to view and edit their information.

Users can add a new staff by filling out a form with details needed. The system then performs a validation check to ensure the data is accurate and complete. If issues such as "Missing or Invalid Data" are detected, users are prompted to correct the errors before resubmitting. Once

the form passes validation, the system finalizes the process and store the new staff to the staff records.

Users can choose a specific staff from the staff list. Upon selection, the system displays the staff details for the student selected This step is mainly for viewing and does not require data input or validation.

Users are allowed to update an existing staff detail with new or corrected information. The data undergoes validation to ensure the data is accurate and complete. If issues like missing or invalid data are detected, users are prompted to correct the errors before resubmitting. Once the form passes validation, the system proceeds to update the staff's details.

5.5.10 Manage Announcement Module Block Diagram
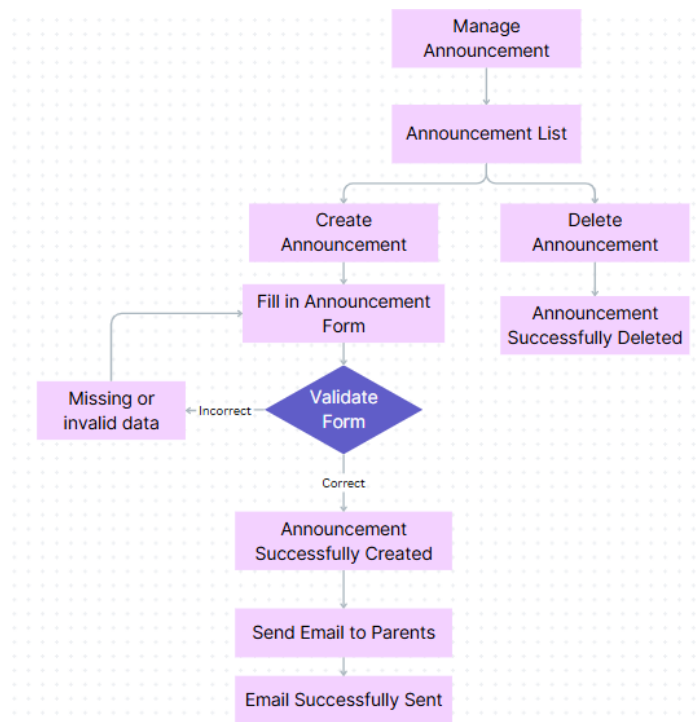
Figure 5.47 Manage Announcement Module Block Diagram

This block diagram illustrates the workflow for managing announcements. Users can create, view, delete and distribute announcements to parents.

Users can create announcement by filling out the Announcement Form with needed data. The system validates the data to ensure it is accurate and complete. If missing or invalid data are detected, users are prompted to correct the errors before resubmitting. Once the form passes

validation, the system will create and store the following data into the Announcement records. Following this, an email will be sent to Parents, and upon successful delivery, the system confirms with "Email Successfully Sent," ensuring parents are informed.

Users can view created announcements in the Announcement list. Alternatively, users can choose to delete announcements if needed. The system will remove the records from the Announcement database.

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CHAPTER 6

Phase 3 Construction

6.1   Core Functionality Development

This phase focused on the development and implementation of EdenSpark KinderCare's core system features, forming the backbone of the entire application. It involved the creation and integration of essential modules, including user authentication mechanisms, secure data input and retrieval systems, and seamless Firebase backend connectivity. Each of these elements was critical in enabling the system to function reliably and securely.

User authentication was implemented to ensure that only authorized users could access and manage sensitive information, such as student records and financial data. The data collection and management features were designed to allow smooth entry, storage, and retrieval of information, which are vital for administrative efficiency. Firebase, chosen for its real-time database and cloud capabilities, served as the central backend infrastructure, facilitating secure data storage, synchronization, and scalability.

This foundational stage set the groundwork for all other functionalities that would be added later. By ensuring that the core modules were stable, secure, and efficient, the team created a solid platform upon which additional features could be built. It was essential that these initial developments were well-structured, as they directly impacted the system's reliability, performance, and future enhancements.

6.2   Iterative Component Construction

In this stage, the development process focused on the gradual and repetitive construction of individual system components through iterative cycles. Each component, ranging from user dashboards and reporting modules to data visualization elements and notification features, was built, tested, and refined incrementally. This approach allowed the development to be broken down into manageable parts, enabling focused improvements on specific features while maintaining overall system cohesion.

The iterative model was especially valuable in identifying and addressing functional gaps early. After each component was implemented, rigorous testing and user simulations were conducted to evaluate performance, usability, and integration with existing features. Feedback obtained during these cycles helped guide adjustments, from layout and flow improvements to backend logic optimization.

This ongoing cycle of development, testing, and refinement ensured that every module met quality standards and contributed to a stable, high-performing system. The flexibility of this process also allowed for the integration of newly identified requirements without disrupting the development timeline, ensuring EdenSpark KinderCare evolved responsively with stakeholder needs.

6.2.1　Login Page
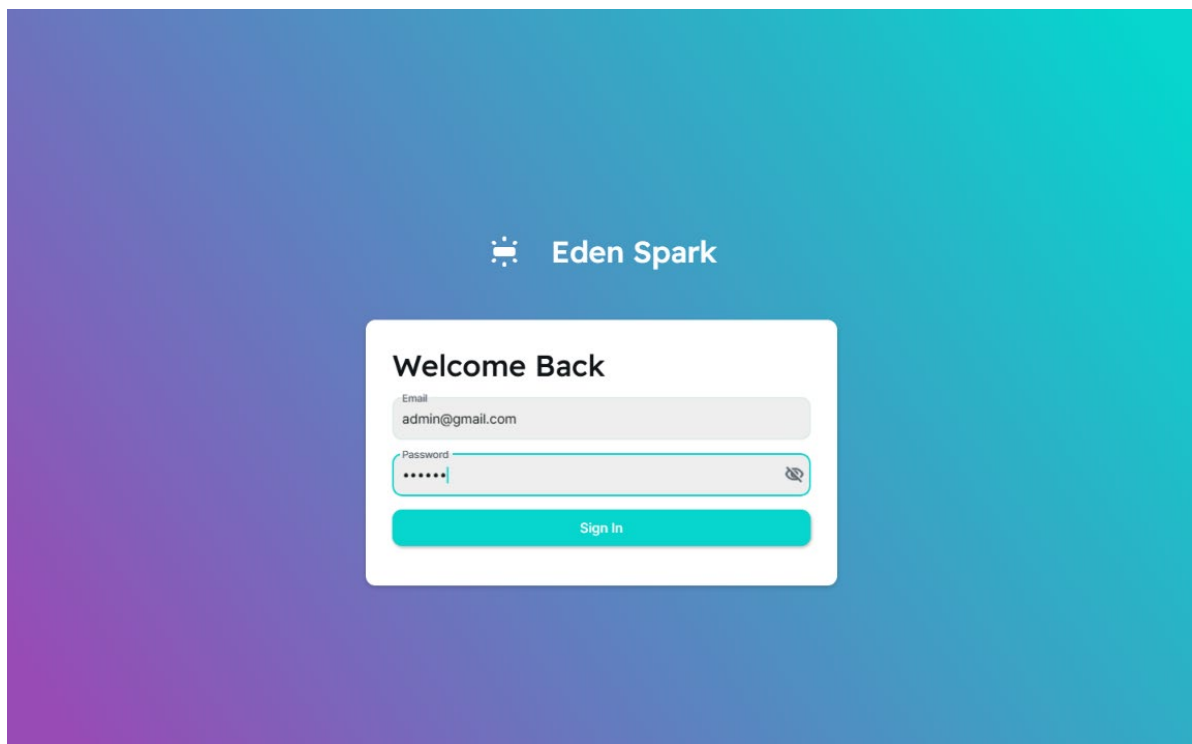
Figure 6.1 Login Page

The login page with Firebase authentication was successfully developed. This page offers a safe and convenient user interface for access by including email and password entry boxes. Firebase authentication handled the user credential validation, resulting in a streamlined and dependable login procedure. The Log In Page include the functionality of role-based log in. When users email and password is verified to be in the system's firebase, the system will check

for the 'Role' of the user. If the user's role is 'Admin', the user will be directed to the Admin Home Page. If the user's role is 'Parent' they will be directed to the Parent Home Page.

