Republic of the Philippines
BATANGAS STATE UNIVERSITY
The National Engineering University
JPLPC – Malvar Campus
COLLEGE OF INFORMATICS AND COMPUTING SCIENCES

LEARNING MANAGEMENT SYSTEM FOR TALISAY SENIOR HIGH SCHOOL

A Capstone Proposal Presented to the Faculty of the
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In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science in Information Technology
Major in Service Management

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APPROVAL SHEET

This Capstone Project entitled "**LEARNING MANAGEMENT SYSTEM FOR TALISAY SENIOR HIGH SCHOOL**", prepared and submitted by **LINSANGAN, JOHN RENZO G., AALA, CARL JUSTINE C.,** and **PEREZ, PATRICIA C.** in partial fulfillment of the requirements for the Degree, Bachelor of Science in Information Technology Major in Service Management, has been examined and is recommended for Oral Examination.

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DEDICATION

With profound appreciation and heartfelt reverence,

we dedicate this labor of love,

to the boundless universe of knowledge,

that ignited our quest and fueled our resolve,

to our dearest families, whose unwavering support,

illuminated our path through the darkest hours,

to our respected thesis adviser, for his wisdom and

guidance, nurtured our growth and shaped our achievements,

This is our tribute to the relentless pursuit of excellence

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EXECUTIVE SUMMARY

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Talisay Senior High School is a public senior high school that is located at Tumaway, Talisay, this is the only public senior high school in Talisay, Batangas. Since it is a senior high school, the school offers four strands, in which are, Science, Technology, Engineering and Mathematics or STEM, Humanities and Social Sciences or HUMSS, Accountancy, Business and Management or ABM, and lastly, Technical-Vocational-Livelihood or TVL strand.

The developers discovered that the school teaching and learning styles is still in the traditional way, in a face-to-face in which, according to the teachers, the performance of the student has decreased. Since pandemic came, the percentage of the school using eLearning has increased so the developers offer a platform that will

enable the interaction through online and allows them to have access from the content materials, with the help of internet.

The goal of this capstone project is to provide a learning management system that will cater a platform and help the users to manage, track, and deliver materials and contents through online, which helps them to be flexible in terms of teaching and learning. This system provides gamification feature such as awards, point system, and leaderboards that will provide motivation for the students to comply and do their best to have a good grade, be at top in the leaderboards, and received awards. In class course section, the system allows the teacher and student to interact, in terms of content creation, in which the teacher create course subject that allows them to provide materials and assessments. Once the class course is created, the student can join using the class code that is auto generated once the class course is created. The teacher can provide materials and assessments such as question, assignment, material, and quiz that will be complied by the students. Those assessments will be labeled as written works, performance tasks, and exam, in which each label has their own percentage to compute the scores of the assessment and turn it as the grade of that student in the course subject. The developed system also has announcement and news that the users can view depends on how the administrator posted it, based on the strand and the time span of the news and announcement. Once the results are done, those are converted into reports in which

both the administrator and teacher can print it into hard copy which can be used as a proof or record of the data in the LMS.

In order to make the developed system happen, the developers used different tools in creating the web-based learning management system, specifically, HTML, CSS, JavaScript, and Bootstrap for the front-end of the website, which are the interface in the user's view. Not just that, in order for the front-end to have data in each function, the developers created the back-end of the website using the MySQL for the database and PHP in order to connect the MySQL data into the website. Since it is a web-based system, the developers used the Web Development Life Cycle (WDLC) as a basis for creating the capstone project. The developers followed the 7 phases which starts with the planning phase, exploration phase, refinement phase, as well as production phase, implementation phase, launch phase, and lastly maintenance phase. Meanwhile, for the development approach, the developers used top-down approach since the client of the developers doesn't have a LMS so the developers thought that the best approach to use is the top-down approach which has an approach in terms of planning, analysis, design, implementation, and maintenance.

The developers used qualitative and quantitative research in order to evaluate and distinguished the needs and functionalities of the system. Also, the developers used test cases, as well as the International Standard Organization (ISO) and IEC

25010:2011 software evaluation criteria which conclude the functionality, reliability, usability, efficiency, and the portability of the system. The developers gathered 30 users for respondents, 1 administrator, 1 adviser, 4 teacher, 4 parent, and 20 students for each strand. After gathering the survey, the test case result show 100% success rate which means that all the functionalities are running. Through evaluation, it is concluded that the developed web system works properly, in which both the intended outcome and demands both the client and developers have meet together. These results imply that the developed system has the capability to be used by the client, in which, the developers recommended to implement and maintain the Learning Management System for Talisay Senior High School.

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CHAPTER 1

INTRODUCTION

This chapter provides a brief overview of the project; it presents the project context, the purpose of the study, the system's objectives, scope and limitations, and the terminology used in the system's development.

Project Context

Online classes become a standard way of teaching and learning since pandemic, throughout the years it shows success and both teacher and students adapting into a different way of learning through online platform. Unfortunately, classes aren't the only thing that must be prioritize but also the learning materials, assessments and activities that the students must accomplish. Learning Management System is a web-based technology that will serve as platform for the administrator, teachers, students, and parents on handling the data, materials, reports, and tracking the progress and performance of the students. LMS will be the platform on the collaboration of the teachers, students, and parents which will obtain a huge step-up for Talisay Senior High School.

One of the forms that is part of the advanced technology is Learning Management System (LMS). It is a software application or web-based technology used to plan, implement and assess a specific learning process. It has become

increasingly attractive in the past few years. Technical innovations have redefined the teaching learning process and it all started in 1924 by the invention of the teaching machine. Learning Management System (LMS) is used for eLearning practices and, its most common form, consists of two elements: a server that performs the base functionality and a user interface that is operated by the instructors, students and administrators [1].

A centralized platform where they can access all of the learning resources, track their progress, and collaborate with other students, in short, called as Learning Management System (LMS). It is a software that allows educational institutions to design, manage, and distribute eLearning material and training programs to their students. With the development of online learning, top LMS platforms have grown in popularity among education institutions all over the world. From the list, there are top 10 Learning Management System Platforms for education, in which to elaborate only the top 5, which are: Hurix, Moodle, Edmodo, Blackboard, and Canvas. Also, from the top 9 is the Google Classroom, in which mostly are used for the K-12 schools and higher education institutions which is mostly used by the schools, high school and college. Ultimately, in the digital era, a learning management system is a vital tool for educational institutions. It can assist universities in providing student with interesting, individualized, and successful learning experiences [2].

The developed system, there are four entities that has different user interface and functions to be dealt with. First is the Administrator Entity, wherein the system allows the administrator to manage the students, teachers, and parent's account, the administrator can add, edit, and delete users and provide user roles. Also, the administrator can provide news and announcements regards from the school data and lastly, the administrator manages the feedback and requests of the users of the system in order to provide improvement, positivity, and innovation to the system. Second is the Teacher Entity, in this entity, the system allows the teacher to create a class course wherein they can upload and facilitate learning materials, assessments and activities of the students, provide a to-do list, provide student and grade reports, and to track the progress and performance of the enrolled students. Third is the Student Entity, in this entity, the system allows the students to manage the learning materials and activities uploaded to the class course. From finishing course assessment, mainly, the quiz, the system has gamification feature wherein the students can receive such awards and be able to join into leaderboards based on their performance. Lastly is the Parent Entity, in this entity the system allows the parent to view and check their child's progress and performance in order to know the circumstances and to provide actions if there are problems within the result in the progress and performance of their child.

Talisay Senior High School is located in Tumaway, Talisay, Batangas. This

is the only public senior high school in Talisay, Batangas wherein it has 4 strands which are HUMSS, STEM, TVL, and ABM. It is a public senior high school, in which follows the curriculum of DepED. In a Senior High School Grading System, it follows an order in which under D.O. No. 8, s.2015 effective school year 2015-2016, it must follow the components on providing the calculation of grade through Written Work (WW), Performance Task (PT), and Quarterly Assessment (QA). Wherein from written work, it makes sure that the student can express skills and contents in written form, while in performance task, it allows the learners to show what they know and can do in diverse ways. Lastly, from quarterly assessment, it measures the student learning at the end of each quarter. This allow the school to provide a certain percentage in calculating grade depending on the academic track and the majority of the subject [3].

Gamification is the use of game designs elements, such as rewards and points, in non-game contexts, such as education. The goal of gamification is to make the learning experience more enjoyable and engaging by tapping into the brain's reward system. When students are rewarded for their efforts, they are more likely to continue to engage in the learning process [4].

So, what is the difference between gamification and game-based learning? It's important to note that they are not the same: game-based learning involves using actual games as the method to teach specific skills or concepts, while

gamification involves incorporating game elements into non-game contexts [4].

Gamification was found to improve students' learning experiences by increasing engagement and motivation. The use of game mechanics show that gamification increases student motivation and sense of achievement. Additionally, the study found that gamification can be effective in promoting skills such as problem-solving, critical thinking, and collaboration [5].

The developer's motivation in implementing and creating LMS for Talisay Senior High School is providing an online platform that is accessible by the teachers and students anywhere and anytime, with the help of internet. The developed system provides an innovative way in the teaching and learning method of Talisay Senior High School. By having this system, the announcements and notifications will be shown through a to-do list and push notifications of the system. As well as the learning materials and assessments of the students that will be uploaded by the teachers will be provided and will be shown from the main dashboard of the student section. With this platform being implemented and used by the school, this will reduce the consumed time of the teachers by being able to upload all of the learning materials, provide announcements, and generate grade reports which will store into the system. Likewise, the students can easily access all of the learning materials and assessments uploaded by the teachers, they can also determine their missing assessments that must be completed in a certain date

and time.

Once the developers planned the development of the system, the developers conducted an interview from Talisay Senior High School, and there, according to the teachers, there are changes to the grades of their students which the teachers concluded that those students are being unmotivated and unwilling in terms of the teaching and learning method within the school. Because of the unwillingness and being unmotivated of the students, this is very alarming problem that the teachers experience. With that, implementing not just an LMS that served as their new platform, it also has gamification feature to boost the motivation of the students, wherein when the students earn points for completing tasks or badges for reaching milestone, their brains release dopamine, reinforcing the behavior and motivating them to continue. Science and research have shown how gamification increases student motivation, engagement, which leads to improved academic performance. [4]. Add to that, the teachers agreed that providing a parent entity that allows them to track the performance and progress of their child will improve and resolve those problems.

Fortunately, gamification has emerged a powerful tool for increasing student motivation in the classroom, and for good reason. Gamification can encourage student progress and motivate them to participate and learn. Gamification is made up of mechanics and techniques. Gamification techniques,

are the strategies teachers use to incorporate game mechanics into lesson to provide incentive for participation. As for gamification mechanics, the developers used techniques such as points, leaderboards, and badges in order to provide gamification mechanics in the system. In conclusion, gamification is a powerful tool for educators to engage and motivate their students. By tapping into the brain's reward system and incorporating mechanics such as points, leaderboard, and badges, gamification increases student motivation. Overall, gamification provides a fun, engaging, and rewarding learning environment that inspires students to learn and grow [4].

Learning Management System for Talisay Senior High School is a web-based system which is programmed in different languages and styles which are HTML, CSS, JavaScript, PHP and Bootstrap. The developers used Bootstrap since they want the interface of the system to be used and be responsive in different platforms such as mobile and desktop. Add to that, the system will use MySQL for the database which will serve as the platform for the upcoming and incoming data and information provided by the users such as administrators, teachers, students, and parents.

Purpose and Description

The developed system entitled "Learning Management System for Talisay Senior High school" aims to provide a platform that enables the flexibility and

adaptation in the new level of generation of learning. The developed system innovates the old-way of learning and teaching styles of the schools by providing a platform wherein the teachers can upload the learning materials and assessments provided to the learners. Also, to empower the innovative way of managing, performing, and delivering the concepts and contents in the developed system like announcements, gamification, content creations and more.

In terms of Teachers, the developed system improves and benefits the teacher in terms of generating grade reports and tracking data in terms of assignment, question, quiz provided to the learners. The developed system serves as the platform on providing the learning materials that removes the hassle and complexity of providing it in face-to-face or other platforms like social media.

In terms of Students, the developed system allows the students to correspond to the contents and materials in the class that is provided by the teachers in terms of viewing, downloading, complying. Add to that, the students can track their progress and performance, related awards based on the results of their performance to provide motivation and it will improve the flexibility and innovative idea in accessing the system in the process of learning.

In terms of Parents, the system allows the parents to track the progress and performance of their child's designated tasks for them to be able to respond on providing motivation and lead their child in a better way.

For the users to have access in the system, the developers avail a subscription to Hostinger for them to upload and provide platform in making it a website that is accessible with the help of internet. Since the developed system is uploaded as a website, the user can view and have access with the web-based system based on their designated accounts provided by the administrator. Designated accounts have their own username and password for the login process and a user role that access into a certain entity of the system.

Objectives of the Study

The main objective of the developed system is to create a learning management system that provides a platform for managing, delivering, and tracking learning activities and content for learners. It aims to facilitate the learning process, support instructional design, and ensure that the learning objectives are met. Specifically, it aims to develop the following:

1. User Management:
    1.1. Manage the student, teacher, and parent's/guardian account;
    1.2. Collaborate teachers and learners into classes;
    1.3. To-Do List and Push Notifications
2. Course Management:
    2.1. Deliver learning materials, and archive;
    2.2. Track and monitor learner's progress and performance;

2.3. Content Creation;

2.4. Gamification for learners;

2.5. Examinations;

3. Data collection and reporting:

3.1. Student Reports

3.2. Teacher Reports

3.3. Parent Reports

3.4. Report of Grades

4. Learning Portals that facilitate the following:

4.1. Parents/Guardian and learner's account:

4.1.1. View and Check learner's progress

4.1.2. Provide feedback services and update request

4.1.3. Check Awards, News, and Announcements

4.2. Teacher's Account:

4.2.1. Assess and modify learner's progress

4.2.2. Facilitate learner's assignment, quiz, and exam

5. To test and evaluate the development of the project using;

5.1. Test Cases and;

5.2. ISO/IEC 25010:2011 software evaluation criteria in terms of:

5.2.1. Functionality;

5.2.2. Reliability;

5.2.3. Usability;

5.2.4. Efficiency;

5.2.5. Portability; and

6. To develop an implementation plan for the development of the project.

Scope and Limitations

Every system has its own strength and weaknesses. In this section, it demonstrates what the system is capable of and what it is not capable of. The developers created a learning management system for Talisay Senior High School.

It is a web-based system in which focuses on the learning materials, announcements, collecting reports in learner's data in performance and progress, and collaborating the social learning on teachers and learners into groups and organizations that will serve as platform for managing, delivering, and tracking learning activities and contents for learners.

The web-based system is consisting of four entities which are, administrator, teacher, student, and parent. From the administrator, the system allows the administrator to manage accounts for the users, it allows the administrator to manage announcements and news to be provided by the users which covers the school updates and news. The system allows the users to provide collaboration in terms of uploading, tracking, and managing the courses created by

the teachers for its intended students. From the courses, the system allows the users to manage the uploaded materials in the courses such as, download, delete, archive, and edit. Once the users are satisfied with their experience, the users can provide feedback and requests which is to be received by the administrator, which will determine the performance of the system and what are the improvements that must be made from the system.

The developed system is uploaded on a hosting, so, in order for the users to have accessed and to be viewed, it requires internet connection. Also, since it is a web-based system, it can be viewed by everyone; however, only registered accounts given and provided by the administrator has the authority and access to view the contents of the web-based system. Also, from the user's accounts, they don't have the access on updating and editing their account's information from which only the administrator has the access to manage the account's information.

Definition of Terms

In this section, terminologies are gathered by the developers, so that the readers to fully understand and determine the exact meaning of terminologies.

Administrator. It is a user account on a home computer accessible only by the user who manages the computer system [6]. In the developed system, the administrator is the one responsible to take care of the user accounts, permissions, access rights and storage allocations and manage the system.

Database. A database is an organized collection of structured information or data, typically stored electronically in a computer system [7]. In the developed system, the database serves as the storage of data that is incoming from the website.

E-Learning. Also referred to as an online learning or electronic learning, is the acquisition of knowledge that takes place through electronic technologies and media [8]. In the developed system, it is the main foundation of having a learning management system that is accessible through internet.

Game-based Learning. Game-based learning involves using actual games as the method to teach specific skills or concepts [4]. In the developed system, this is used as guide in which, to provide a more entertaining process, to implement the gaming process into the activities of the learners.

Gamification. Gamification is the process of using game mechanics, elements, and principles, and applying them to non-game context to engage users better [9]. In the developed system, gamification is added by providing such as leaderboards, awards, and point system for the students in the developed system.

Gamification Techniques. Gamification Techniques are the strategies teachers use to incorporate game mechanics into lesson to provide incentive for participation [4]. In the developed system, the developers used gamification techniques and mechanics such as, point system in which the scores will be converted as leaderboard points, leaderboard rankings, and the awards that the

student will receive based on their performance in each subject.

Learning Management System (LMS). A learning management system (LMS) is a software that is designed specifically to create, distribute, and manage the delivery of educational content [10]. In the developed system, it serves as the platform in providing, managing, and delivering materials and courses between the interaction of all the users in the developed system.

User-interface (UI). User-interface (UI) defines the way humans interact with the information systems. In Layman's term, User-interface is a series of pages, screens, buttons, forms, and other visual elements that are used to interact with the device [11]. In the developed system, the developers provided a interface that is user-friendly for its intended users.

Server. Servers are high-powered computers built to store process, and manage network data, devices, and systems [12]. In the developed system, the server that is used is based on the hosting that the developers subscribed at, which is from Hostinger.

Web-based System. A web-based system provides access to a software system using a computer and internet connection [13]. In the developed system, this allows the users, and administrator, to provide interaction with the help of website hosting and internet connection.

CHAPTER 2

REVIEW OF RELATED SYSTEMS

In this chapter, the developers discussed different technologies and tools to improve the developed system. It presents related system and technical background relevant to the development of the system. To make this possible, the developers gathered different related systems to enhance the developed system.

Technical Background

The developers developed a school website for Talisay Senior High School that aims to provide a platform for the client to manage the materials provided to the learners as well as tracking the student and instructor data reports and provide announcements. As well as providing gamification and content creation in enhancing and providing features that motivates the learners. The developed system holds four entities which has a friendly user-interface and different functionalities that works well with regards on who the users are. In order for the developers to achieve their objectives, variety of tools were used in developing the system.

With the aim of having a friendly user-interface, the developers created a user-interface layout design using Figma which is a software that helps designers and developers create digital products. This software will be a user-friendly

platform that offers a variety of features, including a drag-and-drop interface, a built-in prototype editor, and a variety of integrations with software. With all of the features and functionalities provided by the software, it shows a great result for the desired outcome of the developer's developed system.

In order to create the frontend of the developed system, the developers used HTML or Hypertext Markup Language, CSS or Cascading Style Sheets, Bootstrap and JavaScript. HTML is used on creating the structure of the developed system. This will help the developers in creating the proper format of texts, images, buttons, and images as well as it will be used for separating different elements such as the header, main content and the footer element.

To make the design appealing, creative, and approve in the client and user's perspective, CSS is used to format the layout and design of the website. It helps to describe how HTML elements to be displayed on the user's interface or in other media like laptop, cellphone, tablet, and desktop. CSS let the developers to control the layout of multiple web pages into a one form which will be defined in a single file of CSS linked through different HTML files. This allows the developers to provide and make the desired designed of the system based on how it is handed to the client.

Add to that, in order for the website to be interactive, the developers used JavaScript as their scripting language for them to be able to create a dynamic web-

page. JavaScript allows the website to interact in terms of navigation drop-down on hover, pop-up notification, and it optimizes the browser experience by only sending the code that the user needs.

Next, in creating the backend of the developed system, the developers used PHP as their server-side scripting language and MySQL for their database. In order to perform operations within the system's database, PHP is used to retrieve, add, delete, and modify data into the database. Since the developers used PHP, MySQL served as the system's database since it widely supports each other and it is huge advantage for the developers with regards to their experience.

After all of the making process, the developers used XAMPP (Cross Platform, Apache, MySQL, PHP, Perl) for them to test the website in a local webserver. After testing, the developers avail a subscription in Hostinger for them to be able to deploy the developed system and finalized the interface, functionality, performance, and stability of the developed system.

System Architecture

In developing a system, it is important to consider the system analysis and design in order to understand how the system works. Through system analysis and design, it helps the developers to improve the system, and occurrences of errors can ultimately be reduced. The developers gathered and interpreted needed information, diagnosed problems, and used the information to recommend future improvements

for the developed system. In line with this, we can make a better system that will satisfy the demand and requirement of its users.

Figure 1. System Architectural Diagram

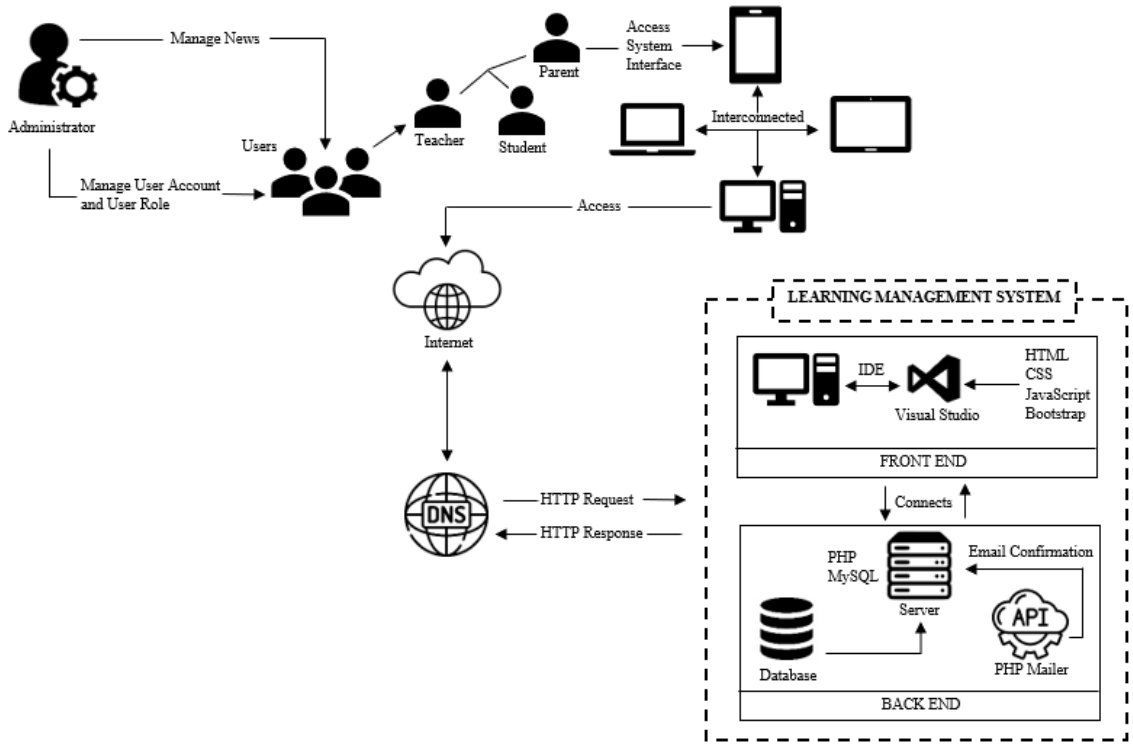


Figure 1 shows the system architectural diagram of the system. From the entity of administrator, the system allows the administrator to manage user account and user role, and also to manage news, for the system's intended users. Once it is done, in the user entity, it is categorized in three entities such as teacher, student, and parent. Once the creation of account is complete, the users can interact with the system interface of the system, such as from the desktop, laptop, tablet, and phone gadgets. In order for the users to access the website from the device, it requires internet connection since

the website is uploaded online in a web hosting - Hostinger. Then, the user can access their designated domain provided. Once the users have successfully accessed the appropriated domain names, it will proceed to match the provided domain names with their corresponding IP addresses. Subsequently, the HTTP requests originating from the end-user's devices will be directed towards the hosting service.

The developers used PHP to create a dynamic website where administrators and user entities will work and perform transactions. Aside from PHP, the developers also use Bootstrap to achieve the responsiveness of the system interface, to provide interconnectedness in using the website in different website with their own user-friendly system interface. Once the functionalities and interface are done, the developers will use MySQL for their database so that the administrator can perform and provide data from the website. Every update and change from the Administrator, it will automatically be uploaded in the system. Also, the developers used an API called PHP Mailer since the developers provided a functionality that allows the users to provide their email to send a process on changing their password accounts.

The system automatically provides an email once the user input their email and proceed with the submit button, a certain account that is created by the developers will send an email to the inputted email. Since it is a web-based system, it compromises to principal elements, which are the front-end and back-end of the system. From the front-end of the system, the developers use Visual Studio as their

IDE to encode the programs in certain programming languages such as HTML, CSS, JavaScript, and Bootstrap. Those languages help the system to provide interfaces that provides the intended functionality and responsiveness in the device to be used by the users. After creating the front-end of the system, the developers created a database in a server, which is PHP MySQL, from there, it encompasses the site's underlying system, structure, data management, and logical processes.

Related Systems

This chapter presents the related systems gathered by the developer which served as the reference for the developed system. The review of related systems is derived from finished theses that have significant relevance to the system. The developer will use the information gathered from the articles to develop plans for the system.

According to Adnan Mohsin Abdulazeez, Subhi R. M. Zeebaree [14], the use of electronic learning (E-learning) is more adequate and applicable to be used in universities and institutes that provide great opportunities for learner and educator to acquire knowledge and improve skills. This led to the development of The Duhok Polytechnic University Electronic Learning System (DPU-ELS) that serves to: DPU presidency, four colleges and eight institutions belong DPU. The system consists of nine modules that provide four groups of services. First group relates with student services: Lecturers Feedback, Discussion Forums and Course

materials that include: Lectures, Assignments, Schedules, Marks and Objections. Second group relates with department services: Academic Staff Authentication, Clearance and Summer Training. Third group relates with Lecturer: Preparing Course Materials and Discussion Forums. And fourth group relates with institution and university services: Exam Committee, Quality Assurance, Curriculum and Statistics. As stated in the project, there are two different study-systems at DPU, two years for institutes and four years for colleges. Therefore, the DPU-ELS is designed according to the structure of DPU. These two different studying systems are depended just at polytechnic universities.

Duhok Polytechnic University Electronic Learning System is similar to the developed system with the terms of modules in Student and Lecturer Module. In the Student Module, it will let the students to browse through lectures and assignments, upload solution of assignments and also the students can download the lectures in the designated subject. While in Lecturer Module, it allows the lecturer browse, upload, remove and edit the existing lectures and assignments that will be provided or already provided to the students. This system provides and prioritize the platform for the student and university staffs.

Simon Woja Luka Justin and Christopher Lamanya Solomon [15] developed a computer-assisted learning system to be used by the university of Juba, Computer Assisted Learning System for University of Juba (CALS), as a tool that

particularly ensures continue engagements between students and lecturers outside lecture halls or remotely. Stating the improvement of the traditional learning system with the help of a computerized software platform that eases access to the learning materials and improves the quality of delivering education. The system was able to provide an overview about Computer assisted learning aspects and the development of an E-Learning system that will facilitate students' access to the learning materials. Furthermore, the system also provided knowledge to the policymakers of the University and lecturers as well as for researchers.

Computer Assisted Learning System is similar to the developed system that includes three entities: Administrator, Student, and Instructor. In terms of features, objectives, and functions, the previous system Administrator Entity will be the one to register the entity of lecturer and students, add courses and delete/modify users. Next is the Student Entity wherein it allows the students to view their profile, download/upload lectures and submit coursework and assignments. Last is the Instructor Entity that allows the lecturers upload multimedia contents like pdf, word documents, and PowerPoint slides for students. The students and teachers have their own accounts to log-in and log-out from the system and also it has message function wherein the system assists learners and instructors to interact virtually.

Ahmed Basheir Abdikadir and Abdifatah Mohamed [16]. Most schools use

manual process of their educational activities; thus, the manual process or partial system does not produce the full report about student's activities and teachers sometimes does not have the ability to share resources to students. Therefore, the comprehensive E- Learning system is needed to solve the current manual system. Hirad E-Learning is an online learning platform for Business, IT & Software, Finance &Accounting, Secondary Subjects, Arts, Personal Development, Design, Marketing, Photography, Teaching & Academics, Health & Fitness and Training programs. To make quality education more accessible and improve lives through learning, Hirad is delivered by an enviable team of qualified and highly experienced trainers envisioned to provide anyone, anywhere with access to the Africa's best online education. Connecting students all over the globe to the best instructors and enable them access quality education and training through robust, integrated and scalable technology platforms, skilled personnel and effective learner support services.

Hirad E-Learning is closely related to the developed system because both systems are web-based. Both systems allow the users to upload, view, and manage and also to interact virtually by having their own accounts. The systems are different in terms of the objectives that the system must met and the functionalities that they system must provide. The previous system is an e-learning that focuses on different courses that the students can enroll while the developed system is a

learning management system that focuses on providing a platform for the users to have access on the learning materials and assessments to a designated subject, not course.

According to Yashraj Nigam, Vinay Nagar, et al. [17], Project on E-learning Management System aims to manage the details of assignments, students, teachers, quizzes, and questions. It provides a user-friendly environment to provide knowledge and give everyone a chance to learn, irrespective of where they are, provided they register themselves with the system. The main features that the system provides can be made use of, once the registered people select their interested subject and take a starter test. This helps to establish incremental learning process. After taking this, based on their level of competence, they can take available tutorials, take online tests and also discuss an issue/topic by posting messages in the discussion forum. Along with this they can also take real time simulations of the most widely known competitive exams.

The related system E Learning (Web Based Management System) similarly focuses on providing a platform that will automate the existing manual system. But for the previous system, it only focuses on providing modules and functionalities like quizzes, assignments, and exams and also integrating the records of the questions. The previous system allows the teachers provide and upload assessments like quizzes and assignments while the developed system will also let

the users upload, view, and download the learning materials such as learning modules and lessons.

Satti Satya Mani Harika and B.N. Srinivasa Gupta [18]. Developing an "e-learning resource management system" to promote a greater count of students to splurge into the field of education. This system provides an online solution to provide teaching and learning environment located within a computer meditated communication system.

E-Learning Resource Management System is similar in terms of generating different type of reports and also providing announcements and news that is added by the faculty and can be view and check by the students. However, the functionalities of the previous system focus on the Virtual Class Room that is designed to help professors and instructors create and teach courses online or use online technology to help run classes while the functionalities of the developed system fulfill the drawbacks in the manual process of the previous system by providing the upload, view, and download of the files, and documents.

Mrs.R.Prema, Gunda Anjali, Pulakuntha vineetha [19]. This system is an E-Learning course platform which uses three panel: admin panel, a faculty panel and a student panel. An admin will control the system and registered faculty can upload courses. Depending on the course category, faculties will get a fixed amount of commission. Students will be more beneficial from using this type of software as

a result they can easily get their essential courses during this software.

The related system MASTERIO is similar to the developed system in terms of providing a platform that let their users upload courses and subjects that must be provided and given to the students. Both the system relies on the administrator which they are the one that creates, add, edit, delete, and update the activities, and records and also to view the list of instructors and students along the courses or subject.

Jilson Correia, Lisa Foss, Sonali Suryawanshi, Magnus Lopes, Tanya Rodrigues [20]. SmartSetGo is an application that makes the online learning system easy to use and with user-friendly way of learning. It allows the teachers and students have the access on creating and joining to a class, provide and view lecture notes and announcements, check and complete quizzes and assignments. It has a unique feature that allows their users to register using face-recognition in order to easily authenticate the user logged in and avoid malicious activity carried by the user.

SmartSetGo has the similarity in terms of providing platform for uploading, viewing, and answering the learning materials and assessments provided for the students. It only differs on the registration process wherein in the developed system, the admin is the one that will register the users while in SmartSetGo, the users are the one that will register and also, they used face-recognition.

Bilal Gonen and Badri Jimale [21]. E-loox is an educational software application that has been designed specifically for students located in areas with limited Internet access. E-loox is a “hybrid app” that can function both on and offline. Once the user logins to the homepage, they can view all of the courses they are enrolled in. Users can access previous, current, and future homework, quizzes, and exams provided by the instructor. It also has message boards that both instructor and students can use the interactive message boards to communicate with each other and has a built-notification feature. To enable the hybrid-app, the users will be able to download the learning materials and assessments so that they can view it offline.

E-loox is similar to the developed system in providing and viewing of their previous, current, and future learning materials and assessments. Also, it enables communication process by providing message boards and a built-notification feature in order to provide notifications regarding on the posted learning materials and assessments, announcements. Both the system can download the contents and materials, the difference only is that in E-loox, the downloaded content and materials are saved into the system while in the developed system, it stores in the device. Also, the platform used in E-loox is application-based while the developed system is web-based.

Dizon, Kate L., Humarang, Joseph M., Manguito, Jenelyn M. [22]. ARAL

BULILIT is a software for early learners that teachers the learners on how to pronounce words through text to speech engine using Filipino as a language. The early learners can access and view their lessons per category and take assessment for each lesson to their module. Add to that, the teacher/administrator will handle and manage the lessons provided to the learners and also view their assessment results. This system specializes on incorporating pre-recorded audio using Filipino as language.

ARAL BULILIT is similar to the developed system in terms of providing a platform in providing the learning materials and assessments with their specialty in features. Both systems can track the learner's performance and progress in each lesson provided. The previous and developed system differs only in the platform since the previous system is a software while the developed system is a web-based system.

Maria Salud M. Delos Santos, Dennis C. Durano,et al. [23]. The lack of online materials for Grade 11 to 12 students motivated the developers to develop a learning management system for senior high schools in the Central Visayas region and the Negros Island region that have been greatly affected by the K-12 BEP (Basic Education Program) implementation. Their publication, "The Development of a Proposed Learning Management System for Senior High Schools in the Philippines", identifies the problems encountered by the principals, teachers, and

students in the implementation, and determines the desired features of a sound learning management system (LMS) for senior high schools (SHS). The LMS was designed and developed to make teaching and learning in senior high school bearable, relevant, and ready for the Fourth Industrial Revolution.

The related system LMS for Senior High School could help the developers have a basis of how the website will perform its functionalities and maximize its usability for the students. Both of the system's target users are Senior High School students, also with the same goal of developing a user-friendly platform wherein students can have an easy access to the learning materials that are hard to find online. Instructors could also manage their students, classes, and learning materials and assessments for the student to view. Students could also view their classes, download learning materials and have access to their progress. Every functionality mentioned are also the same as the developed system.

CHAPTER 3

DESIGN AND METHODOLOGY

This chapter presents the different designs and methodologies used in the development of the system. It also explains the type of research utilized in the study and how it is related in the project.

Data Gathering

This section specifies the method that is used in gathering data for the developed system. It explains how the users gathered data in using the qualitative and quantitative type of research.

The developers aspired to develop a learning management system for Talisay Senior High School that provides a platform in managing, delivering, and tracking learning activities and contents for learners. In order to create this project, the developers used qualitative and quantitative type of research for them to ensure that they get the necessary information to finish this project.

In qualitative research, the developers conducted series of interviews to gather data and information in creating the developed system. The interview was able to help the developers on determining the scope, problems, and scope of the school.

This helped the developers in achieving different ideas from the client's perspective in order to create the desired project.

In addition, quantitative research is utilized in a form of survey questionnaires that is given to the client and its users in order for the developers to determine the perfect quality and functionality of this project.

Project Concept

This section specifies the project concept of the developed system. In this section, it summarizes the goal of what to achieve in implementing the developed system, how it will work for the users of the developed system, such as, teacher, student, parent, and administrator.

The primary goal of this project is to provide a learning management system for the Talisay Senior High School that is accessible for the intended users of the system, such as teacher, student, and parent. Based on the interview that garnered data, an LMS is ideal in motivating the students by providing something "new" that is applicable throughout the school years wherein the system will allow the teacher to provide learning materials and easily assess their students; as for the students, they are able to reach out to their teachers easily, manage their school works, and be updated with the school announcements, lastly for the parents, they can track

their child's learning progress. Also, the users can provide feedback and request with regards to their experience on having access to the system.

For the users, the website is uploaded in a hosting wherein, they can access the website if they have internet. In order to enter inside the website, they must login with their account created and given by the administrator, wherein, it has three entities with different interfaces, such as teacher, student, and parent entity.

