**Development of E-Learning Management System for Malvar School of Arts and Trade**

A System Development Study

Presented to

The Faculty of the College of Industrial Technology

**BATANGAS STATE UNIVERSITY JPLPC- Malvar**

Malvar, Batangas

In Partial Fulfillment

Of the Requirements of the Degree

Bachelor of Industrial Technology

Major in Computer Technology

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June 2020

**APPROVAL SHEET**

This system development study entitled **Development of E- Leaning Management System for Malvar School of Arts and Trade** prepared and submitted by **Gian Carlo L. Garcia**, **Nikka F. Margallo**, **Joshua T. Morong** in partial fulfillment of the requirements for the degree of Bachelor of Industrial Technology major in Computer Technology, has been examined and is recommended for acceptance and approval for Oral Examination.

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**ACKNOWLEDGEMENT**

This project proved as an excellent opportunity, for us to apply learned in the course of our program at the institution. This thesis, becomes a reality with the kind support and help of many individuals. We would like to extend our sincere thanks to all of them.

First and foremost, we want to offer this endeavor to **our ALMIGHTY GOD,** who made all these things possible by the power of wisdom he bestowed upon us, the strength, peace of mind and good health in order to finish this research.

We are highly indebted to Batangas State University Malvar Campus, especially College of Industrial Technology Department for providing necessary information regarding this research.

To our family, for the unending support emotionally and financially which helped us in completion of this paper. Friends and relatives for the encouragement.

To our adviser Mr. Glenn A. Caraig, for imparting his knowledge and expertise in this study.

To our statistician, Ms. Ehra J. Cepillo for sharing knowledge and technical know-how.

Many thanks and appreciation also to our colleague and people who have willingly helped us out with their abilities. We would like to express our sincere gratitude and we are gratefully to acknowledge various people who have journeyed with us in recent years.  **The Researchers**

**DEDICATION**

We have been fortunate, being able to explore one of our dearest passions in life and develop it as a career. For that good fortune, and for all the opportunities in life we’ve been granted, we are grateful.

We want to dedicate this thesis to all of those who could have done a better job than us, but who never received the opportunities that we received.

To our lovingly respective family, relatives, friends, teachers and other people that inspired us with their knowledge and passion, we dedicate this work. They have given us, the drive an discipline to tackle the task with enthusiast and determination.

Without their love and support this project would not have been possible. So that one day, humanity many benefit from their genius, and they receive the opportunities shared their knowledge and their skills in society without prejudices.

**G.L.C**

**N.F.M**

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**EXECUTIVE SUMMARY**

**TITLE : DEVELOPMENT OF E- LEARNING**

**MANAGEMENT SYSTEM FOR MALVAR**

**SCHOOL OF ARTS AND TRADE –**

**MALVAR, BATANGAS**

**RESEARCHERS :** Gian Carlo L. Garcia

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**TYPE OF STUDY :** System Development Study

**NUMBER OF PAGES** **:**

**INSTITUTION**  **:**  **BATANGAS STATE UNIVERSITY**

JPLPC- Malvar

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**SUMMARY :**

This system development study is entitled “Development of E-Learning Management System for Malvar School of Arts and Trade. The study covers the designing, programming and testing. The design and the development of the site and e-learning platform, ease of navigation and functionality. The system focused mainly on giving handouts, random quizzes, assignments and video tutorials.

Teachers can upload downloadable files; creating topics and quizzes for the class. The student can register, view and download uploaded files. Having an E- Learning Management system will benefit the students and teachers. The web-based management system can be operated via Local Area Network with a server computer and client computer. The administrator who is responsible to add and give hand-outs, random quizzes and assignments to the students can manage the said system.

**The main objective of this study is to develop an “E- Learning Management System for Malvar School of Arts and Trade”** is for easier teaching and learning for teachers and students with the rise of technology and identify measures to progress learning and improve upon traditional educational methods. Specifically, identify the current classroom interaction and approach being used in teaching and learning. design a system that may consider to use the different features of a Learning Management System as part of the methods and approaches, develop an E- Learning Management System that allows the students to study the material and examinations given by the teachers, test and evaluate the system using ISO (International Organization for Standardization) 9126 in term of; functionality, reliability, usability and efficiency.

After the analysis and interpretation of the gathered data, the researchers are able to find out the following: The design and the development of the study was based on the need assessments that the researchers conducted in Malvar School of Arts and Trade.

The developed system called “Development of Learning Management System for Malvar School of Arts and Trade” is evaluated using ISO 9126 in terms of functionality, reliability, usability and efficiency. The E- Learning Management System is implemented to the chosen beneficiary of the researchers.

Based on the aforementioned findings, the researchers arrived at the following conclusions: The respondents have a great interest in attending their class for having an outstanding number of attendance. With the E- Learning Management System it is functional, reliable, usable and efficient. During the implementation, the researchers will issue a user manual to the chosen beneficiary to be able to learn how to use the system and maintains its functionality.

Based on the findings and conclusions, the researchers recommend that system can be access and run through online anytime and anywhere with online courses. To have PDF viewer of materials that allows students and teachers to print. Ability to show the scores statistics of students and the ranking of best top scorers. The developed system is to be implemented Future researchers may conduct similar studies for modification purposes.

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**Chapter 1**

**INTRODUCTION**

**Project Context**

Technology has always been an essential part of our lives and few can’t imagine our lives without it. It plays an important role in the society. The advents of technology have changed the way, we live, work, study and spend leisure time. As the latest knowledge of development in computer technology, grows people’s standard increase. They seek and crave for better and more efficient ways to accomplish tedious task. Technology shapes the future and it can help to make it compatible with nature. One of the major changes in trends that technology contributes to the people is the use of internet. This creates a world of endless learning and makes travelling to halfway around the world effortless. It helps us to go to different places and it serves as a major modern for community. In our generation today, man is depending on technology for information. Everything is adapting to technology today. This advancement, provides the importance of information technology into a greater value. Internet is the most efficient in disseminating of information around the world. The usage of the internet also makes an impact in the organization. It has always been there to help us in our everyday situations.

everyday lives.

As communication and information travels faster and faster, the world seems smaller and smaller which creates a large implication. Storing important in files on a computer rather than in drawers, for instance has made information easily accessible. Filipino culture places a high value on education. For the majority of the Filipinos, the only best thing for a child to acquire and secure a better future is through education. Computer gadgets and various electronic communication and productivity devices are now becoming part of everyday lives.

With the continuing conception of more technologies and systems, these tools or gadgets have been proven to lighten-up workload and make people more productive and educated. Hence systems and applications are created for medical purposes, business and education. People nowadays, are living in an information age dependent upon digital information. Digital information is an electronic information, the result of computer processing. Every type of job relies upon getting information, using it, managing it, and relying information to others. Computers enable the efficient processing and storage off this information.

School plays a key role in the society. It is one of the basic needs of a person. Education is one of the privileges for every child. Today, people face different threats and they have no choice but to face them upfront. In the field of education, implementations of computer based systems such as E- Learning Management System.

Malvar School of Arts and Trade is a technical-vocational secondary public high school in the town of Malvar, province of Batangas. Malvar School of Trades and Arts is implementing the new curriculum, Strengthened Technical- Vocational Education Program (STVEP) using Competency-Based Curriculum(CBC).

With this, the researchers proposed an E- Learning Management System for Malvar School of Arts and Trade, this method of learning is being imparted to the Grade 8-10 students of Computer System Servicing. Unlike conventional chalk and board style of schooling. Since this is run offline and through Local Network Area, students are required to attend in the Computer Laboratory. Students can only access this in their hours respectively, especially if they are given tasks to answer by the teacher. With offline training, it’s easier for the students to pay attention. They find it easier to retain the knowledge that they have learned. Today it is devised by a growing number of universities to offer instructional support.

Improving education is a huge issue for our society. Test scores, our perceived performance against different nations and in different elements. Technology can be utilized to enhance teaching and learning and help our students be successful. While everyone would love to see smaller schools and class sizes, technology cannot do that physically. However, it can be a force multiplier for the teacher. Technology itself can be expensive, it can also help schools save money. Virtual field trips, electronic documents, email instead of printed memos, virtual labs, electronic textbooks, and the thousands of free online resources help schools save cash and still give students amazing educational experiences. Technology is not just a powerful thing for education–it is a superpower. With this study, the researchers would like to incorporate technology in teaching and learning in a more advanced way.

**Purpose and Description**

The purpose of this study is to enhance the way of teaching and learning to help teachers and students utilize and discover resources and go to virtual expert improvement courses and conferences that students can access resources and handouts. Hence, for students who need to spend more time practicing a concept, online exercises and curriculum can also help them work at their own pace and still keep up with their peers. Through the use of E- Learning Management System, students can access online resources to get assistance on demand beyond the physical reach of their teacher. Technology can also extend education in another way. Since a considerable measure of time is spared amid research, and since it is easier to access a wider array of sources, students can consolidate a ton of information and knowledge in their projects and handouts.

Results can be compared worldwide more efficiently, allowing for faster progress in advanced research.  Technology can give teachers and students remarkable resources. They have access to new opportunities for learning approaches to work together. The design of the system is simple and easy to understood. Its flexibility makes it amenable for future changes and amendment to either incorporate the aspects of intelligence or to be designed for any other school age or class.

E- Learning Management System is a web-based application that runs through local area network. The system has two users account, the teachers and for the students. The server can manage all the examinations, assignments, quizzes. Students that may struggle to understand a certain subject can search for a tutorial video online.

Videos or live streaming content can offer an alternate approach to a thought and better understanding of a concept or subject. These videos can allow an interesting and interactive approach to learning that might be more easily digested.

This system was developed with the use of Django, a Python Web Framework that encourages rapid development and clean, pragmatic design, and for a rapid and faster development of the system. Also, the system is designed with the use of HTML, CSS and BootStrap 4 for a user- friendly design for the users. Xampp MySQL Database was used as the data storage of all the data on the system for the much more secured database.

In this system, there are two users who can access the system, one is for the teachers and for the students. For the teachers, they can create exams and quizzes with multiple choice, upload hands out, lectures or even the video tutorials about computer literature. Teachers can also post some announcements, track the student’s progress, see their exam results and recorded scores of students. While for the students, they can answer the given exams and quizzes, download or see the uploaded hands out, lectures, and watch the video tutorials.

**Objectives of the Study**

The main objective of this study is to develop an “E- Learning Management System for Malvar School of Arts and Trade” for easier teaching and learning for teachers and students with the rise of technology and identify measures to progress learning and improve upon traditional educational methods.

Specifically, the study aims to:

1. Identify the current classroom interaction and approach being used in teaching and learning;
2. Design a system that may consider to use the different features of a Learning Management System as part of the methods and approaches;
3. Develop an E- Learning Management System that allows the students to study the material and examinations given by the teachers;
4. Test and evaluate the system using ISO (International Organization for Standardization) 9126 in terms of;
   1. Functionality;
   2. Reliability;
   3. Usability; and
   4. Efficiency.

**Scope, Limitation and Delimitation of the Study**

The study covers the designing, programming and testing of the “E- Learning Management System for Malvar School of and Arts and Trades”. The design and development of the site and [e-learning platform](https://www.talentlms.com/), ease of navigation and functionality should be the top priority. The system focused mainly on giving handouts, random quizzes, assignments etc. Teachers can upload downloadable files; creating topics and quizzes for the class. The student can register, view and download uploaded files. Having an E- Learning Management system will benefit the students and teachers. The web-based management system can be operated via Local Area Network with a server computer and client computer. The administrator who is responsible to add and give hand-outs, random quizzes and assignments to the students can manage the said system.

The proposed study aims to benefit the teachers and students. It focuses on the user friendliness, help teachers prepare and develop their teaching materials and compensate the lack in their experience, provides them with an electronic teaching ways that can be easily updated, updating the systems of exams, quizzes and assignments and to disseminate the awareness about E- Learning.

The system is done only for Malvar School of Trades and Arts. A batch of students in one section to access the computers at the same time. Students can access the system with their accounts after registering and download the uploaded files.

The limitation of this system is that it is only accessible through offline access by which the students and teachers can use this system within the computer laboratory area.