6.2.2 Admin Home Page
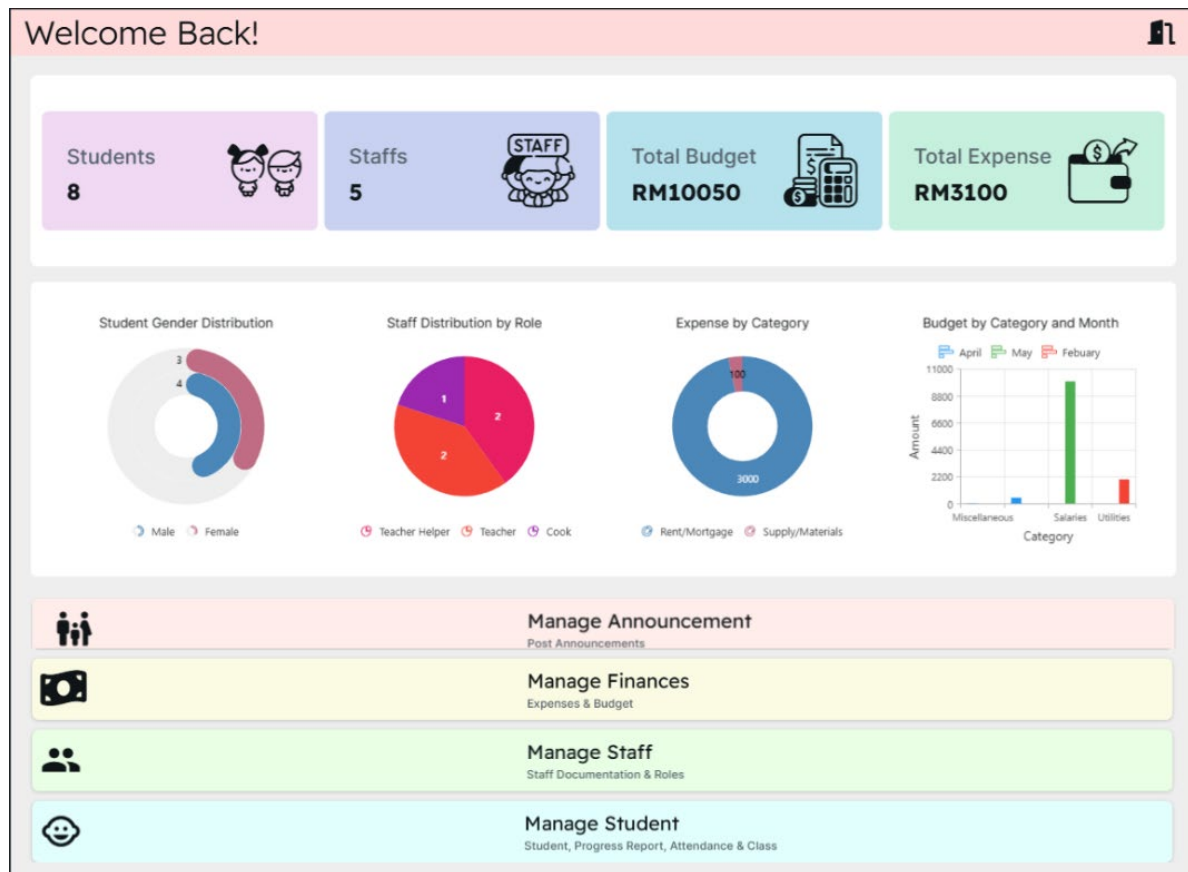
Figure 6.2 Admin Home Page

The Admin Home Page was developed to serve as the point of entry for Admin users. The three primary buttons on this page are the Manage Announcement, Management Finances, Manage Staff and Manage Student. Every button in the system is made to take users to the appropriate page, where they can effectively manage and retrieve pertinent data. There are four cards showing total student count, total staff count, total budget and total expense was added. Additionally, there are four graphs showing the student gender distribution, the staff distribution by role, expense by category, and budget by category and month. Users can click on the door icon at the top right of the page to log out of the account when not in use.

6.2.3   Announcement List Page
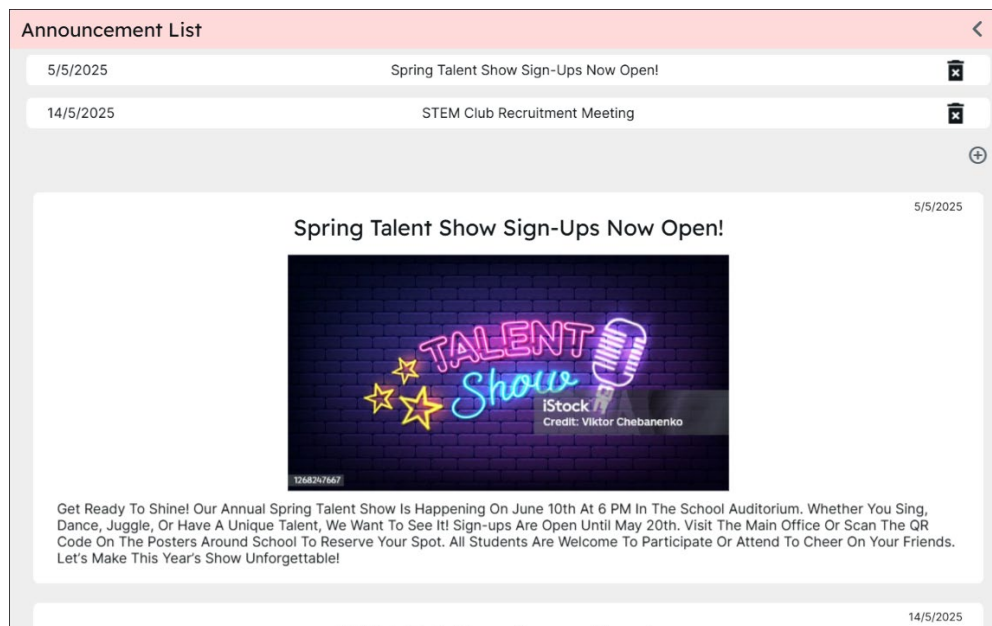
Figure 6.3 Announcement Page
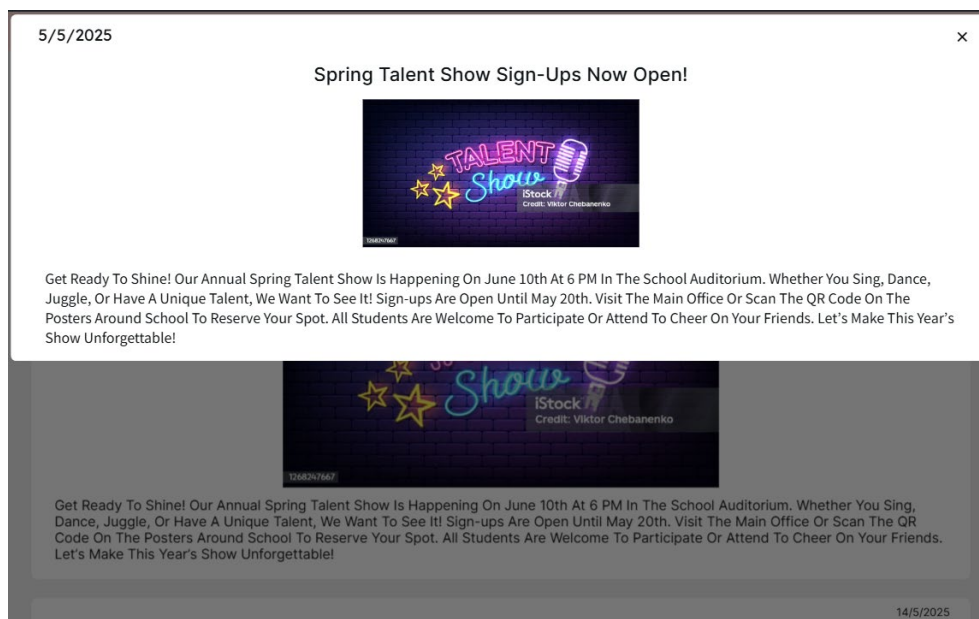
Figure 6.4 Announcement Detail Dialog

The Announcement List Page shows the list of announcements created. When user click on the plus below the list of announcements, they will be directed to the Create Announcement Page. When users click on the announcement list row, a dialog box will be shown, showing the details of the selected announcement, such as the date, title, image and body of the announcement. Users can close the dialog box by clicking on the 'X' icon at the top right of the screen.

6.2.4   Create Announcement Page


Figure 6.5 Create Announcement Page

The create announcement page allows users to create and post announcements. Users will need to fill in the Create Announcement form with information such as date of announcement, announcement body and image of the announcement. Users can upload the image of the announcement by clicking on the upload file icon bellow 'Upload Announcement Image'. When users click on the create button, the system will validate the information entered to ensure that all information are not null and are valid. Once the information passes the validation step, the created announcement will be saved into the database, and an email will be sent to parents. The email will contain the announcement title and announcement body. Users will be directed back to the Announcement List Page. Users can also exit the page without creating the announcement by clicking on the 'X' button on the top right of the form, they will be directed back to the Announcement List Page.

6.2.5 Financial Management Page
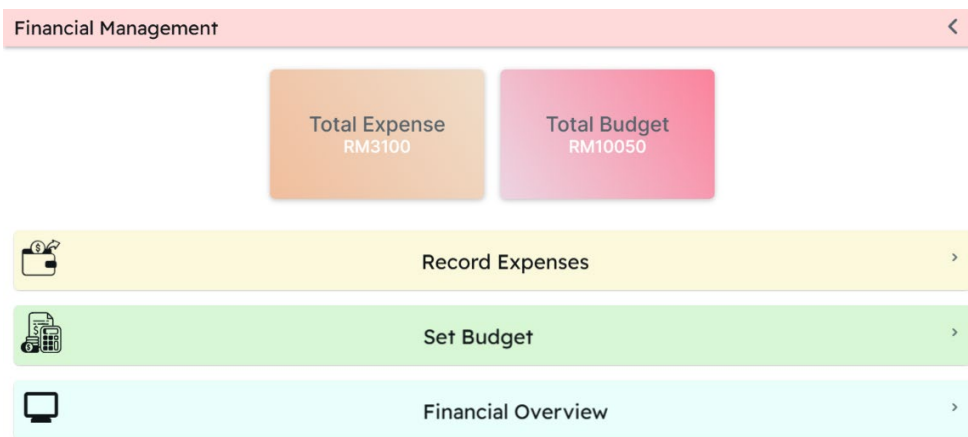
Figure 6.6 Financial Management Page

This page gives customers a rapid overview of their financial data by prominently displaying a card indicating the total expenses and total budgets incurred. The page also has three buttons, Financial Overview, Set Budget, and Record Expenses. With the help of each button, users may navigate to particular system capabilities and effectively manage their costs, create budgets, and produce financial reports. Users can click on the arrow icon at the top right of the page to return to the admin home page.