For the teacher entity, the teachers can create a class course wherein a code will be generated for the students to be able to join in the class. From the class course, the teachers can manage the materials and assessment courses to be uploaded for the learners, like materials, assignment, quiz, and etc. From to-do list section, once the teacher created assessments, it automatically saves from to-do list which has three different parts, ongoing, missing, and completed. The data from the finished assessments of the students are generated automatically with their answers which can be viewed by the teacher, wherein the teacher can then provide a calculated grade from the results on the uploaded assessments of the students. The system automatically generates reports for the teacher such as student reports and grade reports of a certain class that is handled by that teacher. Lastly, once the teachers are satisfied with their experience, the teachers can provide feedback and request.

For the student entity, the website provides a dashboard that handles the news, awards, and a navigation bar that lets them move back and forth with the interfaces of the website. They can view and manage the learning materials uploaded by the teachers, also a to-do-list is provided in order to show the pending school works or assessments of the students regards with its time and date of its submission. In each of the courses that the students are enrolled in, the students can track their progress, and be informed of their performance in each of the courses based on the results of their learning assessments. The students are also notified on the school's announcements and learning assessments that are uploaded, and are nearing to its due date. Their final grade in each assessment course will also be visible once the course is completed, awards and ranking in each class will also be visible. Lastly, once the students are satisfied, the students can provide feedback and request.

Lastly, for the parent entity, they can access the website, track and monitor their child's performance and progress in each of the courses the students are enrolled in. The parents can also provide feedback and request based with their experience in using the system.

Development Methodology

This section specifies the development methodology that is implemented in developing the project. The developers use WDL which has 7 phases, which are Discovery, Exploration, Refinement, Production, Implementation, Launch, and Maintenance for the developed system.

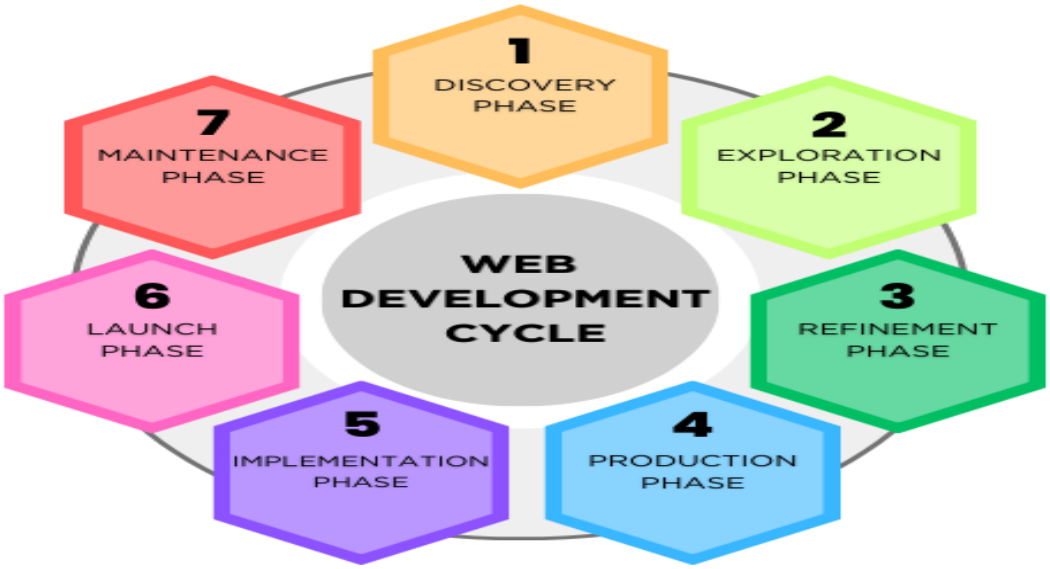
In the process of developing the project, the developers use the Web Development Life Cycle (WDLC). The developers use this cycle since it shows more comprehensive for a device that is focused on developing a system that meets the client's needs which is shown in Figure 2. Its phases are: (1) Discovery, (2) Exploration, (3) Refinement, (4) Production, (5) Implementation, (6) Launch, and (7) Maintenance.

The first phase is the Discovery Phase. In this first stage, the developers discussed their thoughts on providing a system that will be provided and benefit their target client. Identifying the problems in need of a solution. The developers gathered information and performed initial research to conceptualize and identify the capacities of the website that will satisfy the requirements of the client.

The next phase is the Exploration Phase. Based on the gathered information in the first stage, informed decisions are constructed about the structure and features of the website. The developers determined the content structure, schematics,

decided the technology stack and software development methodology based on what the client wanted for the website before the refinement phase.

FIGURE 2. Web Development Life Cycle



Then, for the Refinement Phase. The developers refined the exploration design from the last phase, identifying the navigation, layout, and flow of the website. The developers created website schematics with limited functionality that present interactions and navigation possibilities of the website.

For the fourth phase, the Production Phase. In this phase, the developers present the interface of the website, on how it would look like in terms of its color palette and layout. The developers generate more detailed deliverables that included the final design and interactive prototype. Creating a visualization of the content of

the website and its base features. This phase is crucial and the developers always included the clients' preferences in each step.

The next phase is the Implementation Phase. This phase involves the actual construction of the overall website. The developers focus on the development and completion of the client-side and server-side of the website. The developers started in the front-end development wherein they use HTML, CSS, JavaScript, Bootstrap, and PHP in building the components for user interface and user experience. Then, in the back-end development, the developers make sure of every element to perform the necessary functions, focusing on the back-end logic and the creation of the databases needed.

The website is then presented to the client after the coding stage, the developers together with the client will analyze if all functionalities are working in the desires of the client.

Then, for the Launch Phase. Once the implementation phase is completed, the developers proceeds in the registration of the website's domain name, which the developers subscribed in Hostinger. There, the developers tests the functionality, and provide the online domain of the system, which has the website name talisaylms.online, and there, the developers are able to finalize the project.

Lastly, the Maintenance Phase. In this phase the developers will be served as their administrator as they continue on monitoring the condition of the website and remain to offer the client technical support, ensuring that it continues to operate as intended and that any necessary repairs or improvements are made.

Development Approach

This section specifies the development approach that is used for the developed system. Top-Down is used as an approach for the developed system which concludes the planning, analysis, design, implementation, and maintenance.

In one of the questions listed along with the interview process of the developers to the client, it is stated there that there are no existing LMS to Talisay Senior High School. Therefore, the developers applied the top-down approach as their development life cycle. It is where the developers started from planning the functionalities of the system and the desired outcome with regards on the needs and wants of the client. To be followed by the analysis of the system, designing the system, implementation of the system and providing maintenance for the system. Top-down approach is breaking down of a larger system into smaller segments to gain insight of the compositional sub-systems. Figure 3 shows the development approach that will be used by the developers in developing the system.

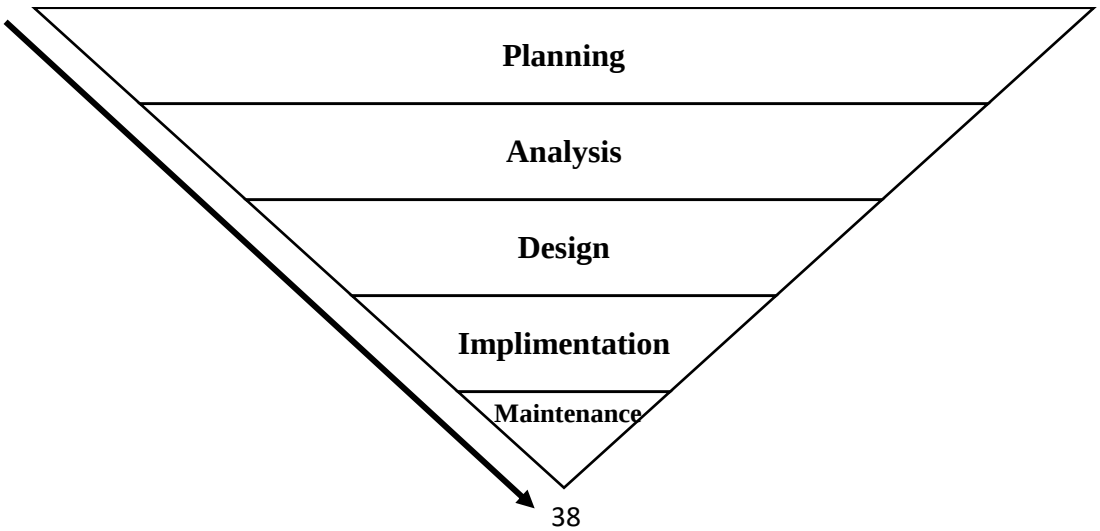
The planning phase is where the developers started planning the general objectives that must be met and how will the system affect and be beneficial in terms

of their intended client. After the objectives are planned, the developers found their intended client that suits with their unique ideas and functionalities of the developed system.

After the planning phase, next is the analysis phase wherein the developers started analyzing, dictating the strategies and defining the requirements that benefits the client. The developers conducted interview for this phase to work by determining their problems, desired outcomes, and expectations with regards on meeting the demands and wants of the client.

The third phase is the design phase wherein the developers started making an interactive, user-friendly interfaces that meets the functionalities that must be met depending on the client user roles, roles as administrator of the system, teacher, student, and student's parent.

Figure 3. Top-Down Approach



After the design phase, implementation phase is implemented wherein the implementation of the system is utilized in terms of testing the technicalities and functionalities that must be met, how the interface looks and how it satisfies the needs and the wants of the client.

Lastly, for the phase to be completed, maintenance phase is where the developers checked if there are problems, bugs, and issues happened while the user used the developed system. This phase allows the developers to determine the changes that must be done with regards on the client's feedback.

System Analysis and Design

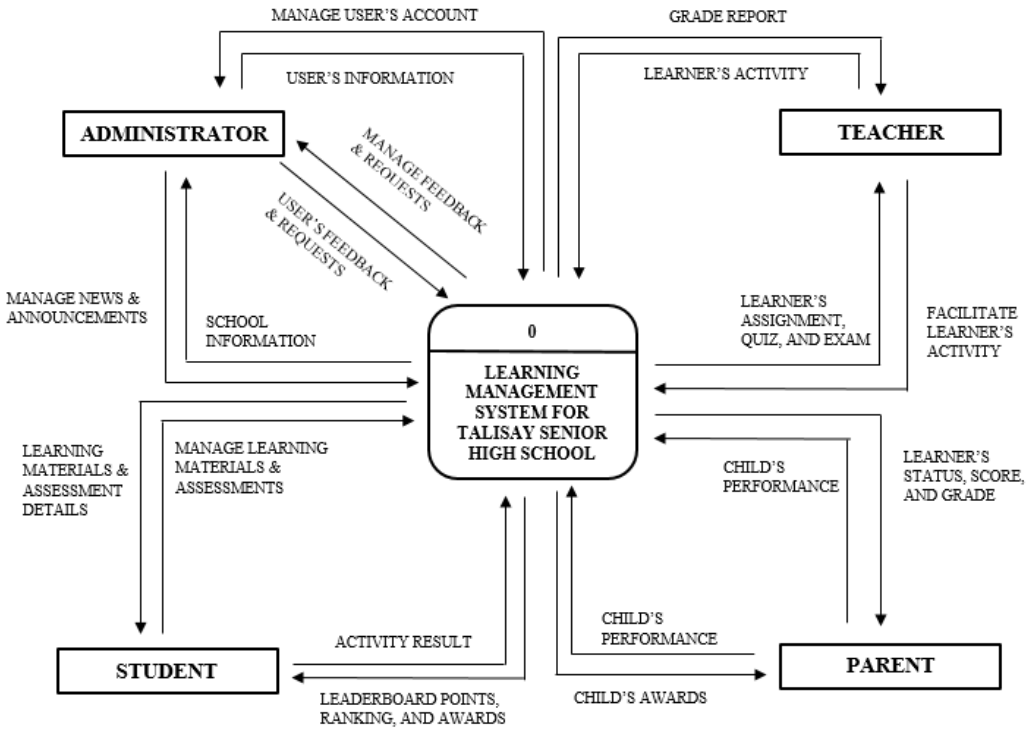
The system analysis and design show the design and implementation plan used in the development of the developed system by visual representation that shows context and data flow within the web-based system. This part presents the different processes and methods that will be use in the development of the website.

Context Flow Diagram

Figure 4 illustrates the overview on how the website works. The developed system has 4 entities which are the administrator, teacher, student, and parent. The administrator has the access on all of the user's account. Also, they manage the news and announcements provided by the school. Lastly, they manage the feedback and requests coming from the system's users. Next, the teacher facilitates the learner's

activities such as quiz, assignment, and exam, in which, once the teacher provides scores, it will provide a grade report in each student. From the student, the student manages the provided learning materials and assessments, in which, once the student is done in the assessments, the developed system provides gamification mechanics such as leaderboard points, rankings, and awards. Lastly, from the parent part, the parent can view the progress of their child, the status, score, and grade in each subject enrolled, and the awards that they received based on their performance.

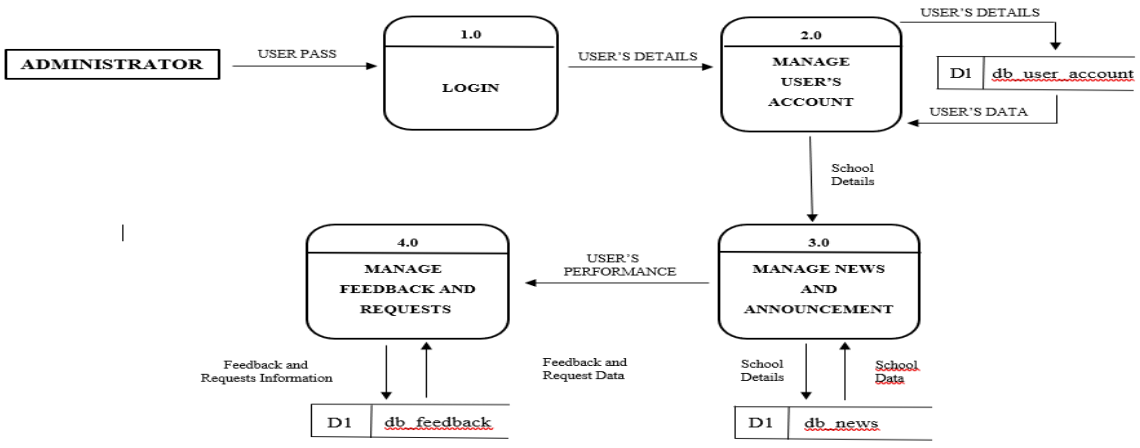
Figure 4. Context Flow Diagram of the Developed System



Data Flow Diagram

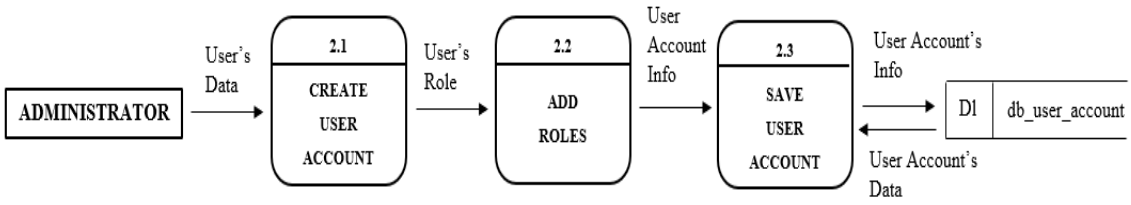
Figure 5 shows the data flow diagram for the Administrator of Talisay Senior High School. In order for the administrator to enter the website, it requires an account that has a set of username and password. Once the admin enters the website, the admin can navigate in the navigation bar to navigate within the interface of the website. First, the administrator manages user's account in terms of creating account for a certain user of the system. Next, the administrator can navigate through the news and announcement, wherein the system allows the administrator to create and manage the news and announcement to be provided by the school personnel. Lastly, the website allows the administrator to manage feedback and requests in terms of, viewing the uploaded feedback and requests by the users, and once they managed the feedback and request of the users, they can act by deleting the uploaded feedback and request.

Figure 5. Data Flow Diagram for Administrator



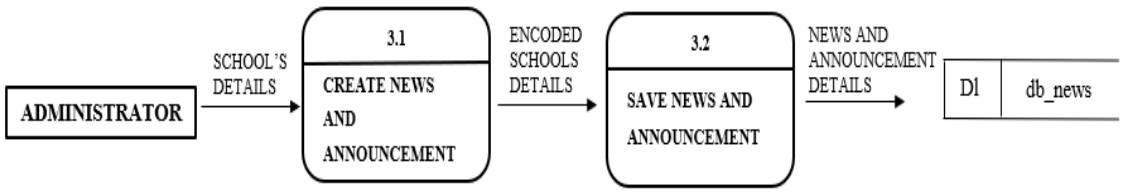
In manage User's Account, the administrator first creates the accounts of user with their right information and credentials, once they are done in providing the data of the users, the administrator provides user roles, such as user types, grade level, and department. Once the administrator is done, the administrator saves the user account.

Figure 6. Level 2 of DFD Process 2.0 – Manage User's Account



In Manage News and Announcement, the administrator first creates news and announcement which consists of data that is provided by the school. Once they are done in creating the news and announcement, the administrator saves it and it automatically posts for its intended users.

Figure 7. Level 2 of DFD Process 3.0 – Manage News and Announcement



In Manage Feedback and Requests, the administrator receives the feedback and requests of the users which is intended for the improvements of the system. Once the administrator is done, the administrator can act in deleting the feedback and request.

Figure 8. Level 2 of DFD Process 4.0 – Manage Feedback and Requests

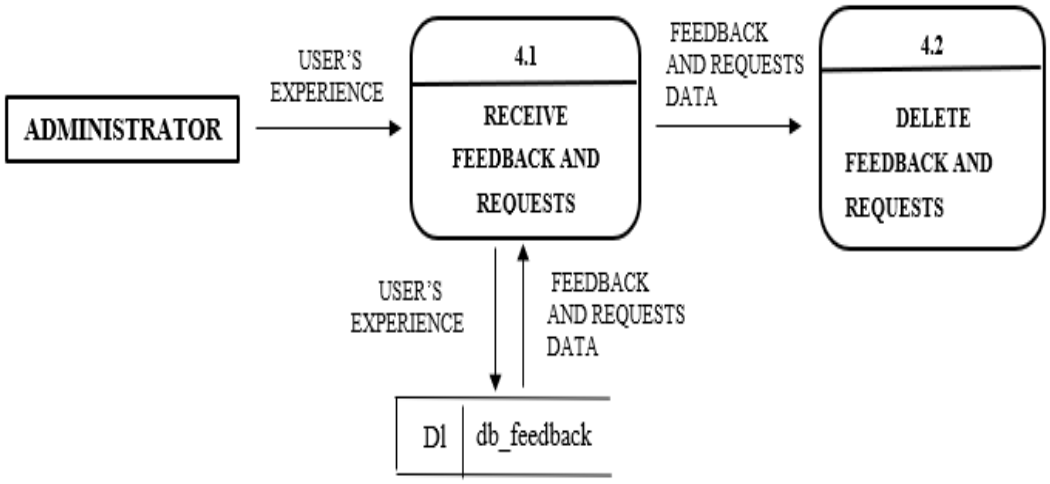
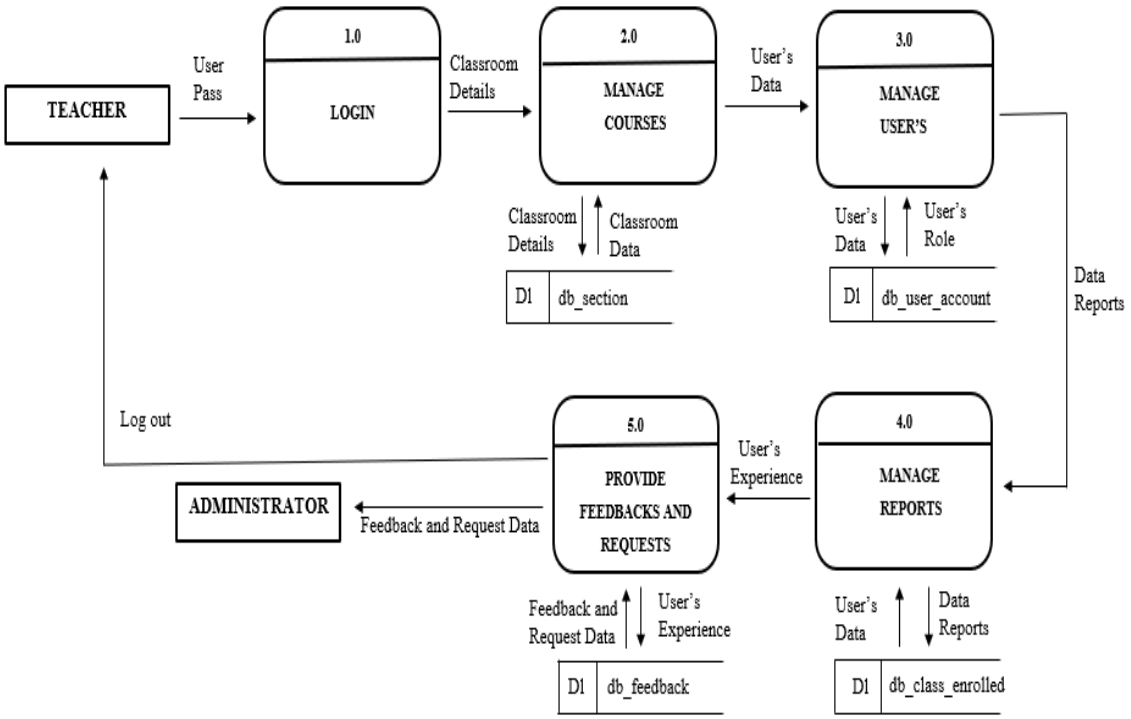


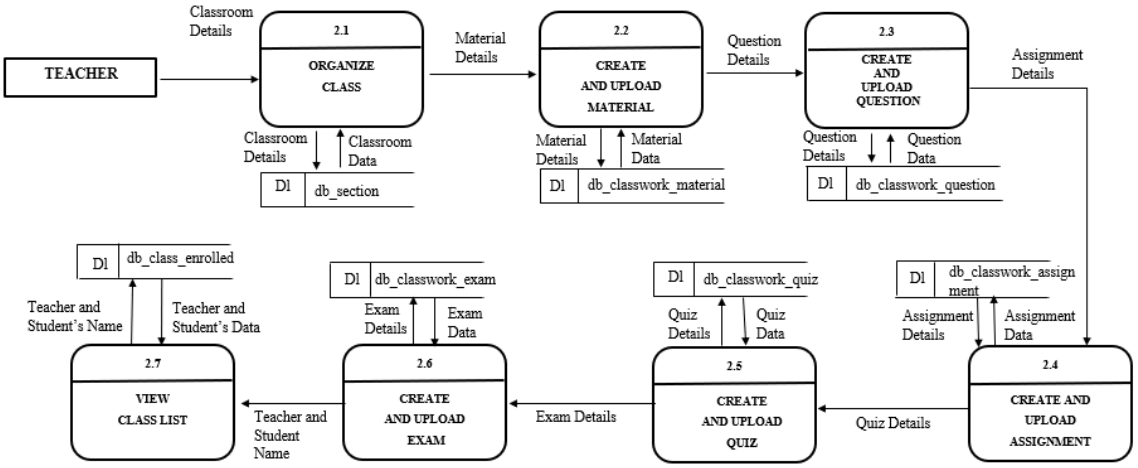
Figure 9 shows the data flow diagram for the teacher. In order for the teacher to access to the website, it requires account with the right credentials for that teacher. After the login process, the teacher can manage from the website, such as, courses, users, reports, and provide feedbacks and requests. From the experience of the teacher in using the website, the teacher can provide feedback and requests that can help for the improvement of the website.

Figure 9. Data Flow Diagram for Teacher



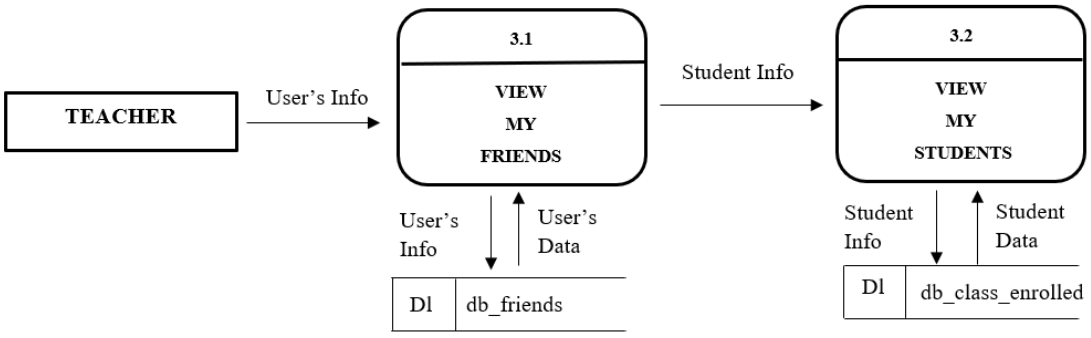
In manage Courses, the teacher is allowed to create classes, which needs information such as class name, section, subject, and department. Once the teacher created the class, the class generate code which will serve as class code in order for the students to be able to join in that class. Once the class is created, the teacher can create topic which will serve as the title to store the materials and assessments that the teacher will post such as material, question, assignment, quiz, and exam. The teacher can also view the list of students that are enrolled to that class.

Figure 10. Level 2 of DFD Process 2.0 – Manage Courses



In manage users, the developed system allows the teacher to create friends, and add their students. In a certain form, it will show all of the friends that the teacher has made, and the students that the teacher adds.

Figure 11. Level 2 of DFD Process 3.0 – Manage Users



In manage reports, the developed system automates the reports for teacher such as student reports and grade reports. From the student reports, it automatically generates the students that are enrolling in that certain class using the class code that is generated from that class. It shows the list of students in a certain a section, and also, all of the class section that is created by the teacher are shown, and the developed system allows the teacher to download the data of the student reports. From grade reports, it is also automated once the teacher graded the submitted assessments of the students which will save from the grade reports, and there, the developed system also allows the teacher to download the data of the grade reports.

Figure 12. Level 2 of DFD Process 4.0 – Manage Reports

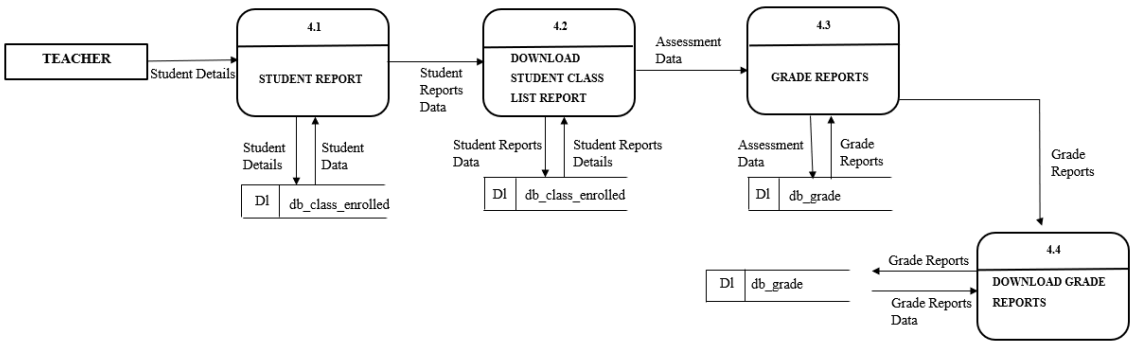
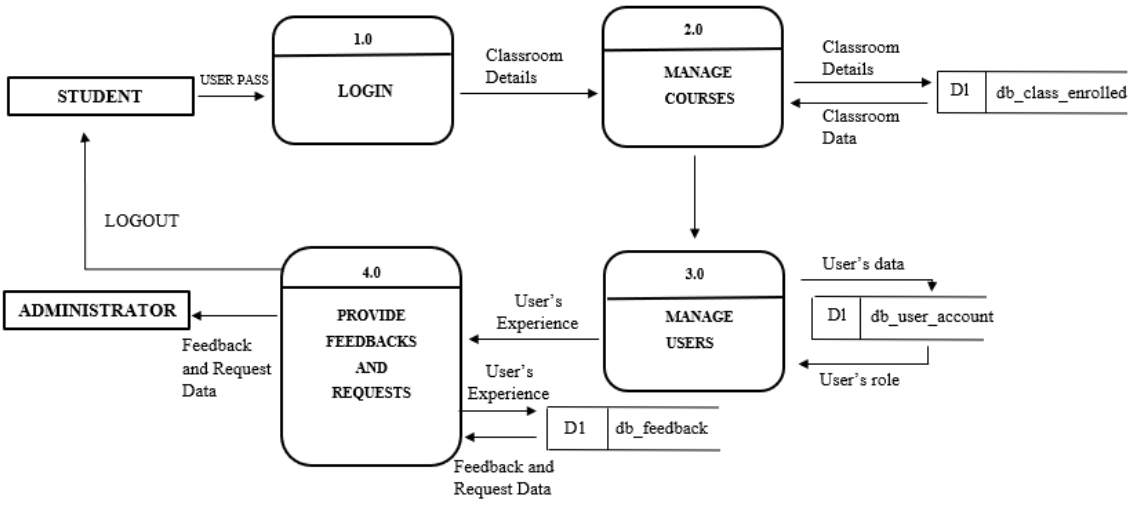


Figure 13 shows the data flow diagram for the student. In order for the student to have access to the website, they must need an account first with the right to the dashboard of the website, and from the course section, the student must input a class code that is provided by their teachers so that they can have the access to the

classroom created by their teacher. After that, the classroom details will be shown, which have three parts, the classroom stream, classwork, and people. Next, they can also manage users, such as their friends, teachers, and parent. Once they are satisfied with their experience in using the website, they can provide feedback and request in order to provide improvements, innovation, and stability of the website.

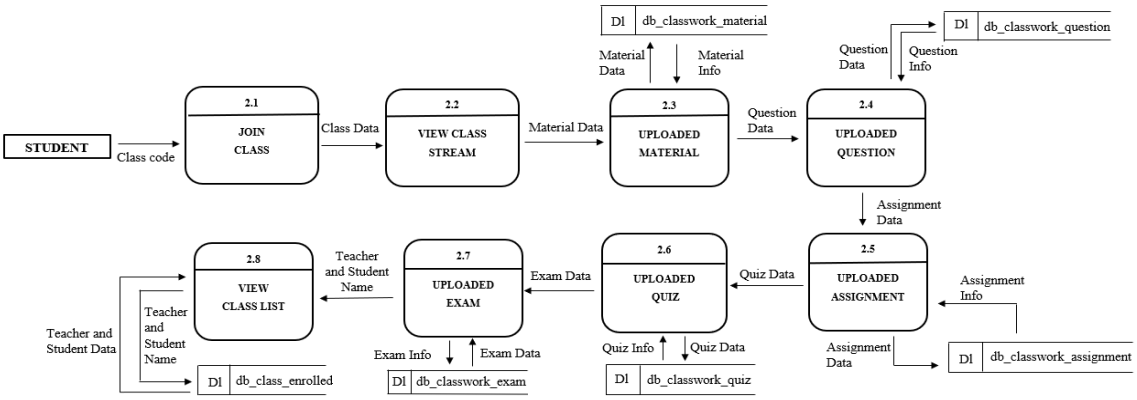
Figure 13. Data Flow Diagram for Student



Manage Courses, the student is allowed to join class through class code that is provided by the teacher. After that, the classroom details will be shown, and from the classroom, there are three parts, stream, classwork, and people. From the class stream, there, the student can view the uploaded materials and assessments such as material, question, assignment, quiz, and exam. From the classwork, the student can view the uploaded materials and assessments, the difference is that it shows on what

topic is the uploaded materials and assessments are uploaded. Lastly, from the people, the student can view the list of students and teacher from the enrolled class.

Figure 14. Level 2 of DFD Process 2.0 – Manage Courses



In manage users, the students are allowed to view and add other users.

Figure 15. Level 2 of DFD Process 3.0 – Manage Users

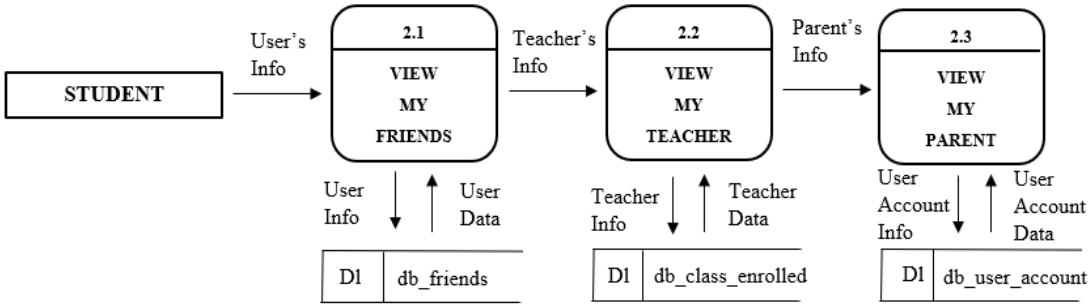
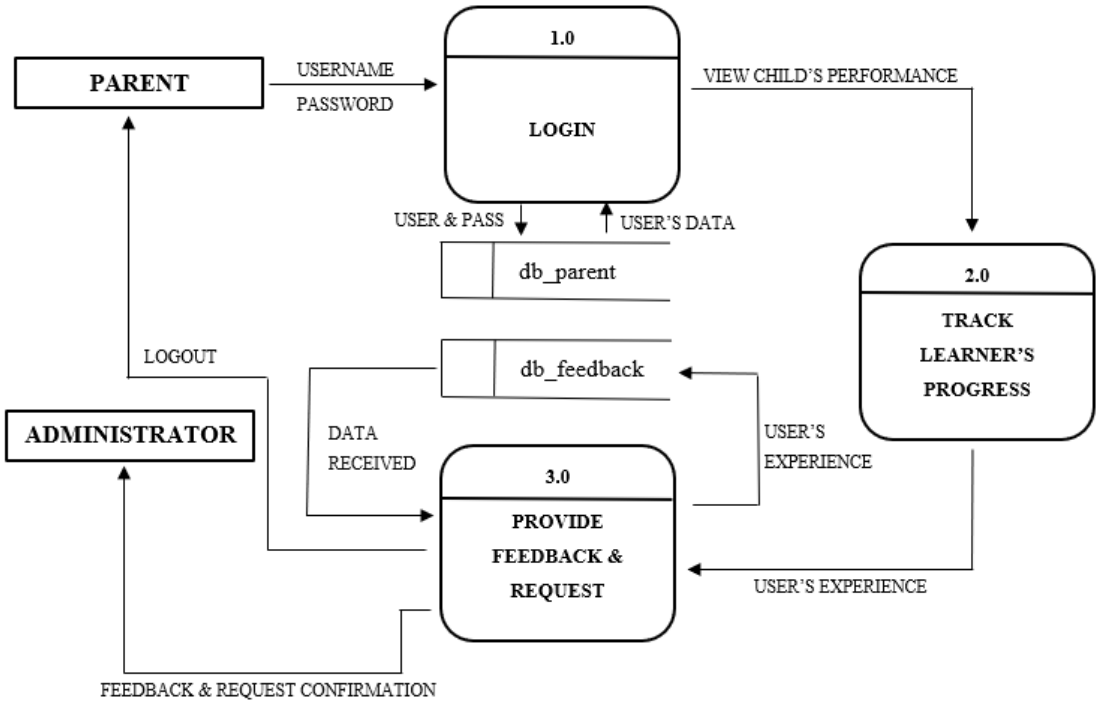


Figure 16. shows the data flow diagram for the parent. First, the account will be provided by the admin that is stated into the role of a parent. Then, the parent

will login to the website with the username and password of the account. In the parent's account, the system only allows the student's parent track and monitor their child's progress and performance in order to check and maintain their student's grade with regards of their assessments and tasks. It also allows the parent to send feedback and requests for them to be able to determine what to be added and improve to the system.

Figure 16. Data Flow Diagram for Parent



User Design Interface

User Design Interface shows all the figure designs that were used in developing the system. It provides all the developed system design, including all the buttons and options with different functions and purposes in providing the needs of the users from the system.

Figure 17 shows the User Login Page. User accounts are provided by the administrator. User ID (1) indicates as the username of the account. Password (2) indicates as the password of the account. Once the user inputs their user id and password, Login (3) button makes the user go directly to the main page.