The delimitation of the study is that it does not require network based operation, the system does not involve other activities in different offices in the school.

**Significance of the Study**

This system development study is entitled “Development of E-Learning Management System for Malvar School of Arts and Trade”. The beneficiaries are the teachers and students from grade 8 to 10 students. The study seeks to improve the learning curve of students with the aid of a learning management system through high quality content materials. Furthermore, the study seeks to identify measures to progress learning and improve upon traditional educational methods. Activities can also offer customization to the student’s interest, which empowers students to own their learning experience and ensures relevancy.

Teachers will benefit from this research as they can view and track the developmental and progress of the learning path of the students, review records and additional courses.

The grade 8 to 10 students will have the E-Learning process so that they are exposed more through virtual learning. Aside from that, is the collaboration module which is knowledge base, to develop the ability to reason out and answer questions. Online learning also fosters, collaboration and interaction. The interaction expands the sources of knowledge and allows students to be involved in the world, as well as their own studies.

With the online learning, students create their own learning experience; it not only puts the student at the center of the learning experience, but also makes them responsible for their own learning. And this was a challenge that made the heart of the study. The researchers conducted this to find out if these positive characteristics of electronic learning affect the student’s achievement.

To the researches, this system will help them enhance and apply the learning with a greater understanding of its relevance to their careers in the future. It helps in assessment of particular situations in order to conform to the practices required in the field with the course Bachelor of Industrial Technology major in Computer Technology, especially programming and database application.

Lastly, this study would also be beneficial to the future researchers since they can use it as a reference for their study.

**Chapter II**

REVIEW OF LITERATURE: SYNTHESIS

This chapter presents related concepts, theories, and studies that are used in the development of the study. They were gathered from different sources like books, journals and internet. Specifically, this includes the conceptual literature, related literature, synthesis, and conceptual framework.

**Conceptual Literature**

The researchers will gather information from different sources for the conceptual literature of the study.

A teacher is responsible for preparing lessons plan and educating students at all levels. Their duties include assigning homework, grading test, and documenting progress. Thus the school felt the need for computerization to improve way of teaching and learning top help teachers and students utilize and discover resources and go to virtual expert improvement courses and conferences that students can access resources and handouts. The e-learning system is primarily designed to allow the students and teachers to give a computerized teaching. The following information proved to be valuable in the creation of the proponents proposed system.

Base on Direct Line Development Inc. (2020), Python is a general purpose and high level programming language. You can use Python for developing desktop GUI applications, websites and web applications. Also, python, as a high level programming language, allows you to focus on core functionality of the application by taking care of common programming tasks. The simple syntax rules of the programming language further makes it easier for you to keep the code base readable and application maintainable.

Developing a websites is a priority these days due to number of reasons including the modernization of our society. Designing and development are the steps that are important. In developing websites python is extremely powerful and very advanced.

Developers with this skill are in great demand, but it is difficult to find a high quality web development company that uses python for web development. There are many web development and design languages a developer can used, but python is the best programming language out there because it is so advanced and complex. (Kite, 2008)

The developer also used Django Web Framework for framework to create a website. Django is an open-source framework for backend web applications based on python, one of the top web development languages. Its main goals are simplicity, flexibility, reliability, and scability. One of Django’s main goals is to simplify work for developers. To do that the django framework uses: The principles of rapid development, which means developers can do more than one iteration at a time without starting the whole schedule from scratch; DRY philosophy – Don’t Repeat Yourself – which means developers can reuse existing code and focus on the unique one. (Gaponov, 2008)

According to Osipenko (2008) With Django, you can tackle projects of any size and capacity, whatever it’s a simple website or a high-load web application. Using Django it works with most major databases and allows using a database that is more suitable in a particular project, or even multiple databases at the same time. Django started off with great documentation, the best of any other open-source framework. And it’s still maintained on a high level, updated along with the new functions and fixes, so you can easily adapt to changes.

The developers used the XAMPP server to easily view what was needed for the websites. Moreover, this kind of server could help them easily notify what kind of design they would utilize for the websites. It is also helps to know the error of the website. With the use of XAMPP it can be a server to access the MySQL database that used as a database for this system. XAMPP is an abbreviation for cross-platform, Apache, MySQL, PHP and Perl, and it allows you to build Word Press site offline, on a local web server on your computer. This simple and lightweight solution solution works on Windows, Linux, and Mac – hence the “cross-platform” part. (ApacheFriends 2002)

MySQL is a relational database managements system based on SQL – Structured Query Language. The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications. The most common used for MySQL however, is for the purpose of a web database. It can be used to store anything from a single record of information to an entire inventory of available products for an online store. (Widenius, 2010)

According to Sunil Gupta (2017) eLearning has completely transformed the way in which learning is imparted to students. Unlike traditional chalk and board method of teaching, eLearning make learning simpler, easier, and more effective. According to him a prime benefit of eLearning is that it makes sure that you are in synchronization with modern learners. This enables the learner to access updated content whenever they want it. ELearning is a way to provide quick delivery of lessons. As compared to traditional classroom teaching method, this mode has relatively quick delivery cycles. This indicates that the time required to learn is reduced to 25%-60% of what is required in traditional learning.

**Research Literature**

To show comparison between the proposed study and other existing projects that are of close relevance, the proponents searched for the other studies from different educational institutions and other available resources. They will gathered more information for the improvement of the current project.

A study made by Bayanin, Castro, and Gomez (2005) entitled “Online Examination” was aimed to develop and promote an interactive webpage and an offline database for the incoming first year college students of Batangas State University. This on-line examination appeared to be for endorsing the capabilities of the institution.

In the study conducted by Dumanig, Fabio, Ibañez, and Rendon (2013) entitled “E-Learning Management System with Screen Share Technology” for Thompson Christian School to cater the needs of the students by providing the course materials, taking of examination/quizzes online and by providing screen share during discussions. The proponents used the Web Engineering process model throughout the study.

The study made by Liwag, Mendrez, and Nuestra (2005) entitled “Computerized Enrollment System” aimed to provide a faster retrieval and immediate access data through queries. The system can generate immediate list of enrollees. By means of the study, problems regarding the possibility of losing information, time-consuming retrieval and access to data burden of manually of manually preparing the list of enrollees were solved.

The study of Dionicio D. Gante (2010) entitled “A Proposed Web Portal for the College of Computing and Information Technology of Isabela State University Cauayan Campus, Cauayan City, Isabela” aims to determine the needed contents or features to be included in the development of web portal: to identify the possible advantages of the web portal for faculty, students and college and to verify if there is really no significant difference on the response of the two groups of respondents.

On the other hand, Ke (2010), in this study of “Online Adult Learning”, pointed out that cognitive presence in adult learners was about how they perceived their learning satisfaction. His study showed that “most adult students reported deep learning as a dominant learning approach” (p.814). He discussed individualistic learning as a dominant approach in adult learners’ cognitive learning activities, indicating that adult learners had mixed feelings about online discussions. In their view, the effectiveness of online discussion largely depended on who participated in the discussion, and meaningful and valuable discussion were grounded on whether the participating peers were “chatty and talkative.” they were concerned that unbalanced discussion performances among their peers were would greatly undermine the quality of online discussion.

On the other hand, Smita Ghosh (2012) developed a “Fundamentals of Online Education and Its Working Model” that aimed to detailed study on functioning of online education. The last two decades have seen a tremendous increase in students enrolling for online education and it have become a big hit among all the students. With the continuous and nonstop growth and innovation and extension in multimedia and IT sector, online education is growing at very fast rate.

Based on the study conducted by Milla, Ramos, and Salazar (2014) entitled “Online Student Information System for Blue Isle Integrated School”, this study that will be used to make such transaction and process that will take place within the school. It enables online management and systemizing of the student information system of blue ISLE integrated school. This system is for entire students who are enrolled in the school and for the interested applicants who want to view about Blue Isle Integrated School. No other information regarding the students’ record will be publicized and the system will be secured for its privacy.

**Synthesis**

The studies conducted by other researchers globally were considered related and essential to the accomplishments of this study. The studies mentioned above contained closely similar scenarios in relation to what this study needed. The best way to understand this study relies on knowing the information relevant to the topic. This includes factors that affect the quality of services that the company provides its customers, the utilization percentage and the level of satisfaction the customers receive.

The study of Bayanin et al entitled. (2005) is similar to the present study in terms of delivering in online examination for the sake of their respective client institution. However, they differ because the past study focused on giving an online examination, while the present study aims to give an offline learning/teaching resources.

The system of Dumanig et al. (2013) is similar to the present study in the terms of taking computerized examination/quizzes, handouts, and improve user-accessibility and time flexibility to engage learners in the learning process. On the other hand, the present study that mainly concerned with a computerized examination system, while the present study aims to design a computerized learning system.

The system of Liwag et al. (2005), is similar to the present study in the terms of allowing, creation, addition, deletion, and modification of data belonging to different files. The records can be easily stored as they come. Both systems have security features requiring the entry of a password to verify whether a user is authorized or not. Both have utility menu that allows creating, editing, and deleting of a password. Well then the present study is different to the past study in terms of inserting data because it’s more on data of enrolment unlike the present study it’s all about electronics learning system.

The study of Dionicio D. Gante (2010) is similar to the present study because they have the same objectives which is to design a web portal for computer course. The advantage of the present study is that the system focused mainly on giving handouts, random quizzes, assignments etc.

The study of Ke (2010) entitled Online Adult Learning is similar to the present study because they have the same objectives of learning which is to give a virtual learning for the students. The difference is that the present study is for the high school students that meet the learning style or needs of students and its offline.

The system made by Smita Ghosh (2012) is similar to the present study because they both have the same thought that the students are finding it a flexible, easily, accessible, and credited option to gain education. These online degrees have started being recognized all over and is helping in increasing the educational level and getting higher paid jobs. Over the past few year world is witnessing a great rise in the educational level because of growth in online education.

The present study is similar to the project of Milla et al. (2014) Online Student Information System for Blue Isle integrated School because both are an information system that minimizes the manual process of handling data for the users. Both system would also need to register to input some personal information and also they both have a security code for the user’s privacy. They differ because previous study is focusing in information system and it is online while the present study are not just for the information and it is offline.

**Conceptual Framework**

The proposed system entitled E-Learning Management System for Malvar School of Arts and trade was automated and can help the students and teachers of Computer Hardware Servicing at Malvar School of Arts and Trade to aims are what teachers and learners want to achieve in a lesson or a course. Knowledge requirements are important to the proposed study in order to apply the right program language to be used in system.

Planning was where the proponents searched for the client and its needs and from there, the system had been proposed as a solution to their problem.

Designing involved information on other existing system related to the study and how their user interfaces were configured. From that, the proponents came up with the design of the system interface.

Implementing was the last process wherein the system was implemented on the client system to obtain the desired improvement and development of their previous system.

Testing was where the proponents tested the effectiveness of the system. This also involved debugging and error checking in order to enhance the system for further development.

Figure 1 illustrates the theoretical explanation of the problem and serves as the basis for the making of accurate information of the proposed study. The idea of having the Input, Process, Output approach was used to describe the Theoretical Paradigm if the study conducted.

Upon considering the listed input and processes, the proponents were able to come up with the output (E-learning Management System for Malvar School of arts and trade).

**INPUT PROCESS OUTPUT**

Development of E-Learning Management System for Malvar School of Arts and Trade

* Identifying
* Designing
* Developing
* Testing/

Evaluating

* Information gathered from Books and Internet
* Information about School rules and regulations
* Information on student evaluation process
* Labor
* Fund

**Figure 1. Conceptual Paradigm of the Proposed System**

**Definition of Terms**

To fully understand the concept and content of this system, the following terms are defined conceptually and operationally.

**Administrator.** A person who is responsible for managing multiple user computing environments such a local network (Barker 2003). In this study, it refers to the staff that manage and administrates the program upon its operation.

**Registration.**  According to Howie (2005) the act of registration through the website. It is the way of logging in to the system. In this study, it is the registration of some personal information to make an account.