6.2.6 Create Expense Page

Figure 6.7 Create Expense Page

The Create Expense page was built to help users record their financial transactions effectively. Input options on this page allow you to enter the name of the cost, the total amount spent, a brief description, the expense date, and the expense category. When users click on the 'Create' button, the system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database. Users will then be directed back to the Financial Management Page. Users also can return without creating the expense by clicking on the 'X' button.

6.2.7 Create Budget Page

Figure 6.8 Create Budget Page

The Create Budget page was designed to help users manage their finances by setting specific budgetary limits. Users can input the budget category, the allocated amount, and the relevant month on this page. These fields ensure that users can effectively plan their spending by categorising their budgets and setting financial goals for specific periods. When users click on the 'Create' button, the system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database.

Users will then be directed back to the Financial Management Page. Users also can return without creating the expense by clicking on the 'X' button.

6.2.8 Financial Reporting Page
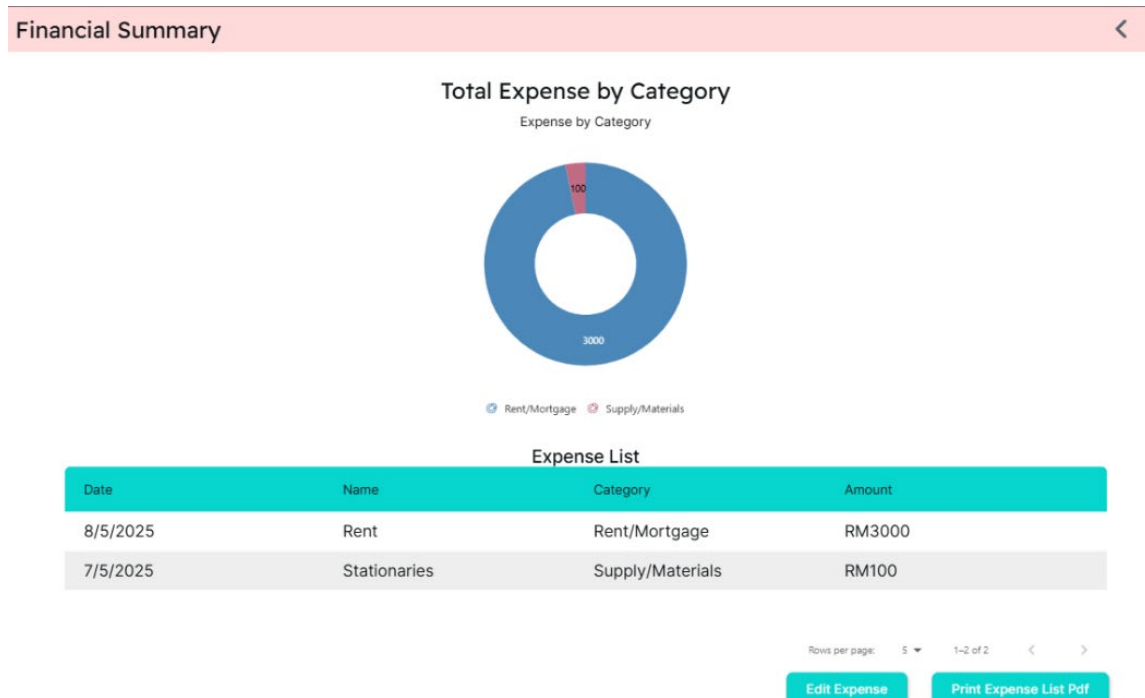
Figure 6.9 Financial Reporting Page for Expense List
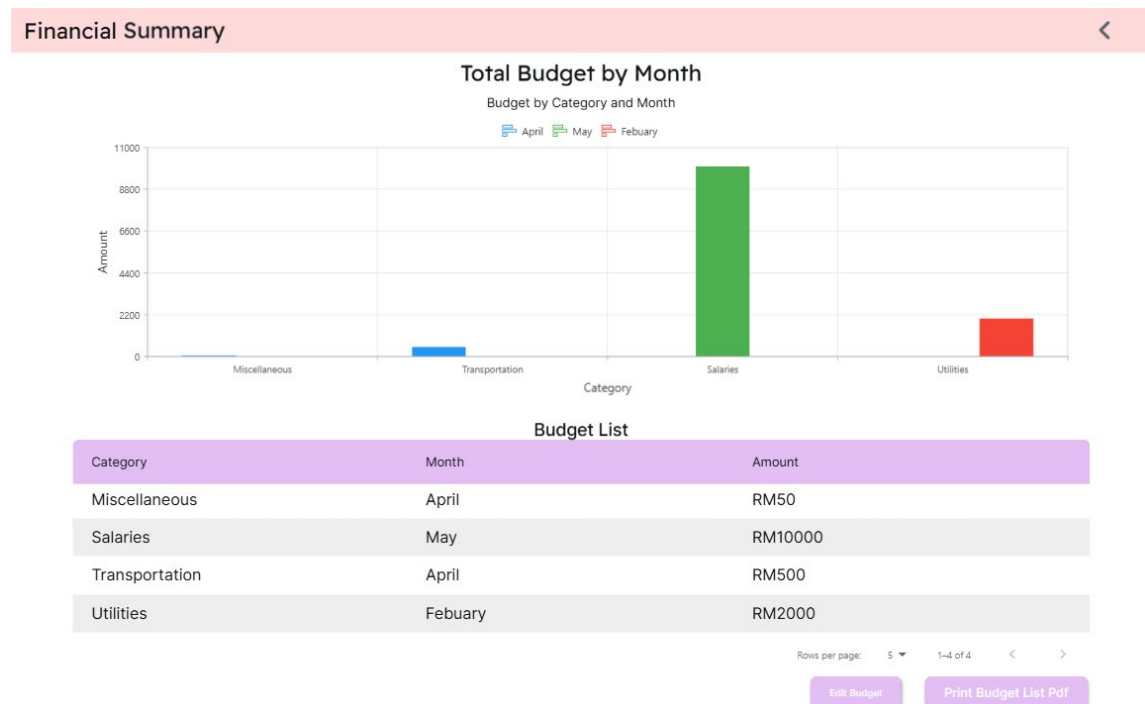
Figure 6.10 Financial Reporting Page for Budget List

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The purpose of the Financial Summary page is to give consumers a thorough summary of their financial information. There are 2 graphs in this page for expense list and budget list. The expense list chart is a doughnut chart that shows the view of the proportion of expense for each category. The budget list chart is bar chart that shows the total budget by month with their category. There are also 2 tables showing the total budget and expense records and details such as their date, name, category and amount. Users can edit the expense list by clicking on the 'Edit Expense' button and print the expense list into PDF by clicking on the 'Print Expense List PDF' button. On the other hand, users can edit the budget list by clicking on the 'Edit Budget button and print the budget list into PDF by clicking on the 'Print Budget List PDF' button. Users can return to the Financial Management Page by clicking on the arrow icon at the top right of the screen.

6.2.9 Budget List Page

Budget List			<
Budget Amount	**Budget Month**	**Budget Category**	
RM100	Febuary	Rent/Mortgage	🗑
RM100	January	Supply/Materials	🗑

Figure 6.11 Budget List Page

The Budget List Page allows users to view and edit the budget list. Users can delete the budget information by clicking on the trash icon at each row to delete that certain budget. Users can return to the Financial Summary Page by clicking on the arrow icon at the top right of the screen.

6.2.10 Expense List Page

Expense List					<
Expense Name	**Expense Amount**	**Expense Description**	**Expense Date**	**Expense Category**	
Colour Pencils	RM50	5 Packs	7/5/2025	Supply/Materials	🗑
Color Paper	RM20	2 Packs	7/5/2025	Supply/Materials	🗑

Figure 6.12 Expense List Page

The Expense List Page allows users to view and edit the expense list. Users can delete the expense information by clicking on the trash icon at each row to delete that certain expense.

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Users can return to the Financial Summary Page by clicking on the arrow icon at the top right of the screen.