Figure 17. User Login Page

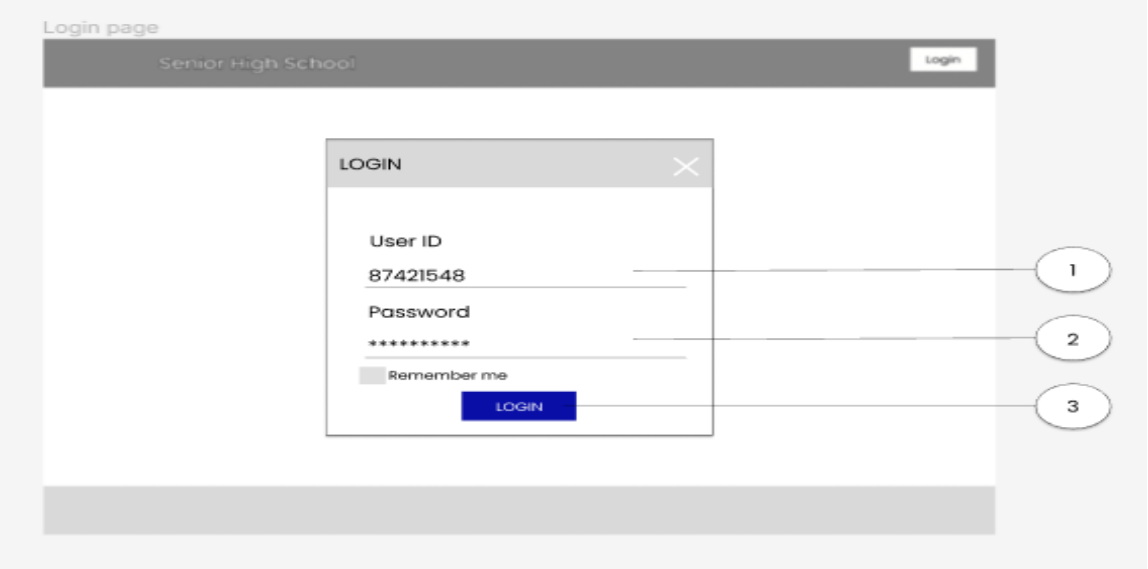


Figure 18 shows the Admin Dashboard Page. From the Admin Page, From the left side, it shows the module buttons which are dashboard page, announcement page, users page, reports page, and feedbacks page. It shows the welcoming page with regards to the school and a function also, the message and profile button.

Figure 18. Admin Dashboard Page

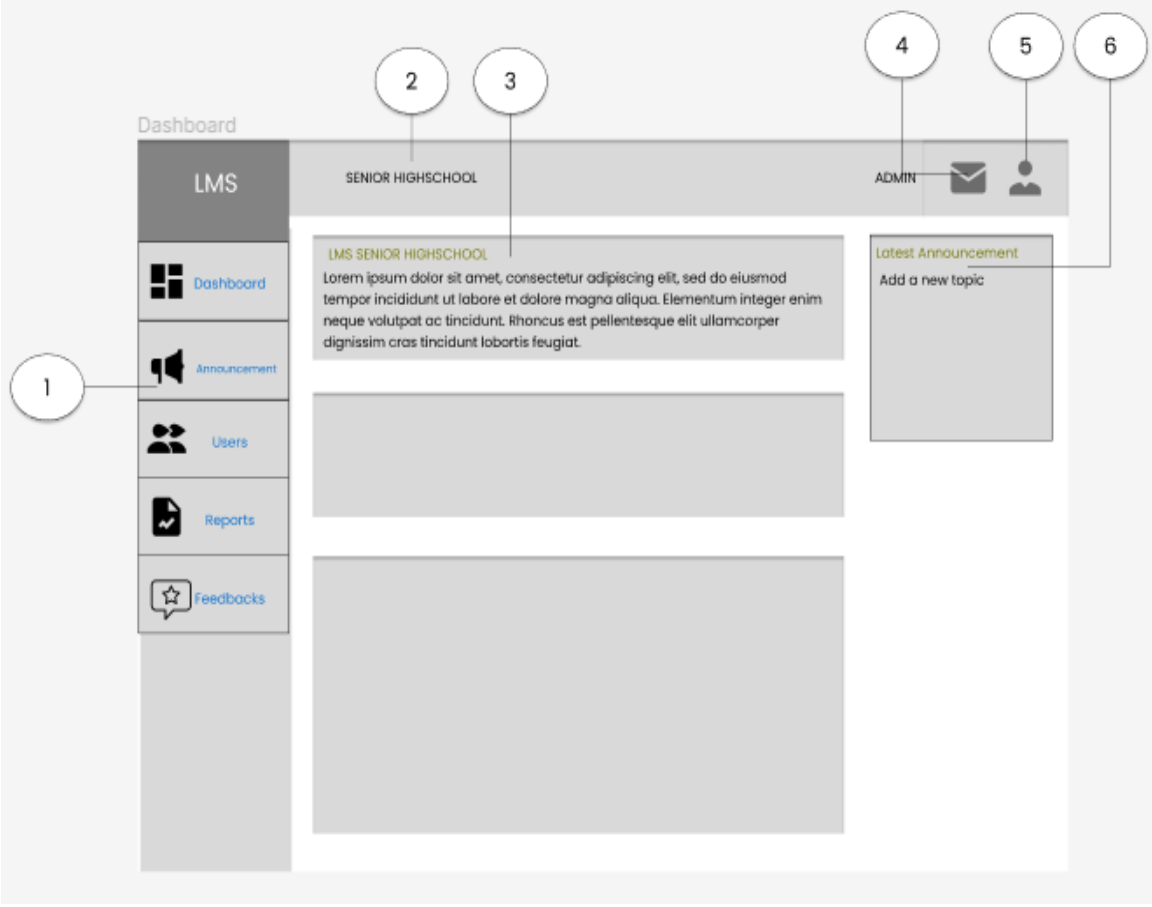


Figure 19 shows the Announcement & News Page. This page shows all the uploaded announcements for the users. First, Create New (1) allows the admin to create a certain announcements or news to be provided by the users. Latest Announcement (2) will be shown from the page. Also, from the Latest announcement, the system allows the admin to Delete (3) and Edit (4) the latest announcement.

Figure 19. Announcements & News Page

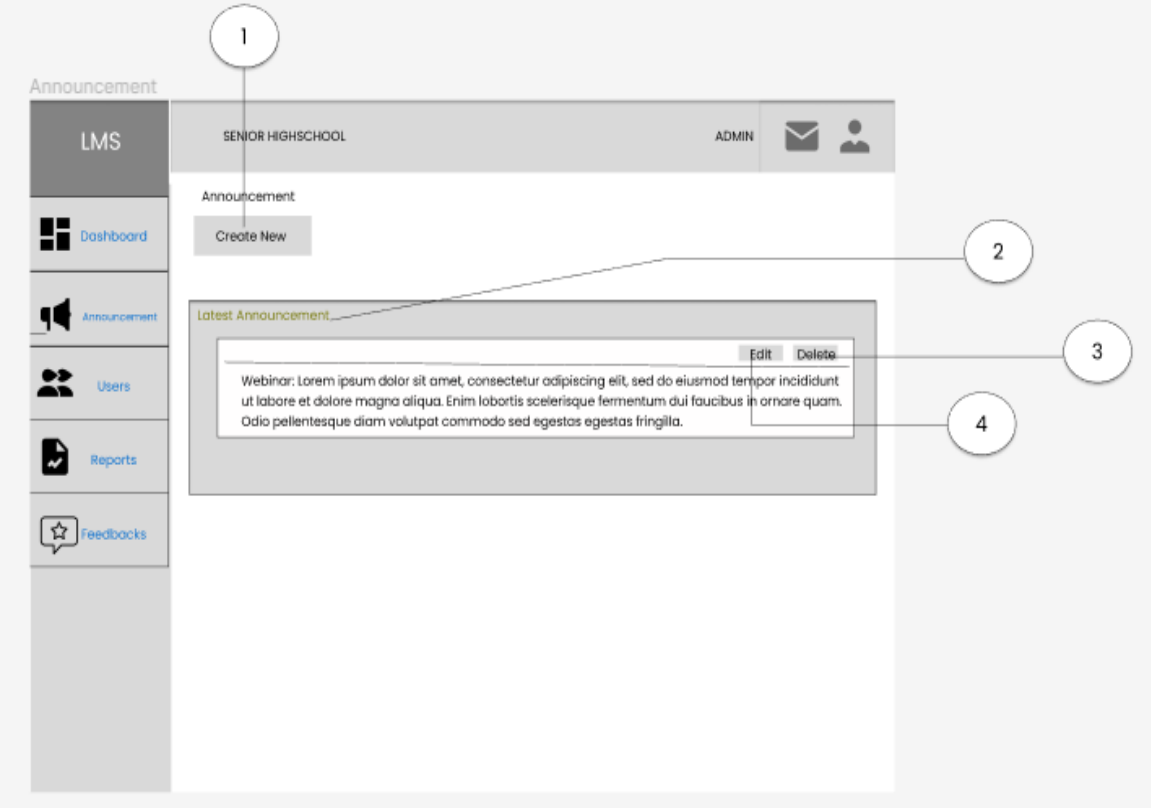


Figure 20 shows the process of uploading announcement and news for the users. First is the Topic Title (1) of the announcement. Next, the admin will choose its Type (2) if it will show in announcement or news form. It also shows where division/track (3) the announcement/news to be provided. Effectivity Date (4) allows the admin to avoid the overflowing data from the page. Details (5) will be provided on a certain announcement/news. Attachment of Files (6) is necessary if there is a file that must be uploaded together from the announcement/news. Lastly, the admin can rather choose to Cancel (7) or Save (8) the announcement/news.

Figure 20. Uploading Announcement & News Page

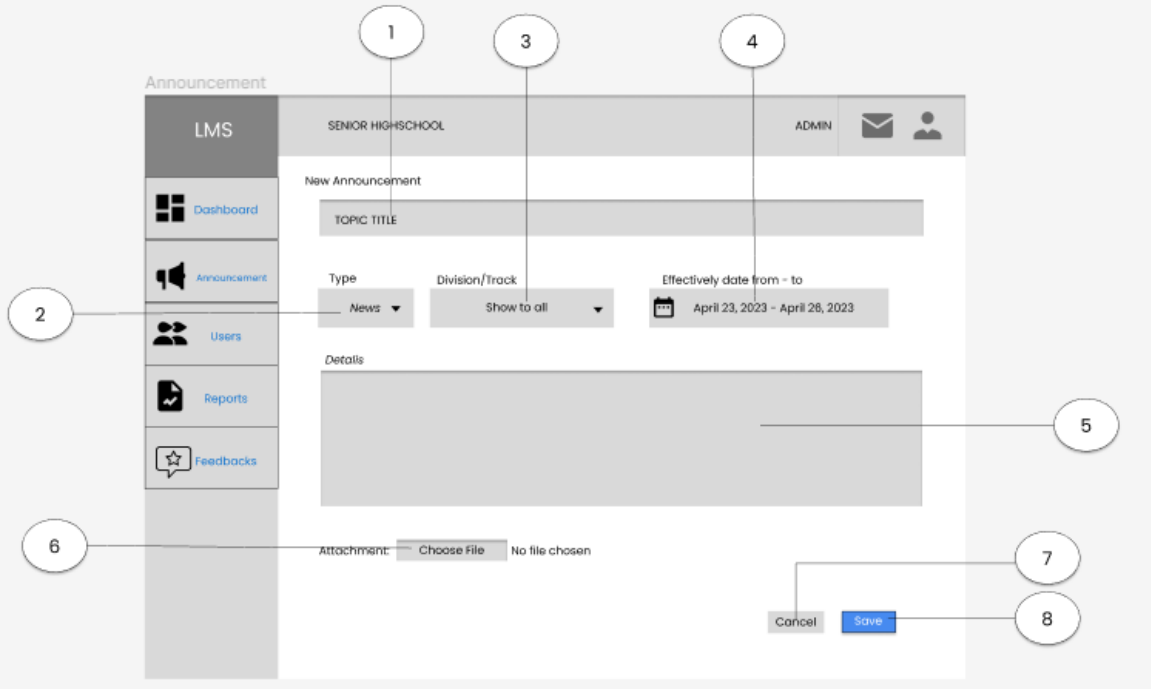


Figure 21 shows the Management of the User Information. From this page, Admin can Select (1) a certain user to edit an also, there is a Select All (2) button in selecting all of the users. Next, Users Information (3) are shown. But because of having many users, the system allows the admin to Search User (4). Admin can provide an action by rather Edit User (5), Manage User (6), Reset Password (7) and Delete User (8).

Figure 21. Managing User Information Page

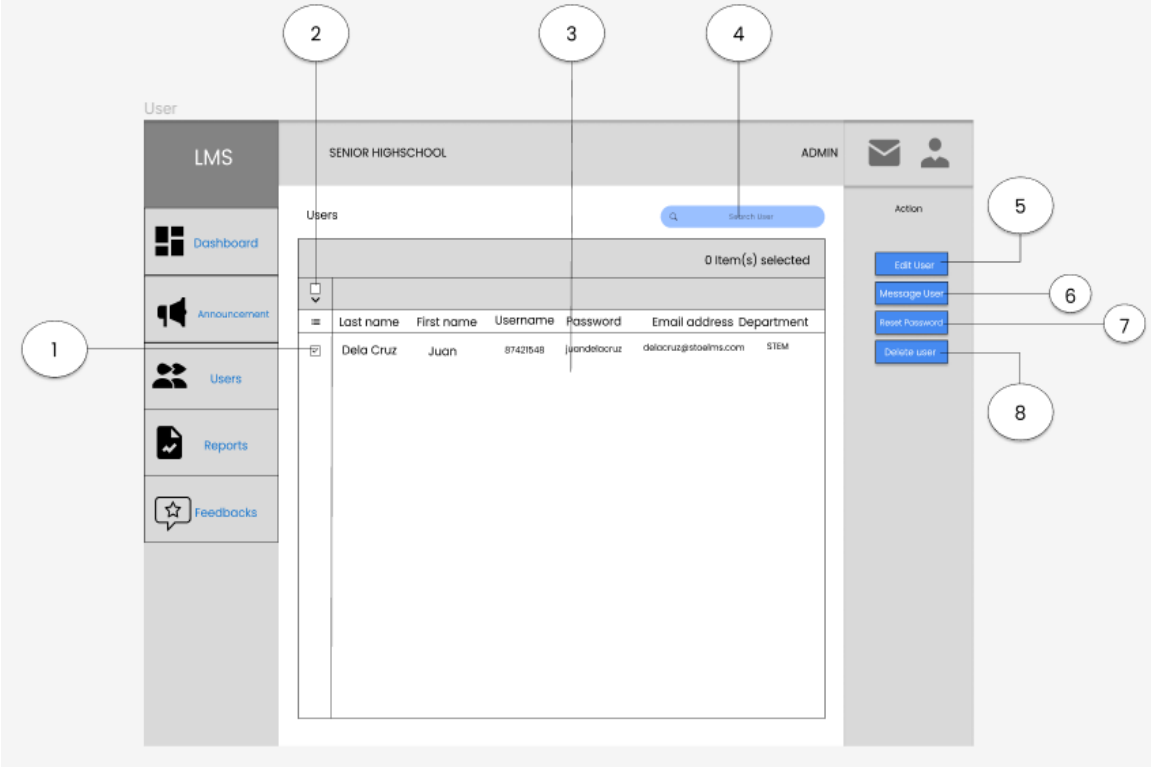


Figure 22 shows the Reports Page. In reports page, this will show the reports of teacher, student, and parent, in which the system allows the administrator to print the reports into hard copy.

Figure 22. Reports Page

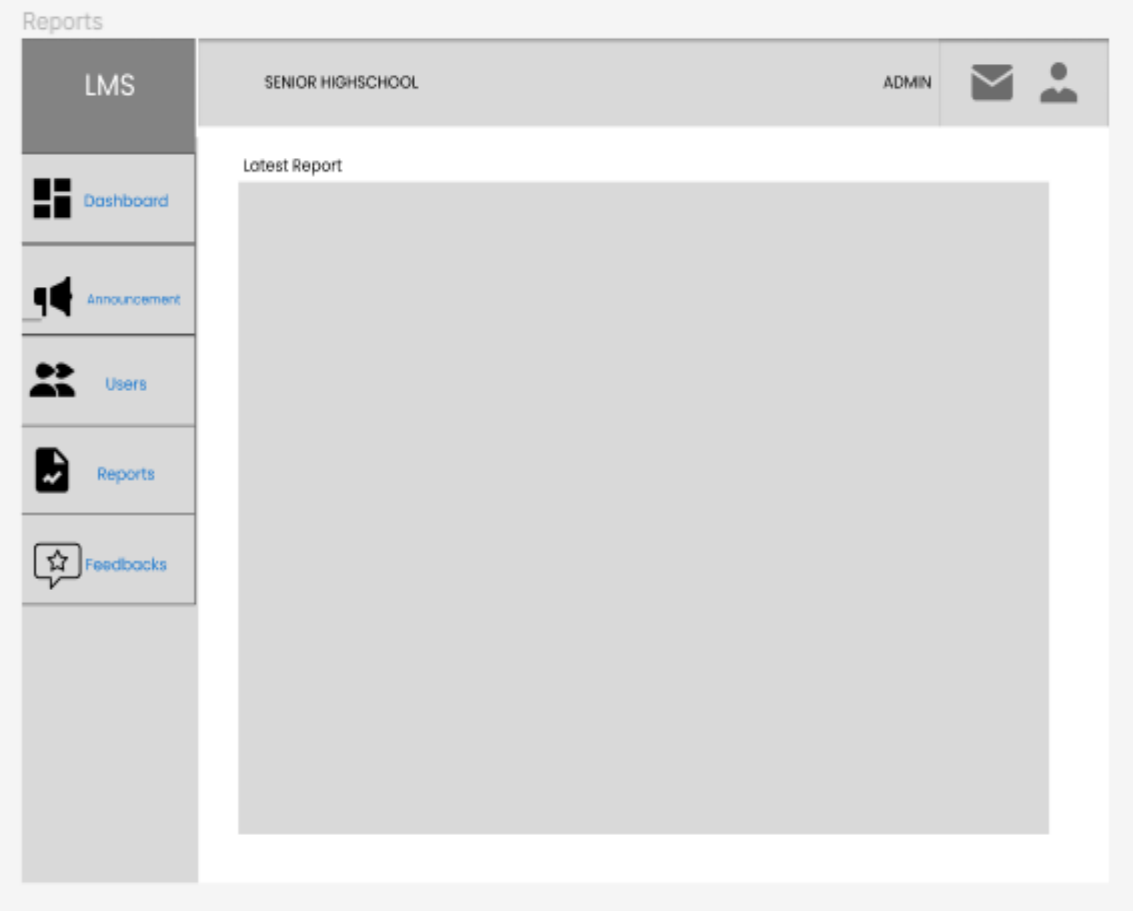


Figure 23 shows the Management of Feedback & Request. Since the user can provide feedback and request, this page shows the feedback and request provided by the user in order to improve the system. Once the admin handles the feedback or request of the user, the admin can Delete (1) a certain feedback or request of the user.

Figure 23. Managing Feedback & Request Page

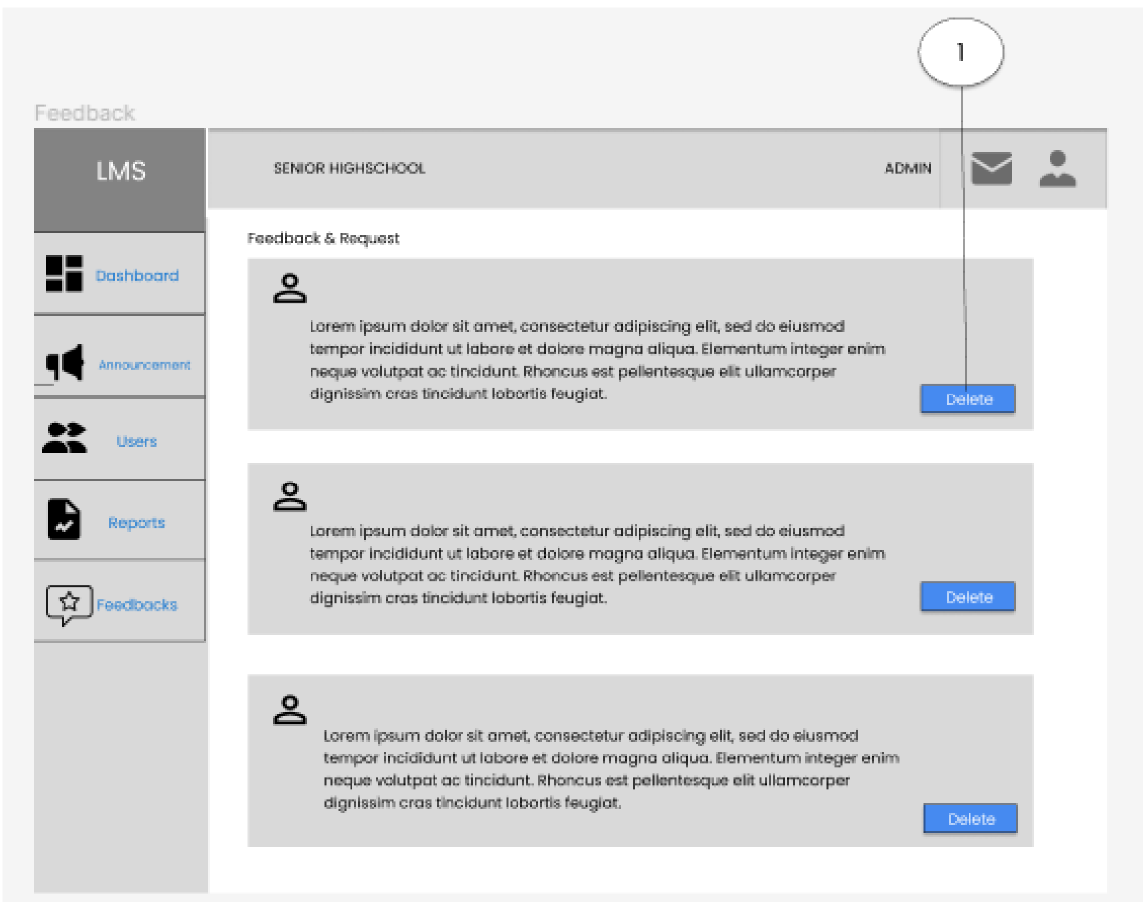


Figure 24 shows the Dashboard in Teacher's form. From the left side, it shows the different parts of form like courses, users, report and profile. Different data and information are provided like Welcome (2), My Lecture (3), News (9), and Announcement (8). Also, it has the Push Notification (4) and Message Icon (5) and lastly, a Calendar (6).

Figure 24. Teacher Dashboard

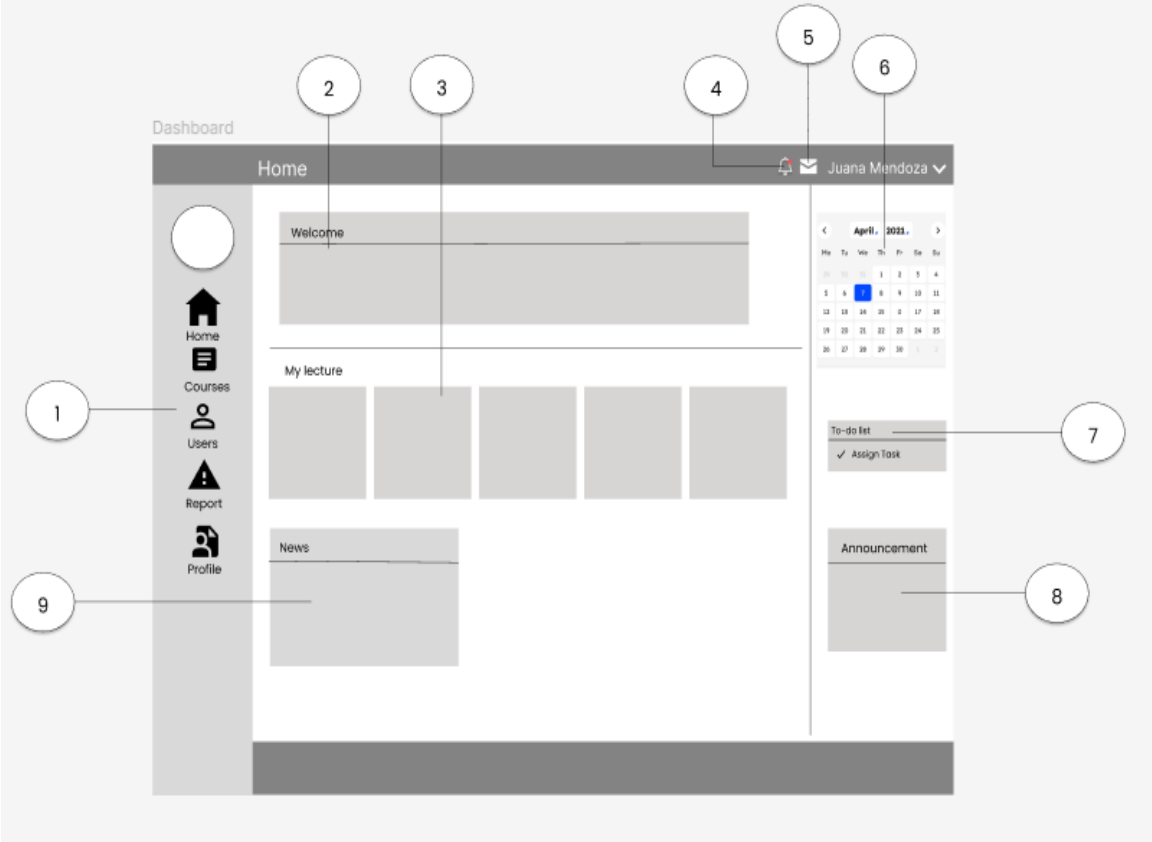


Figure 25 shows the Course Page. From this page, it shows the courses or lecture (2) that the teacher manages. From the Review (1) it makes it easy for the teacher to manage lectures and courses. Also, Create Class (3) will help the teacher to organize the list of students that must be in the class and what course or subject they are taking.

Figure 25. Course Page

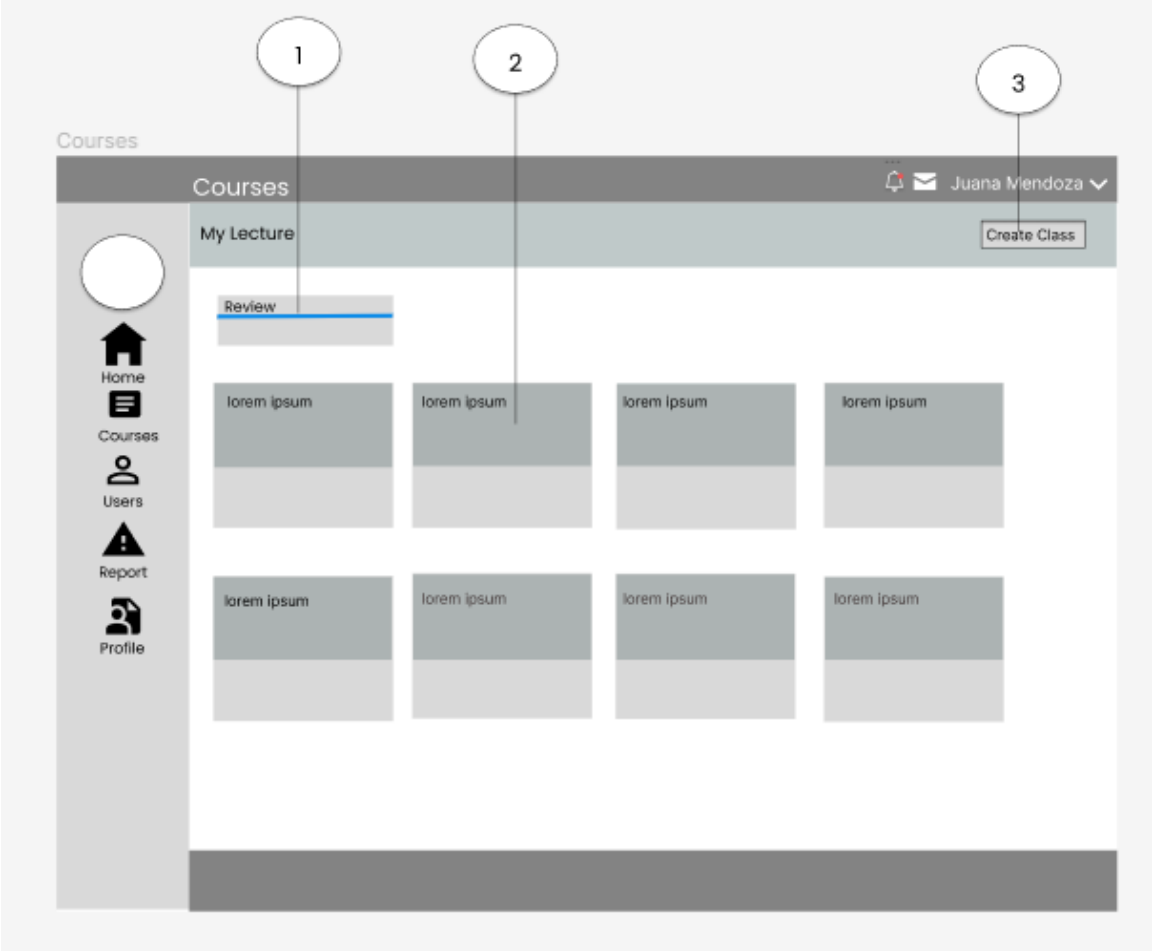


Figure 26 shows the Profile of the Teacher. The teacher has Header (1) and Profile Picture (2). It also has indication in the profile on what role is the account is, like the Teacher (3). From the header and profile picture of the user, they can Edit (4) it.

Figure 26. Teacher's Profile Page

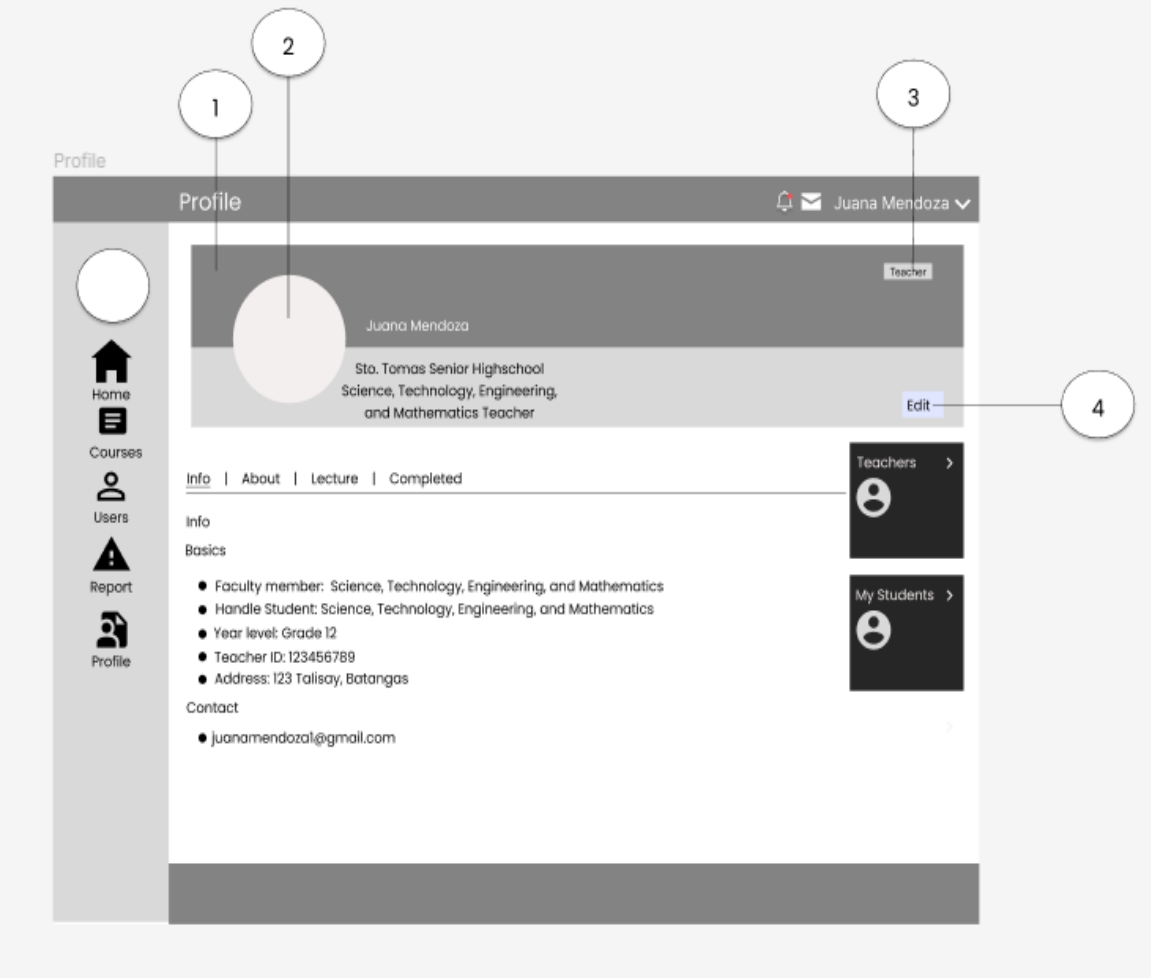


Figure 27 shows the Learning Materials & Assessment Page. This is the class wherein the teacher can Add Activities (1) with regards on what type of assessment they want to provide. Also, they can Announce (2) something to their class. From the class course, it shows the posted materials and assessments of the teacher, and lastly, it shows the People (4) with regards the list of students enrolled to that class.

Figure 27. Learning Materials & Assessment Page

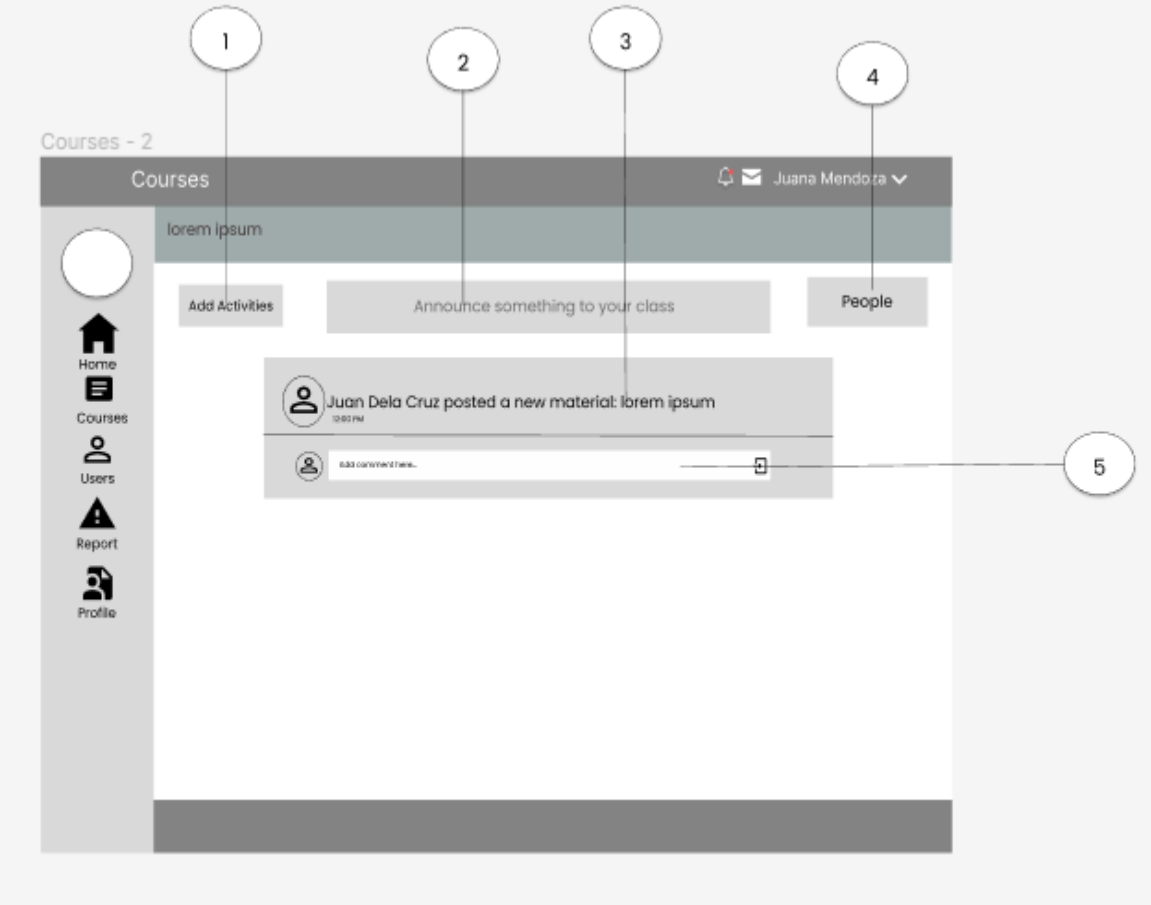


Figure 28 shows the Uploading of Learning Materials & Assessment Page. In this method, the teacher can provide different assessments (1) such as quiz, assignment, or exam that the teacher creates. Also, if the teacher has their own assessments to be uploaded, they can upload either it is file type or video type.