**Security.** The prevention of unauthorized use of program or device on networks or any other systems where more than one user can access programs and data, security usually involves the use of passwords to identify authorized users and encryption which render data unintelligible to an authorized user. In this study, it is one of our objectives which we have to maintain in order to assure the functionality of the system. (Neate, 2006)

**Software.** According to IBM research (2007), any program or routine, such as an application, system file, device driver, etc. that furnishes instruction to the computer. In this study, it is one of the programs used by the E-learning Management System.

**World Wide Web.** The complete system of interlinked documents that use HTTP, residing on the internet and accessible to users via a web browser (Lee, 1991). In this study. It serves as the protocol for internet connection.

**Chapter III**

**DESIGN METHODOLOGY**

This chapter discuss the method of research and methods in developing the software and context flow chart to come up with the accurate information for the study.

**Methods of Research Used**

This study is intended to design and develop E-Learning Management System for Malvar School of Arts and Trade by designing and developing a system that will  
help the teachers and students to accomplish their goals in learning and to help them to use the technology for a much better way of understanding.

In this study, the researchers used the developmental method research. Developmental Method of research is used to identify the procedure in developing the proposed system where every phase of the Developmental Method would be taken into consideration: planning, analysis, design and development, testing, and implementation and maintenance that can be described to loop in cycle.

Descriptive research is conclusive in nature, as opposed to exploratory. This means that descriptive research gathers quantifiable information that can be used for statistical inference on the target audience through data analysis. As a consequence, this type of research takes the form of closed-ended questions, which limits its ability to provide unique insights. However, using it properly can help an organization better define and measure the significance of something about a group of respondents and the population they represent (Fluid Surveys Inc., 2014)

The researchers also used the most common descriptive research method which is conducting a survey through a questionnaire. The researchers used a self-constructed questionnaire in order to evaluate the system guided by ISO 9126 in terms of functionality, reliability, usability, and efficiency of the system.

**Figure 1: Web Development Life Cycle**

Figure 1 shows the Rapid Application Development Method which includes of defining the problem, analyzing the needed requirements, designing the system, testing and supporting the developed system

**Planning Phase**

The first process of researching is planning where in this phase, the researchers saw the ways of how the students learn from their computer-related lectures, the researchers planned about how they can help the students as well as the teachers to gain more knowledge about computer and how they can use the technology to have an easy way of giving and taking quizzes and exams. So the researchers planned of what will be the design of the user interface of the system. The researchers also planned for the functions and flow of every feature of the system so that teachers and students can easily use this system. The researchers also planned what will be the best features that can surely help the teachers as well as the students so that they can learn more about their subject. The data that had been gathered by the researchers as well as the suggestions from the experts were used to plan for the features and determine the requirements for the development of the web-application.

**Library Research**

The researchers use the library materials like the previous thesis documentations, books and journals for gathering the data and information that is relevant to the proposed study in order to have a better source for planning.

**Internet Research**

The researchers propose to do online searching to gather more data and information related to the proposed study. The information that will be acquired from the internet will give the researchers more idea that will help then in planning to develop the proposed system.

**Analysis Phase**

After the researchers planned for the development of the web application, further analysis was conducted for the possible features of the system such as how will the teachers give the exams and quizzes, how the students will take the quizzes and exams randomly, how they can access the web application, and how they can use this system for the hands-out and lectures about computer-related topics. The researchers now select the appropriate tools for developing the web application system such as programming language, database and text editors.

**Design and Development**

In designing and developing the system, the researchers focus on the procedures of making the system more practically, efficient, less costly, flexible and more secure. In designing the system, the developers must focus on two aspects of the design. First, developers must determine how the teachers can give exams and quizzes and how they can upload hands-out. Second, developers must focus on how the students can access the given exams and quizzes and how they can view the uploaded hands-outs.

**Testing**

After the designing and developing of the system, the researchers now test the system to see the possible errors and bugs of the system. The researchers run the system multiple times like answering a giving sample quizzes and exams, uploading and downloading hands out. The researchers also seek help and advice from the experts to see what features can be added or improve for the system.

**Implementation and Maintenance**

After the testing part of the system, the researchers are now implementing the web application system in the Malvar School of Arts and Trade Computer Laboratory. The Researchers ensure that the system works and used by the students as well as the teachers. The researchers also maintain the web application system by securing that the possible future errors or bugs will be fixed and improved this system.

**Table 1: Functional Requirements**

|  |  |
| --- | --- |
| **Functions**  Log in Form  Sign Up Form  Exams  Quizzes  Student Profile  Students List  Handouts  Video Tutorials  Viewing of taken exams and quizzes  Viewing of Scores  Announcements Board | **Description**  Teachers and students can Log in to this system as long as they are registered in this system.  Teachers can sign up to this system. Students can also sign up and choose their corresponding year level.  The teachers can create exams and let the students to answer it.  The teachers can create quizzes and let the students to answer it.  Students can create, delete or update their personal information in their profile.  Teachers can see the list of registered students in this system.  Teachers can upload handouts like PDF files, PowerPoint presentation or any documents that they use to extend their teaching. The students can also download this documents.  Teachers can upload video tutorials or any video related that they can use to extend their teaching. Students can view and play this video.  The students can view the list of their taken exams and quizzes. While the teachers can view the list of students that took a particular exams or quizzes.  Teachers and Students can view and see the scores of every exams or quizzes.  Teachers can create, update, delete announcements and let students to view these created announcements. |

Table 1 shows the functional requirements of the system

The detailed description of the specific functionality within the system is stated. The proponents considered the requirements given by the client to suit their needs. It deals with what the developed system can provide the user.

1. The system has two user accounts. One is for the teachers who is the administrator of the system. The teacher has the full control of the system. The other account is for the students. They both can sign up their own accounts and log in to this system.
2. Teachers can create random exams and quizzes for the students. the teachers can also upload hands-out or lectures and upload video tutorials. Teachers can also create and post announcements.
3. Students can view exams and quizzes according to their sections or year level. Students can answer exams and quizzes and view the scores at the end. The students can also download hands-out and watch uploaded videos.
4. The teachers can see the scores of exams and quizzes and view the list of students who took the exams or quizzes.
5. Students can update their personal information in their profile. While teachers can see the list of registered students in this system.

**Methods Used in Developing the Software**

The researchers consider the current procedures of giving and taking exams and quizzes in the Malvar School of Arts and Trade. With this, the researchers used this as a guide to design and develop the system in order to obtain the best result of how the system can be used to help the teachers to give exams and quizzes and to help the students to gain more knowledge and have the eagerness to learn more.

**Developing and Documenting the System**

In the development of the system, the researchers planned the design and flow of the system. The researchers look for the desired programming language, database and tools for developing the system. The developed system must be user-friendly and easily understood by the user.

The researchers also design the system for other features such as uploading and downloading handouts and video tutorials that can also help their students to learn more about the related topic.

**System Analysis and Design**

The researchers first developed and design a prototype of the system using JustinMind Prototype to help them to design a more accessible and easily understood user interface of the system. After they have designed a prototype, the proponents now use the proper tools for developing the system. The researchers use Django Web Framework as the back end language for web application due to its rapid development ability when developing the web application system. Django is a Python based Web Framework that is free and open source. Django follows it's DRY (Don't Repeat Yourself) principle that helps the proponents for rapid development of the system and to have a much cleaner and short codes for the system. Django also follows the model-view-template (MVT) architectural pattern.

Since the system was designed as a web application system, the researchers also use the Hypertext Markup Language (HTML) for the proper presentation of data and information in the web browser. The researchers also used the cascading style sheet (CSS) and bootstrap 4 for the design of the user interface of the web application system. The researchers use Xampp as MySQL Server, which is used as the database of the system.

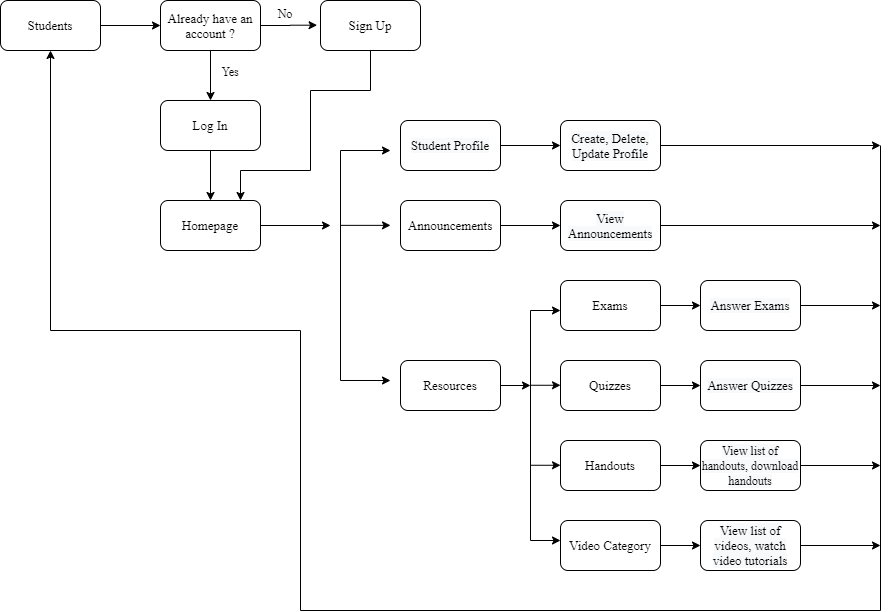
**Table 2: Software Requirements**

|  |  |
| --- | --- |
| **Software** | **Requirements** |
| Operating System | Windows, Linux, Mac OS (Any browser) |
| Programming Language | Python 3.8, Django 3.0 , HTML, CSS, Bootstrap 4 |
| Database  Browsers | Xampp 7.4.5, MySQL 5.6.16 Database  Google Chrome, Microsoft Edge, Mozilla Firefox |

Table 2 shows the software requirements for the development of the web application system.

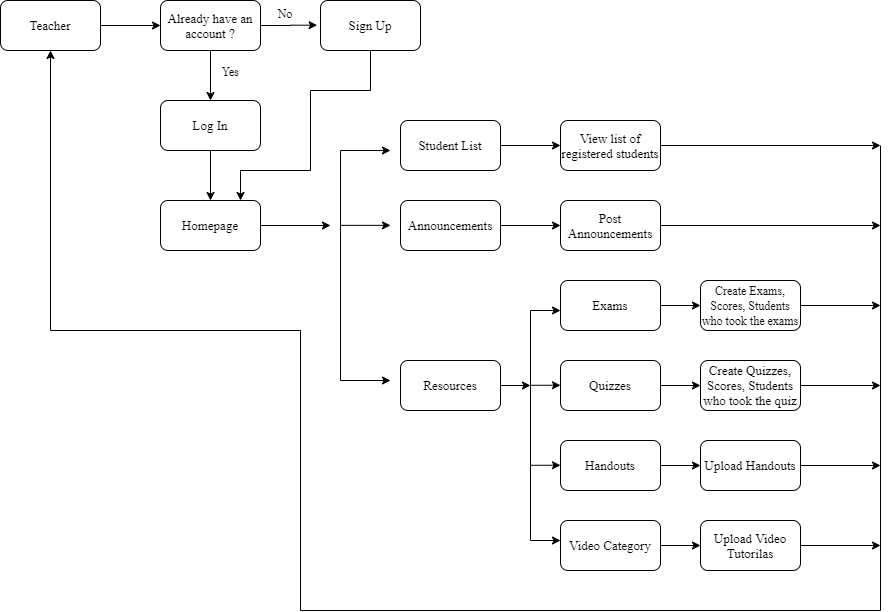
**Table 3: Hardware Requirements**

|  |  |
| --- | --- |
| **Hardware** | **Requirements** |
| Processor   RAM  HDD Storage | At least Quad Core Processor  At least 4GB RAM  At least 250GB of storage capacity |
|  |  |
|  |  |

Table 2 shows that hardware requirements for the development and implementation of the web application system.

**Figure 2: Context Flow Diagram for Student**

The developers used this Context Flow Diagram of Students to plan on how the students can access the system. Wherein the students can sign up and log in to the system. access the home page, student profile, quizzes, exams, announcements, handouts and videos. This diagram also represents the flow of the system for the student.