6.2.11Staff List Page

Figure 6.13 Refined Staff List Page

The Staff List Page shows the list of staffs created with their profile picture, name and role. When users click on the plus icon at the bottom right of the list, they will be navigated to the Create Staff Page. When users click on the staff row, they will be directed to the selected staff's profile page. Users can return to the Admin Home Page by clicking on the arrow icon at the top right of the screen.
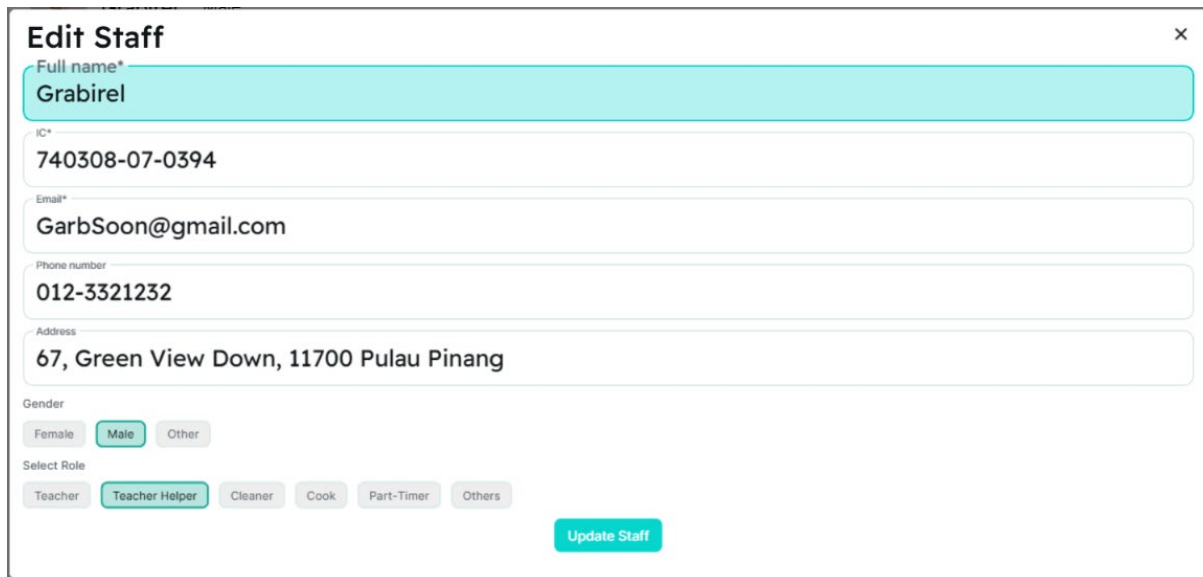
6.2.12 Staff Profile Page

Figure 6.14 Staff Profile Page
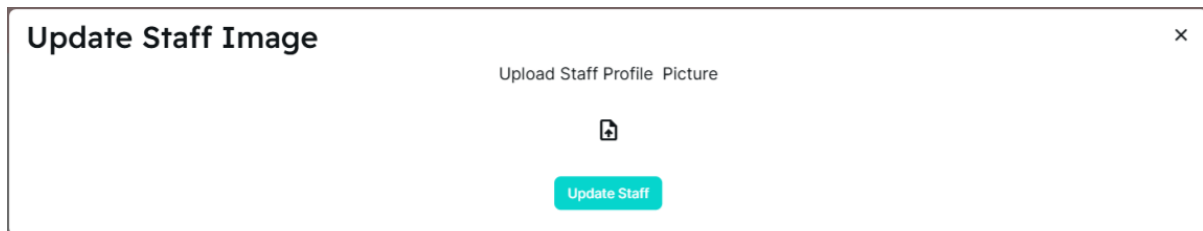
Figure 6.15 Edit Staff Profile Dialog

Figure 6.16 Edit Staff Image Dialog
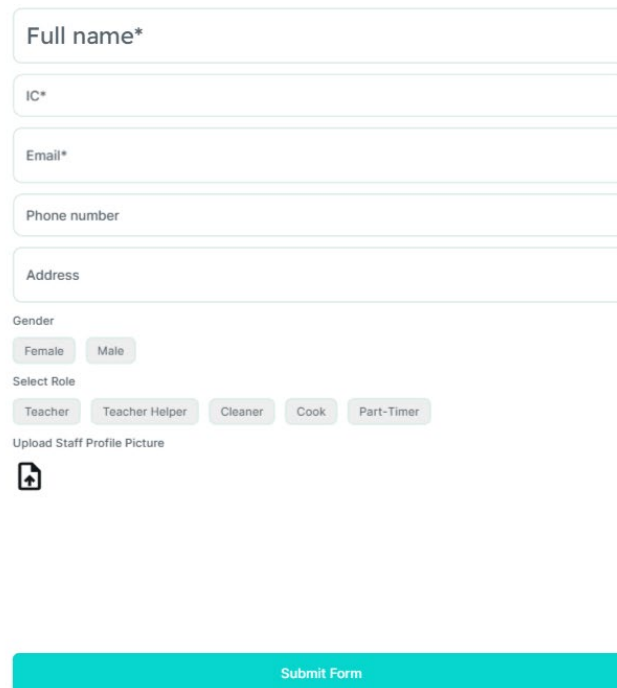
The Staff Profile Page shows information of the selected staff from the staff list. The page shows the staff's profile picture, name, gender, identification card number, phone number, address, email address and role. Users can return to the Staff List Page by clicking on the back arrow at the top right of the screen. When the 'Edit Profile' button is clicked, a dialog box will appear on the screen. Users can edit the staff's information by changing the information in the form and clicking on the 'Update Staff' button. Users can close this dialog box without saving by clicking on the 'X' button on the top right of the page. When the 'Edit Staff Profile Picture' button is clicked, a dialog box for editing will appear on the screen. Users can upload the new image of the staff by clicking on the upload file icon. Users will need to click on the 'Update Staff' button to successfully update the profile picture of the staff. Users can close this dialog box without saving by clicking on the 'X' button on the top right of the page.

6.2.13   Create Staff Page

Figure 6.17 Create Staff Page

The Create Staff page allows users to add new staff into the system. Users will need to fill up the create staff form with the necessary information such as Staff Name, Identification card Number, Phone Number, Address, Gender, Role and Staff Profile Picture. When users click on the 'Submit Form' button, the system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and user will be directed back to the Staff List Page. Users can return without creating the staff by clicking on the 'X' button on the top right of the page.

6.2.14 Student Management Page
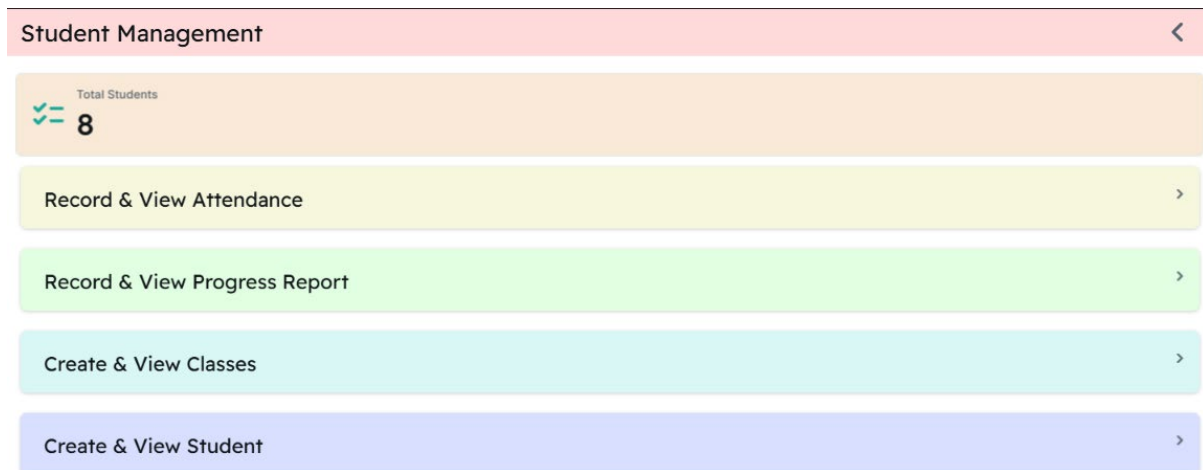
Figure 6.18 Student Management Page

The Student Management page offers a brief overview of student metrics with a card showing the overall number of students. Four routing options are provided, that is Record and View Attendance, Record and View Progress Report, Create and View Class, and Create and View Student. The 'Record and View Attendance' button will navigate users to the Attendance List Page, the 'Record and View Progress Report' button will navigate users to the Progress Report List Page, the 'Create and View Classes' button will navigate users to the Class List Page, and the 'Create and View Student' button will navigate users to the Student List Page. Users can return to the Admin Home Page by clicking on the arrow icon at the top right of the screen.

6.2.15 Attendance List Page

Figure 6.19 Attendance List Page

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Figure 6.20 Selected Student Attendance Dialog
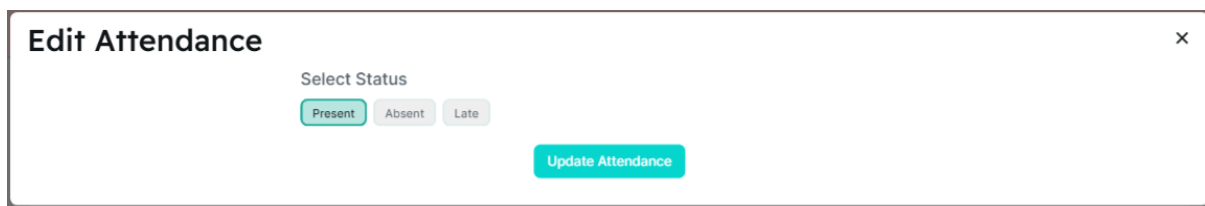
Figure 6.21 Edit Attendance Dialog

The Attendance List Page shows the list of attendance created with the details of date, student name and status for each student attendance created. When users click on the plus icon at the bottom right of the list, they will be navigated to the Create Attendance Page. When users click on the attendance row, a dialog will be shown on the screen. The dialog will include the selected student's attendance record with their attendance date and status. At the bottom left of the dialog will show the total attendance percentage of the student's attendance. Users can close this dialog box by clicking on the 'X' button on the corner right of the screen. When users click on the edit icon on the attendance list, an Edit Attendance Dialog will be shown on the screen. Users can update the selected student's attendance by changing the status selected and clicking on Update 'Attendance' button. The system will proceed to update the student's attendance record and percentage. Users can close this dialog box by clicking on the 'X' button on the corner right of the screen. Users can return to the Manage Student Page by clicking on the arrow icon at the top right of the screen.