Figure 28. Uploading Learning Materials & Assessment Page

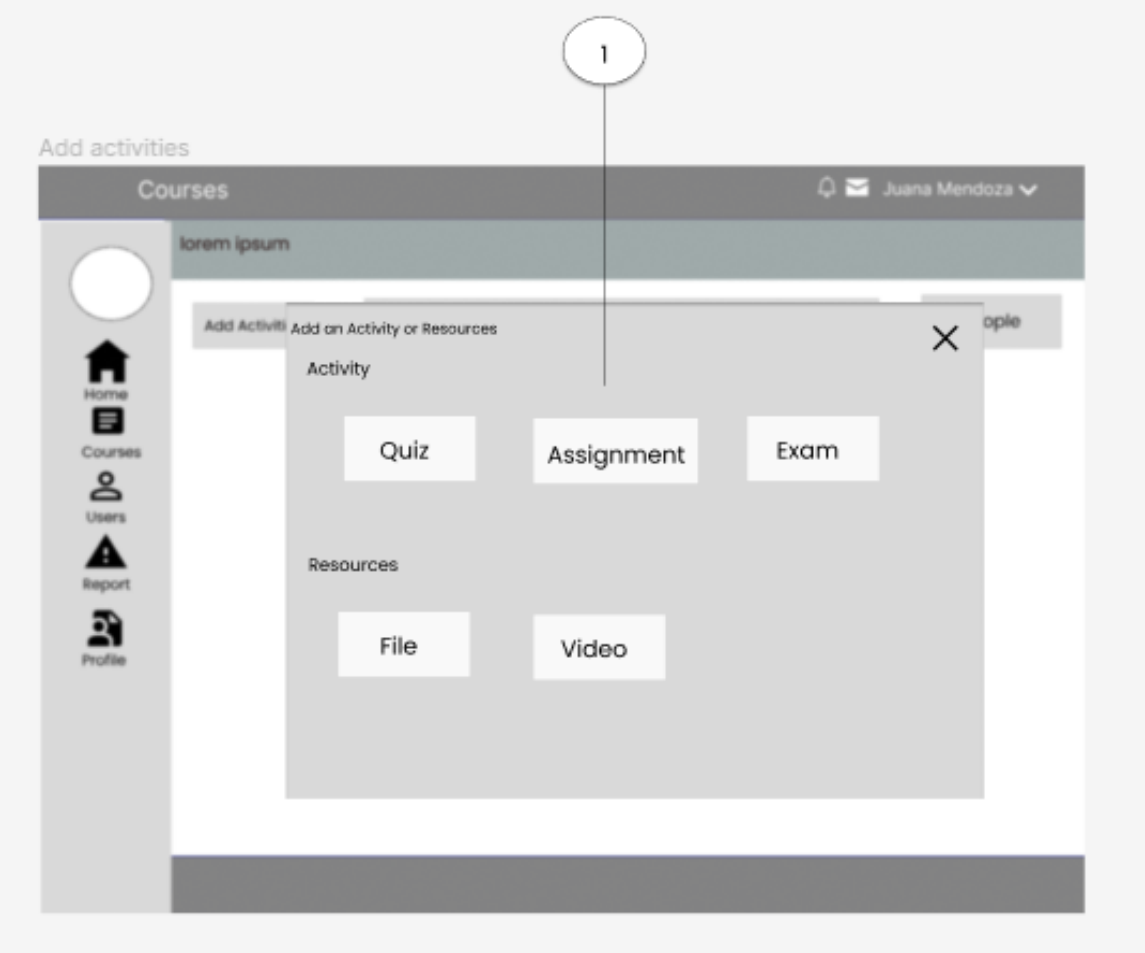


Figure 29 shows the Student Dashboard. From the dashboard, the student has different parts shown in the left side such as home, courses, users, awards, and profile. It also shows the Welcome (2), Enrolled Courses (3), Push Notifications (4), Message button (5), Calendar (6), To-do List (7), Announcement (8), News (9), and Awards (10).

Figure 29. Student Dashboard

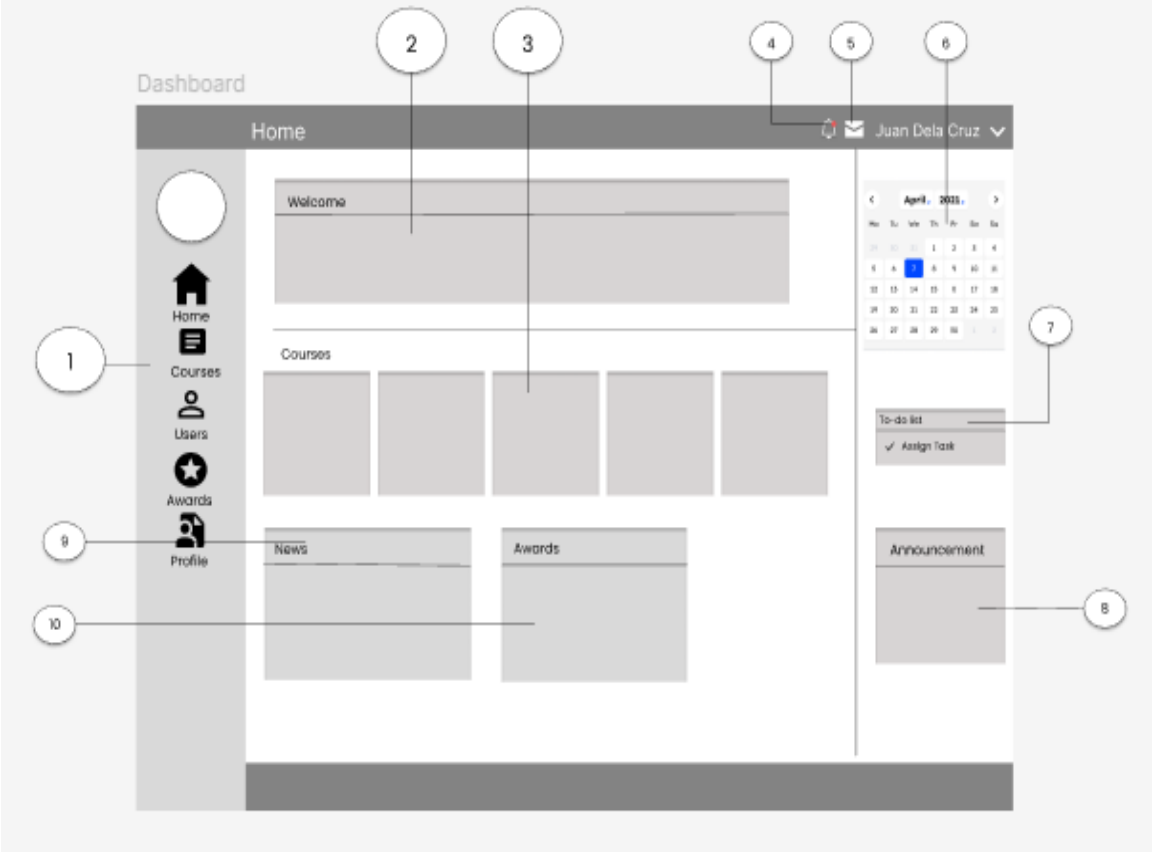


Figure 30 shows the Student Course List Page. From this page, the student can see their To-do list (1) and Enrolled Courses (2) that they interact with.

Figure 30. Student Course List Page

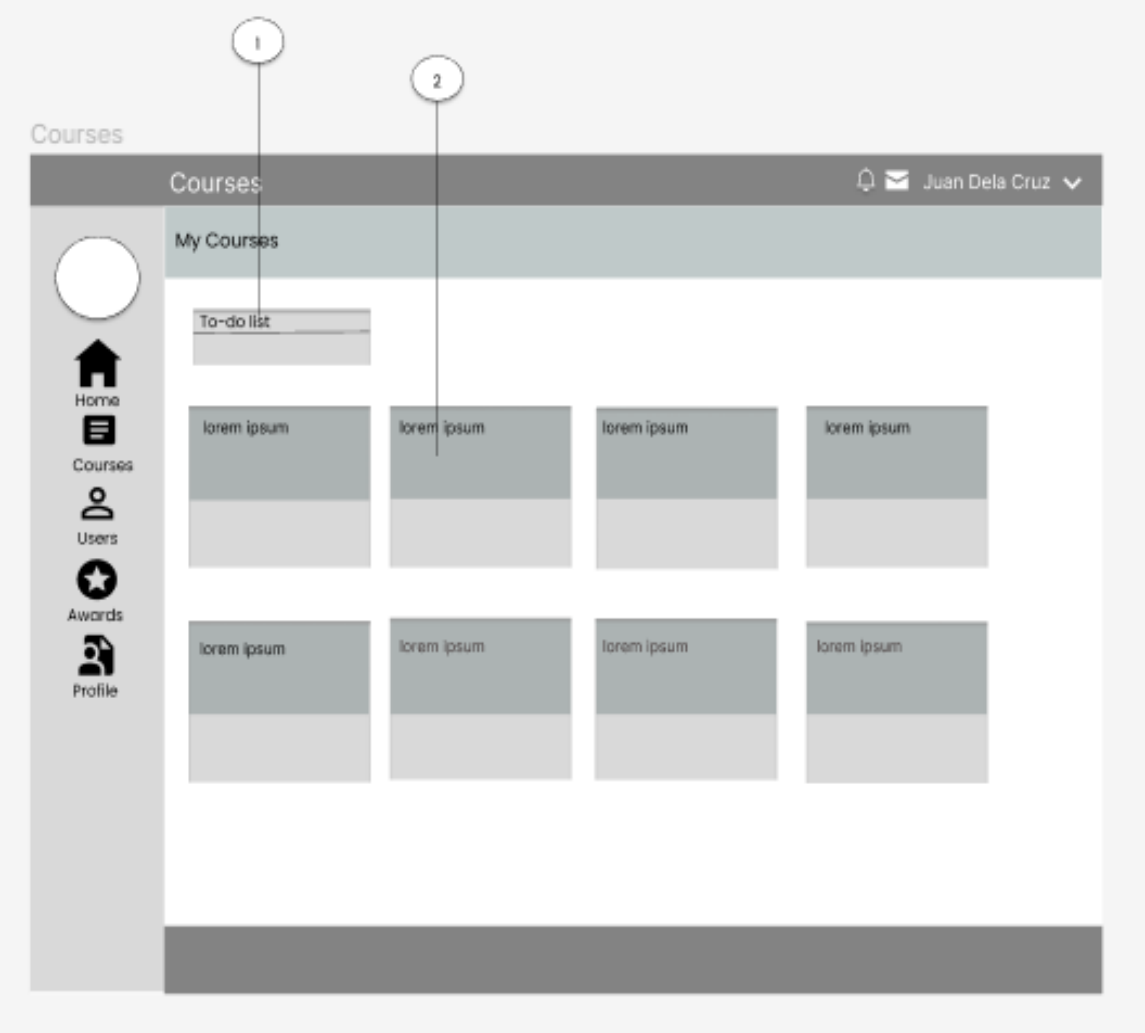


Figure 31 shows the Course Subject Page. From this page, this is the view of a certain enrolled course of the student. In this page, the student can also announce something to the class (1). Also, they can see the uploaded assessment or material. They can see their classmate or professor in the People (3). Lastly, they can add comment to a certain uploaded assessment or material if they have concern with regards to the material or assessment.

Figure 31. Course Subject Page

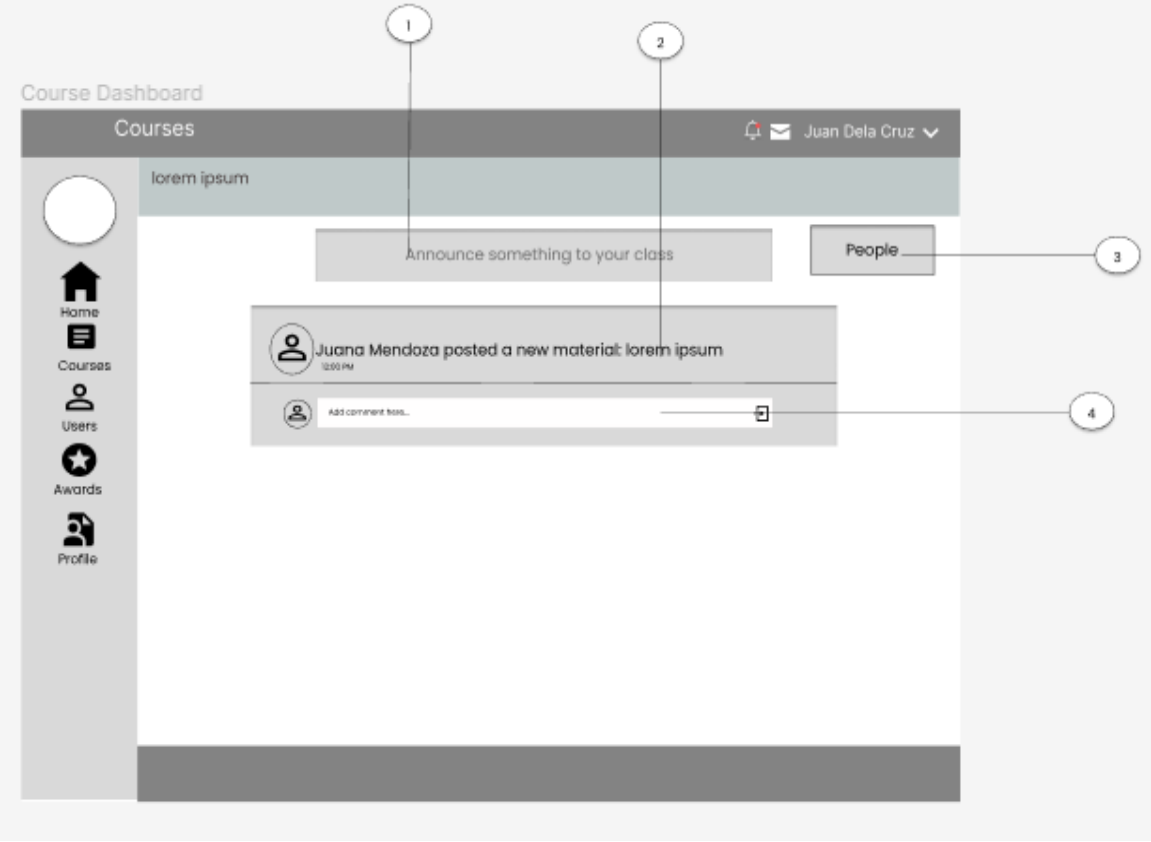


Figure 32 shows the Student's Users Page. In this page, it shows the list (1) of the Student's Friends, Teachers, and Parents they added or related with.

Figure 32. Student's Users Page

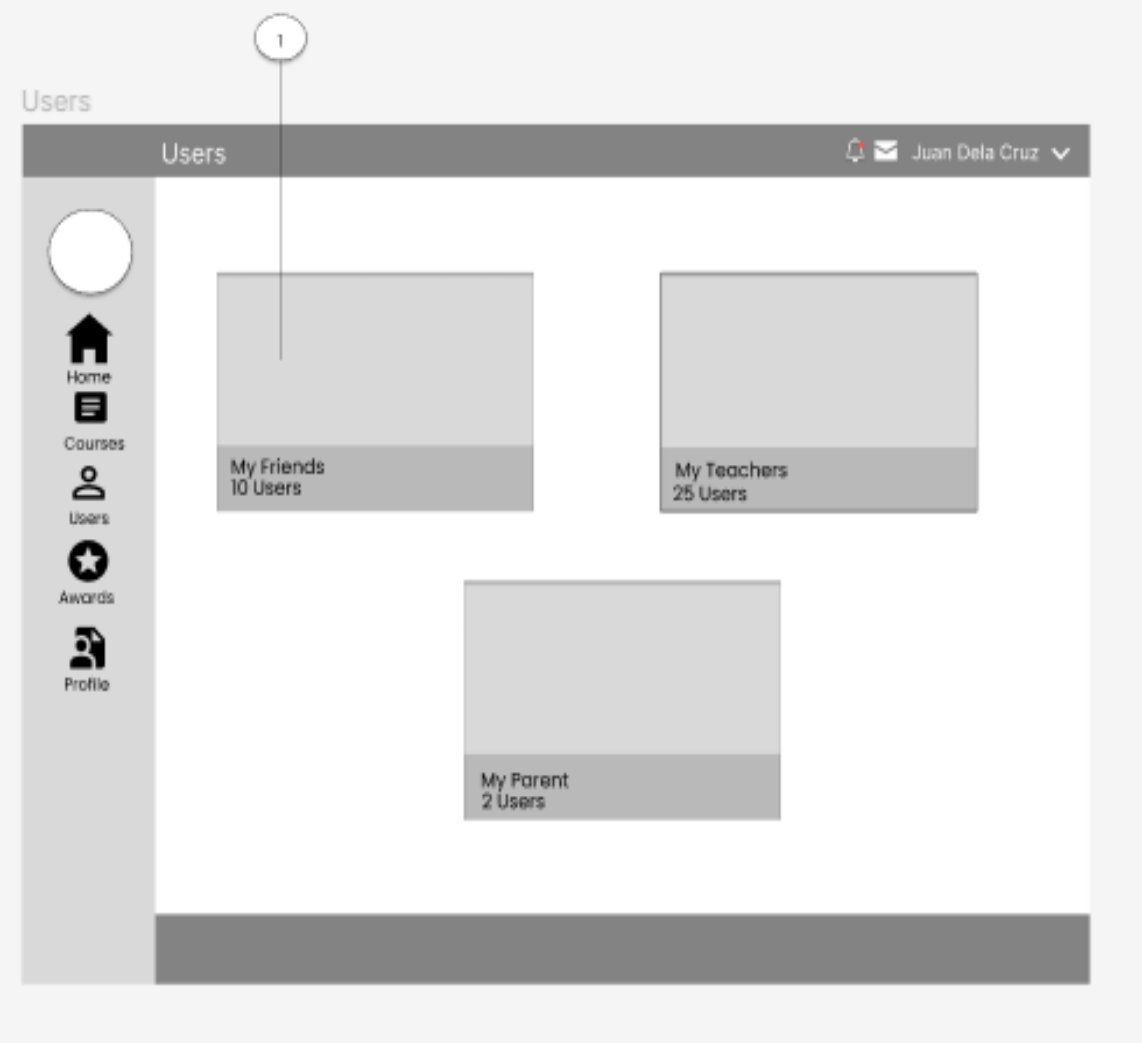


Figure 33 shows the Student Profile Page. In this page, the student has Header (1) and Profile Picture (2). It also has indicator on what is the role of the user, like Student (3). Add to that, the user can Edit (4) their header and profile picture.

Figure 33. Student Profile Page

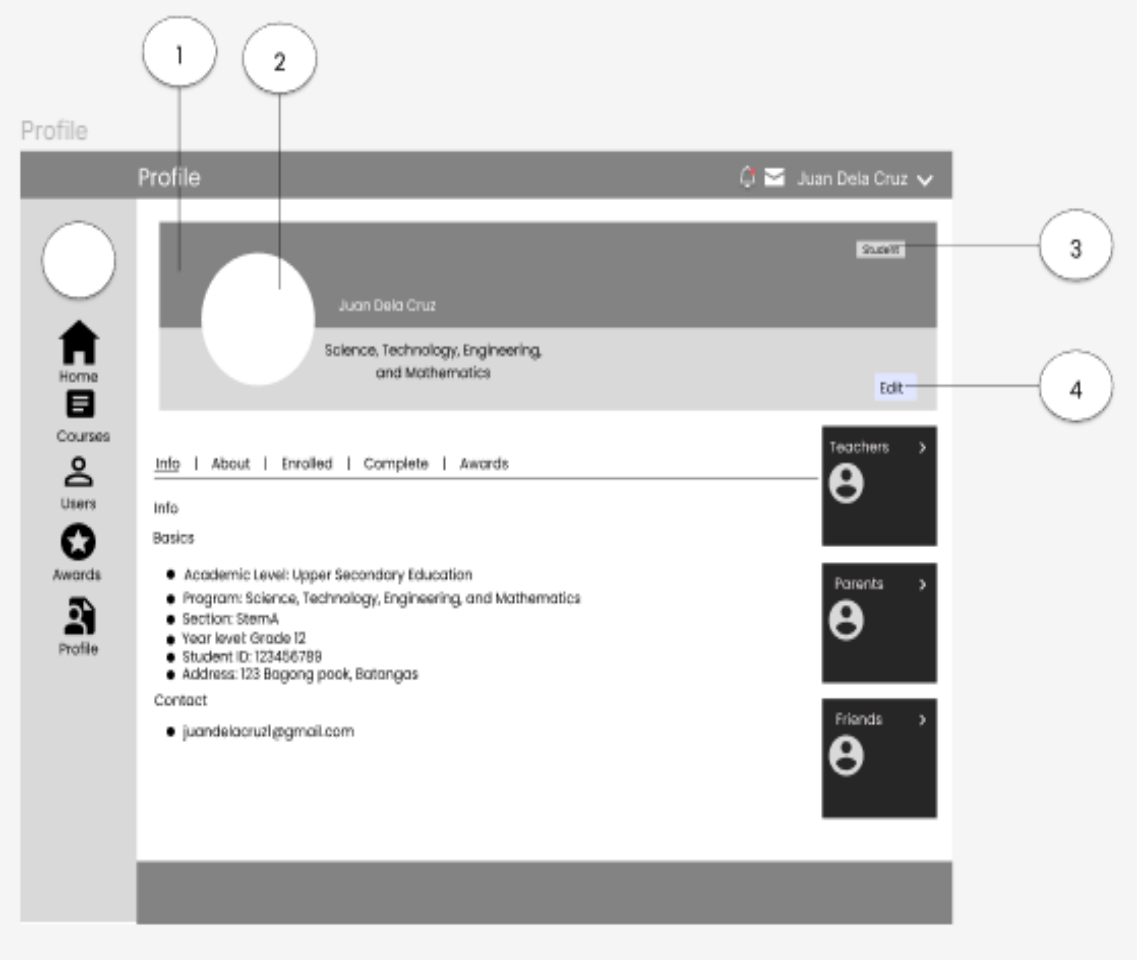


Figure 34 shows the Student Awards Page. In this page, the system has different awards for the performance of the student. Just like in the form, the student received an award as Quiz Wizard achieved in Physics with the date of March 8, 2023 (1).

Figure 34. Student Awards Page

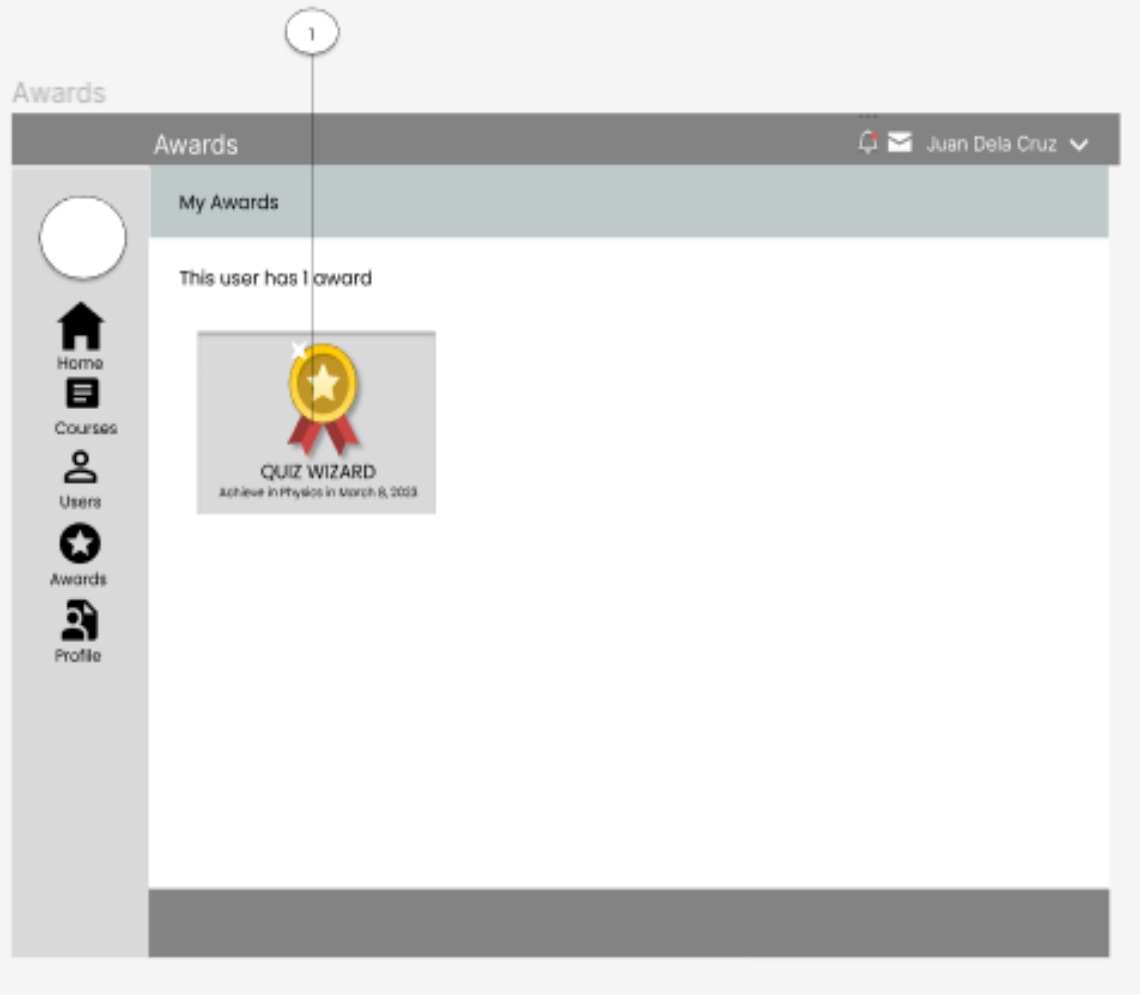


Figure 35 shows the Dashboard of the Parent. From the dashboard, it has different parts such as Home, My Children, Report, and Profile (1). It has Welcome (2), and My Children (3) that is related from the parent. It also has Calendar (4), Announcement (5), and News (6).

Figure 35. Parent Dashboard Page

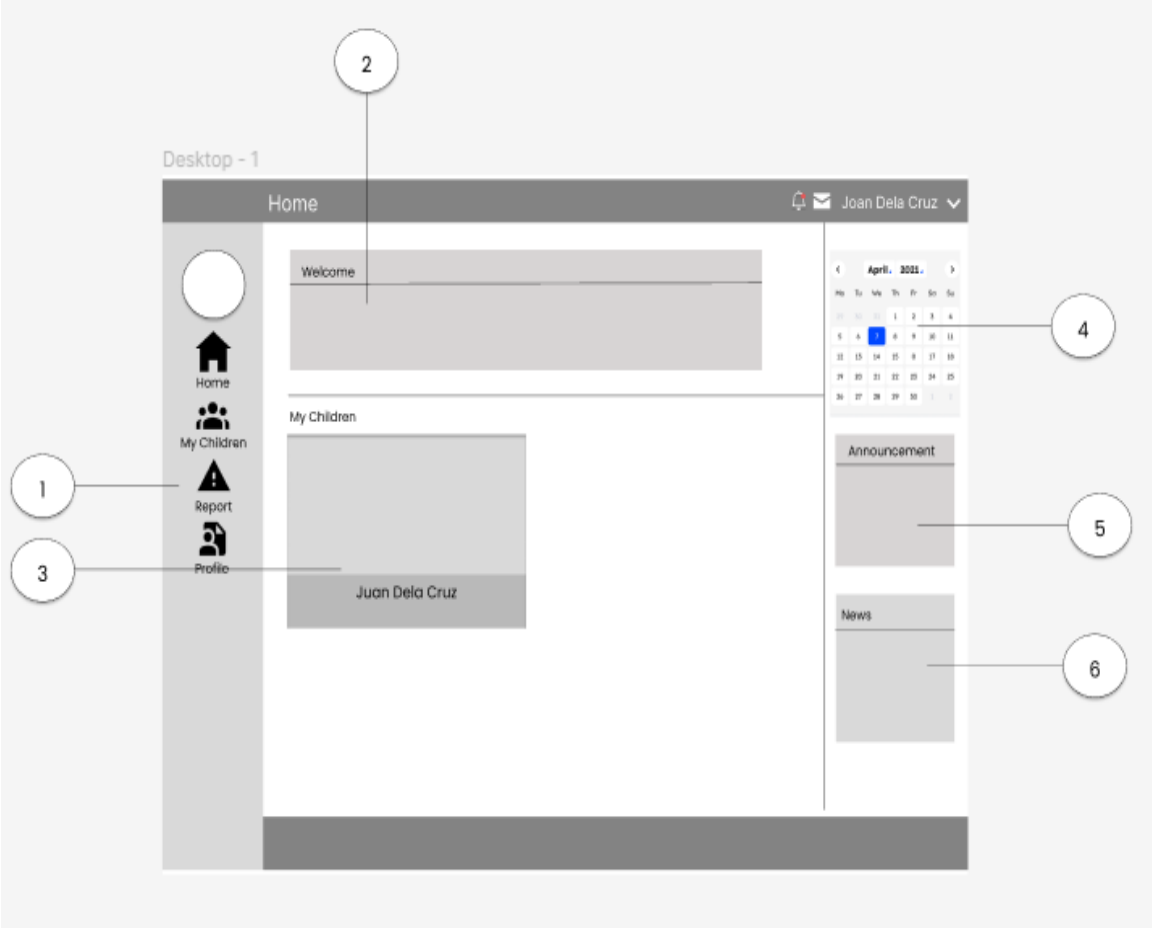


Figure 36 shows the Parent's Children Page. From the My Children, it shows the child of the parent, either one child, two children, or many children.

Figure 36. Parent's Children Page

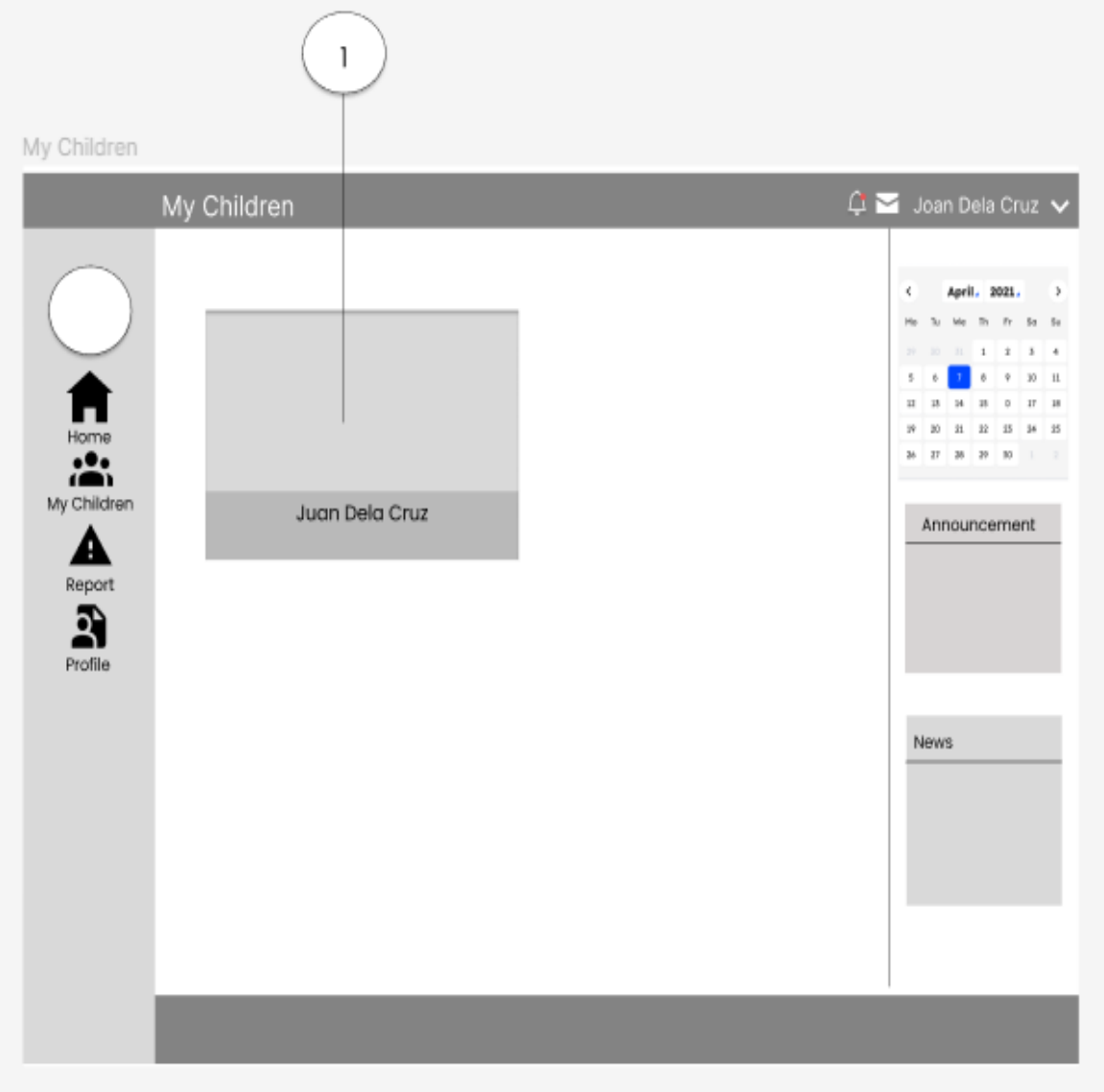


Figure 37 shows the Children's Progress Page. In this page, the parent can see the progress of their child with regards on the Finished Assessments, Ongoing Assessment, and Missing Assessment of the child. Also, they can check the profile of their children.

Figure 37. Children's Progress Page

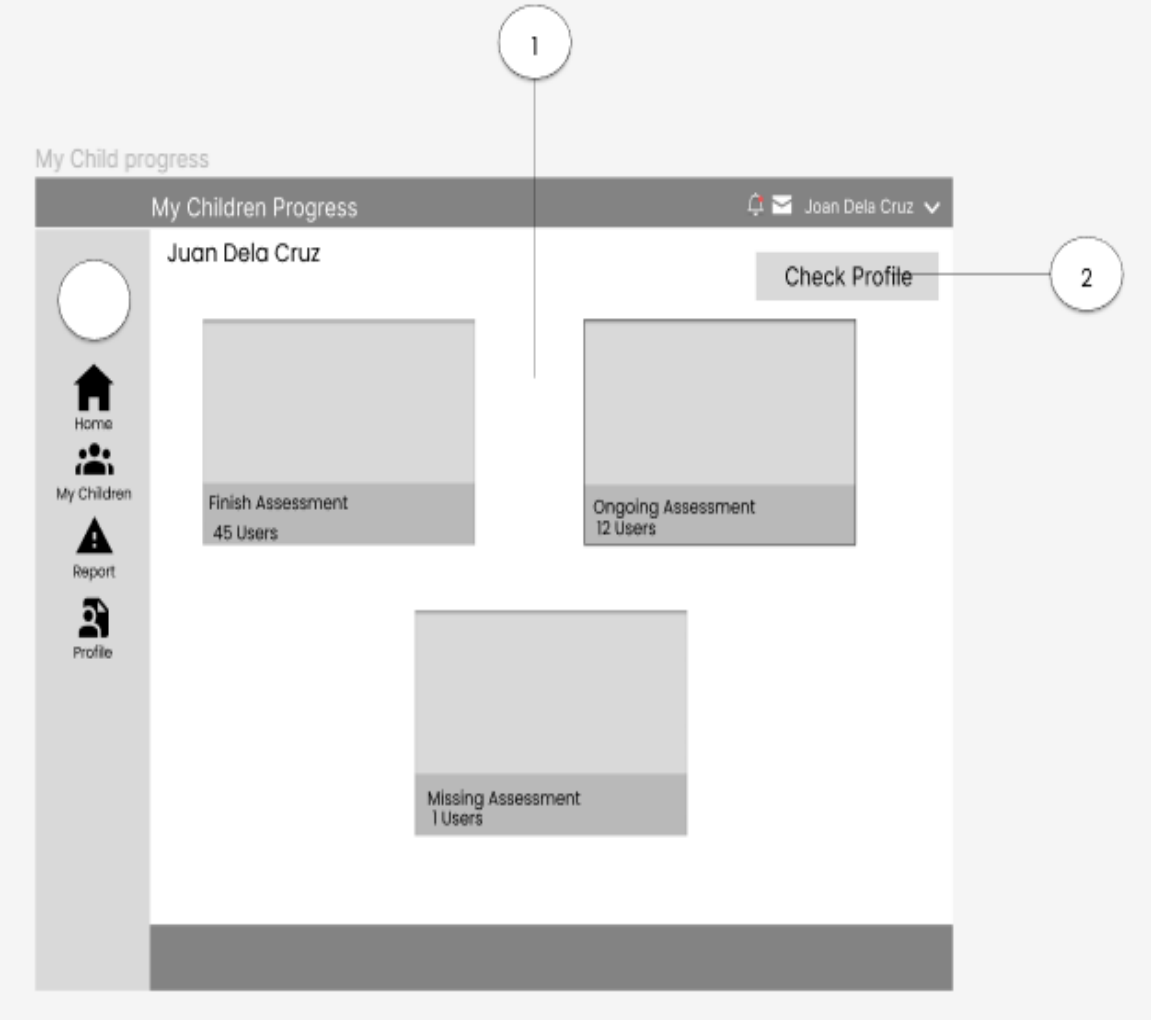


Figure 38 shows the Parent's Profile Page. From this page, the user has Header (1) and Profile Picture (2). It also shows the role of the user, Parent (3).