**Figure 3: Context Flow Diagram for Teachers**

The developers used this Context Flow Diagram of teachers to plan on how the teachers can access and manage the system as they are the administrators of the system. This diagram shows how the teachers can use the system for creating quizzes, exams, view the list of registered students, post announcements, upload and update the handouts and upload video. This diagram also represents the flow of the web application system.

**Test and Evaluation**

To provide a quality assurance of the system, the researchers conducted the testing and evaluating system using the ISO 9126. The ISO 9126 is an international standard for the evaluation of software.

**Figure 4: ISO 9126 (Benjamin Zeiss, 2004)**

Figure 4 shows the ISO 9126-1 quality model by Benjamin Zeiss (2004).

The researchers used this model as a basis to evaluate the E-Learning Management System for Malvar School of Arts and Trade with the help of a questionnaire. The researchers just used functionality, reliability, usability and efficiency, which are part of the external quality characteristics of the ISO 9126 model.

The researchers used a questionnaire to evaluate the system. The instrument consists of four parts: functionality, reliability, usability, and efficiency. It also composes of twenty (20) statements in which the respondents will rate their response base on the characteristics of the system. A scale of 1-4, 1 is the lowest and 4 is the highest as a basis for the quantitative result.

However, the researchers did not include the maintainability and the portability because the teachers or the administrator of the system does not have direct access to the codes of the system. And it cannot be answered by the respondents since it is a technical issue of the system. After conducting the survey, the data have been tallied and rated using the scale below.

|  |  |  |
| --- | --- | --- |
| **Scale** | **Mean** | **Verbal Interpretation** |
| 4  3  2  1 | 3.50 – 4.00  2.50 – 3.49  1.50 – 2.49  1.00 – 1.49 | Strongly Agree/Highly Functional, Highly Reliable, Highly Usable, Highly Efficient  Agree/Functional, Reliable, Usable, Efficient  Disagree/Moderately Functional, Moderately Reliable, Moderately Usable, Moderately Efficient  Strongly Disagree/Not Functional, Note Reliable, Not Usable, Not Efficient |

**Chapter IV**

**RESULT AND DISCUSSION**

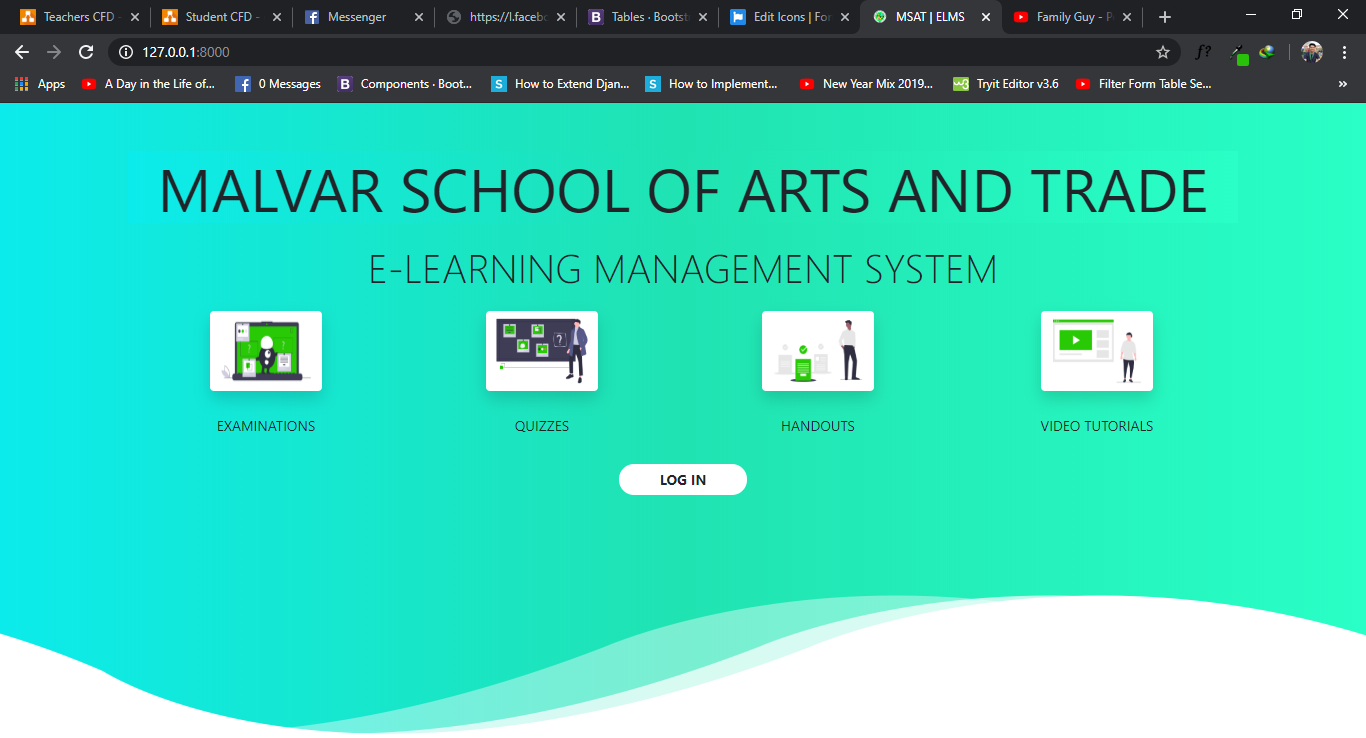
This chapter discusses the system description, system structure, and system evaluation.

**System Description**

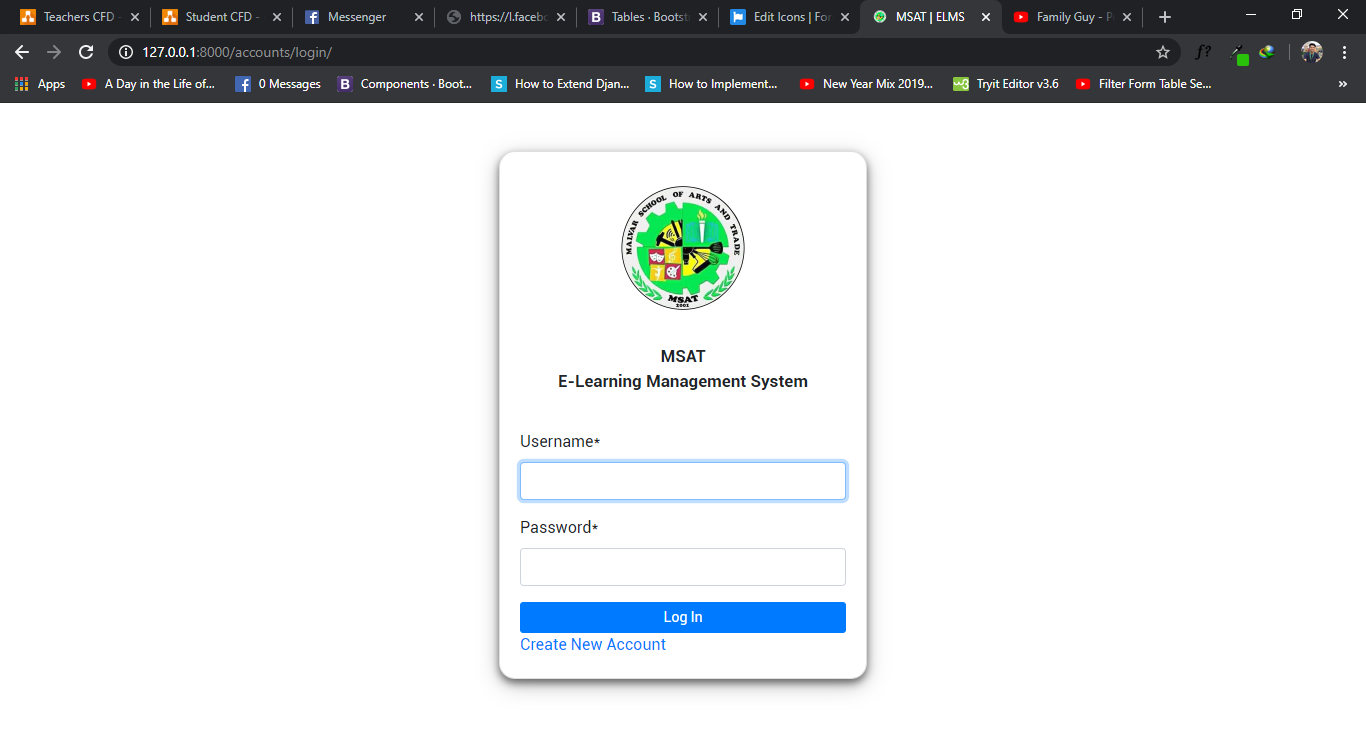
The developers aimed to develop a system to improve the traditional way of teaching and learning and to help teachers and students utilize and discover resources and go to virtual expert improvement courses and conferences that students can access resources and handouts. The system requires a login account for the user which involves a username and password in order to access the system and oversee its implementation.

**System Structure**

The developers decided to develop a system using MySQL Structured Query Language that runs through Xammp as their database and Django Web Framework that was created using Python Programming Language as their programming language and Cascading Style Sheet, HTML, JavaScript and Bootstrap 4 for designing the front end user interface. The user’s information need to be encoded. The database stores information, updates can be done necessary and retrieval of the information can be processed easily. The mechanics of the database management is that a single database is used and located in the server which is controlled by the administrator.

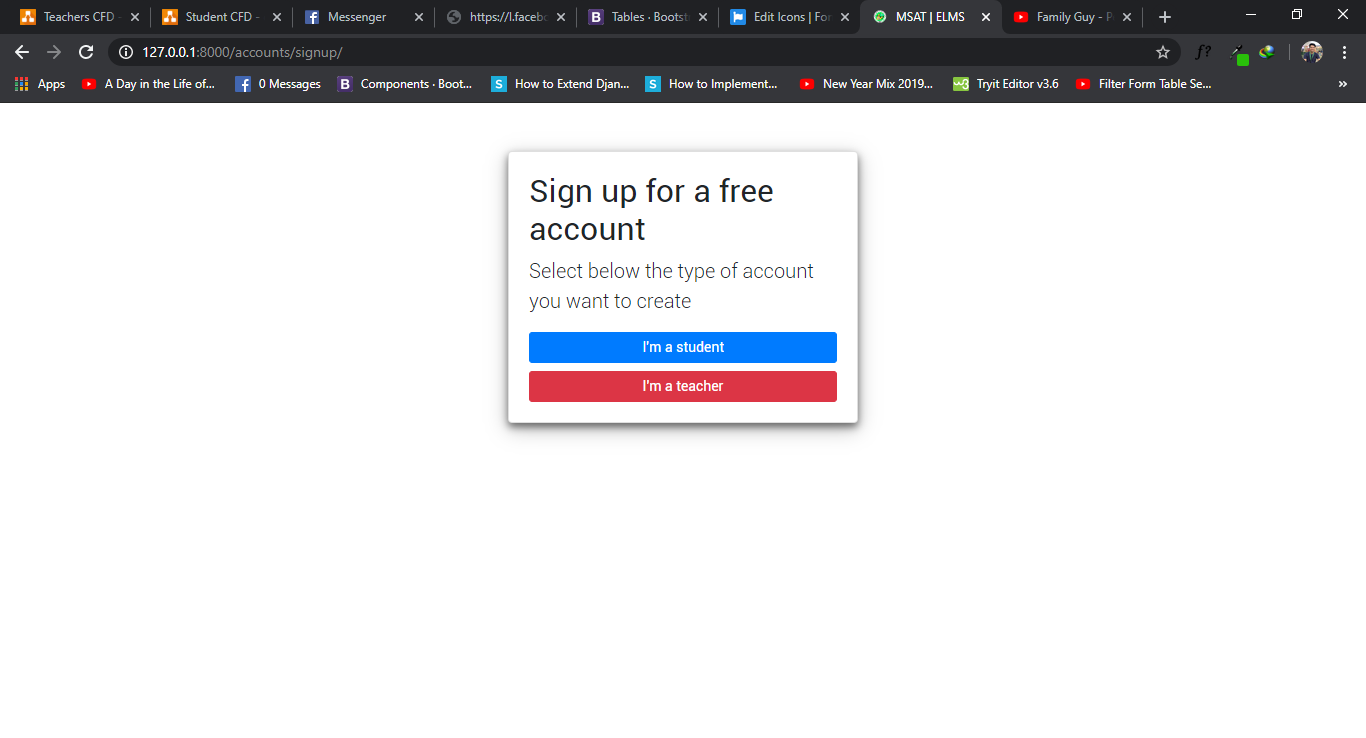


**Figure 1. Home Page**

This shows the Home Page where the user can see the name of the school and system and also some features of the system.