6.2.16 Create Attendance Page

Figure 6.22 Create Attendance Page

The Create Attendance Page allows users to create new records of Attendance for multiple students at once. Users will need to fill up the create Attendance form with the necessary information such as Student Name, Date and Status. When users click on the 'Submit Form' button, the system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and user will be directed back to the Attendance List Page. Users can return without creating the attendance by clicking on the 'X' button on the top right of the page.

6.2.17 Progress Report List Page

Figure 6.23 Progress Report List Page

The Progress Report List Page shows the list of student progress reports created with the details of Subject, Student Name and Subject for each progress report created. When users click on the plus icon at the bottom right of the list, they will be navigated to the Create Progress Report Page. When users click on the progress report row, they will be directed to the Progress Report View Page. Users can return to the Manage Student Page by clicking on the arrow icon at the top right of the screen.

6.2.18   Create Progress Report Page
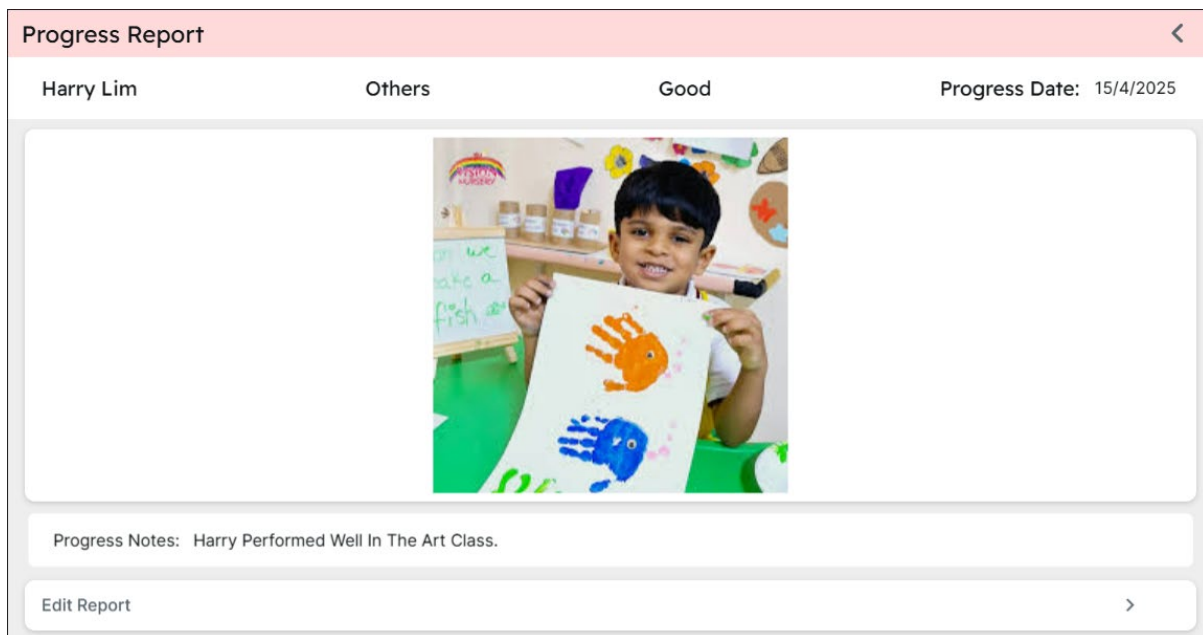
Figure 6.24 Create Progress Report Page

The Progress Report Page allows users to create new records of progress reports for. Users will need to fill up the create progress report form with the necessary information such as Student Name, Date, Subject, Grade, Progress Notes and Progress Image. When users click on the 'Create' button, the system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and user will be directed back to the Progress Report List Page. Users can return without creating the progress report by clicking on the 'X' button on the top right of the page.
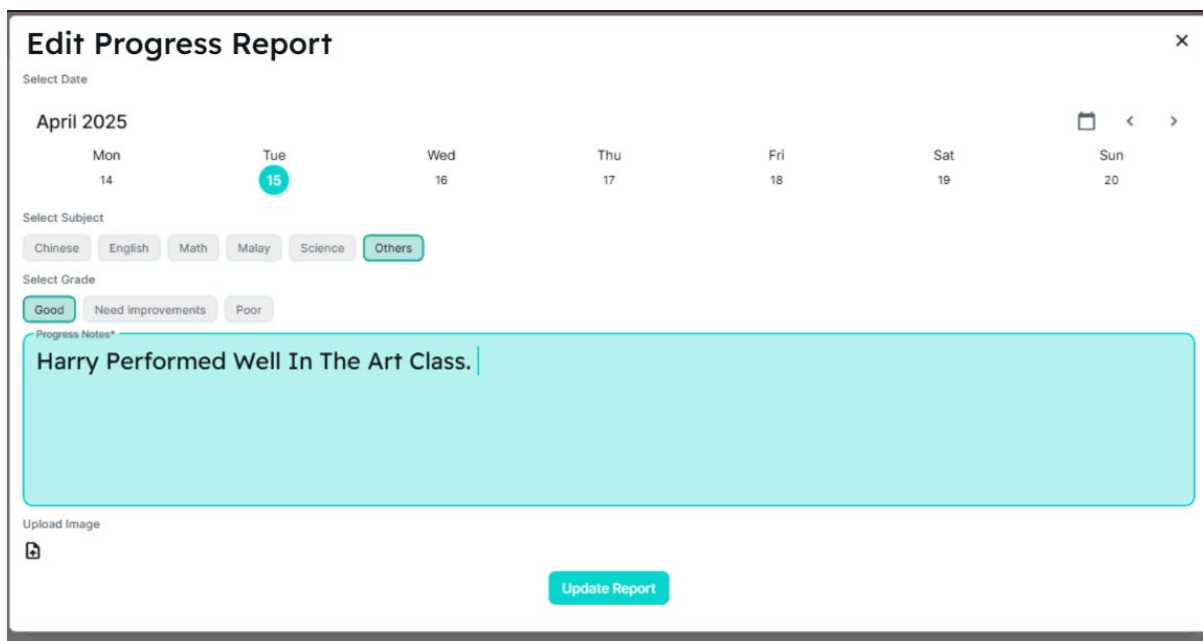
6.2.19 Progress Report View Page

Figure 6.25 Progress Report View Page

Figure 6.26 Edit Progress Report Dialog

The Progress Report View Page shows the details of the progress report for the selected student such as Student Name, Subject, Grade, Date, Progress Notes, and Progress Image. When the 'Edit Report' button is clicked, an Edit Progress Report dialog box will be displayed on the screen. Users can edit the progress report by changing the information in the form and clicking the button 'Update report'. The system will validate the data to ensure that data saved are in

the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and user will be directed back to the Progress Report View Page. Users can return without editing the progress report by clicking on the 'X' button on the top right of the page.

6.2.20 Class List Page

Figure 6.27 Class List
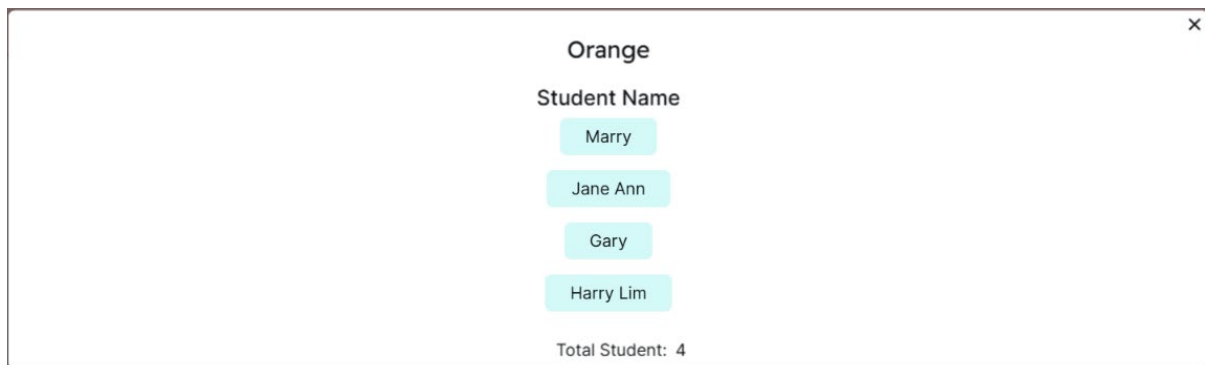
Figure 6.19 Selected Class List Detail Dialog
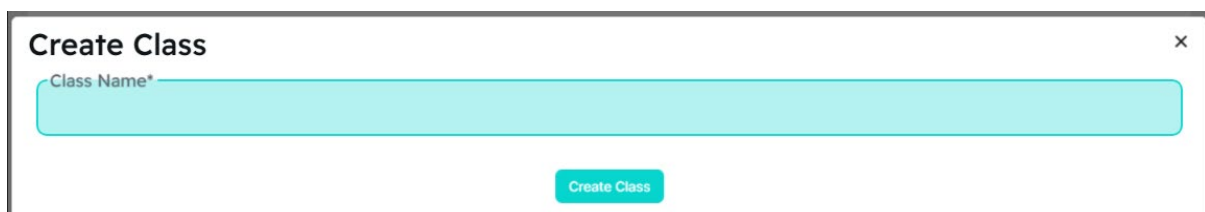
Figure 6.28 Create Class Dialog

The Class List Page shows the list of classes. When users click on the plus icon at the bottom right of the list, a Create Class dialog will be shown on the screen. Users can input the Class Name and click on the 'Create Class' button to create a class. The system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data,

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they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and the dialog will close. Users can close the dialog without creating the class by clicking on the 'X' button on the top right of the page. When users click on the class row, a dialog with the details of the selected Class Name, Student Names in the class, and the count of students in the class will be shown. Users can close the dialog by clicking on the 'X' button on the top right of the page. Users can return to the Manage Student Page by clicking on the arrow icon at the top right of the screen.