Figure 38. Parent Profile Page

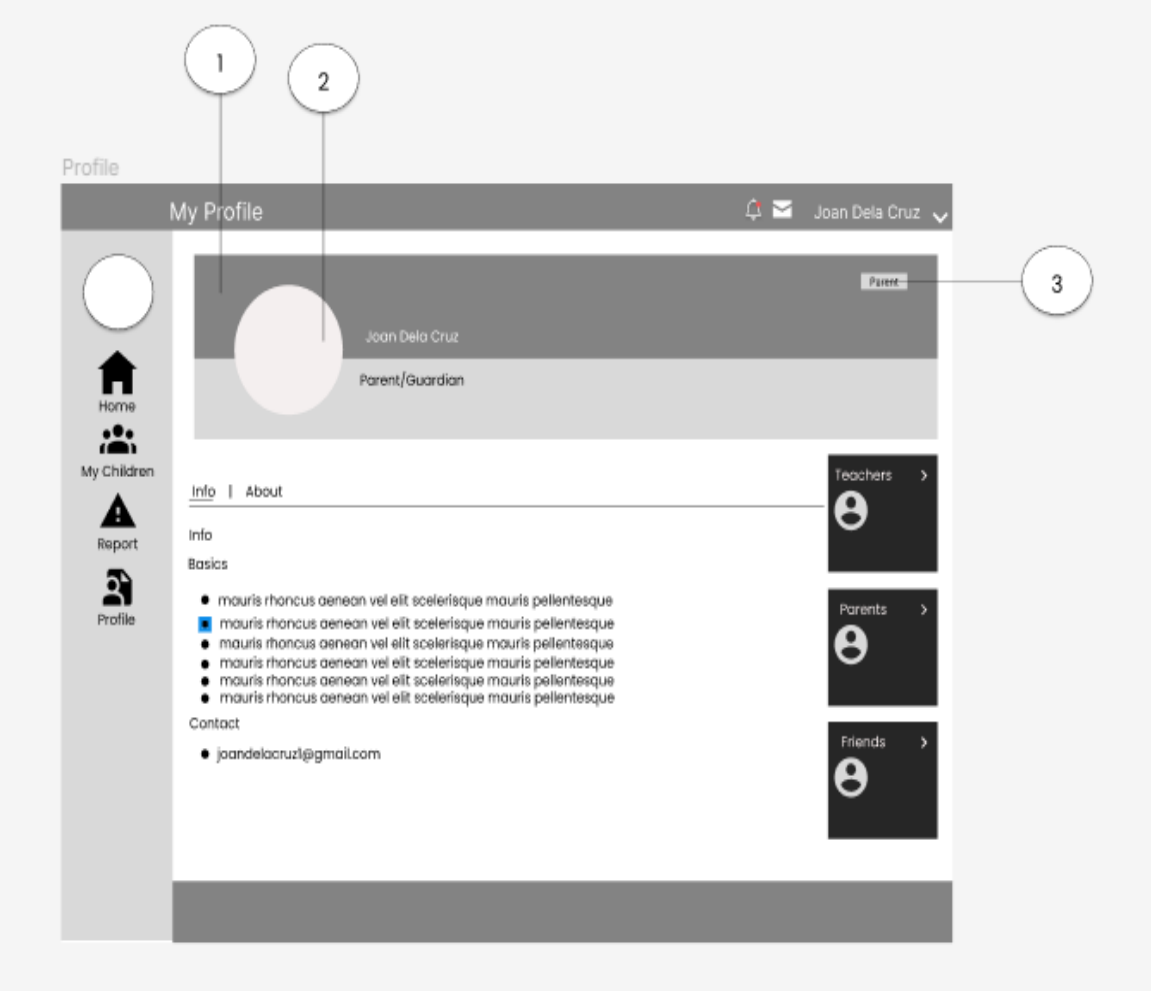
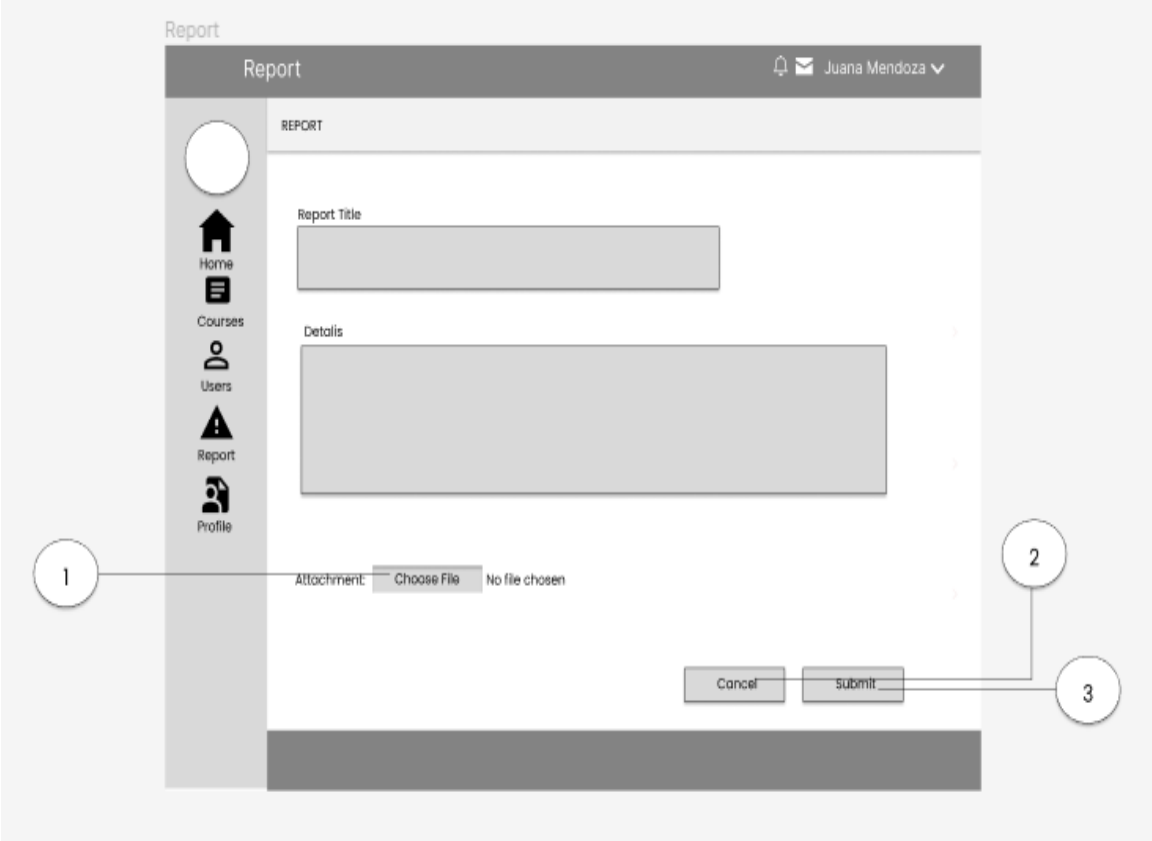


Figure 39 shows the User's Feedback & Reports Page. From this page, the user is allowed to send a feedback or request from the admin that indicates on what is the title of the report, the details with regards to their concern, attached file (1) and once the details are provided, the user can either choose if they will Cancel (2) or Submit (3) the feedback or request.

Figure 39. User's Feedback & Request Page



Functional Requirements

In this section, the functionalities of the system are specified, stating their behavior and expected output. This list of functional requirements guides the developers to obtain the features and functionalities that the system must have.

Table 1. Functional Requirements

Characteristics	Description
Manage Accounts	Admin manages the account in terms of creating, editing, and deleting the user account and providing user role for each user.
Forgot Password	The developed system allows the user to change their password through forgot password using their registered email in the system.
Create News and Announcement	The developed system allows the administrator to create news and announcement depending on the users who will view it and the time span of it.
View News and Announcement	The users can view news and announcement in the user dashboard, with a certain time and data.
Send Feedback and Requests	The developed system allows the users to send feedback and requests in order to provide improvements and polish the system.
View Feedback and Requests	The feedback and requests sent by the user is received by the administrator, which therefore can be viewed and deleted.

Functional Requirements (cont'd)

Create and Archive Class Course	The developed system allows the teacher to create class course in which allows them to interact with the student, and once the class course is done, the teachers can archive it.
Join Class Course	Once the teacher created class course, it generates class code in order for the students to join and to interact with other students and teacher.
Upload Learning Materials and Assessments	The developed system allows the teacher to upload and edit learning materials and assessments, such as material, quiz, question, and assignment.
Manage Learning Materials and Assessments	Once the teacher uploaded the learning materials and assessments, the students can view, download, and comply with the instructions before the due date.
Grade Learning Assessments	The developed system allows the teacher to insert scores in every assessment, and once the assessments are scored, it generates grade depending on the inputted percentage when the class is created.
Gamification	The developed system has gamification features that allows them to provide badges, point system, and leaderboards for the learners.

Functional Requirements (cont'd)

To-do List	The to-do list section is auto-generated once the teacher upload assessments, and it has three parts which are assigned, missing, and done.
To-Review	The to-review section allows the teacher to provide scores for the assessments that is uploaded and complied by the students.
Learner's Progress and Performance	The developed system allows all of the users, such as student, teacher, and parent to view the learner's progress and performance, as well as the calculated grade.
Content Creation	The developed system allows the user to provide contents such as uploading news and announcement, courses, materials, assessments, and to provide interaction to one another.
Provide Reports	The developed system provides reports with regards to the user role, from administrator, there are student, teacher, and parent report. While in teacher, it has student and topic report.

Non-Functional Requirements

This section specifies the scope and constraints of the system in different aspects. This also determines the standard that has to be met for the system's usability for the client. With this list, non-functional requirements guide the

developers in order to obtain the features and functionalities that the system must have.

Table 2. Non-Functional Requirements

Action	Description
Operational Requirement	The developed system ensures that the system achieves the compatibility with all of the devices such as desktop, tablet, laptop, and mobile phones. As well as providing a user-friendly interface in order to fully satisfy and provide the intended functionality and interface of the system.
Performance Requirement	The developed system provides a performance that meets the standard of the client in terms of having a fast refresh time rate, respond quickly in time with regards to user input, handle all of the user requests and all of the functionalities and technicalities of the system run smoothly and interactively.
Security Requirement	The developed system ensures that the system is secured in terms of user's data that is securely stored and encrypted to prevent unauthorized access, along with the login system with their registered accounts provided by the administrator.

Non-Functional Requirements (cont'd)

Cultural and Political Requirement	The developed system provides equality and ensures that the system is sensitive with the cultural beliefs and not discriminate any group or community. Also, it is accessible and relevant to a diverse range of users, regardless of their cultural and political backgrounds.

Hardware Requirements in Developing the System

This section specifies the hardware requirements in developing the system. In this section, it explains the specification that is needed in a certain hardware that will be used in developing the system.

In order for the developed system to be effective and show no interference, hardware requirements are specified. Table 3 shows minimum hardware requirements in the developed system. For the internet connection, WLAN is required with at least 10mbps connection speed to run the system properly. For the processor, it must be quad core with at least Intel I3 or higher. For the RAM, at least 8GB or higher and 512GB hard disk storage or more.

Table 3. Hardware Requirements in Developing the System

HARDWARE	SPECIFICATION
Internet Connection	At least WLAN/10mbps
RAM	At least 8GB

Hardware Requirements in Developing the System (cont'd)

Processor	At least Intel core I3 or higher
Storage	At least 512GB

Hardware Requirements in Using the System

This section specifies the hardware requirements in using the system. In this section, it explains the specification that is needed in a certain hardware that will be used in using the system.

To properly used and show effectivity of the developed system, hardware requirements are specified. Table 4 shows the minimum hardware requirements in using the system. Hardware Requirements include the use of internet connectivity with at least 10mbps WLAN connection. As for the processor, at least quad-core. For the RAM, at least 4GB and 128 GB free disk storage.

Table 4. Hardware Requirements in Using the System

HARDWARE	SPECIFICATION
Internet Connection	At least WLAN/10mbps
RAM	At least 4GB or higher
Processor	At least quad-core or higher
Storage	At least 128GB

Software Requirements in Developing the System

This section specifies the software requirements in developing the system. In this section, it explains the type and specification that is needed in a certain software that will be used in developing the system.

In order for the developers to achieve the effectiveness and show no interference for the developed system, software requirements are specified. Table 5 shows the Software Requirements in developing the system. The developers used Visual Studio Code as their Text Editor while HTML, CSS, and Bootstrap are for the structure and design of the website. In addition, JavaScript was used for the client-side scripting. Lastly, PHP and MySQL were used to develop the backend of the website and Hostinger for the web-hosting domain for the website.

Table 5. Software Requirements in Developing the System

SOFTWARE	TYPE/SPECIFICATION
Text Editor	Visual Studio Code
Front End Language	HTML, CSS, Bootstrap, and JavaScript
Back End Language	PHP ver. 8.2.4 and MySQL ver. 8.0.33
Web Hosting	Hostinger

Software Requirements in Using the System

This section specifies the software requirements in using the system. In this section, it explains the type and specification that is needed in a certain software that will be used and implemented in the developed system.

In order for the administrators to use the developed system effectively, Table 6 shows the Software Requirements in using the system. For the Operating System, Windows 10 Home or higher is recommended because the developers believed that security fixes and other features from recent Windows are important to run the website efficiently and also for the latest browser support. For the Browser, the website will run well on Google Chrome and Microsoft Edge.

Table 6. Software Requirements in Using the System

SOFTWARE	TYPE/SPECIFICATION
Operating System	At least Windows 10 Home or higher
Browser	Google Chrome and Microsoft Edge

Software Development Tools

This section specifies the software development tools that is used in order for the developers to develop the front-end and back-end of the system. Also, in providing hosting and server for the developed system.

In creating the frontend of the developed system, the developers used HTML or Hypertext Markup Language, CSS or Cascading Style Sheets, Bootstrap and JavaScript. HTML is used on creating the structure of the developed system. This helps the developers in creating the proper format of texts, images, buttons, and images as well as it is used for separating different elements such as the header, main content and the footer element.

To make the design appealing, creative, and approve in the client and user's perspective, CSS is used to format the layout and design of the website. It helps to describe how HTML elements will be displayed on the user's interface or in other media like laptop, cellphone, tablet, and desktop. CSS let the developers control the layout of multiple web pages into a one form which will be defined in a single file of CSS linked through different HTML files. This allows the developers to provide and make the desired designed of the system based on how it will be handed to the client.

Add to that, in order for the website to be interactive, the developers used JavaScript as their scripting language for them to be able to create a dynamic web-page. JavaScript allows the website to interact in terms of navigation drop-down on hover, pop-up notification, and it optimizes the browser experience by only sending the code that the user needs.

Next, in creating the backend of the developed system, the developers used

PHP as their server-side scripting language and MySQL for their database. In order to perform operations within the system's database, PHP is used to retrieve, add, delete, and modify data into the database. Since the developers used PHP, MySQL serve as the system's database since it widely supports each other and it is huge advantage for the developers with regards to their experience.

After all of the making process, the developers used XAMPP (Cross Platform, Apache, MySQL, PHP, Perl) for them to test the website in a local webserver before buying a domain and upload it to the web.

The developed system is now hosted in Hostinger which the developers subscribed for the developed system to be accessible by its users through internet.

Testing and Evaluation

The testing and evaluation phase hold a huge part in the development of the system. It is used to evaluate the functionality, reliability, usability, efficiency, and portability of the system. System testing is implemented through the system once the developers finishes the developed system so that they can test the developed system to identify the possible bugs and errors and in order to provide a working system.

The developers used Functionality Testing wherein it is a method by which each individual functions of the software are being tested. It is used to verify whether all of the functions of the system are working properly. In order to obtain

success, the developers tested the system in XAMPP that will serve as a local webserver to test the functionalities, see the interfaces, and use the entire system.

Test Case

The developers used test case in order for them to know if the objectives of client specifications are met for the developed system. The developers utilized test cases for the Admin as shown in Table 7, for the Teacher in Table 8, for the Student in Table 9, and for the Parent in Table 10, in order to provide a website that satisfies the needs and wants of the client's and meet their expectation towards the developed system. This helps the developers to find and address any issues that may occur throughout the development process by adhering to a set of established test cases.

Table 7. Test Case for Administrator

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	RESULT	STATUS
1	Access System Login	Can enter and login through the website with registered account for the administrator		
2	Create accounts for the users	Can create accounts for the users		
3	Manage the accounts of the users	Can manage the accounts of the users		
4	Provide news and announcements for the users	Can provide news and announcements for the users		

Test Case for Administrator (cont'd)

5	View and download student, teacher, and parent reports	Can view and download student, teacher, and parent reports		
6	Receive feedbacks and requests from their users	Can receive feedbacks and requests from their users		

Table 8. Test Case for Teacher

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	RESULT	STATUS
1	Access System Login	Can enter and login through the website with account provided by the administrator		
2	Organize class with proper student list and course subject	Can organize class with proper student list and course subject		
3	Upload learning materials and assessments	Can upload and provide learning materials and assessments		
4	Provide to-do list	Can provide to-do list with certain due dates for every assessment		
5	Provide Feedback and Request	Can provide feedback and requests for the improvements of the system		
6	Edit Profile	Admin is the only one that can edit teacher account information		

Table 9. Test Case for Student

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	RESULT	STATUS
1	Access System Login	Can enter and login through the website with account provided by the administrator		
2	View Uploaded Learning Materials and Assessments	Can view and manage the uploaded learning materials and assessment to the class		
3	To-do List and Push Notifications	Can manage to-do list with certain due dates and manage notifications		
4	View Award, News, and Announcements	Can view and interact with award, news, and announcements		
5	Provide Feedback and Request	Can provide feedback and requests for the improvements of the system		
6	Edit Profile	Admin is the only one that can edit student account information		

Test 10. Test Case for Parent

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	RESULT	STATUS
1	Access System Login	Can enter and login through the website with account provided by the administrator		

Test Case for Parent (cont'd)

2	Track Learner's Progress and Performance	Can track learner's progress and performance		
3	Provide Feedback and Request	Can provide feedback and requests for the improvements of the system		
4	Edit Profile	Admin is the only one that can edit student account information		

System Evaluation

The developers constructed survey questionnaires which were based on the ISO/IEC 25010:25011 Software Evaluation Criteria. These questionnaires determined the quality of the system and to know whether the users are satisfied on the requirements that the system provides.

The system was evaluated in terms of its: (1) Functionality, (2) Reliability, (3) Usability, (4) Efficiency, and (5) Portability. In functional testing, it will be used to test if the system's function is working as intended to be. The system's reliability testing will determine if the system can recover the data directly affected and re-establish the desired state of the system. In usability testing, it indicates if the interface is user-friendly and if the user can easily understand and know how to use it with effectiveness, efficiency, and objectively. It refers to the ease of the use for a given function. In efficiency testing, which refers to the resources expended in

relation to the accuracy and completeness with which users achieve their goals. The user can determine if the system can work properly according to achieving goals. Lastly, in portability testing, it refers the effectively be adopted for different evolving hardware, software, or other operational, or usage environments. The user determines if the system can work properly according to specified tasks.

Table 11 illustrates the Likert Scale on how the user rates the system based on their different statements that is provided in the survey questionnaires. The developers distributed survey questionnaires to 30 respondents that helped the developers to determine the quality of the system.

Table 11. Likert Scale

RATING	VERBAL INTERPRETATION
5	Strongly Agree
4	Agree
3	Fair
2	Disagree
1	Strongly Disagree

Table 12 illustrates the range and verbal interpretation of the score rating of the interpretation of the results that were collected in the survey questionnaires. In every row, there is a certain verbal interpretation and range the table has. In strongly

agree, it ranges from 4.50 – 5.00. Next, from agree, it ranges from 3.50 – 4.49. Fair ranges from 2.50 – 3.49. From disagree, it ranges from 1.50 – 2.49, and lastly, from strongly disagree, it ranges from 1.00 – 1.49. It is used in determining the weighted mean from the test case in each iso mechanics.

Table 12. Range and Score Rating

RANGE	VERBAL INTERPRETATION
4.50 – 5.00	Strongly Agree
3.50 – 4.49	Agree
2.50 – 3.49	Fair
1.50 – 2.49	Disagree
1.00 – 1.49	Strongly Disagree

CHAPTER 4

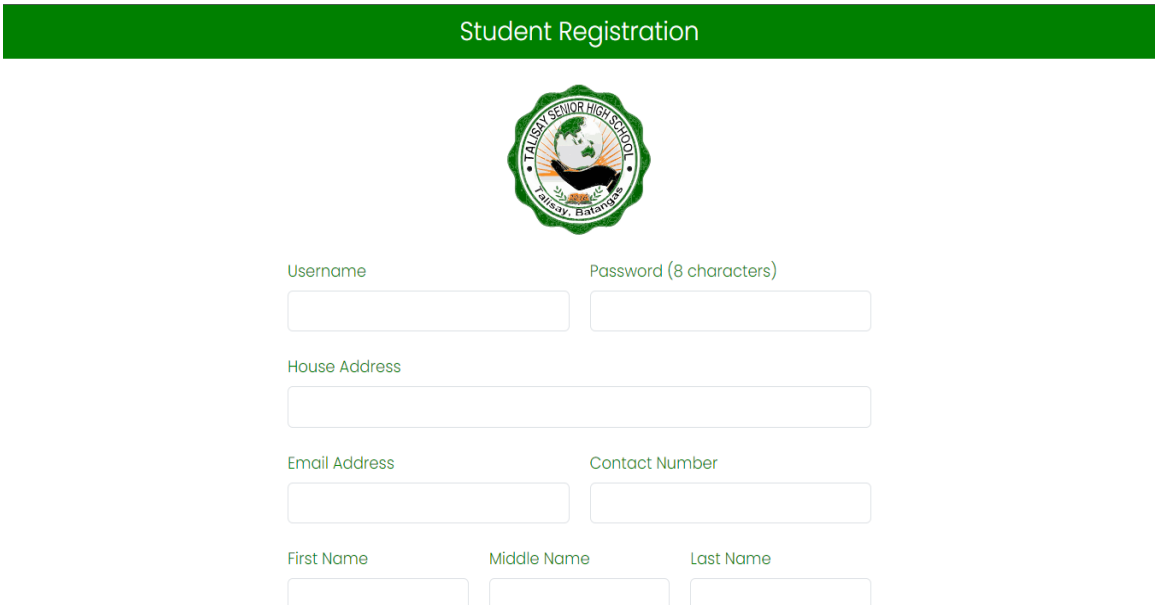
RESULTS AND DISCUSSIONS

This chapter presents how the developers focused on the results of the data gathered that were used in developing the system. The chapter contains the results of actual testing of the software and the results of analysis on how the system works based on its objectives.

Create Student Account

Figure 40 shows the form in student registration. In student registration, the administrator manages and create student account. In order to complete the registration, the administrator needs to complete the form by encoding the username and password for the student, the house address, email address and contact number, first name, middle name, and last name of the student. In managing the user role, the administrator includes the grade level of student, department, the class section and the user type, if it is a student, teacher, or parent.

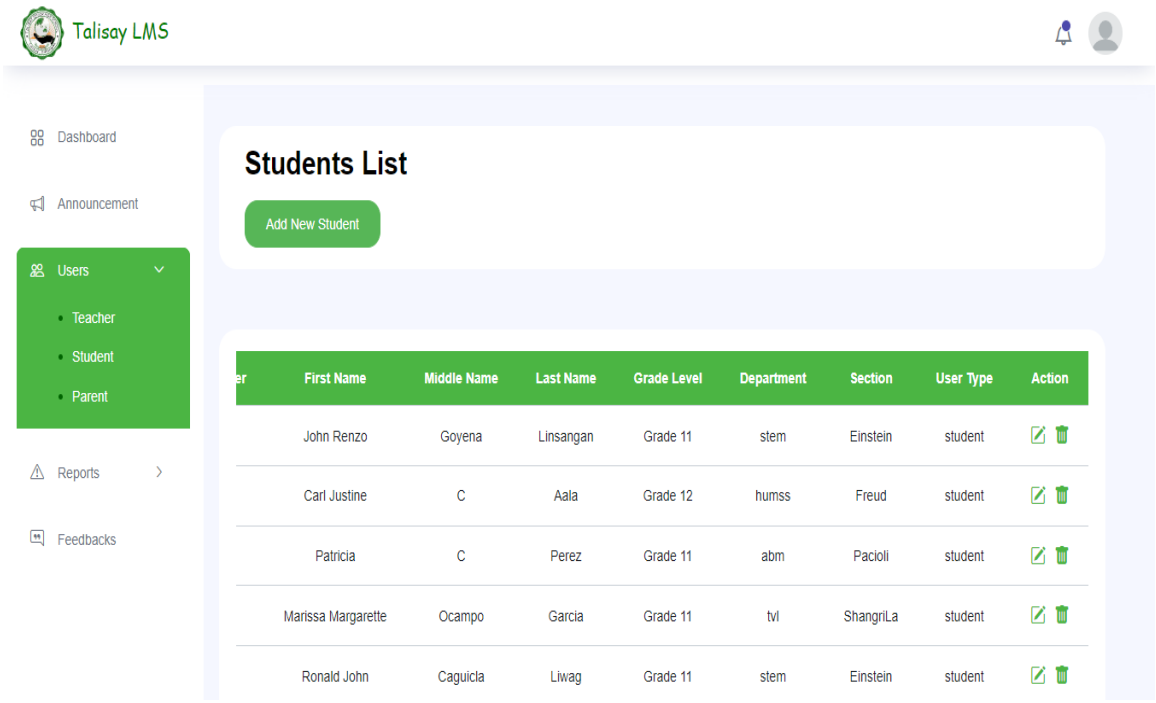
Figure 40. Create Student Account



Management of Student List

Figure 41 shows the list of students that is registered in the system. From the students list, there it shows the username, password, email address, house address, contact number, first name, middle name, last name, grade level, department, section, and the user type of the student. Also, there are two actions that are stated in the list, which are the edit and delete button. From the edit button, the administrator has the power to edit and view the student and information. Also, the delete button, wherein it allows the administrator to delete users.

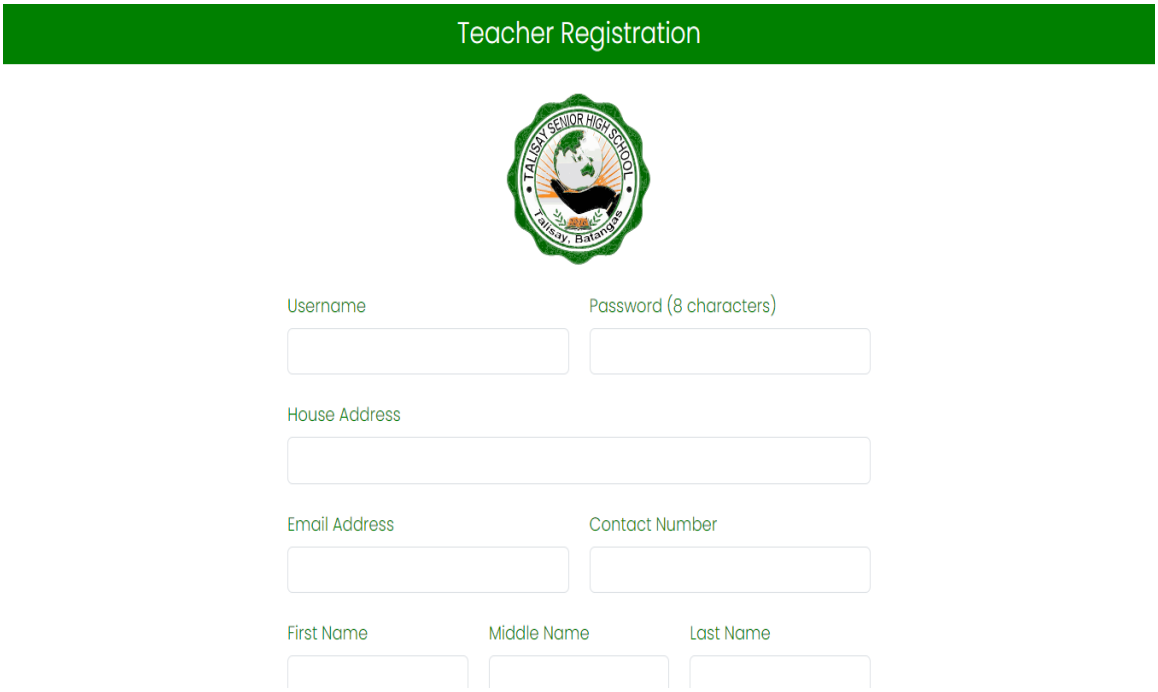
Figure 41. Management of Student List



Create Teacher Account

Figure 42 shows the form in teacher registration. In teacher registration, the administrator manages and create teacher account. In order to complete the registration, the administrator needs to complete the form by encoding the username and password for the teacher, the house address, email address and contact number, first name, middle name, and last name of the teacher. In managing the user role, the administrator includes the department and user type of the teacher.

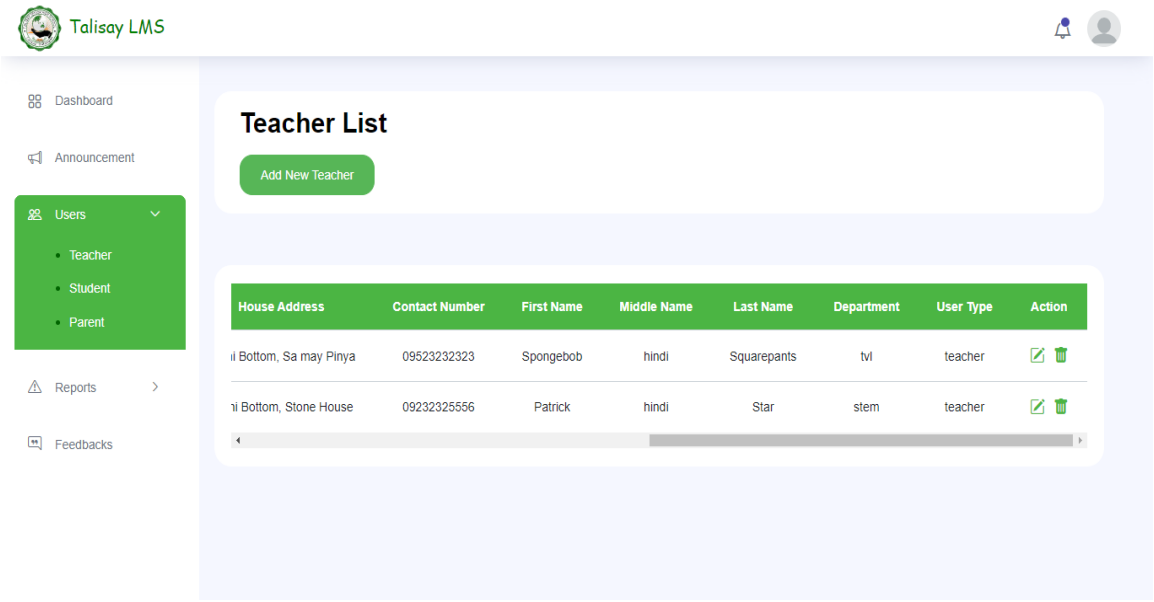
Figure 42. Create Teacher Account



Management of Teacher List

Figure 43 shows the list of the registered teacher in the system. From the teacher list, it shows the username and password of the teacher, email, house address and contact number. It also includes first name, middle name, and last name of the teacher, department and the user type. Also, there are two actions in order to manage the information of teacher, which are, the edit and delete button. From edit button, the administrator has the power to edit and view the information of the teacher, and edit. Lastly, the delete button, wherein it allows the administrator to delete users.

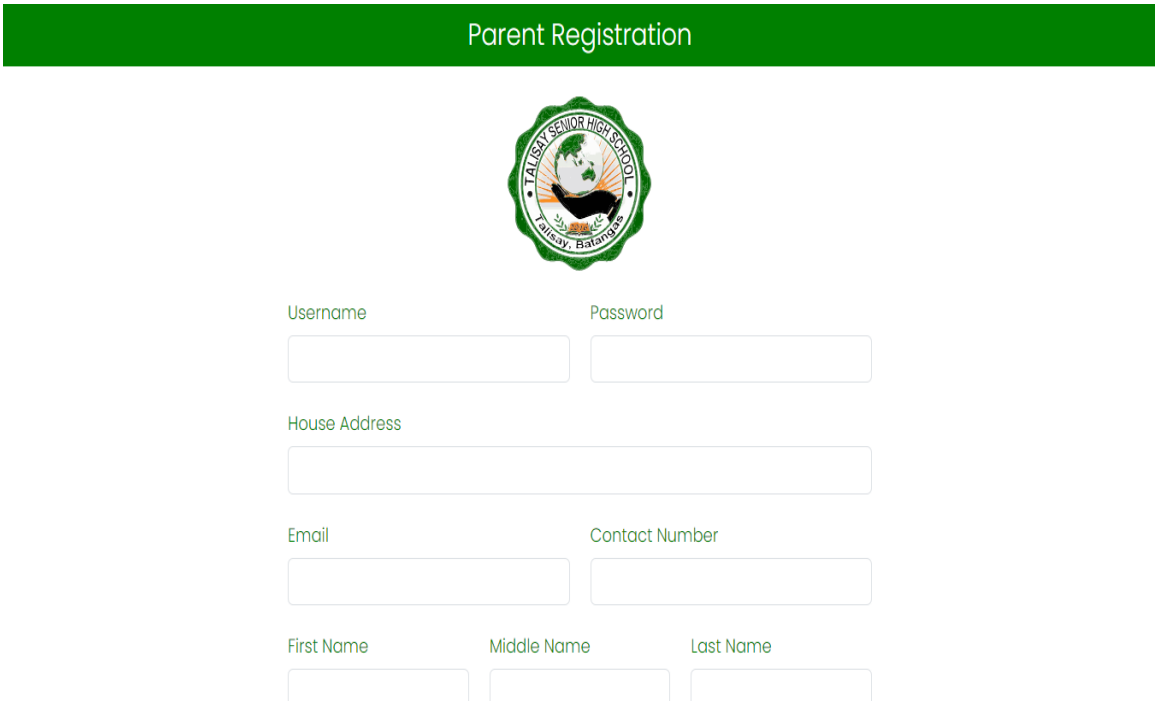
Figure 43. Management of Teacher List



Create Parent Account

Figure 44 shows the form in parent registration. In parent registration, the administrator manages and create account. In order to complete the registration, the administrator needs to complete the form by filling out the information that the form needs, that concludes the username and password of the account, the house address of the parent, the email and contact number, their full name, such as first name, middle name, and last name. Since it is a parent registration, the registration form shows the list of all the students, and there, the administrator can search the child of the parent, and in providing user roles, the administrator can choose on which is the user type of the account.