**Figure 2. Log in Page**

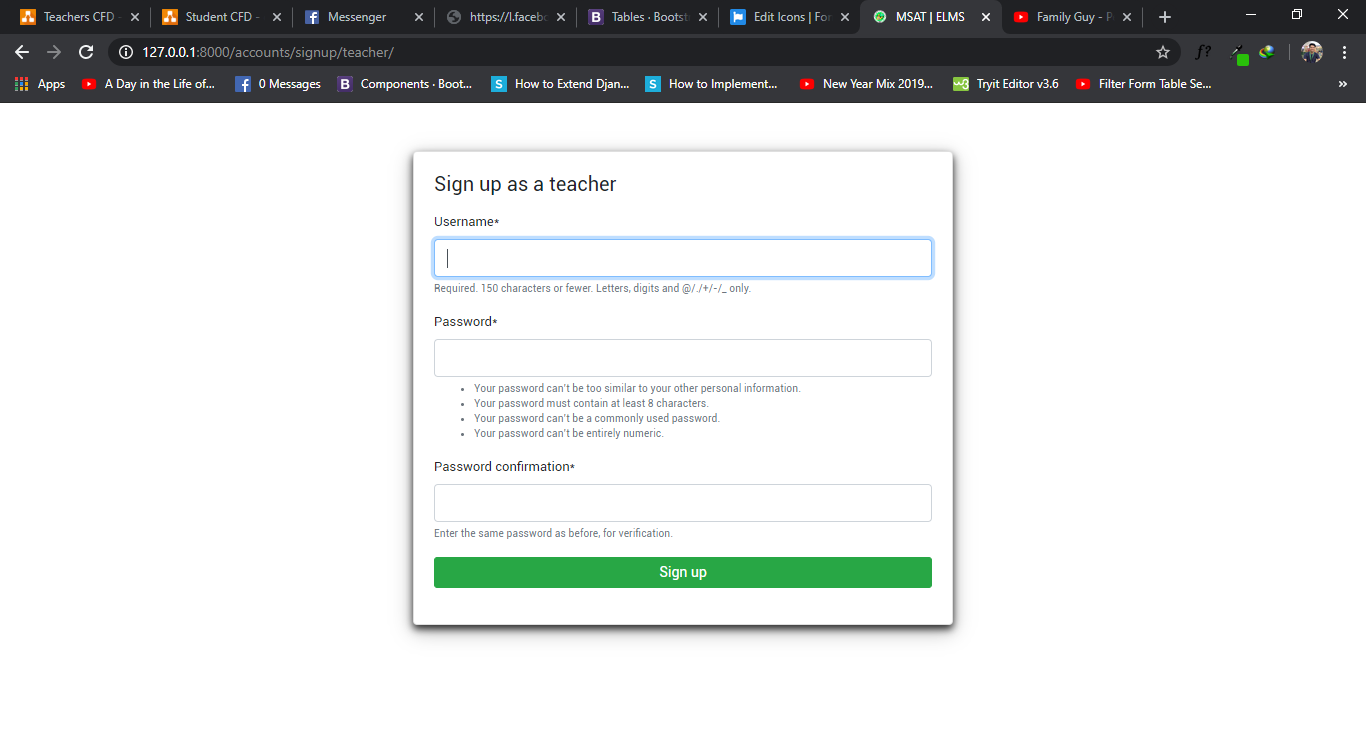
This figure shows the log in page of the system. In this part of the page where the teachers and students are going to login to use the system.



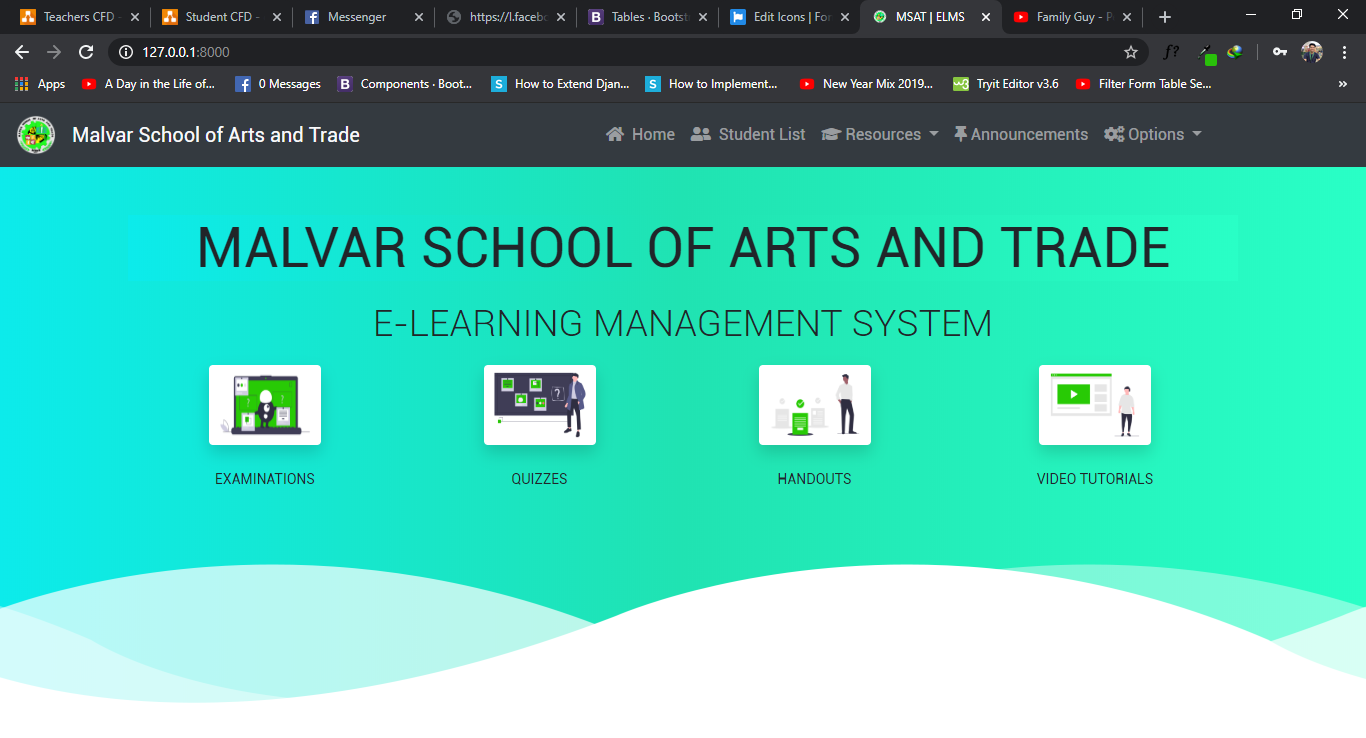
**Figure 3. Option Page if Students/Teachers**

This show the option page where the user identify themselves if they are students or teachers for them to sign up.

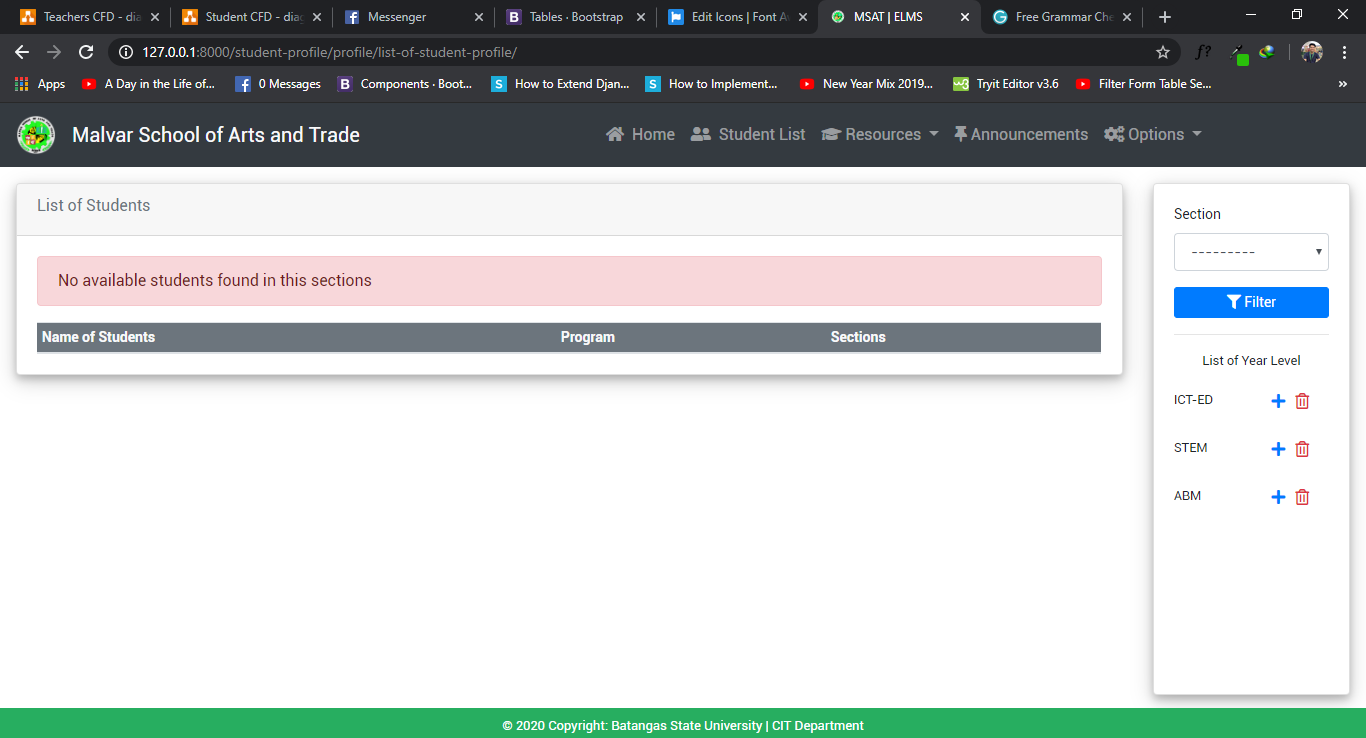
**Figure 4. Sign up Page for Students**

This figure show the sign up page for students where they need to sign the username, create a password for the security of their account and lastly the verification of year level.