6.2.21 Student List Page
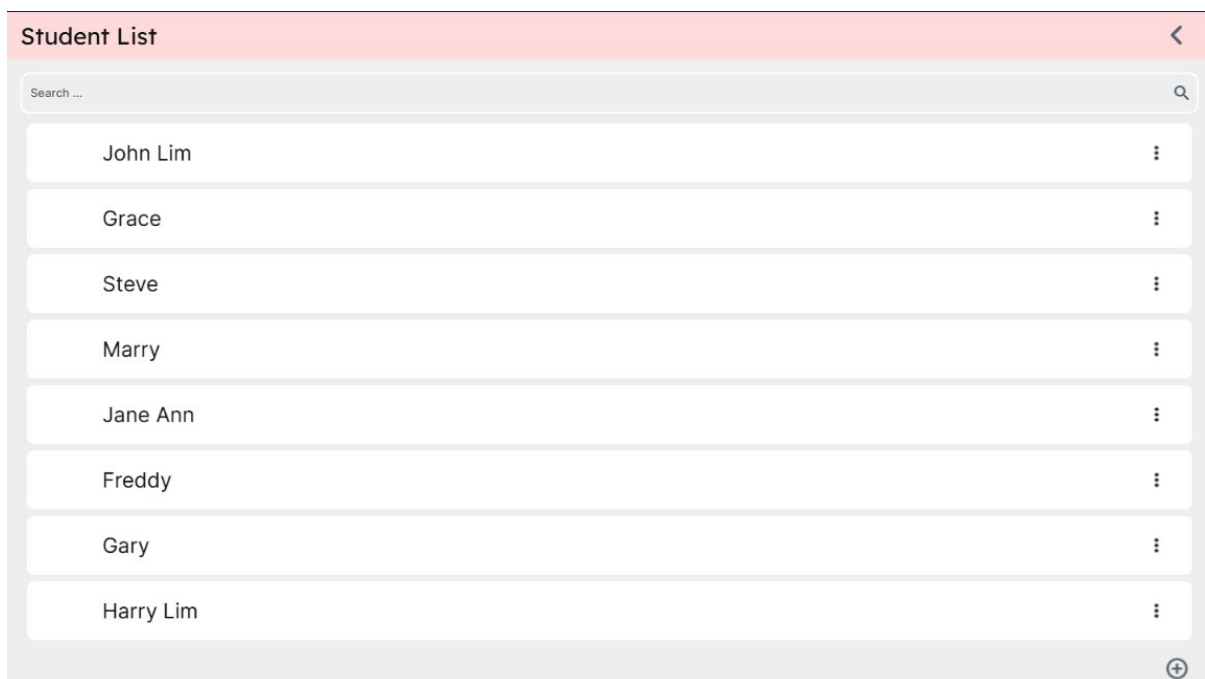
Figure 6.29 Student List Page

The Student List Page shows the list of students recorded. When users click on the plus icon at the bottom right of the list, they will be directed to the Create Student Page. Users can return to the Student Management Page by clicking on the arrow icon at the top right of the screen. When users click on the student's name row, they will be directed to the Student Profile Page. Users can also search for student names using the search bar and entering the student's name.

6.2.22 Create Student Page

Figure 6.30 Create Student Page

The Create Student page allows users to create student records into the database. Users will need to fill in the Create Student form with information such as Student Name, Student Date of Birth, Class Name, Parent Name, Parent Email, Parent Phone Number, Gender, Student Birth Certificate Image and Student Profile Picture. The system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and the user will be navigated back to the Student List Page. Users can return to the Student List Page without creating the student by clicking on the 'X' button on the top right of the page.

6.2.23 Student Profile Page

Figure 6.31 Student Profile Page

Figure 6.32 Edit Student Profile Dialog

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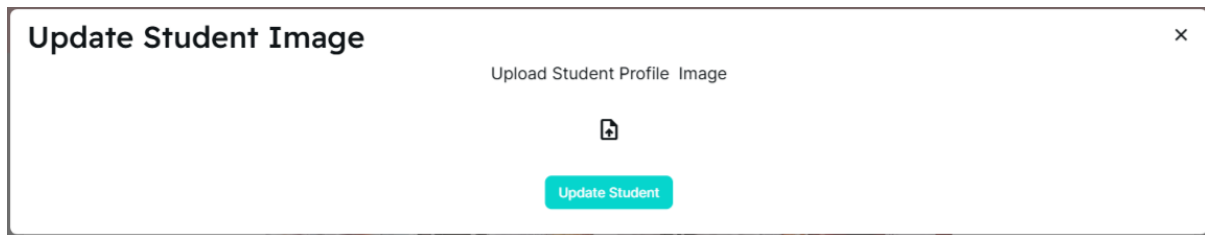
Figure 6.33 Edit Student Image Dialog
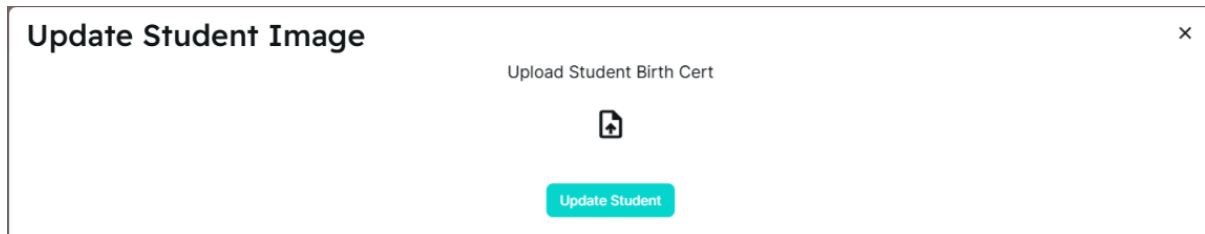
Figure 6.34 Edit Student Birth Certificate Image Dialog

The Student Profile Page shows information of the selected student from the student list. The page shows the Student's Profile Picture, Name, Gender, Date of Birth, Parent Name, Parent Phone Number, Parent Email Address and Student Birth Certificate Image. Users can return to the Student List Page by clicking on the back arrow at the top right of the screen. When the 'Edit Profile' button is clicked, a dialog box will appear on the screen. Users can edit the student's information by changing the information in the form and clicking on the 'Update Student' button. The system will validate the data to ensure that data saved are in the correct format. If there are null or invalid format of data, they system will prompt users to enter the correct data. Once the validation of data passes, the system will store the data into the database and the dialog box will close. Users can close this dialog box without saving by clicking on the 'X' button on the top right of the page. When the 'Edit Student Profile Picture' button is clicked, a dialog box for editing will appear on the screen. Users can upload the new image of the student by clicking on the upload file icon. Users will need to click on the 'Update student' button to successfully update the profile picture of the student. Users can upload the new birth certificate image of the student by clicking on the upload file icon. Users will need to click on the 'Update student' button to successfully update the birth certificate of the student. Users can close this dialog box without saving by clicking on the 'X' button on the top right of the page.