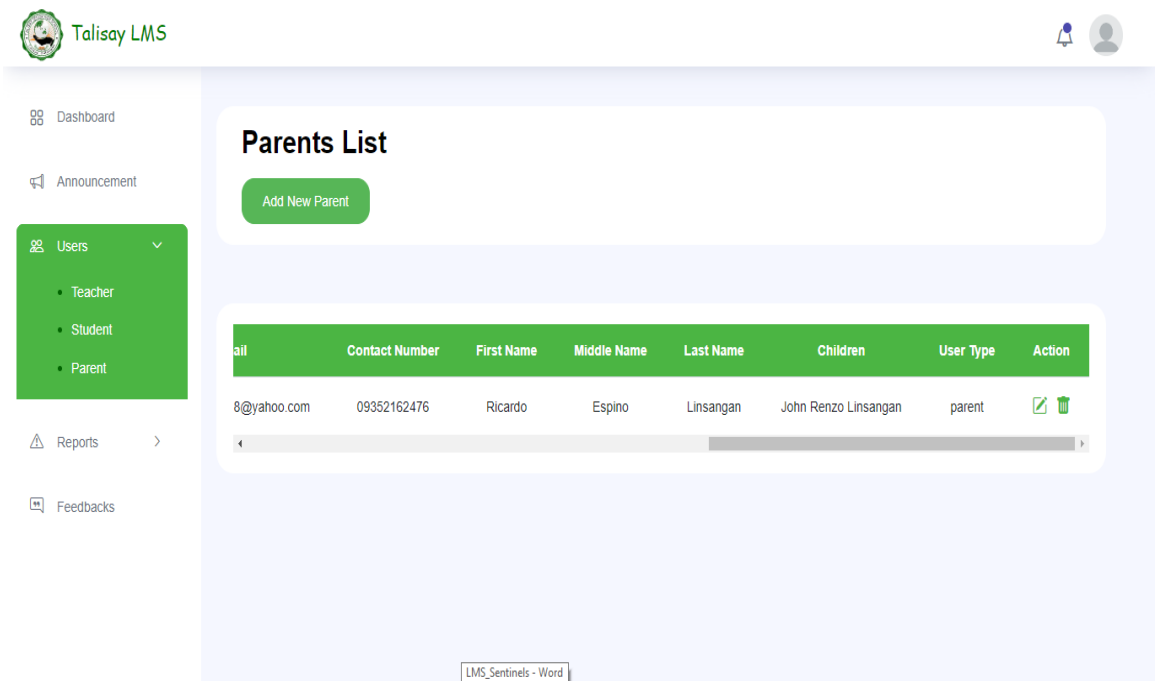
Figure 44. Create Parent Account



Management of Parent Account

Figure 45 shows the list of registered parents in the system. From the parent list, it shows the username and password of the parent, email, house address, and contact number. It also includes the first name, middle name, and last name of the parent, their children and the user type. Also, there are two actions in order to manage the information of parent, which are, the edit and delete button. From edit button, the administrator can edit and view the information provided in the parent's account, and also, the administrator can delete the account of the user.

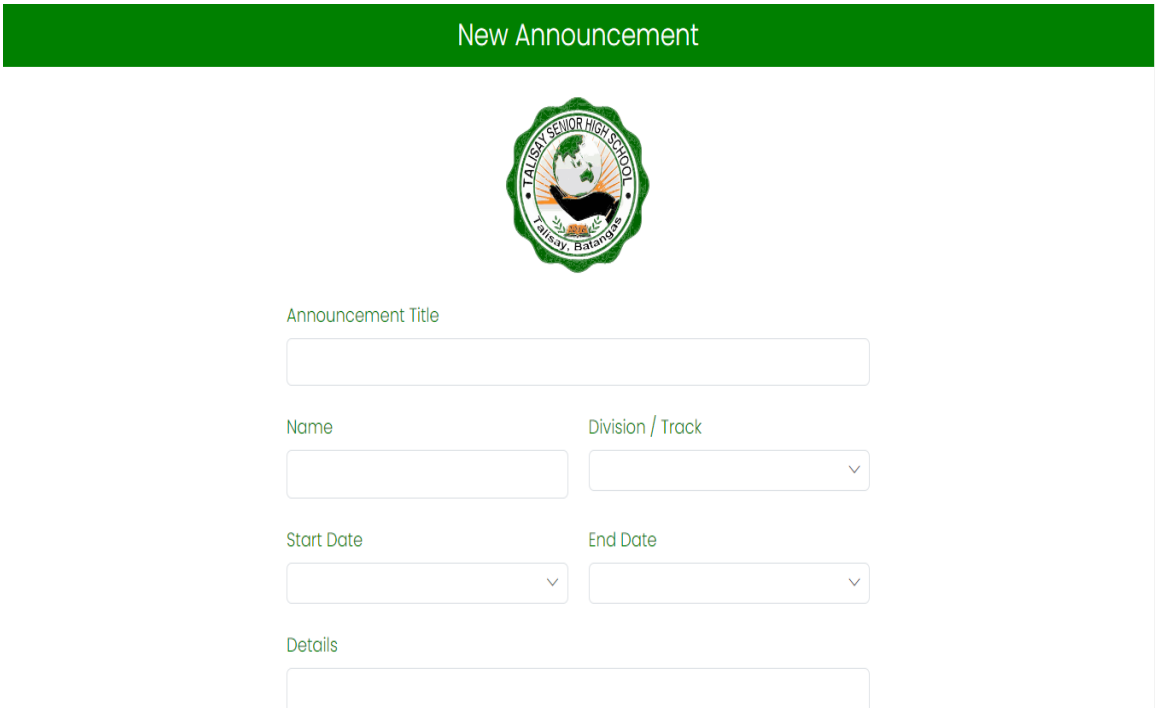
Figure 45. Management of Parent List



Create Announcement

Figure 46 shows on how the administrator create announcement for the users. In creating announcement, the admin needs to input information for the announcement such as the announcement title, the name of who propose that announcement, the division/track, the start and end date for the span of the announcement, the details on what is that announcement is all about, and the admin has the option to attach a picture, or not.

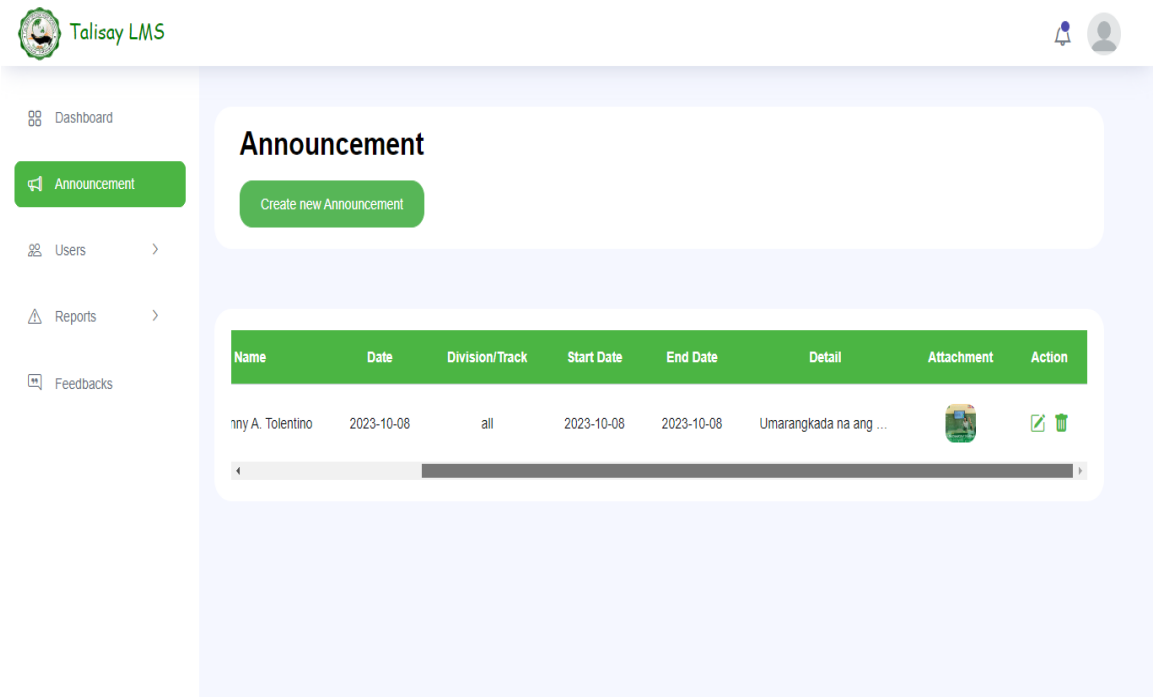
Figure 46. Create Announcement



Management of Announcement

Figure 47 shows the list of posted announcements for the users. Posted announcement consists of its title, name, date it is posted, the division/track for the intended users, the start date and the end date for the span of the posted announcement, announcement details and attachment for the attached picture for the announcement.

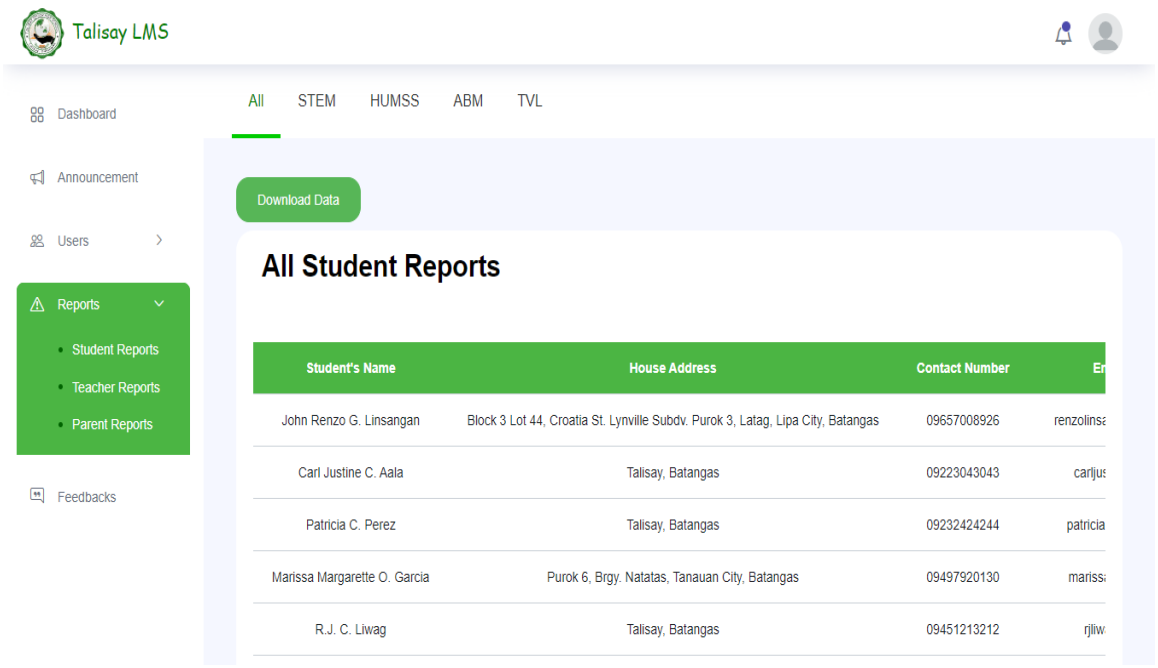
Figure 47. Management of Announcement



Management of Student Reports

Figure 48 shows the reports in all the students enrolled in the system. The information that is shown in all student reports are the student's full name, house address, their contact number, email address, grade level, department and section. The student reports can be printed as a hard copy so that, the school can show data through face-to-face. Also, from the student reports, the admin can print report of students based on their department, such as STEM, HUMSS, ABM, and TVL students.

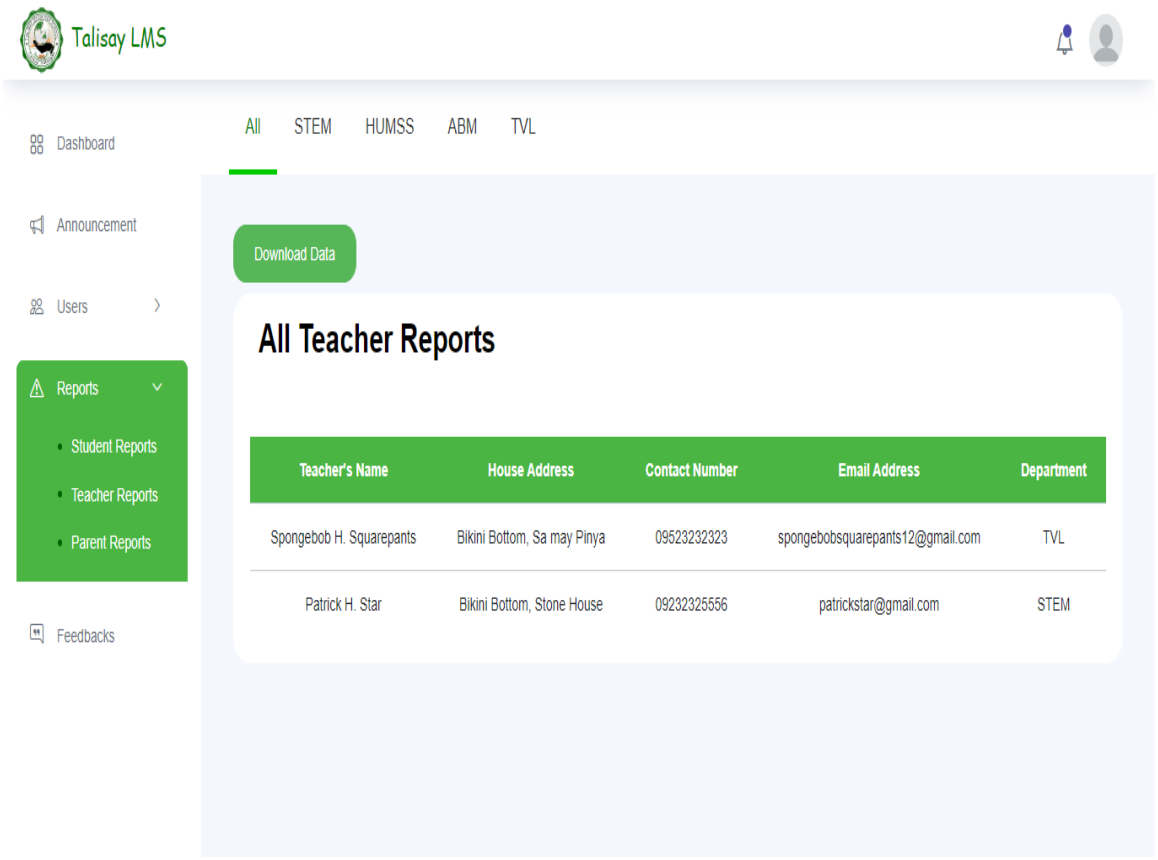
Figure 48. Management of Student Reports



Management of Teacher Reports

Figure 49 shows the reports of all registered teacher in the system. The information that is shown in the teacher reports are the full name of teacher, house address, contact number, email address, and department. The teacher reports can be printed in hard copy, which can be used as a copy of teachers that are listed in the system. Also, from the teacher reports, each department can be shown and printed individually, if the administrator wants only the STEM teachers, HUMSS, ABM, or TVL.

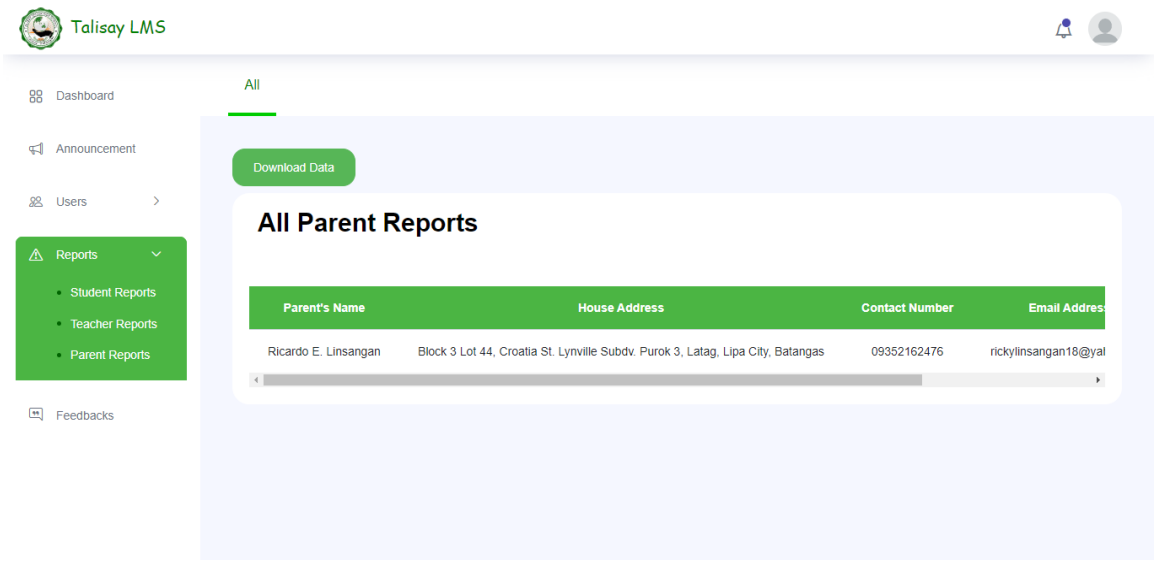
Figure 49. Management of Teacher Reports



Management of Parent Reports

Figure 50 shows the reports of all registered parent in the system. The information that is shown in the parent reports are parent's name, house address, contact number, email address, and their children. The parent reports can be printed in hard copy, which can be used as a copy of parents that are listed in the system.

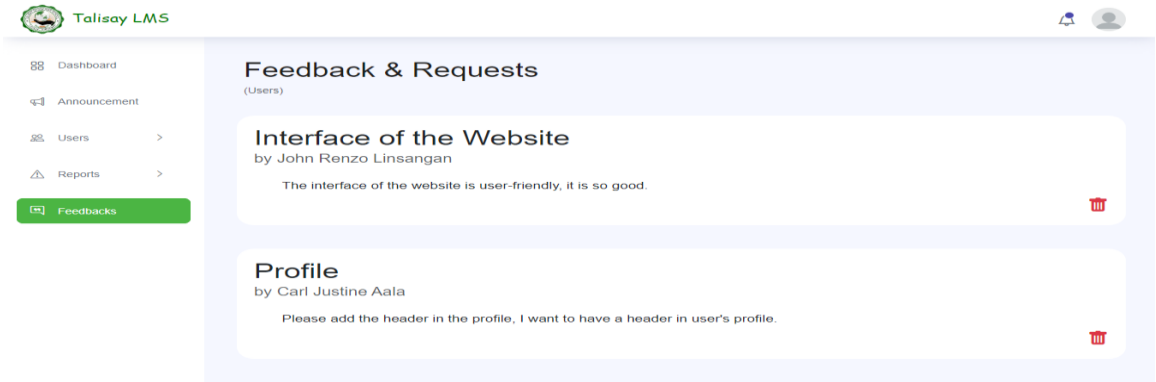
Figure 50. Management of Parent Reports



Management of User Feedback & Requests

Figure 51 shows the feedback and requests provided by the users. The administrator only has one action to make, which is to delete the feedback or requests once they already make action to it.

Figure 51. Management of User Feedback & Requests



Create Class List

Figure 52 shows how the teacher create classes for the students. In creating classes, it requires the department of the student, the section for that class, the class name, and the subject itself.

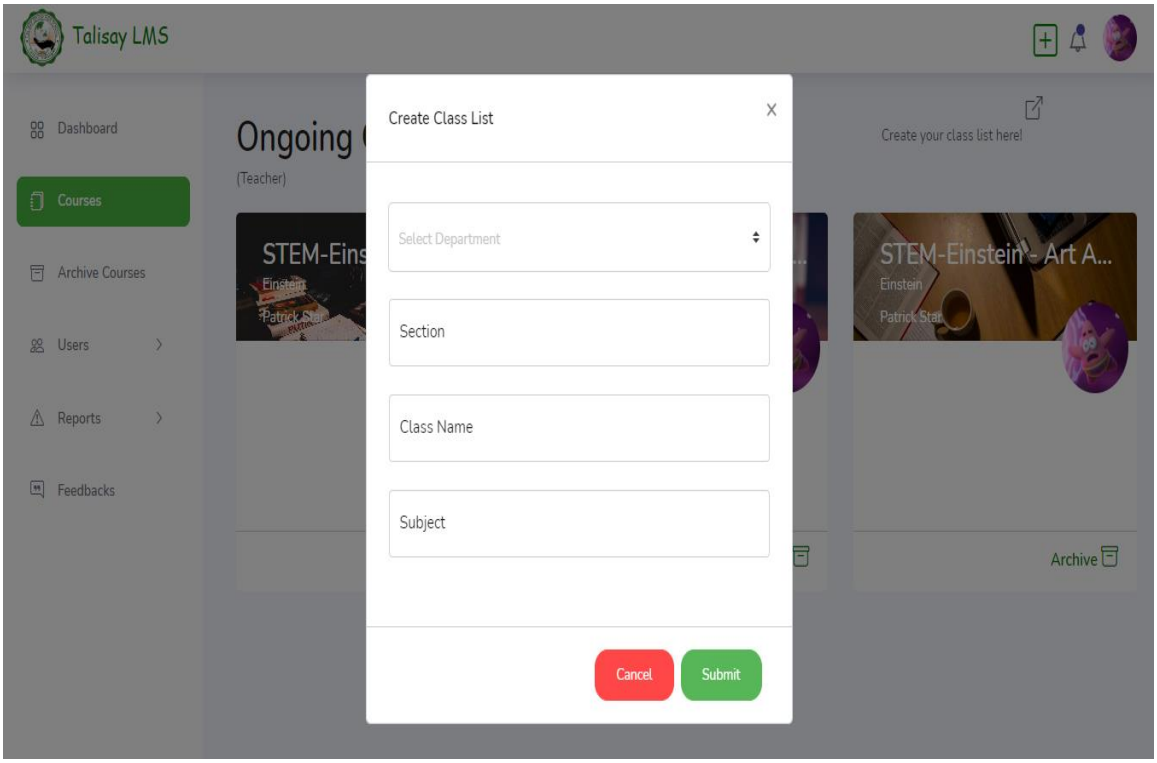
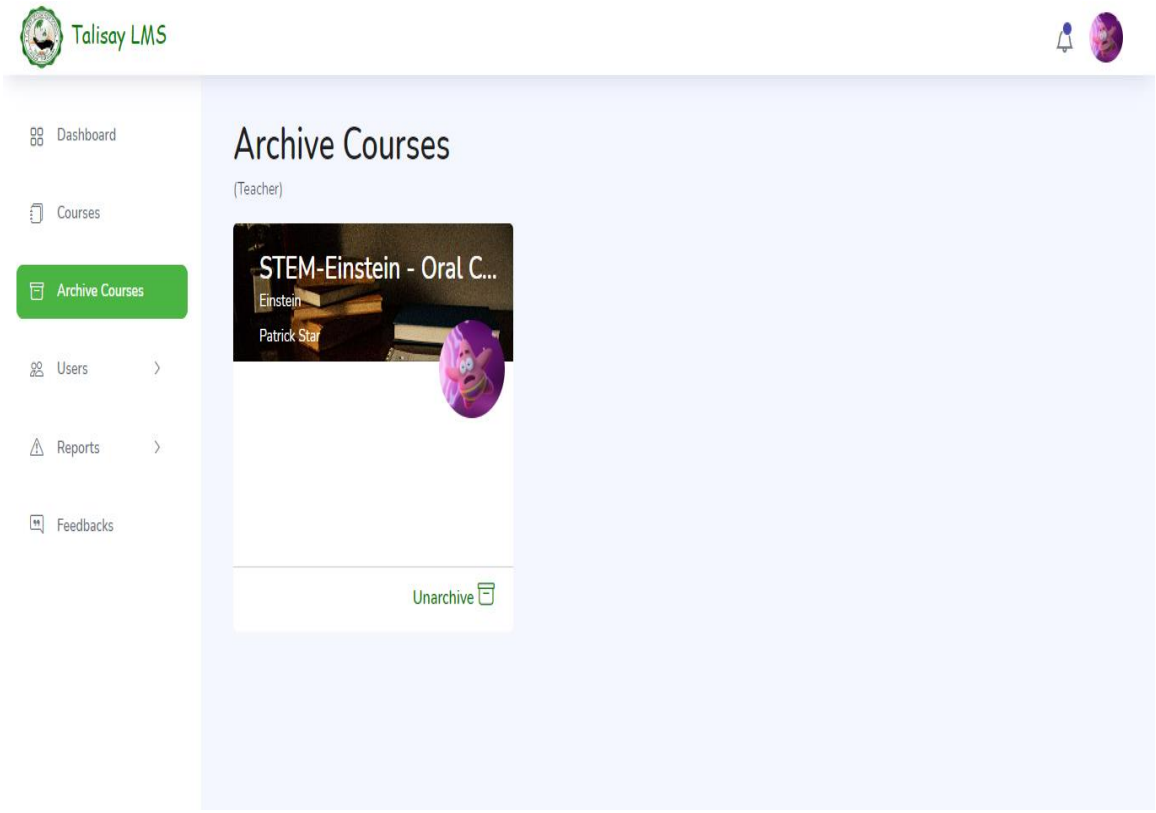


Figure 52. Create Class List

Archive Courses (teacher)

Figure 53 shows the archive courses. From archive courses, it allows the teacher to lessen the courses to be provided in the course section, and once the class is archived, all of the functionalities are disabled, but the materials are still there.

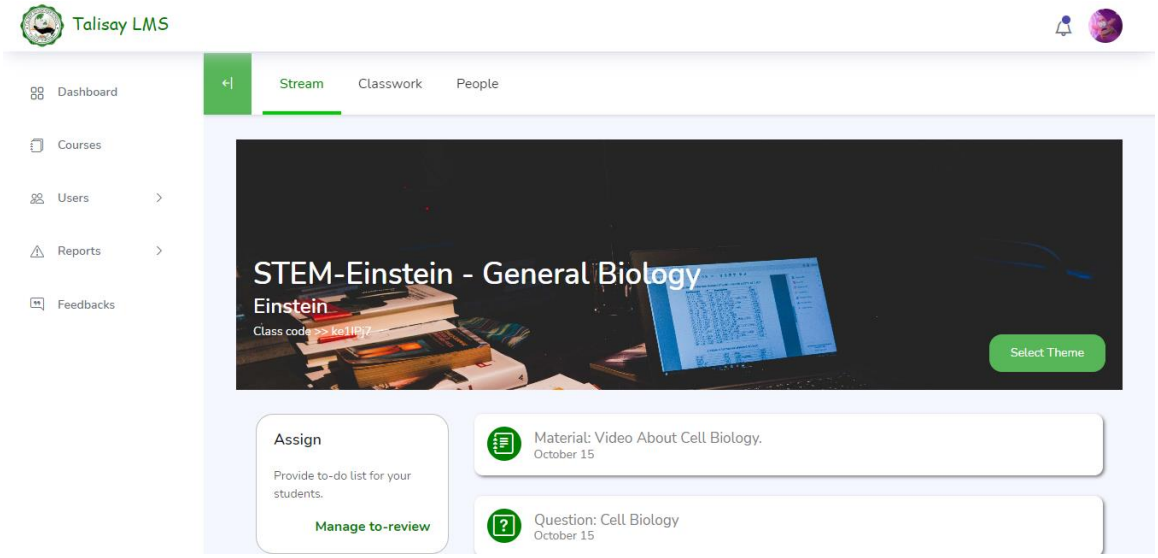
Figure 53. Archive Courses (teacher)



Management of Class Stream

Figure 54 shows the stream of the classroom. From stream, there, the user can access the uploaded classwork provided by the teacher. It shows from the first part the background of for the stream, which from select theme, the teacher can select a certain theme and also, it shows the class name, section, and the class code that is generated when the teacher created the class.

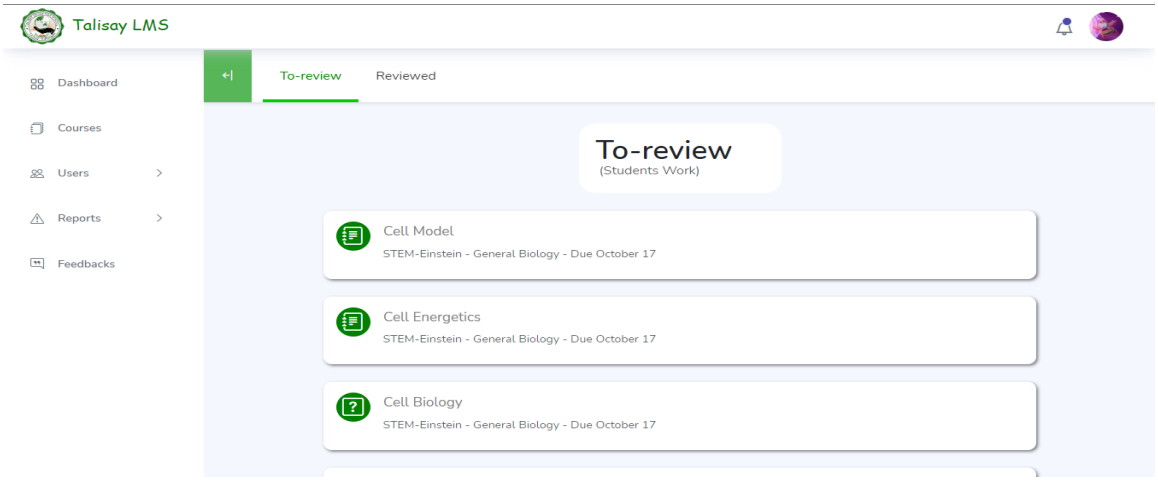
Figure 54. Management of Class Stream



Management of To-review

Figure 55 shows the management of to-review of the assessments answered by the students. From there, it shows the list of student's assessments that the teacher can provide scores that will be used in calculating the grades of the students.

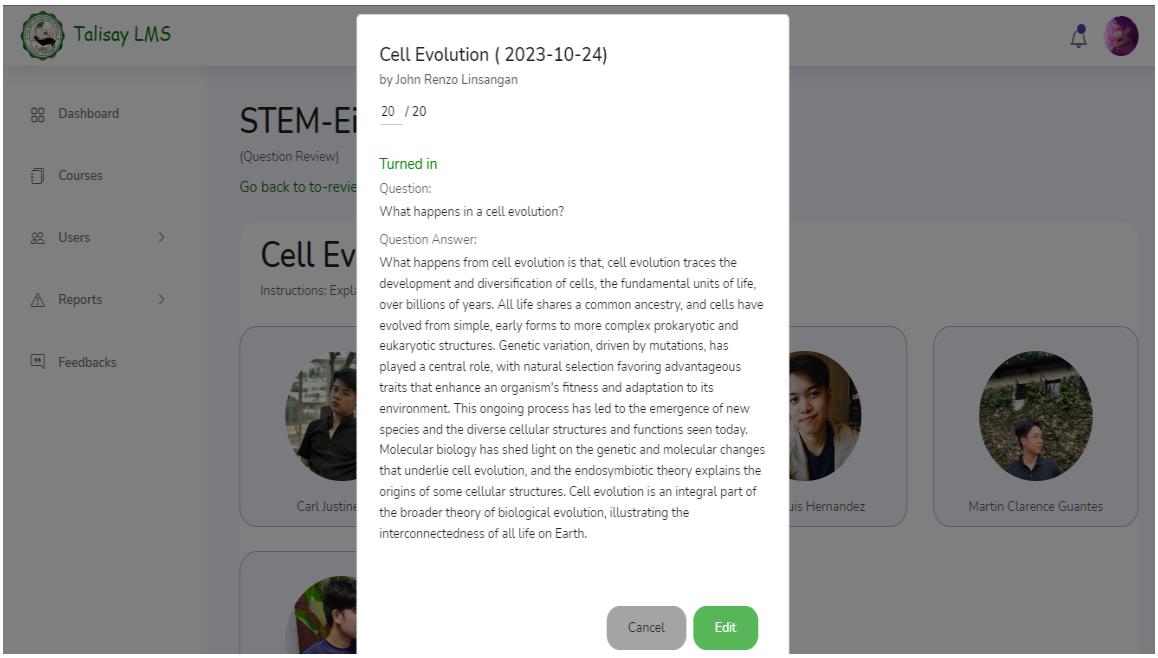
Figure 55. Management of To-review



Grading To-review Assessments

Figure 56 shows the to-review assessment where the teacher input scores based on their provided answers. From the dashboard, it will show the list of students that are enrolled in that class, it also shows the title of the assessment and the instructions provided. After that, once the teacher clicks the student that the teacher wants, it will show if the student has passed their assessment, based on the status and if there are answer, and in that, if there are answers, the teacher can input scores at the top, and once it is done, the button submit will turn into edit button, wherein the teacher can edit the score of the student.

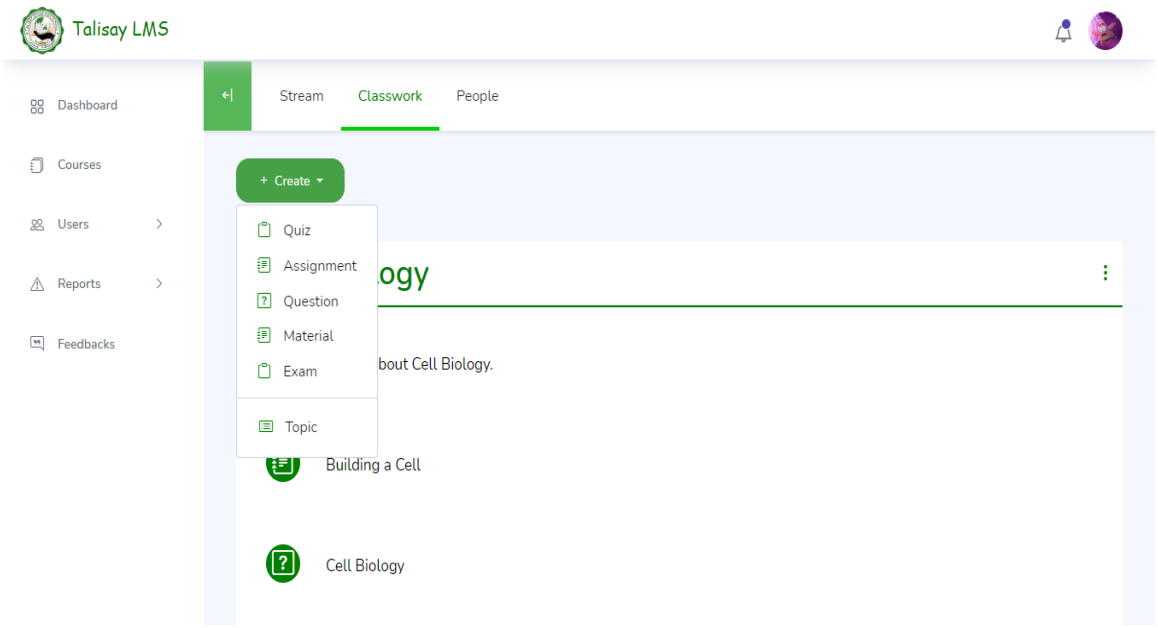
Figure 56. Grading To-review Assessments



Management of Class Classwork

Figure 57 shows how the teacher can create classwork such as quiz, assignment, question, material, and exam. There, the last is the topic, wherein from that topic, the teacher creates topic to store the other classwork.