**Figure 5. Sign up Page for Teachers**

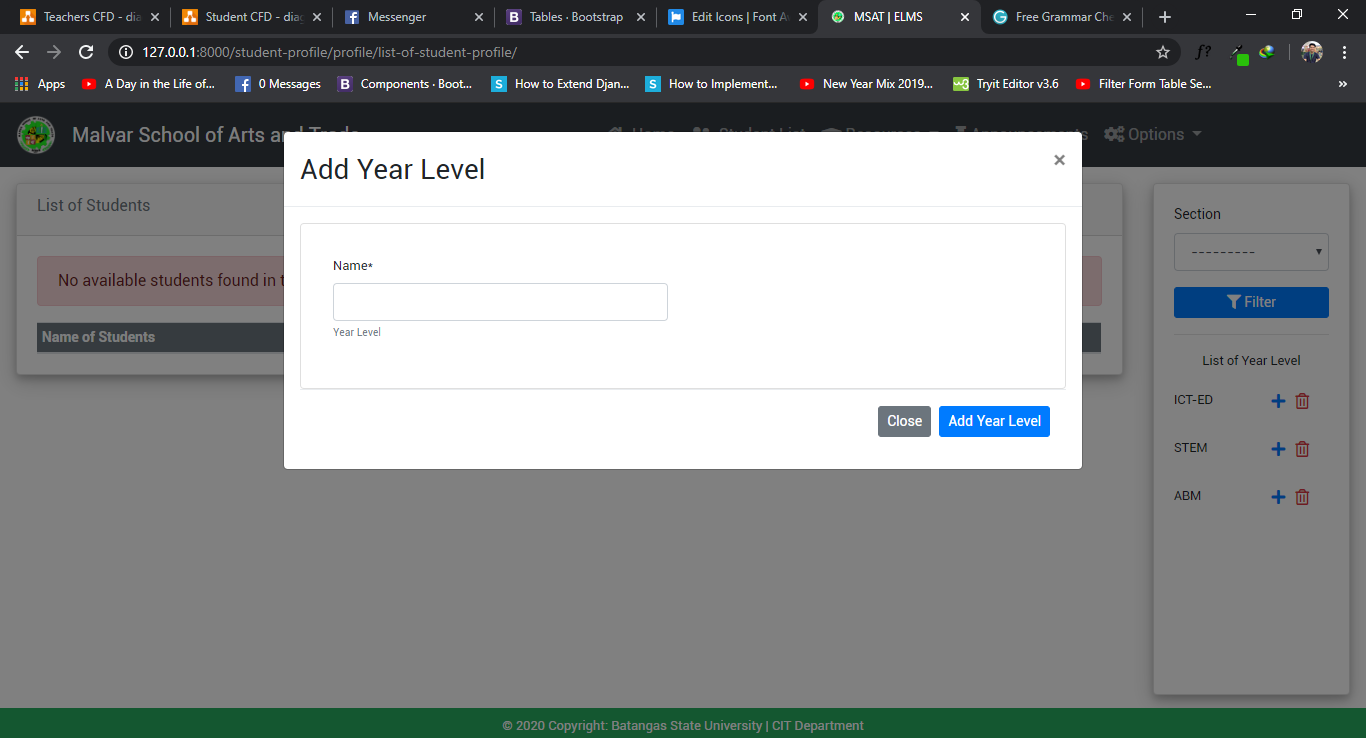
 This show the sign up page for teachers which include username, password and confirmation of password.

**Figure 6. Homepage for Admin/Teacher’s Account**

 This figure shows the homepage account for teachers and admins. On this homepage, the user can see the navigation bar at the top, the logo and name of school, the name of the system and the menu for easily accessing the features of the system.

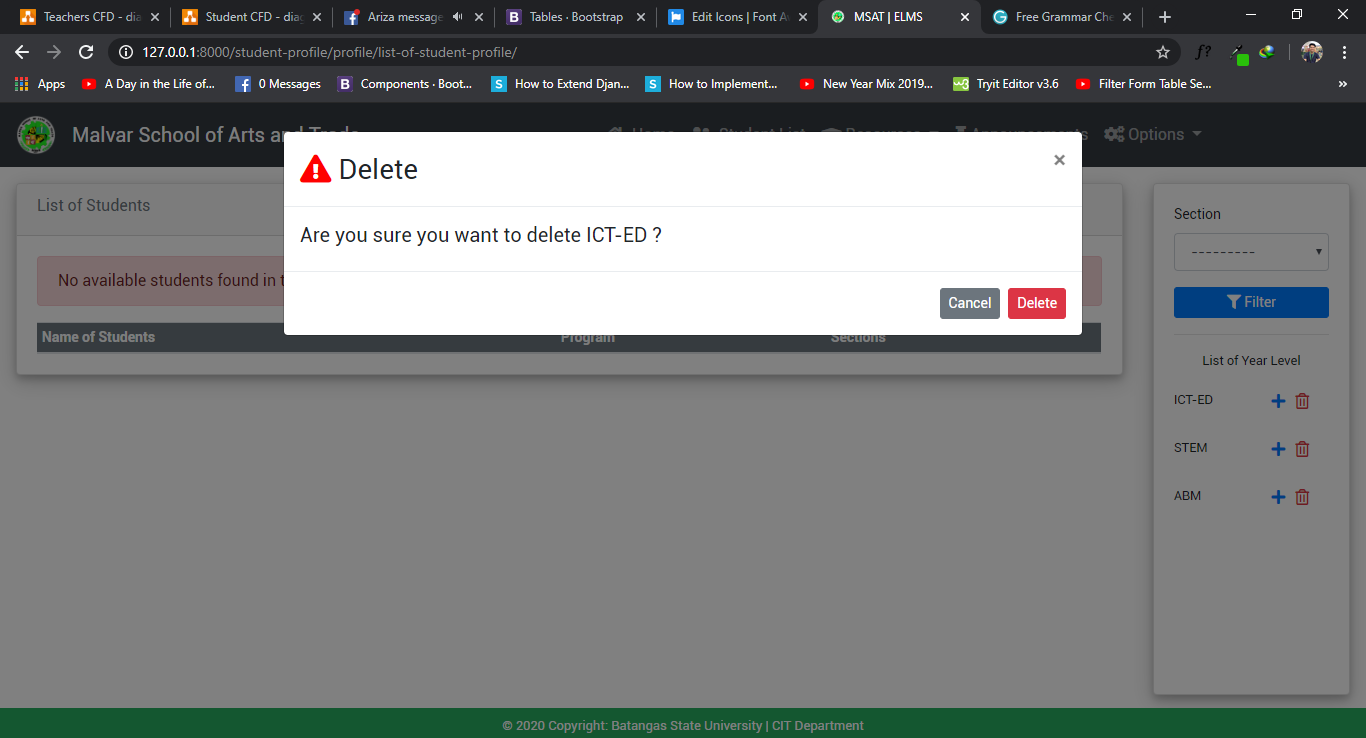
**Figure 7. Student Profile**

This shows the list of registered students in this system. Teachers can see the list of students based on their year level. On the right side of the system, teachers can use the filter feature to filter the list so that they can easily identify the students on different year level. Teachers can also see the created year level in the system and they have the choice of adding a new one or deleting a specific year level.



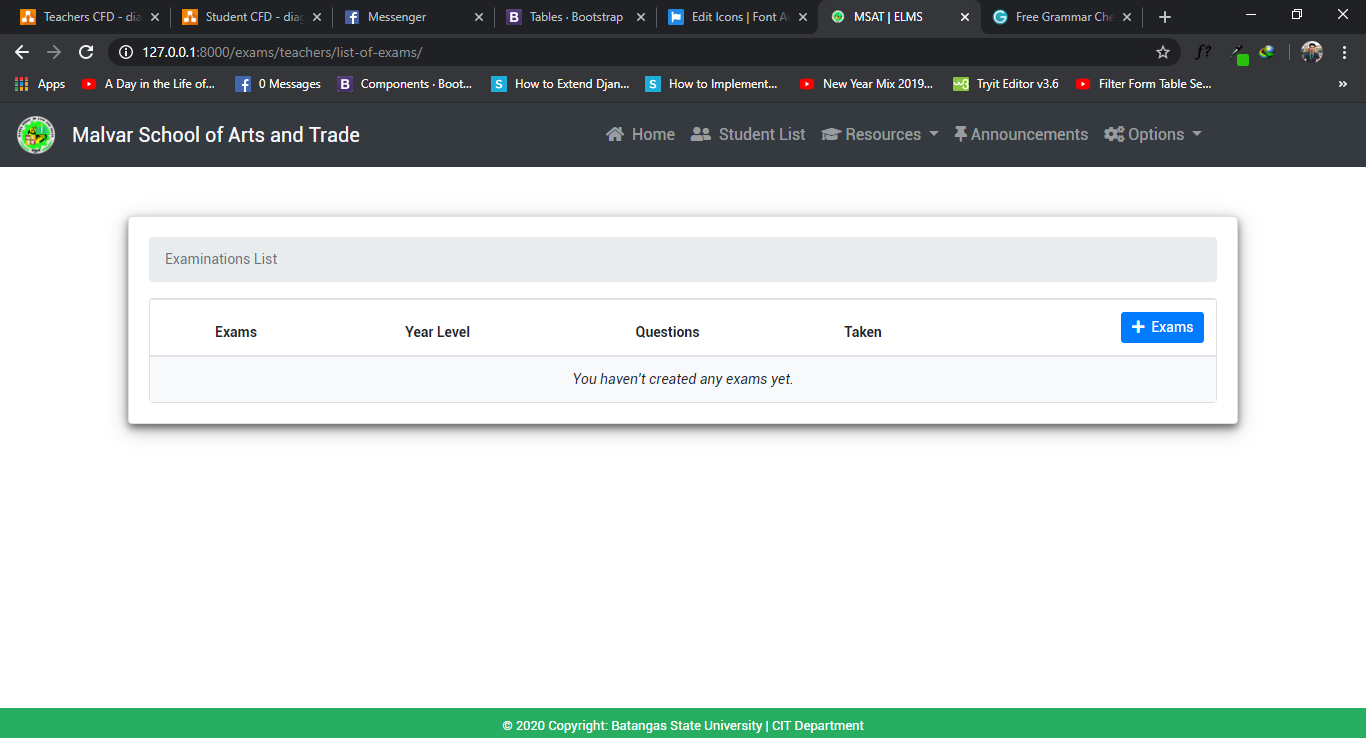
**Figure 8. Modal Form for adding a new year level**

This is the modal form for adding a new year level. Teachers can use this form if they want to add a year level for new students. This feature helps to maximize the user experience of every teacher.

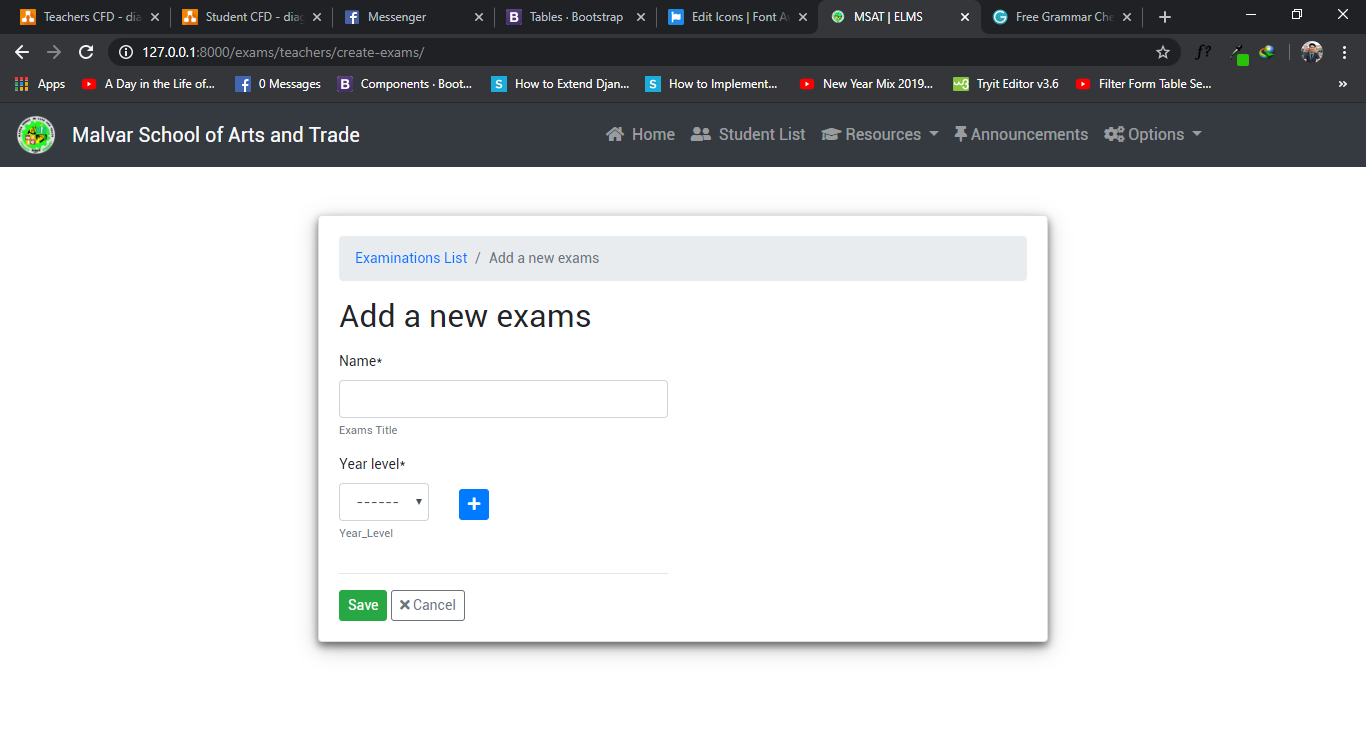


**Figure 9. Modal Form for deleting a year level**

This shows the modal form for deleting a year level. This will inform the teachers that they are planning to delete a specific year level and ask for the confirmation of the request.