6.2.24 Parent Home Page
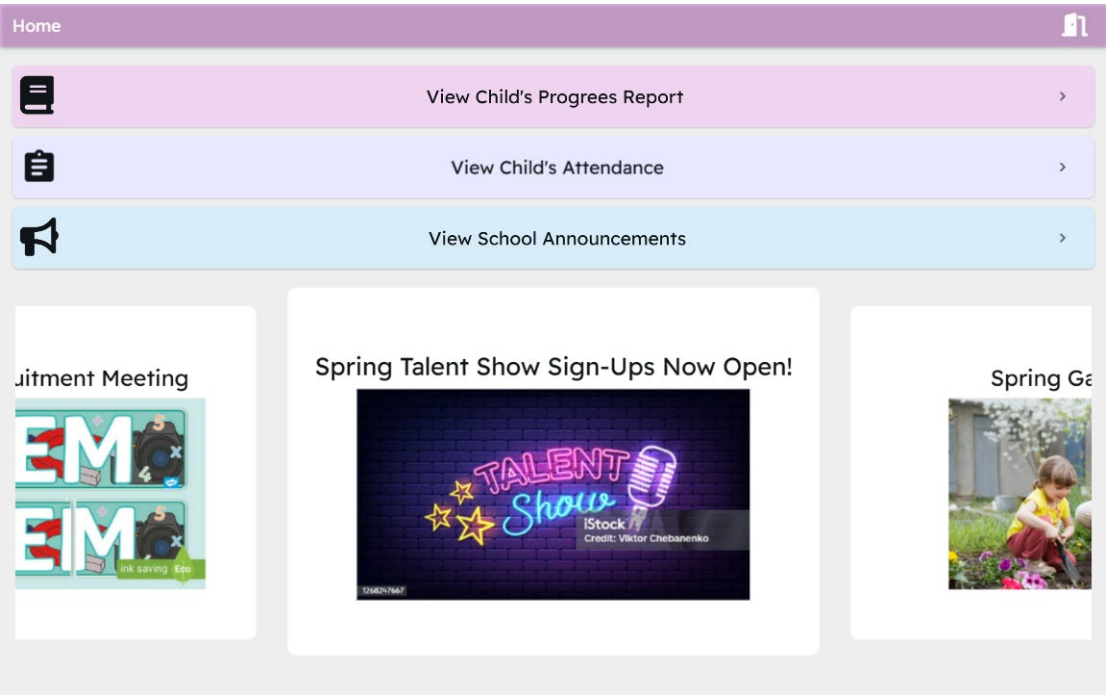
Figure 6.35 Parent Home Page

The Parent Home Page was developed to serve as the point of entry for Parent users. The three primary buttons on this page are the View Child's Progress Report that leads users to the Parent Side Progress Report List Page, the View Child's Attendance that leads users to the Parent Side Progress Report Page and the View School Announcement that leads users to the Parent Side Announcement Page. Below these buttons is a carousel that displays announcements posted by admin users. When users click on the announcement carousel, an Announcement Detail dialog will be shown on the screen with details of the selected announcement. Users can log out of their account by clicking on the door icon on the top right of the screen.

6.2.25 Parent Side Progress Report List Page
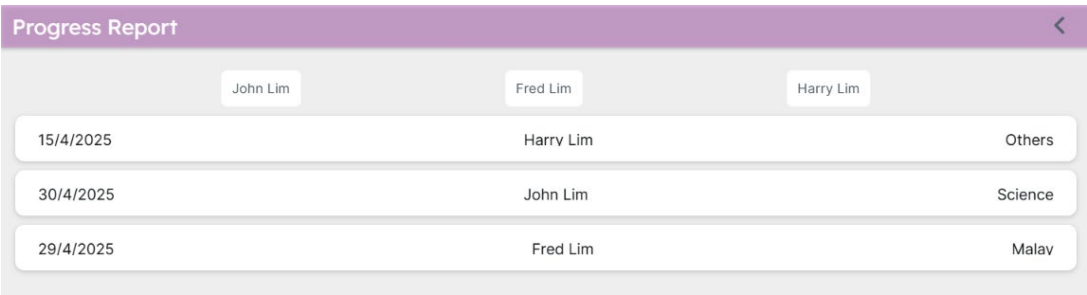
Figure 6.36 Parent Side Progress Report List Page

The Parent Side Progress Report List Page displays the list of associated progress reports of their child with information of the date, student name and subject of the progress report. Users can filter the list by selecting the choice chips containing their child's name and the system will filter the list accordingly. When users click on the row of the progress report list, they will be navigated to the Parent Side Progress Report Page. Users can return to the Parent Home Page by clicking on the arrow icon on the top right of the screen.

6.2.26 Parent Side Progress Report Page
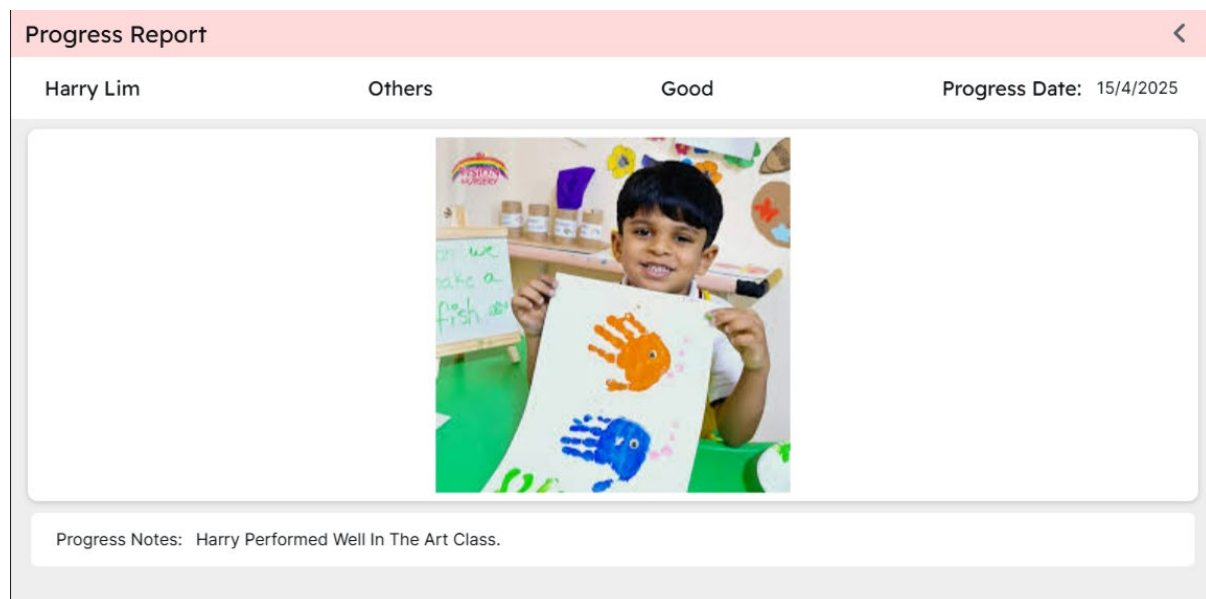
Figure 6.37 Parent Side Progress Report Page

The Progress Report View Page shows the details of the progress report for the selected student such as Student Name, Subject, Grade, Date, Progress Notes, and Progress Image. Users can navigate back to the Parent Side Progress Report List Page by clicking on the arrow icon on the top right of the screen.

6.2.27 Parent Side Attendance List Page

Figure 6.38 Parent Side Attendance List Page

The Parent Side Attendance List Page displays the list of associated attendance of their child with information of the date, student name and status of the Attendance. Users can filter the list by selecting the choice chips containing their child's name and the system will filter the list accordingly. When users click on the row of the attendance list, the Selected Student Attendance dialog will be shown on the screen containing information of the student's attendance records. Users can return to the Parent Home Page by clicking on the arrow icon on the top right of the screen.

6.2.28 Parent Side Announcement Page

Figure 6.39 Parent Side Announcement Page

The Parent Side Announcement Page shows all the announcements posted by the Admin users. Each announcement card will include the announcement title, announcement image and announcement body. Users can navigate back to the Parent Home page by clicking on the arrow icon at the top right corner of the screen.

6.3   Implementation Issues and Challenges

Implementing EdenSpark KinderCare presented several challenges, particularly in ensuring the seamless integration of its various components while maintaining a smooth user experience. One of the primary difficulties was aligning the system's design to accommodate the diverse needs of its users, ranging from administrators to educators and parents. Each user group required distinct features, access levels, and user interfaces, and striking the right balance between simplicity and functionality became a major hurdle. It was essential to create a system that didn't overwhelm users with unnecessary complexity while still providing all the necessary tools for efficient operation. This required careful planning and ongoing iteration during the development process to meet all these varied needs.

Another significant challenge arose in providing real-time data synchronization across multiple devices, especially when utilizing Firebase. Handling large volumes of data while ensuring smooth synchronization and optimal performance under various network conditions was technically demanding. The integration needed to be robust enough to handle fluctuating internet connectivity and large data transfers, which posed a challenge to maintaining system efficiency and responsiveness.

Data security and privacy were also major concerns throughout the development process. Given the sensitive nature of the information being handled, such as financial records, student profiles, and attendance information. Ensuring that data remained protected from unauthorized access and breaches was paramount. This required the implementation of stringent security measures and the continuous review of security protocols to ensure compliance with data protection regulations and best practices.

Despite these hurdles, what sets EdenSpark KinderCare apart is its holistic approach to kindergarten management. By integrating various functionalities, such as data collection, financial management, and stakeholder communication into a unified platform. The system offers a comprehensive solution to many of the inefficiencies that have long plagued the sector.

Although the technical challenges of integrating such a system were considerable, the end result is a solution that improves operational efficiency, reduces redundancy, and enhances the overall educational experience for both staff and students.

6.4   Feasibility of the Proposed Method

Based on the work accomplished thus far, the suggested approach for creating EdenSpark KinderCare, which uses Firebase for the backend and FlutterFlow for the front end, has shown to be reasonably practical. The development progress have shown that FlutterFlow facilitates fast design iteration and prototyping, which enables the team to promptly modify the user interface in response to feedback from stakeholders. This strategy has expedited the development process while guaranteeing that the system will always be user-centred and responsive to the demands of its wide range of users.

Firebase has shown to be a reliable and scalable backend solution for handling user authentication, safe data storage, and real-time data synchronisation. Initial testing has verified that Firebase can meet system requirements, especially when preserving system efficiency while handling massive amounts of data for numerous users. The smooth integration of Firebase with FlutterFlow adds even more evidence to the method's viability. Furthermore, because the development process is modular, it has been possible to make incremental adjustments and enhancements, ensuring that each component works properly before going on to the next. The early research indicates that the suggested approach is workable and well-suited to accomplishing the project's goals, offering a solid basis for EdenSpark KinderCare's successful implementation.