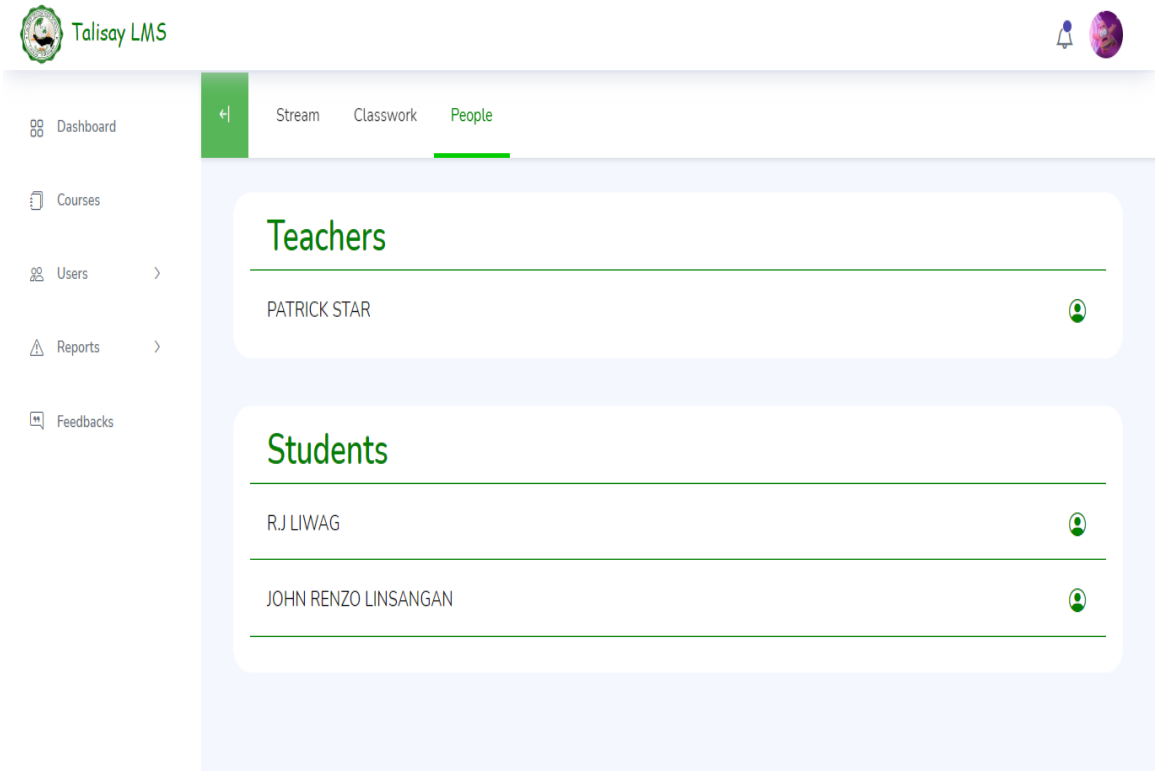
Figure 57. Management of Class Classwork



Management of Class People

Figure 58 shows the list of people from the class, such as the list of students enrolled in that class, and the teacher that manages that class. Not just that, the profile icon serves as view profile, wherein from that, the user can view another user's profile, and also, they can add that certain user.

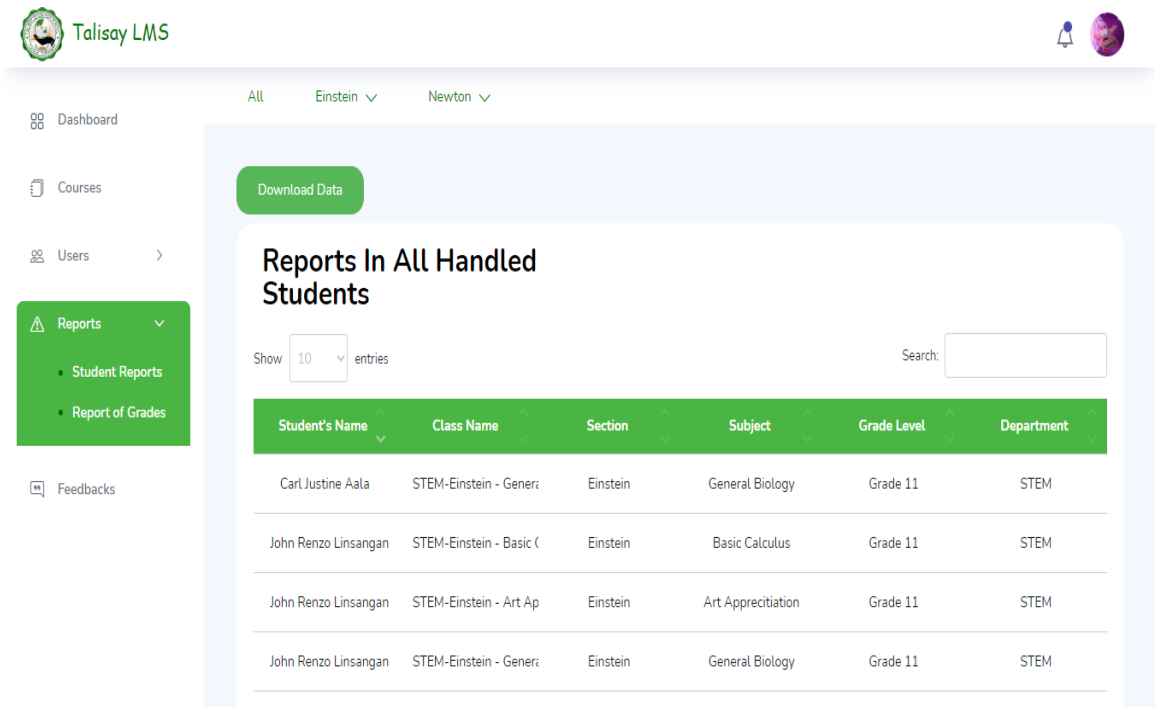
Figure 58. Management of Class People



Management of Student Reports

Figure 59 shows the list of reports of all handled students of that teacher through all of the teacher's classes. In the student reports, the system allows to print the data of the handled students of the teacher. The teacher can print all the data, or can select a certain section to print out the list of the students from that section. From the student reports, it consists of information such as student's name, class name, section, subject, grade level, and department.

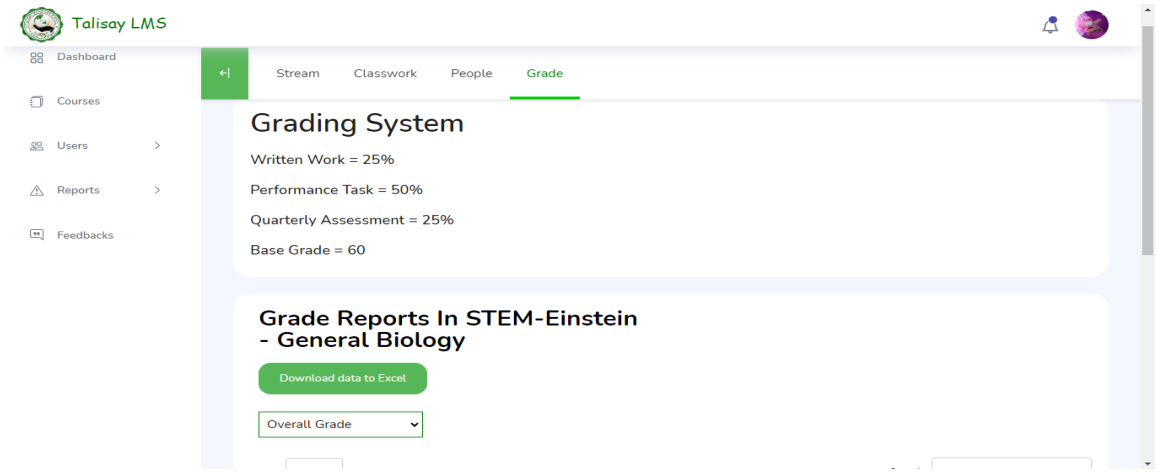
Figure 59. Management of Student Reports



Management of Class Grades

Figure 60 shows the management of the classwork grades in the created class course. From the grade in class course, it shows the grade reports of a certain class which automatically creates a list of students table with the uploaded learning assessments in the class course. The teacher is allowed to view each calculated grade in every part, written works, performance task, and quarterly assessment. The system also allows the teacher to provide grade reports, in which, they can download it as excel so that, they have the ability to edit the scores and grade of the students.

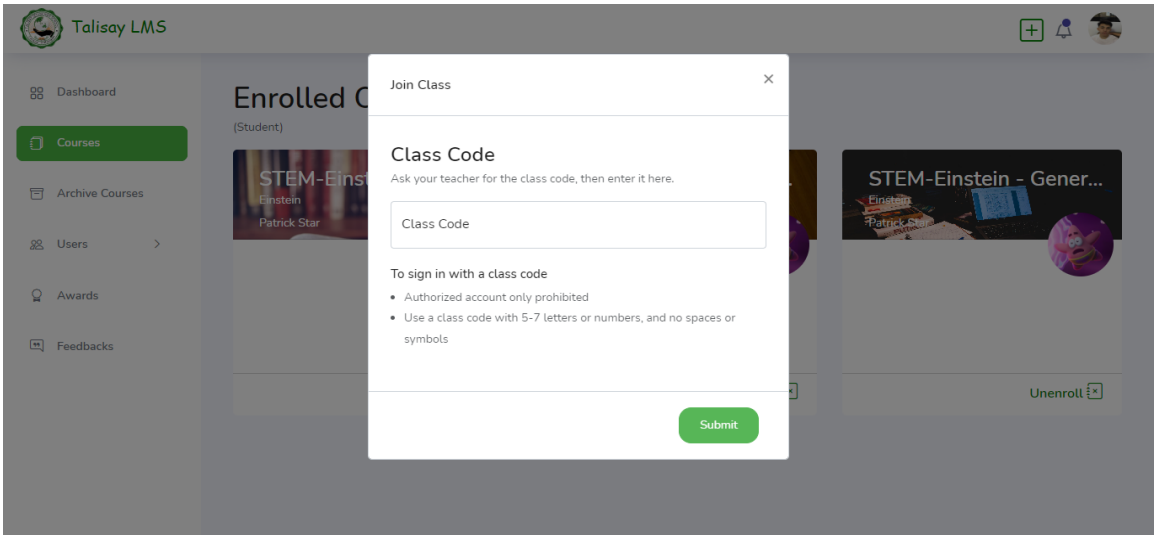
Figure 60. Management of Class Grades



Join Classroom

Figure 61 shows how the user can join classroom through class code. The classroom generates a certain class code, wherein, for the student to be able to join to the classroom, they must input the class code that will be provided by the teacher.

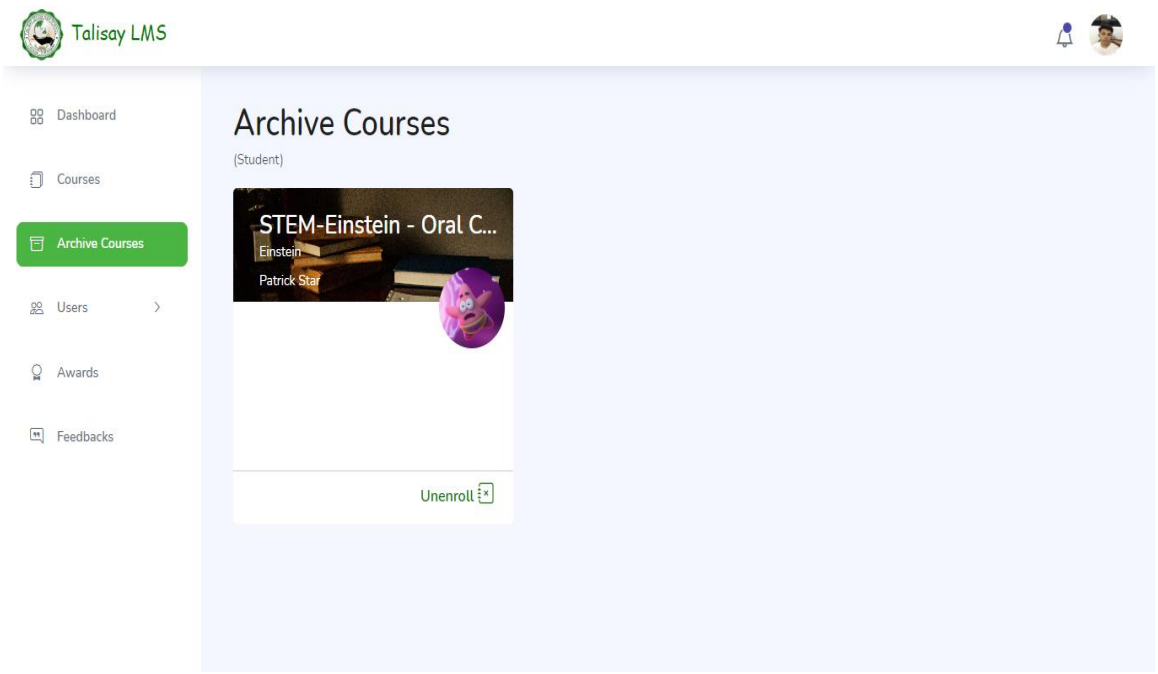
Figure 61. Join Classroom



Archive Courses (student)

Figure 62 shows the archive courses. From the archive courses, there, those are the courses that are archived by the teacher. Once the teacher archives the course, the functions will be removed, but still, the materials are still there.

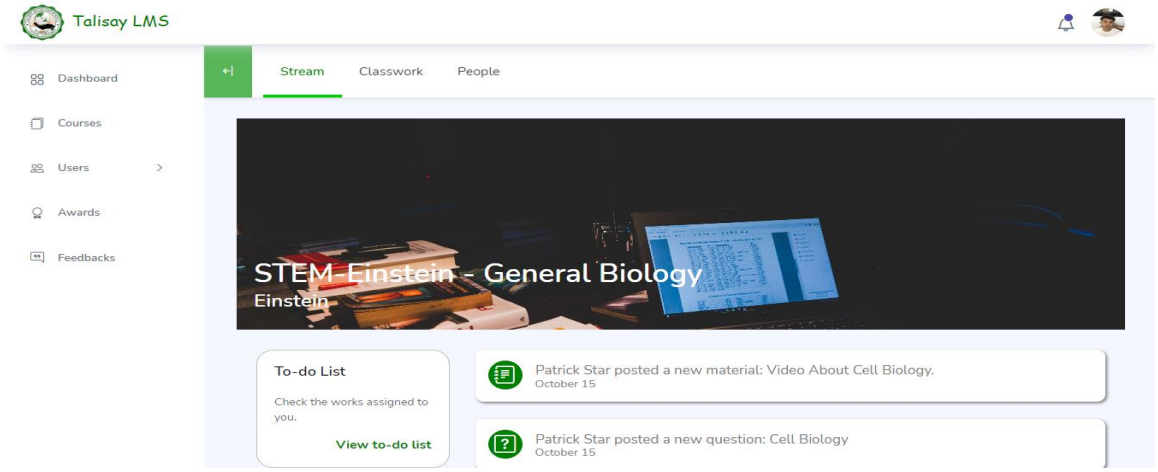
Figure 62. Archive Courses



Management of Class Stream

Figure 63 shows the class stream in the student perspective wherein, in the class stream, the student can manage and access the materials uploaded by the teacher, with their date, who posted it, type of material, and title. It also shows the to-do list section, leaderboard points, and leaderboard rankings.

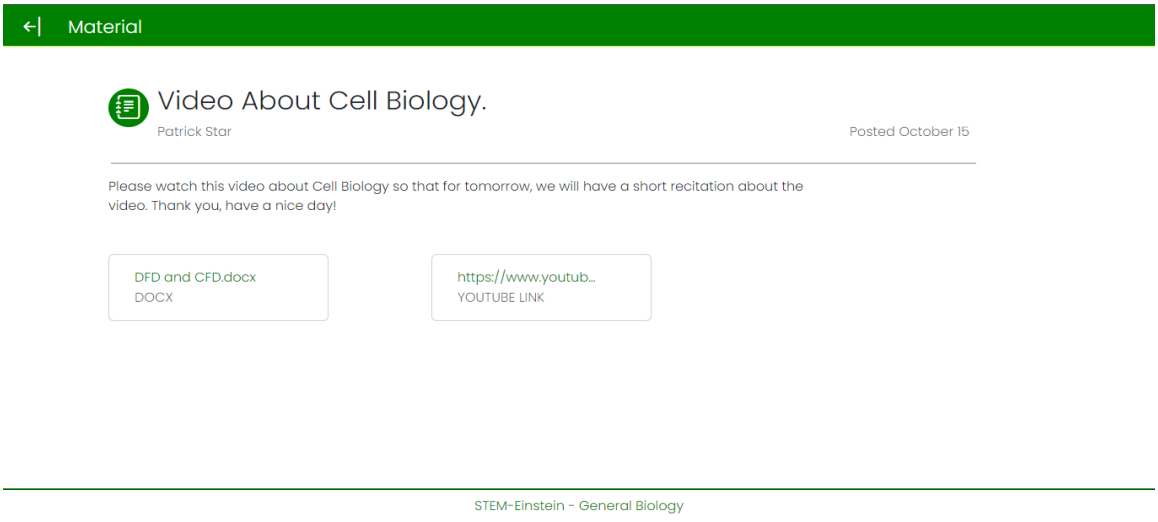
Figure 63. Management of Class Stream



Management of Classwork Material

Figure 64 shows the classwork material uploaded by the teacher. It allows the student to access the material that is provided to them, such as link, file, and youtube link.

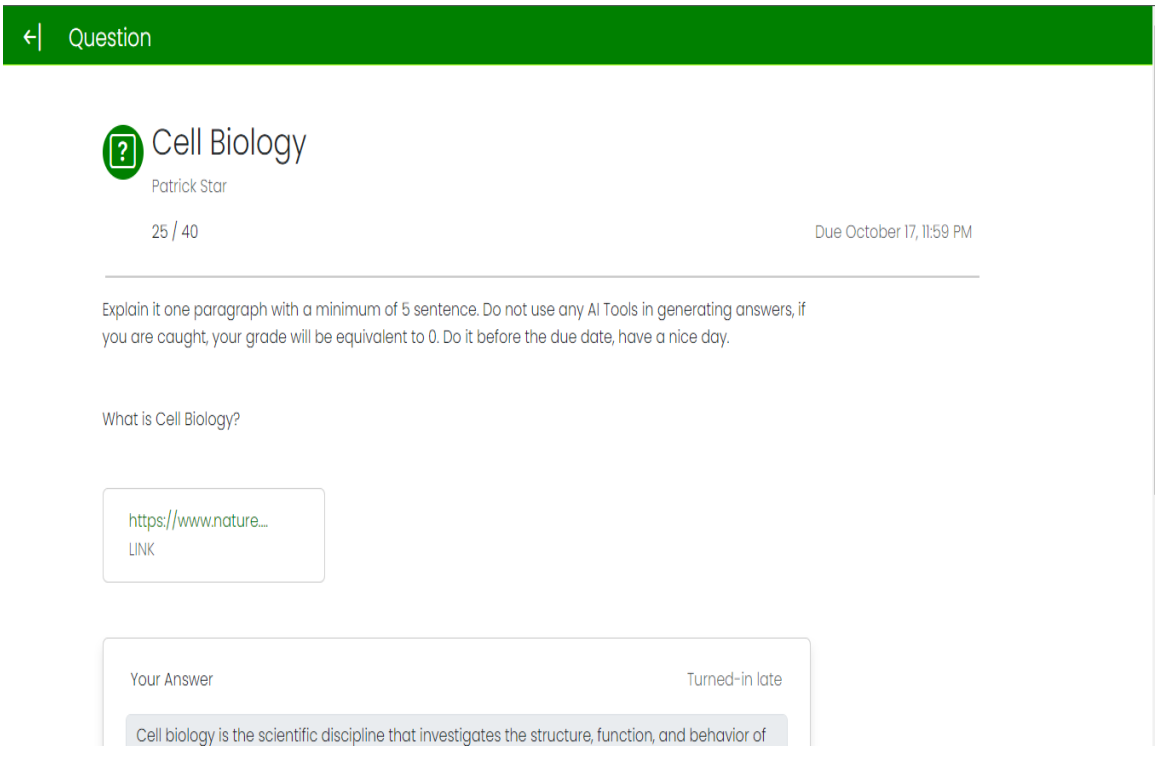
Figure 64. Management of Classwork Material



Management of Classwork Question

Figure 65 shows the classwork question provided by the teacher. From this section, the teacher provides a set of question, or a one whole question that the user must answer with a certain points, due date, and instructions. Classwork question has a text area wherein, there, the student will provide the answer regards to the question list provided by the teacher. Once the student submitted their answer, they are allowed to edit their answer, but once it surpasses the due date, it will be marked as missing activity.

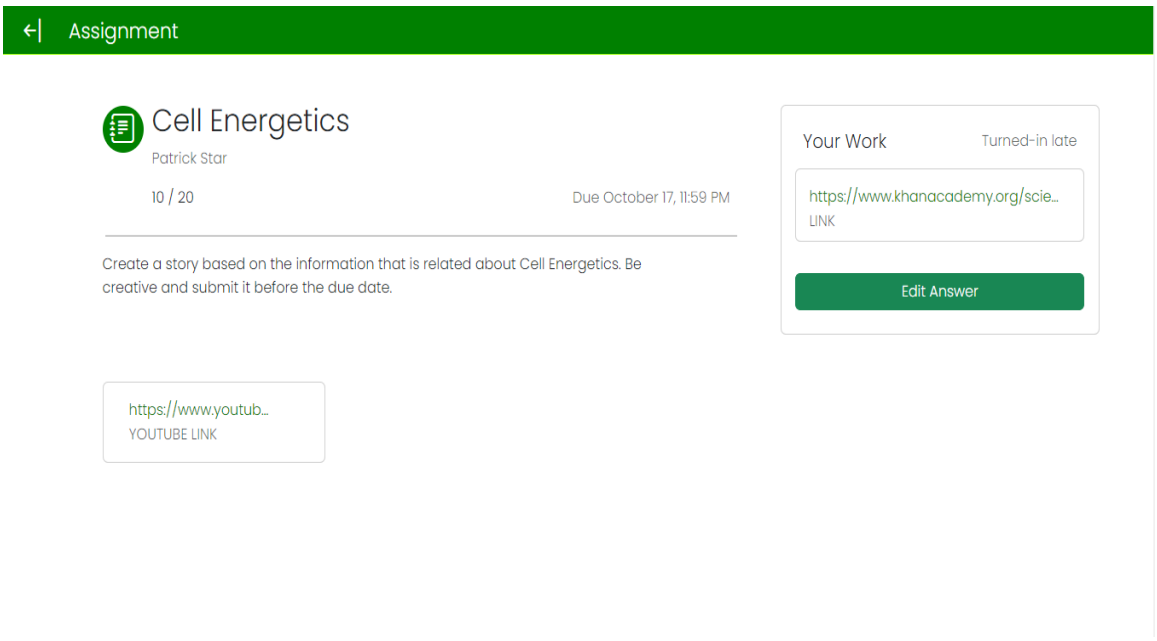
Figure 65. Management of Classwork Question



Management of Classwork Assignment

Figure 66 shows the classwork assignment provided by the teacher. From the classwork assignment, it has the assignment title, the teacher that uploads the assignment, points, due date, and the details. In order for the student to pass the assignment, the teacher will provide details and instructions for the students to understand what is the assignment all about, and after that, the student can provide a link or file that can serve as their answer to the assignment. When the student provides link or file, they can still remove the inputted link or file, and once they submit it, they can unsubmit the assignment, if they want to edit something, or to add something.

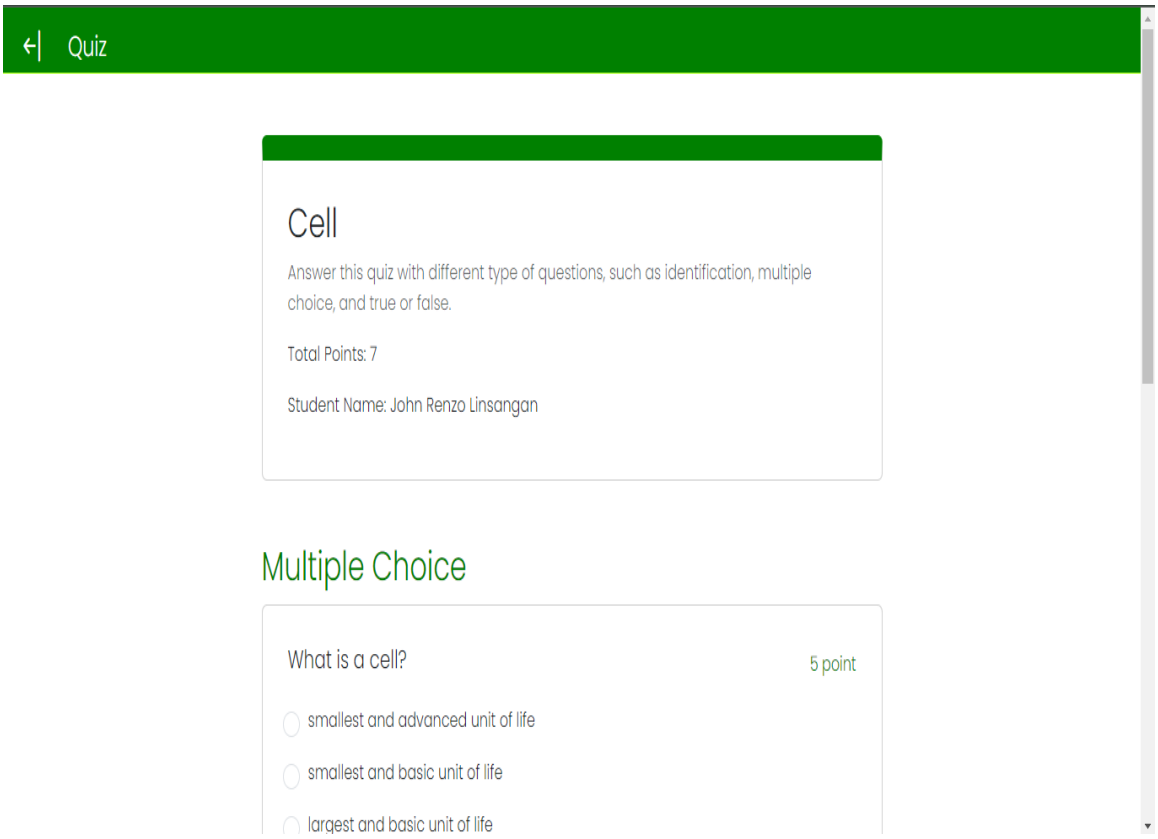
Figure 66. Management of Classwork Assignment



Management of Classwork Quiz

Figure 67 shows the classwork quiz provided by the teacher. From the classwork quiz, it has the quiz title, followed by the quiz instruction, total points for the quiz, and the name of the student. From classwork quiz, the teacher provides set of questions with different styles, such as multiple choice, identification, and true or false. Once they are done in answering the quiz, they can submit the quiz and it auto generates the score on that quiz.

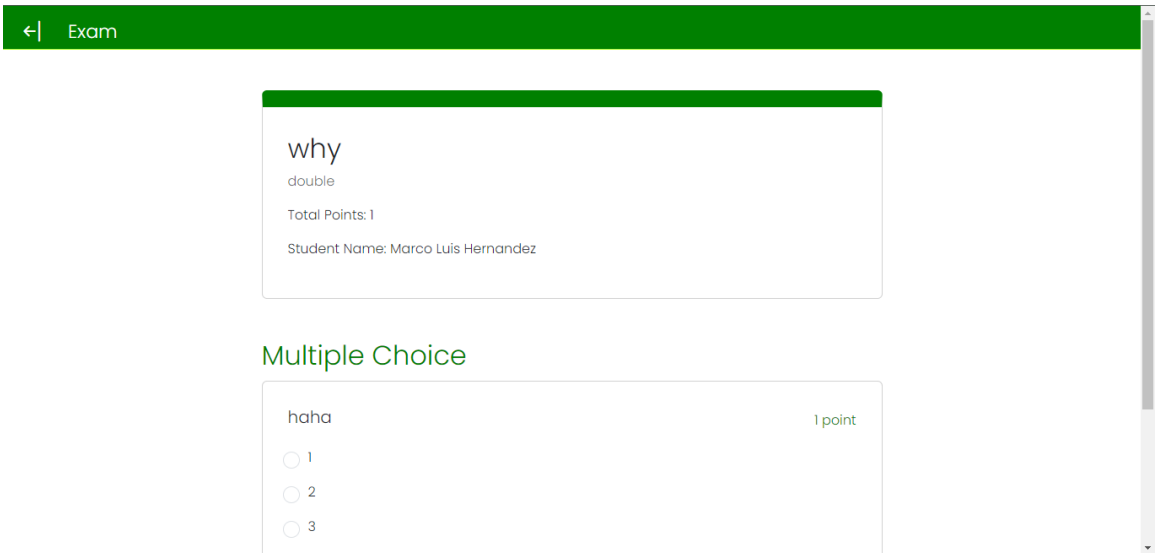
Figure 67. Management of Classwork Quiz



Management of Classwork Exam

Figure 68 shows the classwork exam provided by the teacher. From the classwork exam, it has the exam title, followed by the exam instruction, total points for the exam, and the name of the student. From classwork exam, the teacher provides set of questions with different styles, such as multiple choice, identification, and true or false. Once they are done in answering the exam, they can submit the quiz and it auto generates the score on that exam.

Figure 67. Management of Classwork Quiz

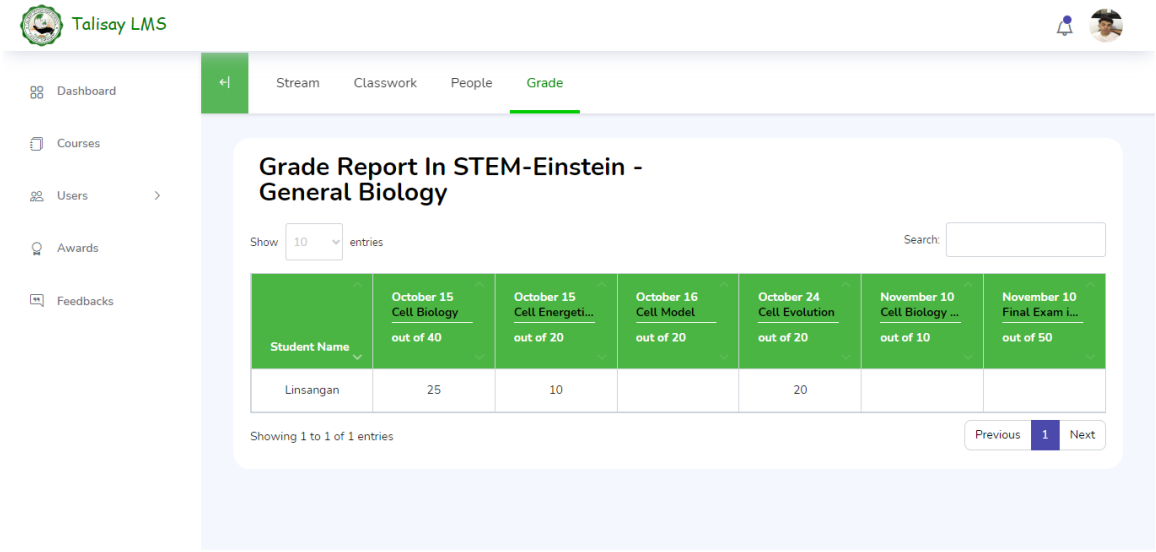


Class Course Student Grade

Figure 69 shows the class course student grade. In this section, the developed system allows the student to record and track their missing assessment from the class, not just from to-do list, but also from this grade section. Also, it allows the

student to view the scores in each assessment, so that they know if they are doing well in that subject. This section will help the student to manage their performance and progress from that subject, also, will help them to track their scores in each assessment so they know if they are doing well or not.

Figure 69. Class Course Student Grade



Management of User Awards

Figure 70 shows the awards of the user. In this section, the student acquires awards with regards to his performance from the assessments in class course. In this way, the student receives awards that the system auto generates depending on the performance that the student has made.

Figure 70. User Awards

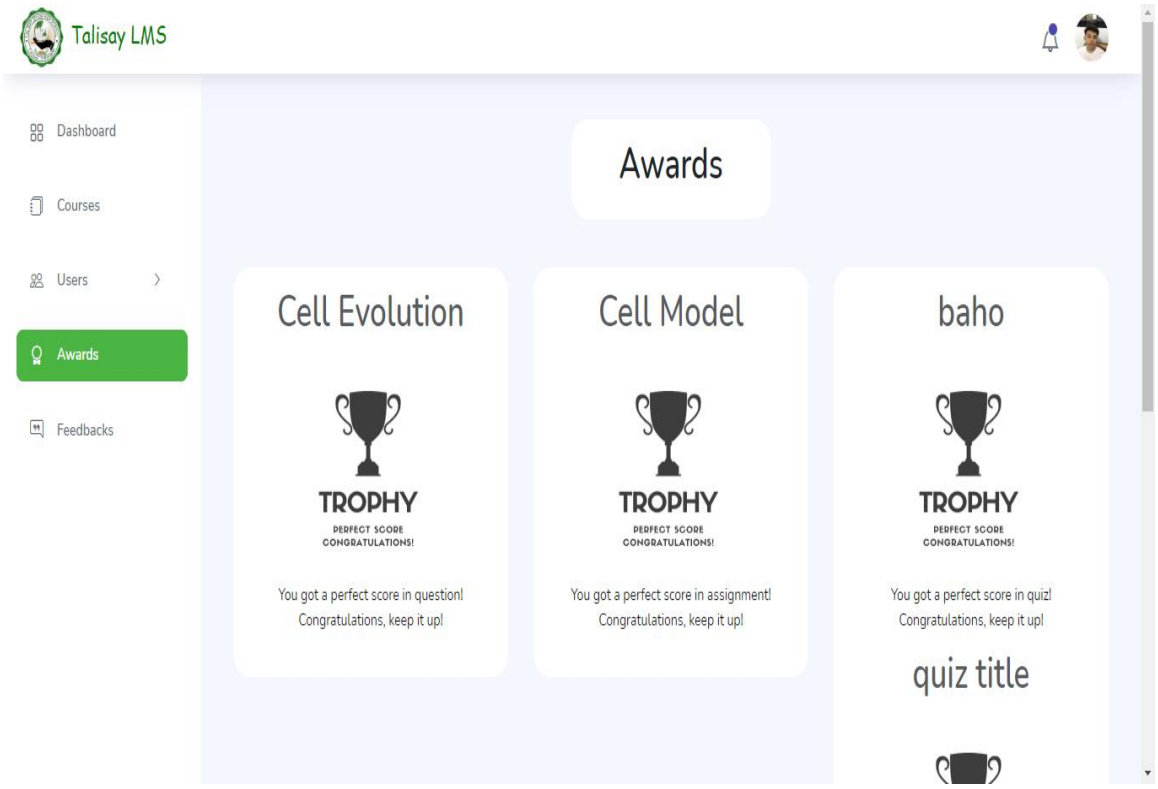
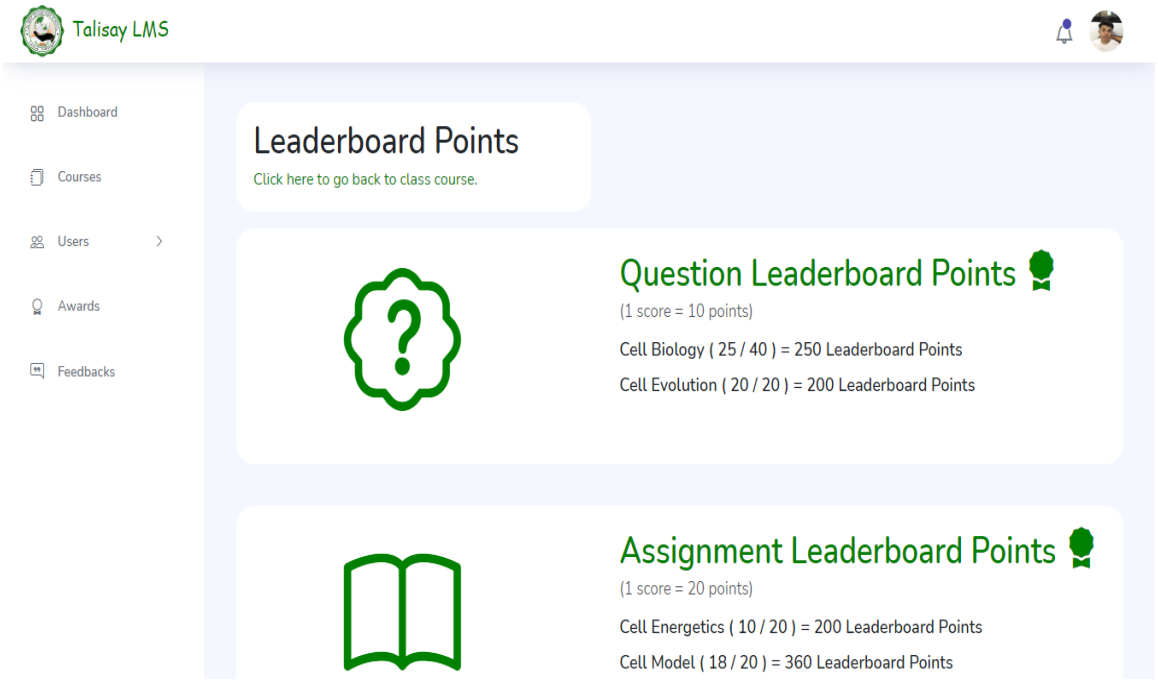


Figure 71 shows the leaderboards points of the student enrolled in the class course. In this section, the class course generates leaderboards points in which, all of the score in every assessment is shown and the calculated points are shown. The point system in the leaderboards are based on the score from the assessment in which, those scores are turned into points based on the percentage of the score in the base score of the assessment. In that way, leaderboards for the students are made with auto-generated point system.