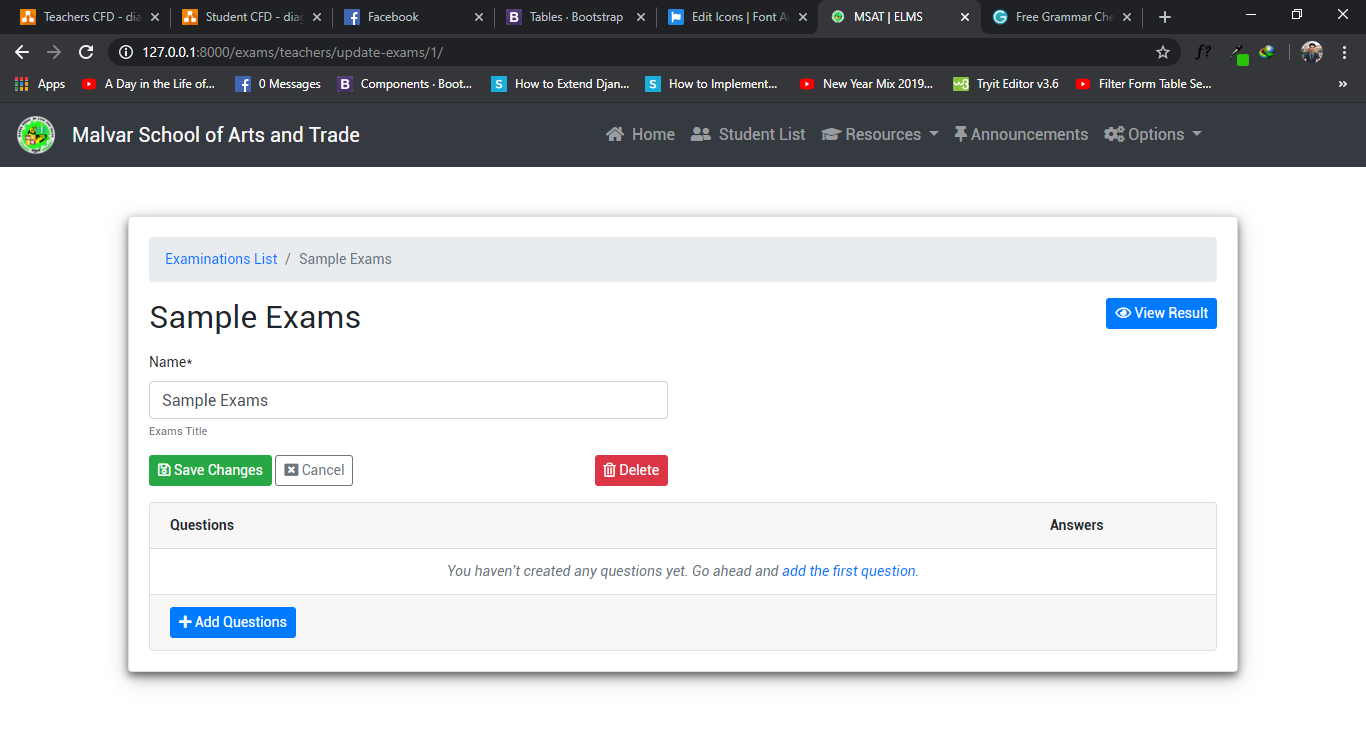


**Figure 10. Examinations list page**

 This shows the list of created exams by teachers. The teachers need to click the exams button in order to add a new exam.

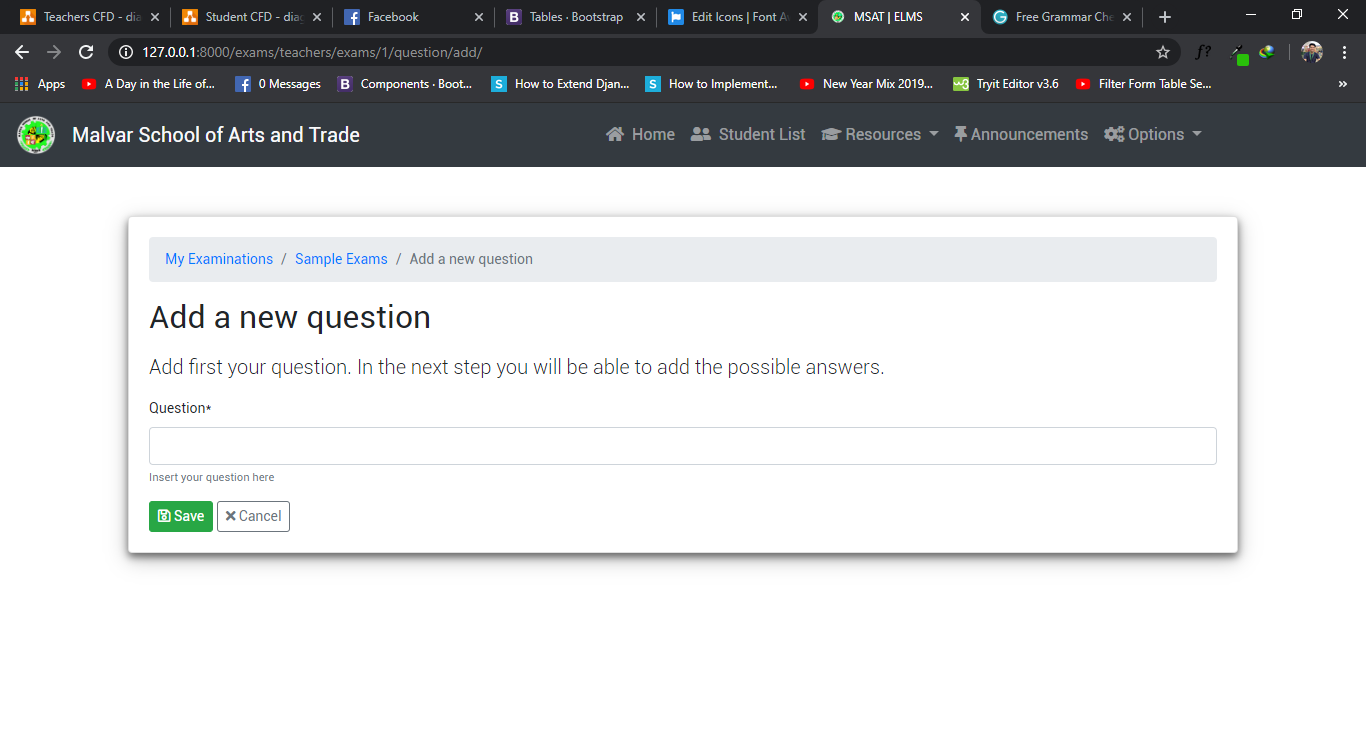
**Figure 11. Adding a new exams page**

This page shows the form for adding a new examination. Teachers need to fill up the name of the exams and choose the corresponding year level they want to create exams. Beside of the Year Level dropdown, there is a button that they can use if they want to add a new year level. Teachers must also click the save button to proceed in creating exams or cancel button if they decide to cancel.



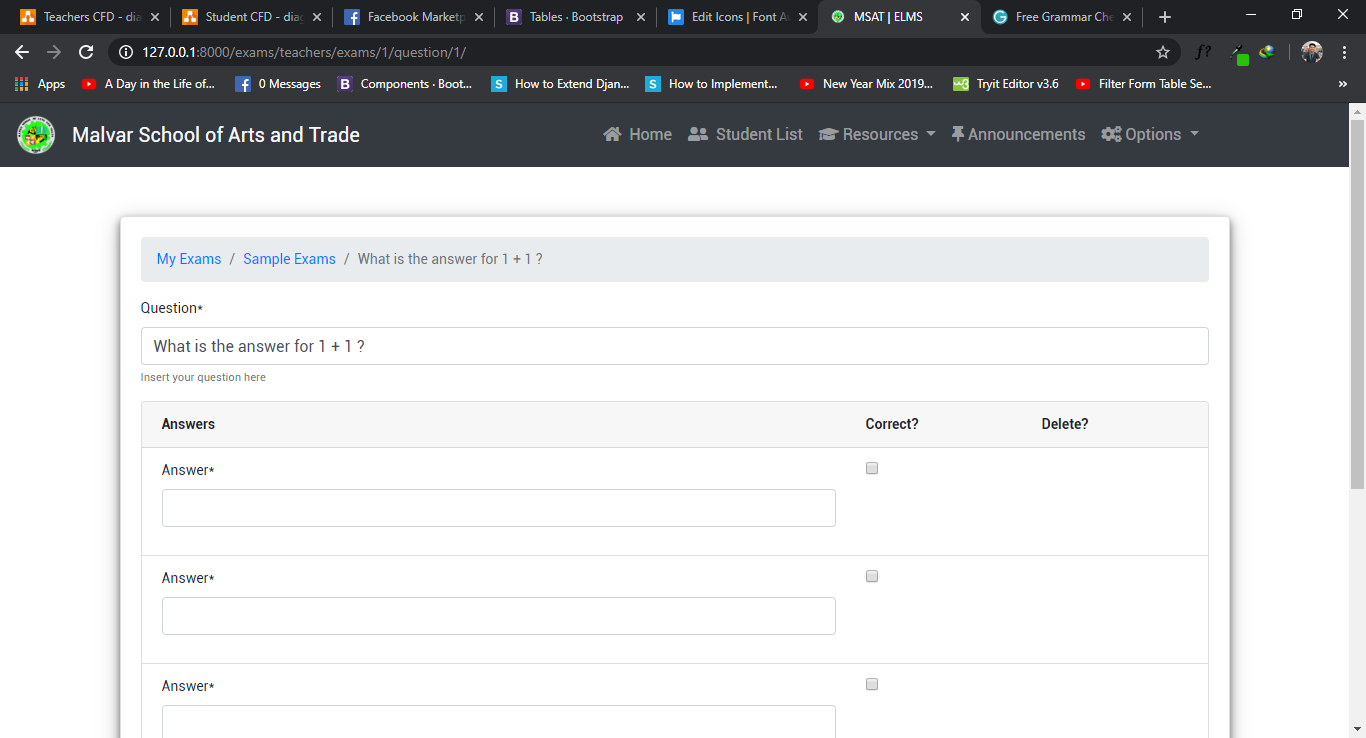
**Figure 12. List page of questions for examinations.**