CHAPTER 7

Phase 4 Testing

Phase 4 focuses on the testing activities carried out to ensure the program functions as intended. This phase is divided into two key parts: Unit Testing and Integration Testing.

7.1   Unit Testing

This section details the unit testing procedures undertaken to confirm the correct functionality of individual components within the EdenSpark KinderCare system. Unit testing is a critical phase in the development lifecycle, as it involves isolating and evaluating each function, method, or module independently to ensure it performs as expected under a variety of predefined conditions.

During this process, test cases were designed to cover both typical use scenarios and edge cases that might challenge the system's robustness. For each unit, documentation included a clear outline of the input data, the anticipated outcome, and the actual result observed during test execution. Discrepancies between expected and actual outputs were analysed to identify logical errors, incorrect data handling, or integration issues.

Test ID	Unit Tested	Test Description	Expected Output	Actual Result	Status
1	Student Count	Show correct student count from student list	Count of student from student list is correct	Correct student count from student list	Pass
2	Sum of Total Budget	Show correct total budget amount from budget list	Sum of budget from budget list is correct	Correct sum of budget shown	Pass
3	Announcement View	Show correct Announcement based on Announcement ID	Announcement detail shown is correct.	Correct announcement detail shown	Pass
4	Attendance Percentage	Show correct Attendance percentage	Attendance percentage from	Correct attendance	Pass

		based on Attendance status	attendance status is correct	percentage shown	
5	Input Data Format	Show correct format for Amount entered	The format of amount entered is in decimals	Correct amount format	Pass
6	Drop-down List	Displays correct drop-down list for months	The drop-down list displayed is correct	Correct drop-down list shown	Pass
7	Data List Filtering	Filter correct attendance status in attendance list	The data filtered from attendance list is correct.	Correct data filtered from attendance list	Pass

Table 7.1 Unit Testing

7.2   Integration Testing

This section documents the integration testing conducted to ensure that different modules within the program interact correctly with one another. Each test case is designed to validate that when individual components are combined, they function seamlessly and produce the expected results. The table below outlines the test case objectives, detailed descriptions, expected outputs, actual results, and the status of each integration test executed.

Test ID	Test Case Objective	Test Case Description	Expected Output	Actual Result	Status
1	Check correct login for User 'Admin'	After user email and password has been verified, user with role 'Admin' log in into Admin Home Page	User role 'Admin' log in Admin Home Page	User role 'Admin' log in Admin Home Page	Pass
2	Check correct login for User 'Parent'	After user email and password has been verified, user with role 'Parent' log in into Parent Home Page	User role 'Parent' log in Parent Home Page	User role 'Parent' log in Parent Home Page	Pass

Table 7.2 Integration Testing

Chapter 7

7.3   Objective Evaluation

The development and implementation of EdenSpark KinderCare have been driven by several key objectives, each aimed at enhancing the management and efficiency of kindergarten operations. Below is the evaluation of each objective, demonstrating how they have been successfully achieved:

The objective of developing and implementing a comprehensive financial management system was fully realized. The system enhances financial tracking and reporting accuracy, streamlines budgeting processes, and simplifies expense management. Administrators can now easily generate financial reports, track expenses, and make well-informed decisions about budgeting and resource allocation. The user-friendly interface ensures that even those without deep financial expertise can effectively manage and oversee the kindergarten's finances. This achievement has made the financial management process more transparent and efficient, contributing to the institution's long-term sustainability.

The goal of centralizing and streamlining data management has been successfully completed. The system integrates student records, attendance monitoring, and communication channels between educators and parents into a single platform. This centralization has not only improved data retrieval efficiency but also fostered better collaboration among all stakeholders. administrators and parents can now access real-time information about student progress, attendance, and upcoming events, which enables quick decision-making and enhances communication. The system has significantly reduced the time spent on administrative tasks and has increased the overall efficiency of managing data related to students and staff.

The integration of administrative processes was another critical objective that has been fully achieved. The system combines student record-keeping, staff management, and student progress reporting into one unified platform. This integration has led to more efficient administrative workflows by eliminating redundancy and ensuring consistency in data management. Staff members now have access to up-to-date information, which improves collaboration and ensures the alignment of educational efforts. By centralizing administrative tasks, EdenSpark KinderCare has minimized errors and duplication, allowing resources to be used more effectively and contributing to a more organized and efficient system.

Enhancing parental involvement was a central goal of the system, and it has been successfully implemented. The development of an interactive parent portal has created a transparent

communication channel between educators and parents. This portal allows parents to access real-time updates on their child's progress, attendance, and announcements. By facilitating easy communication, the system has enabled parents to become more involved in their child's educational journey. The system not only allows parents to track their child's progress but also encourages active participation in school activities, thus strengthening the connection between the school and the home environment. This has ultimately led to improved collaboration and a more engaged and supportive community for the students.

CHAPTER 8

Phase 5: Cut Over

8.1   Final System Review and Evaluation

In the concluding phase of the project, a comprehensive review and evaluation of the EdenSpark KinderCare management system was conducted. This assessment focused on verifying that each component functioned correctly and aligned with the project's overall goals. Key modules developed and reviewed during this stage included Financial Management, Student Management (comprising Attendance Management, Progress Report Management, Class Management, and Student Profile Management), Staff Management, and Parent Access features.

For the parent side, functionalities such as parent login and the viewing of student progress reports, announcements, and attendance records were thoroughly tested to ensure a smooth and intuitive user experience. Each module was evaluated based on functionality, user interface consistency, data accuracy, and responsiveness. Any necessary refinements were implemented based on this evaluation to enhance system reliability and usability. This final review confirmed that EdenSpark KinderCare is ready for deployment, providing a complete, user-centered solution to streamline kindergarten administration.

The system is now fully developed and functional, but it is not yet open to the public. At this stage, the system is available for use by a select group of users for testing and gathering feedback. Once these evaluations and adjustments are completed, EdenSpark KinderCare will be ready for a broader public release. This release will be a part of future work, allowing for a wider implementation and adoption across kindergartens to enhance their administrative processes and user experience.

Chapter 9

Conclusion

This chapter summarizes the key findings and accomplishments of the EdenSpark KinderCare project.

EdenSpark KinderCare addresses key kindergarten management issues related to stakeholder communication, data recording, and financial management. The ineffectiveness and dispersion of kindergartens' present management practices, which sometimes rely on antiquated or manual procedures that can result in resource mismanagement and communication breakdowns, have been cited as a significant issue. This project aims to provide a centralised, user-friendly platform that simplifies these processes and raises the efficacy and efficiency of kindergarten management.

Throughout the development of EdenSpark KinderCare, several essential features have been implemented, including Financial Management, Student Management (with components such as Attendance Management, Progress Report Management, Class Management, and Student Profile Management), and Staff Management. Additionally, the system allows parents to log in and access important information, including progress reports, announcements, and attendance data, promoting engagement and communication between parents and the school.

The development process involved a series of iterative design phases, testing, and refinement to ensure that the system met the needs of all stakeholders, including administrators, educators, and parents. Despite facing challenges such as ensuring data security, managing real-time data synchronization, and balancing the system's functionality with the user interface's simplicity, EdenSpark KinderCare has been successfully developed and is now functional.

The system's hardware setup is straightforward, requiring only any device with internet access to function, making it adaptable to a wide range of devices. On the software side, FlutterFlow was used for the front-end development, and Firebase was utilized for the back-end, providing real-time data synchronization and a secure storage solution. This combination of software technologies ensures a seamless, efficient, and scalable system.

At present, the system is available for use by a select group, with feedback being gathered to further refine the platform. The future work involves preparing the system for public release,

allowing a wider range of kindergartens to benefit from its features. Once the feedback from the initial users is incorporated and final adjustments are made, the system will be made available for a broader audience.

In conclusion, EdenSpark KinderCare offers a comprehensive solution for kindergarten administration, streamlining processes and improving efficiency for both educational staff and parents. With the upcoming public release, the system promises to enhance the operational aspects of kindergartens and foster better educational outcomes for children, teachers, and their families.

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Appendix

Poster

EdenSpark: KinderCare
Streamlined Excellence in Records and Resource Management

1 Introduction

Kindergartens often face challenges due to manual management systems. These challenges include poor communication, scattered data, and weak financial tracking. To address these issues, EdenSpark KinderCare provides a digital solution designed to centralize and simplify operations.

2 Methodology
Rapid Application Development (RAD)

Requirement Planning
User Design — Prototyping — Construction
Testing
Cutover

3 Discussion

- Simplifies admin work and reduces manual errors.
- Enables better communication with parents.
- Balanced user needs with system performance.

Challenges
- Real-time data syncing
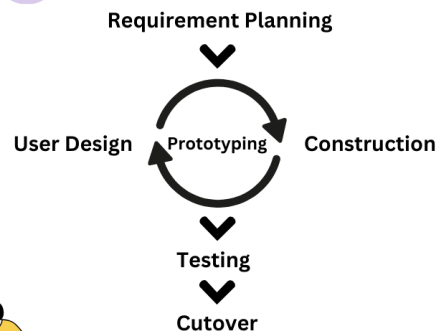- Role-based access
- Security

4 Results

Created modules for:
- Student management
- Staff management
- Attendance recording
- Progress reports recording
- Announcements
- Parent login & viewing

5 Conclussion

✔ EdenSpark KinderCare improves kindergarten management.

✔ Centralizes data and enhances efficiency.

✔ Enables better communication for educators and parents.

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