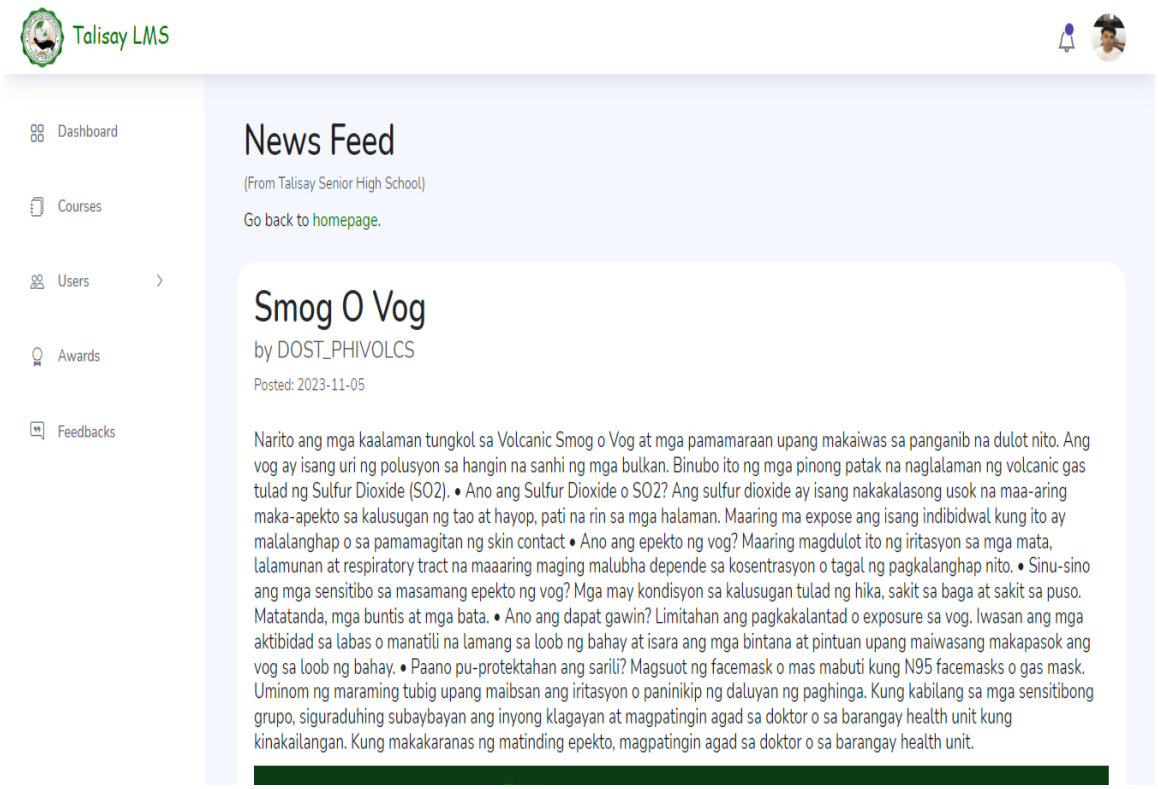
Figure 71. Class Course Leaderboard Points



View Announcement

Figure 72 shows the announcement provided by the administrator. From the announcement section, it shows the announcement title, the name of the one who provides the announcement, the date it is posted, and the details of the announcement. Announcement are provided in different terms such as, the administrator can create announcement that can show to all departments, and also, they can create announcement that is only designated for a certain department, like STEM, HUMSS, ABM, or TVL. Announcement expires on the end date.

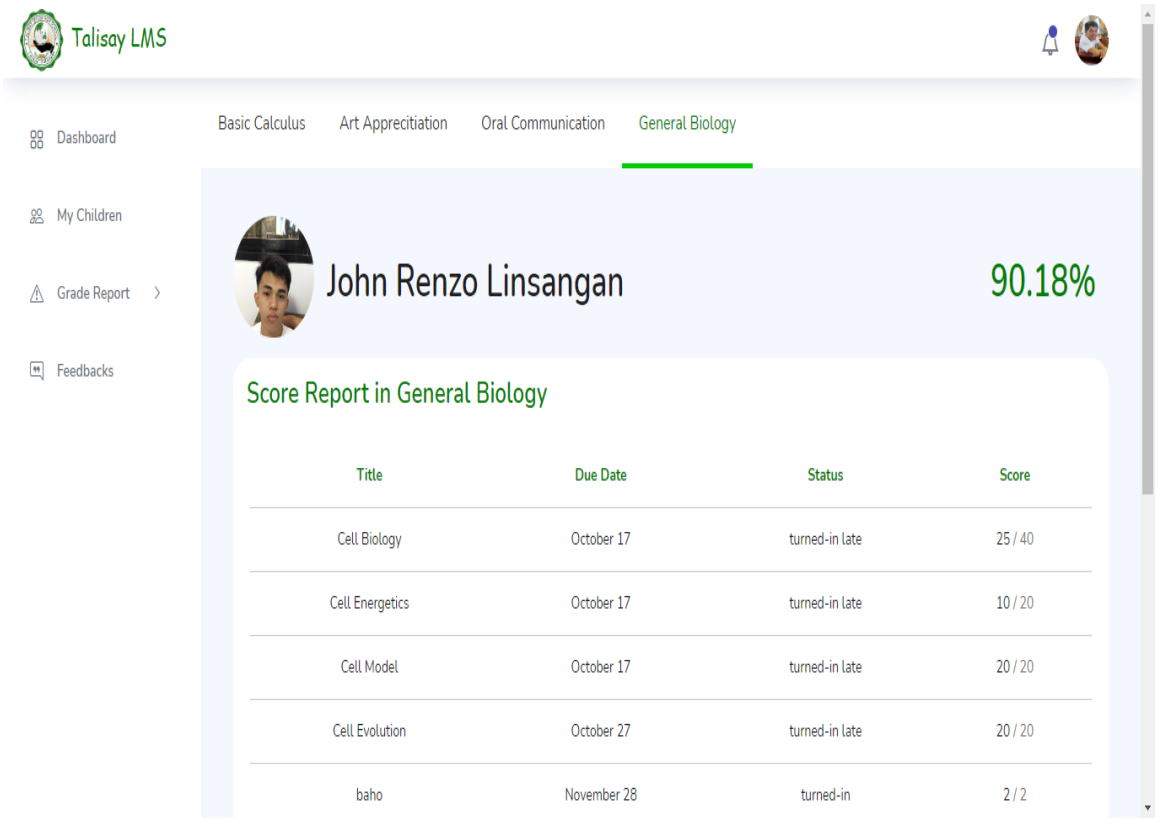
Figure 72. View Announcement



Children Grade Report

Figure 73 shows the children grade report. From the header-links, it shows the classes where their child is enrolled. From the body, it shows the picture and the name of the student, and from the opposite side is the calculated grade based on the scores of their child in every material. The table represent the materials uploaded, the title, due date, status, and the score. This allows the parent to view the progress and performance of their children.

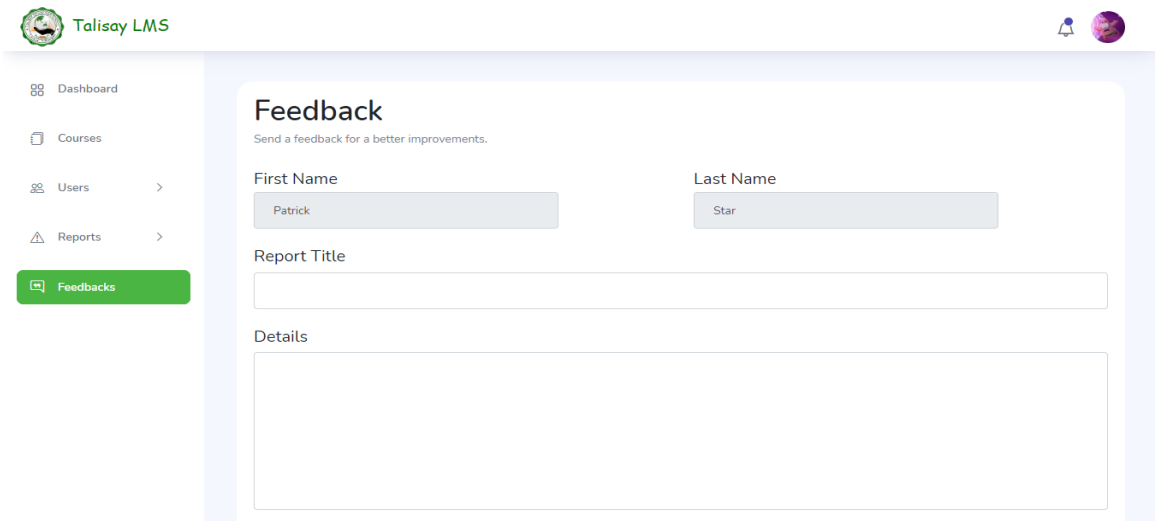
Figure 73. Children Grade Report



User Feedback & Requests

Figure 74 shows how all the users provide feedbacks and requests to the admin. This form automatically includes the first name and last name of the user which disabled the input, also the user must provide the report title, and the detail of their feedback and request to the administrator. It is also optional from the attachment part of sending feedback and requests.

Figure 74. User Feedback & Requests



Evaluation Results

The developers conducted a post-assessment that provides the evaluation that demonstrates its usability, functionality, dependability, and efficiency of the developed website. This evaluation provides the system findings and feedback from the school administrator, teachers, students, and parents as users who participated in the creation and usage for the development of website. It incorporates the genuineness and accurate observations of the developers as well as a detailed analysis for the outcomes. This includes a discussion and the system results.

The developers conducted survey 30 users as respondents—1 administrator, 1 adviser, 4 teachers, 20 students, and 4 parents—to identify if the website will work as the intended outcome. Those respondents come from the school wherein, the administrator is the principal, adviser of the team, in 4 different strands, there are 4

teachers, 20 students, and 4 parents with a total of 30. From the responses of the respondents, the developers were able to assess the capability of the website in terms of its functionality, reliability, usability, efficiency, and portability. The website is evaluated based on the five chosen criteria as referenced in ISO/IEC 25010:2011: functionality, reliability, usability, efficiency, and portability.

In each and every intended user, from the administrator, teacher, student, and parent, from Table 13 up to Table 16, it shows the testing of every task accomplished in each and every user. If each test got a score of 100% or higher, it means that the system functions work according to what the users need and is considered pass. However, if the result was less than 100%, it means that the system failed to perform its respective function.

The developers assured users that the development of the Learning Management System for Talisay Senior High School will follow the objectives which aims for the convenience and efficiency for the users. The result means that respondent strongly agreed that the LMS website innovates and resolve the manual process and the unwillingness of the students.

Table 13 shows the result of evaluation test case for administrator. In order to accumulate the result of evaluation test case for administrator, the developers set a list of functionalities for 1 administrator. In accumulating the actual result in

administrator entity, the status in each and every test description stated accumulates 100% which means passed. Therefore, the result of evaluation test case for administrator is successful with a 100% success rate in every test description.

Table 13. Result of Evaluation Test Case for Administrator

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	ACTUAL RESULT	STATUS
1	Access System Login	Can enter and login through the website with registered account for the administrator	The admin can enter and login through the website with registered account	1/1=100% PASSED
2	Create accounts for the users	Can create accounts for the users	The admin can create accounts for the users	1/1=100% PASSED
3	Manage the accounts of the users	Can manage the accounts of the users	The admin can manage the accounts of the users	1/1=100% PASSED
4	Provide news and announcements for the users	Can provide news and announcements for the users	The admin can provide news and announcement for the users	1/1=100% PASSED
5	View and download student, teacher, and parent reports	Can view and download student, teacher, and parent reports	The admin can view and download student, teacher, and parent reports	1/1=100% PASSED
6	Receive feedbacks and requests from their users	Can receive feedbacks and requests from their users	The admin receives feedbacks and requests from their users	1/1=100% PASSED

Table 14 shows the result of evaluation test case for teacher. In order to accumulate the result of evaluation test case for teacher, the developers set a list of functionalities for 4 teachers in every strand. In accumulating the actual result in teacher entity, the status in each and every test description stated accumulates 100% which means passed. Therefore, the result of evaluation test case for teacher is successful with a 100% success rate in every test description.

Table 14. Result of Evaluation Test Case for Teacher

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	ACTUAL RESULT	STATUS
1	Access System Login	Can enter and login through the website with account provided by the administrator	Teacher can enter and login through the website with account provided by the administrator	4/4=100% PASSED
2	Organize class with proper student list and course subject	Can organize class with proper student list and course subject	The teacher can organize class with proper student list and course subject	4/4=100% PASSED
3	Upload learning materials and assessments	Can upload and provide learning materials and assessments	The teacher can upload and provide learning materials and assessments	4/4=100% PASSED
4	Provide to-do list	Can provide to-do list with certain due dates for every assessment	The teacher can provide to-do list with certain due dates for every assessment	4/4=100% PASSED

Result of Evaluation Test Case for Teacher (cont'd)

5	Provide Feedback and Request	Can provide feedback and requests for the improvements of the system	The teacher can provide feedback and requests for the improves of the system	4/4=100% PASSED
6	View Profile	Admin is the only one that can edit teacher account information	The teacher cannot edit their account information	4/4=100% PASSED

Table 15 shows the result of evaluation test case for student. In order to accumulate the result of evaluation test case for student, the developers set a list of functionalities for 20 students, 5 students in every strand. In accumulating the actual result in student entity, the status in each and every test description stated accumulates 100% which means passed. Therefore, the result of evaluation test case for student is successful with a 100% success rate in every test description.

Table 15. Result of Evaluation Test Case for Student

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	ACTUAL RESULT	STATUS
1	Access System Login	Can enter and login through the website with account provided by the administrator	Student can enter and login through the website with account provided by the administrator	20/20=100% PASSED

Result of Evaluation Test Case for Student (cont'd)

2	View Uploaded Learning Materials and Assessments	Can view and manage the uploaded learning materials and assessment to the class	The student can view and manage the uploaded learning materials and assessment to the class	20/20=100% PASSED
3	To-do List and Push Notifications	Can manage to-do list with certain due dates and manage notifications	The student can manage to-do list with certain due dates and manage notification	20/20=100% PASSED
4	View Award, News, and Announcements	Can view and interact with award, news, and announcements	The student can view and interact with award, news, and announcements	20/20=100% PASSED
5	Provide Feedback and Request	Can provide feedback and requests for the improvements of the system	The student can provide feedback and requests for the improvements of the system	20/20=100% PASSED
6	Edit Profile	Admin is the only one that can edit student account information	The student cannot edit their account information	20/20=100% PASSED

Table 16 shows the result of evaluation test case for parent. In order to accumulate the result of evaluation test case for parent, the developers set a list of functionalities for 4 parents in every strand. In accumulating the actual result in parent entity, the status in each and every test description stated accumulates 100% which means passed. Therefore, the result of evaluation test case for parent is successful with a 100% success rate in every test description.

Table 16. Result of Evaluation Test Case for Parent

TASK ID	TEST DESCRIPTION	EXPECTED RESULT	ACTUAL RESULT	STATUS
1	Access System Login	Can enter and login through the website with account provided by the administrator	The parent can enter and login through the website with account provided by the administrator	4/4=100% PASSED
2	Track Learner's Progress and Performance	Can track learner's progress and performance	The parent can track learner's progress and performance	4/4=100% PASSED
3	Provide Feedback and Request	Can provide feedback and requests for the improvements of the system	The parent can provide feedback and requests for the improvement of the system	4/4=100% PASSED
4	Edit Profile	Admin is the only one that can edit student account information	The parent cannot edit their account information	4/4=100% PASSED

The developers accumulate result of evaluation in terms of roles in the developed system. From the result evaluation, the developers evaluate the developed system in 1 administrator, 1 adviser, 4 teachers in each strand, 5 students in each strand, and 1 parent in each strand. All of the result evaluation shows 100% in which, resulted as passed in overall result evaluation.

If the result is 100% then it is passed.

Else, if the result is <=99%, then it is failed.

Table 17 provides an overview of the evaluation in terms of functionality for the teacher. Teachers expressed strongly agree that they can change password in forgot password using their registered email in the website, achieving an average of 4.88. Also, teachers expressed strongly agree that they can view and open notification in which the system auto-generates with an average of 4.63 weighted mean. Teachers expressed strongly agree that they can create and organize class through class code with proper student list and course subject, with a 4.75 weighted mean. Also, teachers expressed strongly agree that they can upload and view uploaded materials and assessment in the created class course, which they acquire a 4.75 weighted mean. Correspondingly, teachers expressed strongly agree that they can track the progress and performance of the learner with their assessment, with a 4.75 weighted mean. Teachers expressed strongly agree that they can view all the news and announcement from dashboard with its corresponding description and type, which they acquire 4.88 weighted mean. As well as, the teacher can download data from the student report and topic reports as they express agree with a 4.38 weighted mean. Lastly, the teachers expressed strongly agree that they can provide feedback and request for the improvement of the system having a 4.50 weighted mean. Overall, the functionality for teacher form has a weighted mean of 4.69 with a verbal interpretation of strongly agree.

Table 17. Summary of the Result of Evaluation for the Teachers in Terms of Functionality

Functionality	WM	Verbal Interpretation
1. I can change my password in Forgot Password using my registered email in the website.	4.88	Strongly Agree
2. I can view and open notification in which the system auto-generates.	4.63	Strongly Agree
3. I can create and organize class through class code with proper student list and course subject.	4.75	Strongly Agree
4. I can upload and view uploaded materials and assessment in the created class course.	4.75	Strongly Agree
5. I can track the progress and performance of the learner with their assessment.	4.75	Strongly Agree
6. I can view all the news and announcement from dashboard with its corresponding description and type.	4.88	Strongly Agree
7. I can download data from the student reports and topic reports.	4.38	Agree
8. I can provide feedback and requests for the improvement of the system.	4.50	Strongly Agree
Composite Mean	4.69	Strongly Agree

Table 18 provides an overview of the evaluation in terms of functionality for the student. Students expressed strongly agree that they can change their password in Forgot Password using their registered email in website, achieving an average of 4.85. Also, students expressed strongly agree that they can view and open

notification in which the system auto-generates with an average of 4.80 weighted mean. Students expressed strongly agree that they can join in the class course with the proper class code provided by the teacher, with a 4.80 weighted mean. Also, students expressed that they can manage the uploaded learning materials and assessment in the enrolled course subject which, acquire a 4.80 weighted mean. Students expressed strongly agree that they can track their progress and performance in to-do list section and from the course subject, which it shows the status and data of assessment, with a 4.75 weighted mean. As well as, students expressed strongly agree that they can view the news, announcement, and award designated to them from the dashboard, which acquire a 4.80 weighted mean. Lastly, student expressed strongly agree that they can provide feedback and request for the improvement of the system, with a 4.65 weighted mean. Overall, the functionality for student form has a composite mean of 4.78 with a verbal interpretation of strongly agree.

Table 18. Summary of the Result of Evaluation for the Students in Terms of Functionality

Functionality	WM	Verbal Interpretation
1. I can change my password in Forgot Password using my registered email in the website.	4.85	Strongly Agree
2. I can view and open notification in which the system auto-generates.	4.80	Strongly Agree

Summary of the Result of Evaluation for the Students in Terms of Functionality (cont'd)

3. I can join in the class course with the proper class code provided by the teacher.	4.80	Strongly Agree
4. I can manage the uploaded learning materials and assessment in the enrolled course subject.	4.80	Strongly Agree
5. I can track my progress and performance in section to-do list and grade in enrolled class course.	4.75	Strongly Agree
6. I can view all the news, announcement, and award from dashboard with its corresponding description and type.	4.80	Strongly Agree
7. I can provide feedback and requests for the improvement of the system.	4.65	Strongly Agree
Composite Mean	4.78	Strongly Agree

Table 19 provides an overview of the evaluation in terms of functionality for the parent. Parent expressed agree that they can change their password in Forgot Password using their registered email in the website with a 4.25 weighted mean. Parent expressed strongly agree that they can view and open notification in which the system auto-generates with a 4.50 weighted mean. Also, parent expressed strongly agree that they can track their child's progress and performance in each and every enrolled class, with the designated assessment and their child's status, score, and average grade, which, acquire a 4.50 weighted mean. Parent expressed agree that they can view all the news and announcement from dashboard with its

corresponding data and type, with a 4.25 weighted mean. Lastly, parent expressed agree that they can provide feedback and request for the improvement of the system, which, acquire a 4.25 weighted mean. Overall, the functionality for parent form has a composite mean of 4.35 with a verbal interpretation of agree.

Table 19. Summary of the Result of Evaluation for the Parents in Terms of Functionality

Functionality	WM	Verbal Interpretation
1. I can change my password in Forgot Password using my registered email in the website.	4.25	Agree
2. I can view and open notification in which the system auto-generates.	4.50	Strongly Agree
3. I can track my child's progress and performance in each and every enrolled class, with designated assessment and their child's status and score and average grade.	4.50	Strongly Agree
4. I can view all the news and announcement from dashboard with its corresponding description and type.	4.25	Agree
5. I can provide feedback and requests for the improvement of the system.	4.25	Agree
Composite Mean	4.35	Agree

Table 20 provides an overview of the evaluation in terms of reliability for the users. Users expressed strongly agree that the system provides consistent performance and result, having a 4.66 weighted mean. Users expressed strongly

agree that the system provide accurate information in every process of creating, uploading, and downloading which ensures accuracy and avoid redundancy with a 4.81 weighted mean. As well as, parent expressed strongly agree that the system provides the objectives that must be met and acquired to satisfy the wants of the intended users, which has a 4.59 weighted mean. Lastly, users expressed strongly agree that the system reacts appropriately when failure and incorrect data occurs, with a 4.53 weighted mean. Overall, the reliability for all the users of the system has a composite mean of 4.65 with a verbal interpretation of strongly agree.

Table 20. Summary of the Result of Evaluation for the Users in Terms of Reliability

Reliability	WM	Verbal Interpretation
1. The system provides consistent performance and result.	4.66	Strongly Agree
2. The system provide accurate information in every process of creating, uploading, and downloading which ensures accuracy and avoid redundancy.	4.81	Strongly Agree
3. The system provides the objectives that must be met and acquired to satisfy the wants of the intended users.	4.59	Strongly Agree
4. The system reacts appropriately when failure and incorrect data occurs.	4.53	Strongly Agree
Composite Mean	4.65	Strongly Agree

Table 21 provides an overview of the evaluation in terms of usability for the users. Users expressed strongly agree that the system's functions can be easily understood since it doesn't have a complex way in processing functions, which has a 4.69 weighted mean. Also, users expressed strongly agree that the system possesses an appropriate user-friendly interface having a simple yet informative design, with a 4.88 weighted mean. As well as, users expressed agree that the system is easy to navigate, from its functionality and user-interface, having a 4.47 weighted mean. Overall, the usability for all the users of the system has a composite mean of 4.68 with a verbal interpretation of strongly agree.

Table 21. Summary of the Result of Evaluation for the Users in Terms of Usability

Usability	WM	Verbal Interpretation
1. The system functions can be easily understood since it doesn't have a complex way in processing functions.	4.69	Strongly Agree
2. The system possesses an appropriate user-friendly interface having a simple yet informative design.	4.88	Strongly Agree
3. The system is easy to navigate, from its functionality and interface.	4.47	Agree
Composite Mean	4.68	Strongly Agree

Table 22 provides an overview of the evaluation in terms of efficiency for the users. Users expressed strongly agree that the system responds immediately to every action done by the user, which accumulate 4.63 weighted mean. Also, users expressed strongly agree that the systems function can be done in a short period of time since it doesn't have complexity with its function, which also accumulate 4.59 weighted mean. Lastly, users expressed strongly agree that the system allows CRUD Functions which allows the website to be flexible and improve the efficiency, with a 4.68 weighted mean. Overall, the efficiency for all the users of the system has a composite mean of 4.63 with a verbal interpretation of strongly agree.

Table 22. Summary of the Result of Evaluation for the Users in Terms of Efficiency

Efficiency	WM	Verbal Interpretation
1. The system responds immediately to every action done by the user.	4.63	Strongly Agree
2. The systems function can be done in a short period of time since it doesn't have complexity with its function.	4.59	Strongly Agree
3. The system allows CRUD Function which allows the website to be flexible and improve the efficiency.	4.68	Strongly Agree
Composite Mean	4.63	Strongly Agree

Table 23 provides an overview of the evaluation in terms of portability for the users. Users expressed strongly agree that the system can be accessed and opened anywhere, as long as you have internet connection, with a 4.78 weighted mean. Also, users expressed strongly agree that the system is flexible in any devices such as desktops, laptops, cellphones, and tablets, which accumulate a 4.75 weighted mean. As well as, users expressed strongly agree that the system allows the users to browse the website in any browser, which also accumulate a 4.75 weighted mean. Lastly, users expressed strongly agree that the system allows having multiple users with different roles and interface, with a 4.67 weighted mean. Overall, for the portability for all of the users of the system has a composite mean of 4.72 with a verbal interpretation of strongly agree.

Table 23. Summary of the Result of Evaluation for the Users in Terms of Portability

Efficiency	WM	Verbal Interpretation
1. The system can be accessed and opened anywhere, as long as you have internet connection.	4.78	Strongly Agree
2. The system is flexible in any devices such as desktops, laptops, cellphones, and tablets.	4.75	Strongly Agree
3. The system allows the users to browse the website in any browser.	4.69	Strongly Agree
4. The systems allows having multiple users with different roles and interface.	4.67	Strongly Agree

Summary of the Result of Evaluation for the Users in Terms of Portability (cont'd)

Composite Mean	4.72	Strongly Agree

Implementation Plan

The schedule of each activity throughout the implementation of the developed system is displayed in the implementation plan. A strategy, technique, concept, idea, model, specification, standard, or policy is implemented when it is carried out, executed, or put into practice. Implementation therefore the action that must come after any initial thought for something to happen. Table 24 shows the implementation plan that is used to show the schedule of each activity that take place during the implementation of the developed system.

The developers gathered the requirements that were needed through an interview with the client and discuss the Memorandum of Agreement before signing it. After the signing of Memorandum of Agreement, the developers provide beta testing of the developed system in order to avoid the bugs and finalize the system in the deployment process. After testing the developed system, the developers provide dry run in the deployment of the developed system so that to provide suggestions and inputs based on the wants of the client. Once it is done, the developers provide

orientation and demonstration, the developers went through the final testing of the system and implemented it.

Table 24. Implementation Plan

Date	Duration	Task	Persons Involved
November 2023	1 Hour	Signing of Memorandum of Understanding	Owners and Developers
December 2023	1 Hour and 30 Mins	Beta testing of the developed system	Developers and Adviser
January 2023	3 Days	Actual dry run and deployment of the developed system	Developers and Users
January 2023	1 Hour and 30 mins	Orientation and demonstration of the system to the client	Owners and Developers
January 2023	3 hours	Final System Testing	Developers
January 2023	1 Hour	Implementing the developed system	Adviser/Panelist, Developers and Users

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter discusses the summary of findings regarding the efficiency of the developed system. This also gives a summary of the recommendations for enhancements of the system. It also presents the conclusion, which is about what the study has observed after developing the system. It is what the developers had made based on the data gathered during the development of the developed system.

Summary of Findings

The Learning Management System for Talisay Senior High School was developed by the developers to provide a platform that will allow them to manage, deliver, and track materials and to provide motivation for their students. As well as providing a gamified learning management system that boost the motivation for the student and allowing interconnection between the teacher, student, and parent. After the development of the developed system, important findings have been made, and these are as follows:

1. The developed system provides a module for administrator entity in which performs the following:

1.1. The developed system allows the administrator to modify the accounts to be designated with user data and user role;

1.2. It allows the admin to manage the user account in terms of creating, editing, and deleting the user account;

1.3. The administrator can post such as announcement and news that will be viewed by the user based on the data provided by the school;

1.4. The developed system allows the administrator to view and download the reports for the system such as student reports, teacher reports, and parent reports;

1.5. Lastly, the administrator can interact with the user in a feedback module where the user can provide feedback and request in either for the improvement of the system or some concerns with regards to the system.

2. The developed system provides a module for teacher entity in which performs the following:

2.1. The developed system allows the teacher to enter and interact with other users from the system with their designated account created by the administrator;

2.2. The teacher is capable of editing their password through forgot password with their registered email in the system;

2.3. From dashboard, ongoing courses created by the teachers are shown, and also, such as announcement and news that are created by the administrator, which can be viewed;

2.4. The teacher can create class course which allows them to interact with their students in providing materials and assessments, and also can be archived once the course is done;

2.5. Assessments are to be graded as scores by the teacher which will be auto generated to calculate the grades for all of the uploaded assessments.

2.6. The developed system provides reports for teacher such as student reports, and topic reports, which can be downloaded as hard copy;

2.7. The developed system allows the teacher to provide feedback and request from the administrator to fix such as errors and bugs and for the improvements for the system.

3. The developed system provides a module for student entity in which performs the following:

3.1. The developed system allows the teacher to enter and interact with other users from the system with their designated account created by the administrator;

3.2. The student is capable of editing their password through forgot password with their registered email in the system;

3.3. From dashboard, enrolled ongoing courses created by the teacher are shown, as well as the news and announcement that is provided by the administrator, and the awards that the student receive;

3.4. The student can join to class course through class code that is generated once the teacher creates the class course, and can unenroll the class course;

3.5. The developed system has to-do list section for the student that has three status which are assigned, missing, and done designated for the uploaded assessments in the class course;

3.6. The student can add users which goes from three designated part, my friends, my parent, and my teacher;

3.7. The developed system has gamification feature which covers badges, scores, and leaderboards in order to provide motivation to the students;

3.8. The developed system allows the student to provide feedback and request from the administrator to fix such as errors and bugs and for the improvements for the system.

4. The developed system provides a module for parent entity in which performs the following:

4.1. The developed system allows the parent to enter and interact with other users from the system with their designated account created by the administrator;

4.2. The parent is capable of editing their password through forgot password with their registered email in the system;

4.3. From dashboard, the parent can view the card of their children, and the news and announcement that is provided by the administrator;

4.4. In the developed system, my children show the list of the children who has account to interact from the system, and allows them to view the learner's progress and performance, and the grade result of the learner.

5. The developed system has been tested using the following:

5.1. The web-based system has been tested using the test cases and has given a result of 100%, by the administrators, developers, and users, and;

5.2. ISO/IEC 25010:2011 software evaluation criteria in terms of:

5.2.1. The functionalities of the web-based system meet the requirements and standards of the system functions well and perform properly;

5.2.2. The reliability of the web-based system maintained the consistency and performance under stated conditions. As well as having a high accurate information, which helped to boost the reliability of the system;

5.2.3. The user-friendly interface of the web-based system helped to boost the usability for the user part since it is easy to navigate, from its functionality and the interconnected to the interface;

5.2.4. The efficiency of the web-based system is correlated by how the web-based system immediately responds to the action done by the user. As well as, with the functions of the system that has less complexity, and has the ability to perform CRUD operations;

5.2.5. Lastly, the portability of the web-based system is flexible, since it can be accessed and open in different platforms such as desktop, mobile, and etc. Also, the web-based system can be opened anywhere as long as the user have internet connection.

Conclusions

The learning management system was developed to provide platform for Talisay Senior High School to allow and help them to manage, deliver, and track learning contents. The following conclusions were drawn:

1. The developers concluded that the administrator role is the essence of the developed system which help Talisay SHS to manage the account and role of the student, provide announcements and news, receive feedbacks and requests for the improvement of the system, and provide reports for the users of the developed system. This helped them to provide and transition from their traditional way into a new way of having a platform which allows them to interact with each other with the help of content creation. In this way, in order

for the users to have access in the website, they must be first one of the people in Talisay SHS and ask the admin to register an account for them, with the right information and user role. Specifically, the following processes can be managed by the administrator in the developed system:

1.1. The learning management system for Talisay Senior High School concludes that the developed system allows the administrator to control and provide security, information, and assurance for the users of the system;

1.2. The developers conclude that the administrator can provide news and announcement in which, they can either limit or provide it to all of the users based on their strands. As well as providing it in a certain amount of time, which allows them to post it with ease;

1.3. The developers conclude that the administrator is the only one that has the access to create accounts for the users of the system with their significant roles, edit their accounts, and view the information of the users. In which why, the developers improve the security in terms of encrypting the data to provide assurance for the data encoded in the web-based system. They can create accounts for their users with their significant roles, and also, they can delete the account of the user, if ever a problem occurs or unauthorized access happens;

1.4. With their users, the developers allow the administrator to download the reports of their users with their roles, such as teacher reports, student reports, and parent reports. The developers conclude that providing a report that the administrator can print will allow them to provide hard copy as proof, and also as evidence, if ever a problem occurs or the school needs the list of registered users from the system;

1.5. Lastly, in order to provide improvement for the system, the developers conclude that the feedback and requests that is provided by the users will be received and viewed by the administrator only, so that, they know if there is a problem or bug within the system, and they can improve the functionality of the system based on the feedback that the user wants for the improvement of the system.

2. The developers conclude that providing user roles with their own interface and significant functionality, it empowers the importance of each role in the system. In the content creation of the developed system, it provides interconnectedness for all of the user in the system, such as for the teacher, student, and parent. Specifically, the processes and importance of each role are specified in every function that every user role possess:

2.1. The developers conclude that the news and announcement that is posted by the administrator should be viewed by all of the users but depends on their

user roles since that is how the users can be updated with regards on the data that is encoded in the news and announcement;

2.2. The developed learning management system for Talisay SHS provides content creation in which, the teacher can create class course which generates class code in order for the student to join from the class. Also, from the content creation, the teacher can upload, and edit content materials, such as materials, question, quiz, and assignments. Meanwhile from the student, they can view, download, and comply with the content materials and assessment that the teacher uploads, and once they are done, the teacher provide scores to auto-generate the grades of the student. From there, the system provides an online platform to enable a new teaching and learning styles for all of the users;

2.3. The developers conclude that once contents are created, there it provides progress and performance of the students, in which, all of the user such as teacher, student, and parent have the access on the progress and performance of the learners. In terms of teacher role, they can provide the results that the student achieves in performing and complying with all of the assessments based on the status of the assessment, and the answer of the student. Meanwhile, in terms of student role, the student has the access on the list of assessments posted, the scores, and the missing activities, and the grade that

the system calculated with the scores indicated in each assessment. It also shows the position of the student in the leaderboards based on the point system for the scores in the assessments, and the awards that the student received based on their performance. Lastly, from the parent role, the developed system allows the parent to have access on the generated grade of the student, based on the compliance status and scores of the student in each assessment, which will help them to track the progress and performance of their child.

3. After the development of the web-based system, the developers tested and evaluated the system using the following:

   3.1. The developers concluded that the testing and evaluation for administrator and each roles of the users using test cases has succeeded since it gave a 100% success rate from the perspective of the administrators, developers, and their thesis adviser. This means that all functional and non-functional requirements are met and working properly to launch and maintain the learning management system.

   3.2. The developed system was tested through ISO/IEC 25010:2011 software evaluation criteria to determine if the system works properly, gives accurate functions, can be accessed in any platform, and is fully operational in real time;

3.2.1. In terms of functionality, the developers conclude that the web-based system met the requirements and standards of the system functions since it performs properly, it operates and provide expected results for the system;

3.2.2. In terms of reliability, the developers conclude that the web-based system maintained the consistency and performance under the stated conditions. The system met the standard in terms of providing an accurate information, tight security, and assurance for the users of the system, in which, boost the reliability of the system;

3.2.3. In terms of usability, the developers conclude that the web-based system has a user-friendly interface that boost the usability for the user part, since it is easy to navigate, from its functionality, and interconnected to its interface;

3.2.4. In terms of efficiency, the developers conclude that the efficiency of the web-based system is correlated by how it immediately responds to the action done by the users. As well as, the functions have the ability to perform CRUD operations, and has less complexity which is efficient in the user part.

3.2.5. Lastly, in terms of portability, the developers conclude that the web-based system can be accessed in any platforms such as desktop, mobile,

and etc. It meets the intended interface in every platform. As well as the web-based system can be opened and accessed everywhere, as long as the user have internet connection.

Recommendations

The developers established several suggestions for future researchers and developers who want to pursue and enhance the study. The recommendations were as follows:

1. The future developers should provide messaging between the users, even or not they are friends or connected to one another.

2. The future developers should enhance the creation of quiz and exam, wherein the system will allow the users to create their own type of quiz and exam.

3. The future developers should enhance the gamification feature into game-based learning feature, so that, it can boost the functionality of providing a new type of learning management system.

4. The future developers should allow the users to edit their own user information if it is necessary, and that is needed to be implemented in the system.

5. The future developers should add an offline course in which, it will allow the user to use the system, and once they have internet connection, it will sync to the system.

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