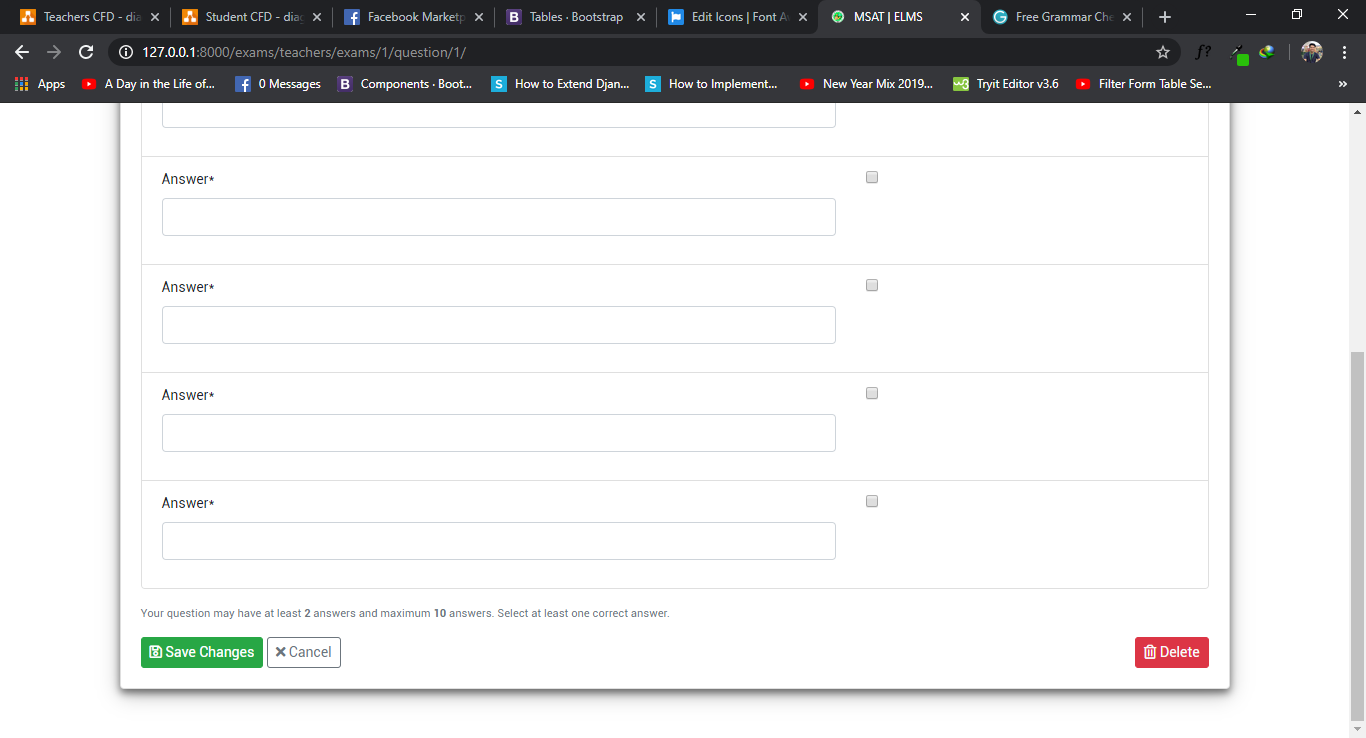
This page shows the list of available questions in creating exams. If the teachers are not yet adding a question, so they can click the add question button to add a question. There are also buttons for saving changes, canceling the exams, or deleting exams. On the top right corner, teachers can use the view result button if they want to see the students who took the exams and their corresponding scores.



**Figure 13. Adding an exam’s questions page**

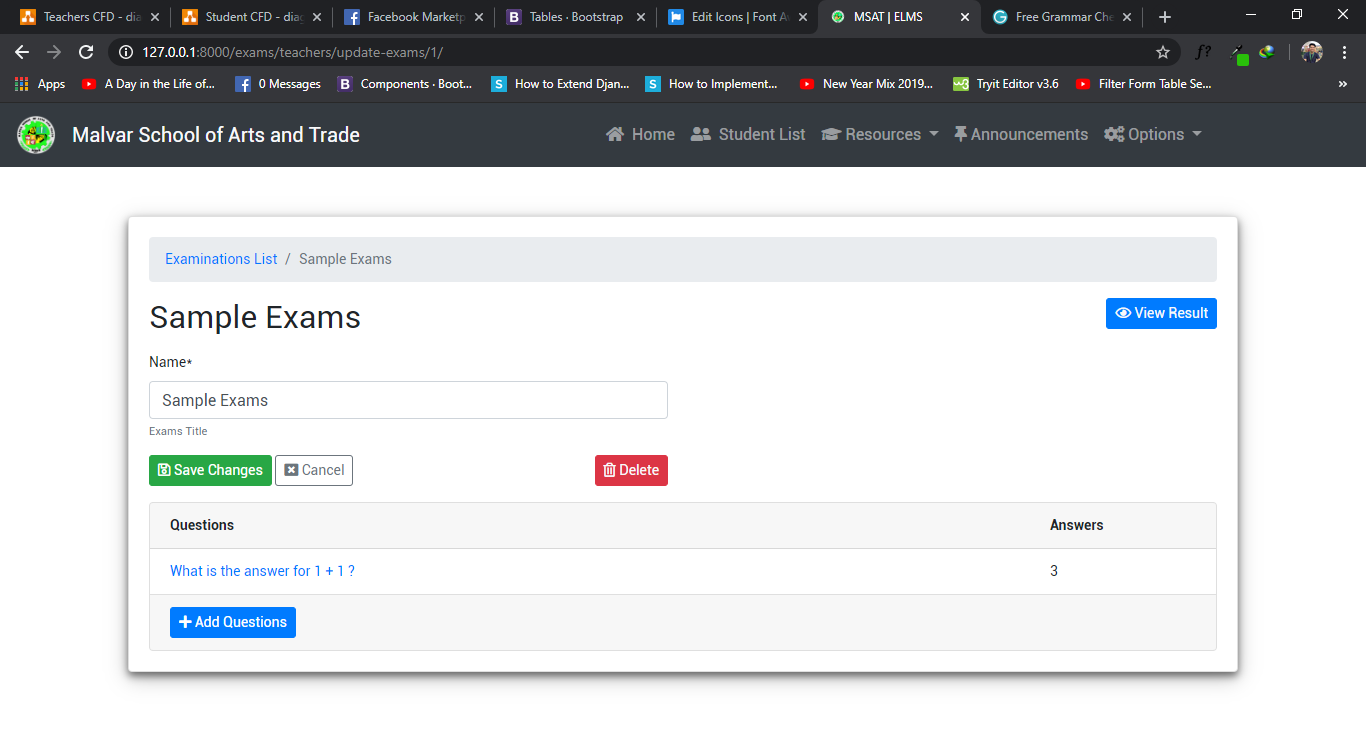
In this page, teachers can add questions for their created exams.





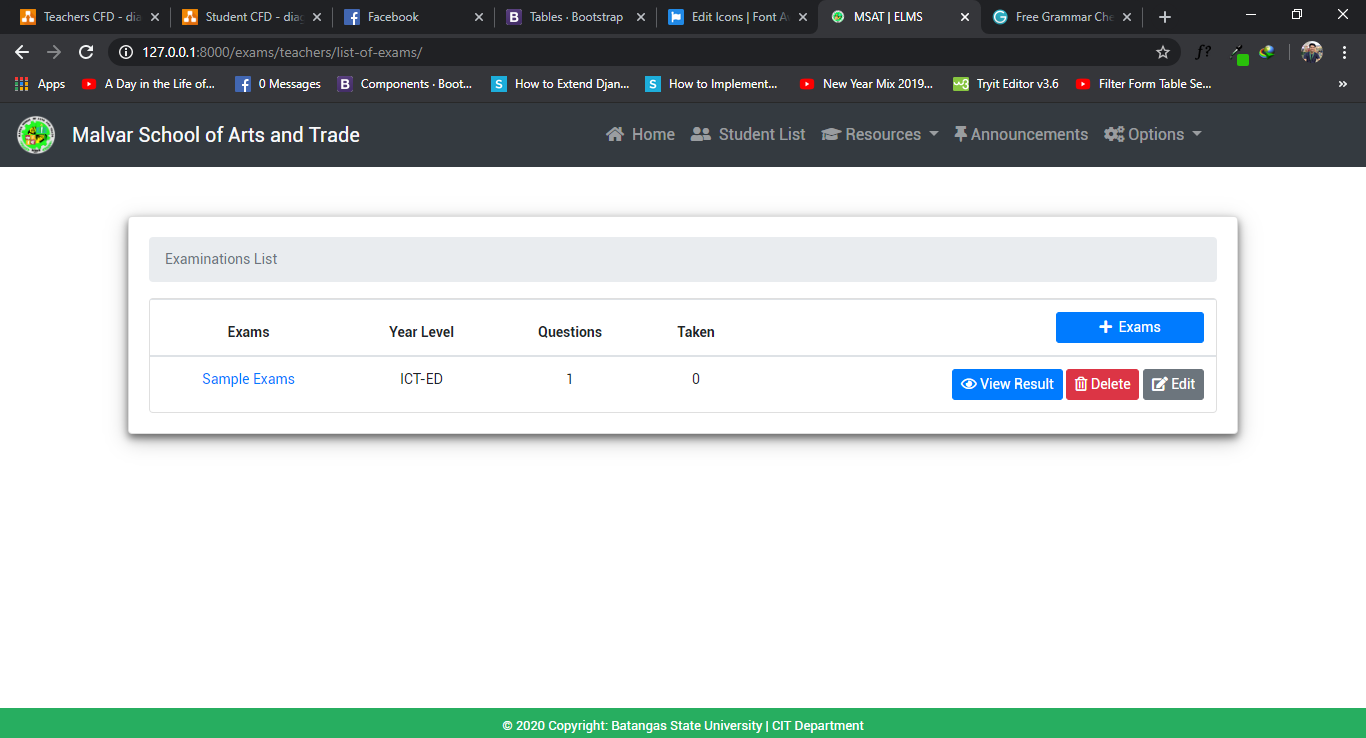
**Figure 14. Adding answers for examination’s question**

In this page, teachers can now add answers for their created questions. Teachers must add at least 2 answers choices and a maximum of 10 choices.



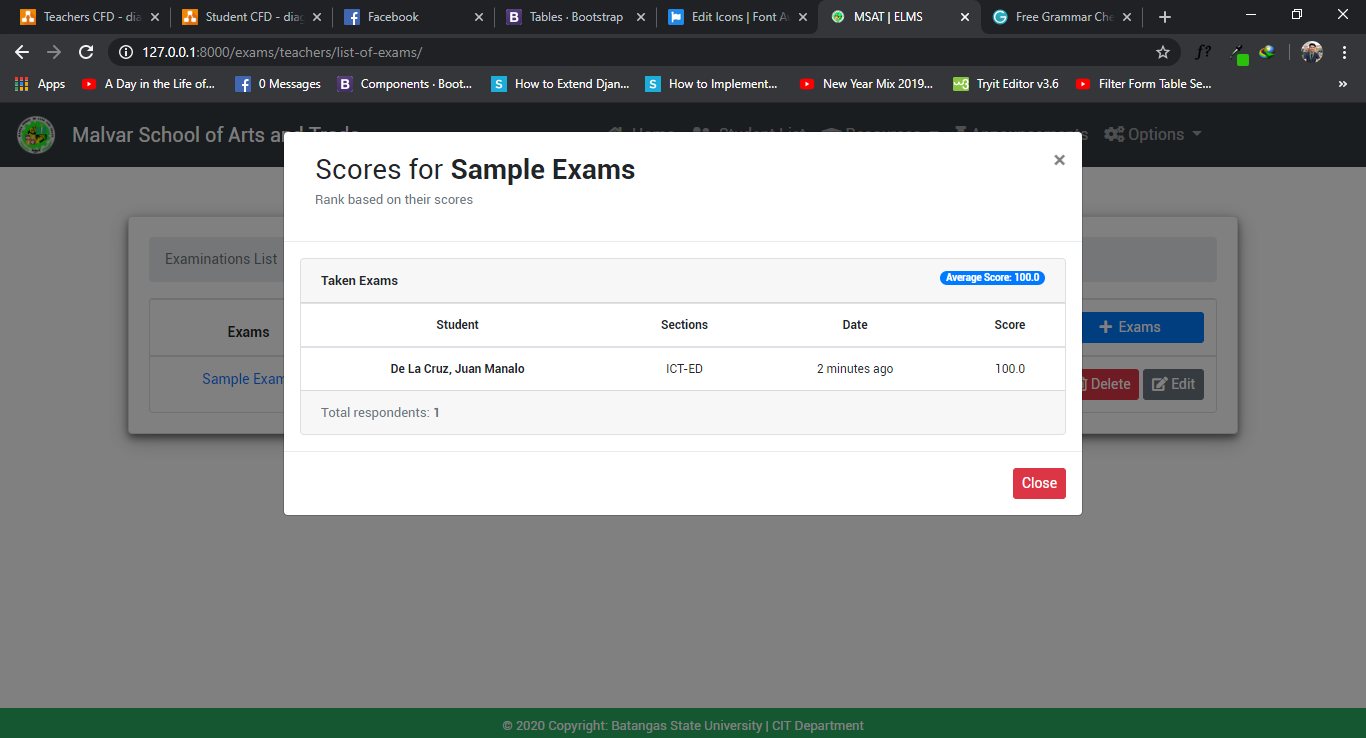
**Figure 15. List of created exam’s questions**

After the teachers create a questions and answer choices, they can now see this on exam’s questions list page.



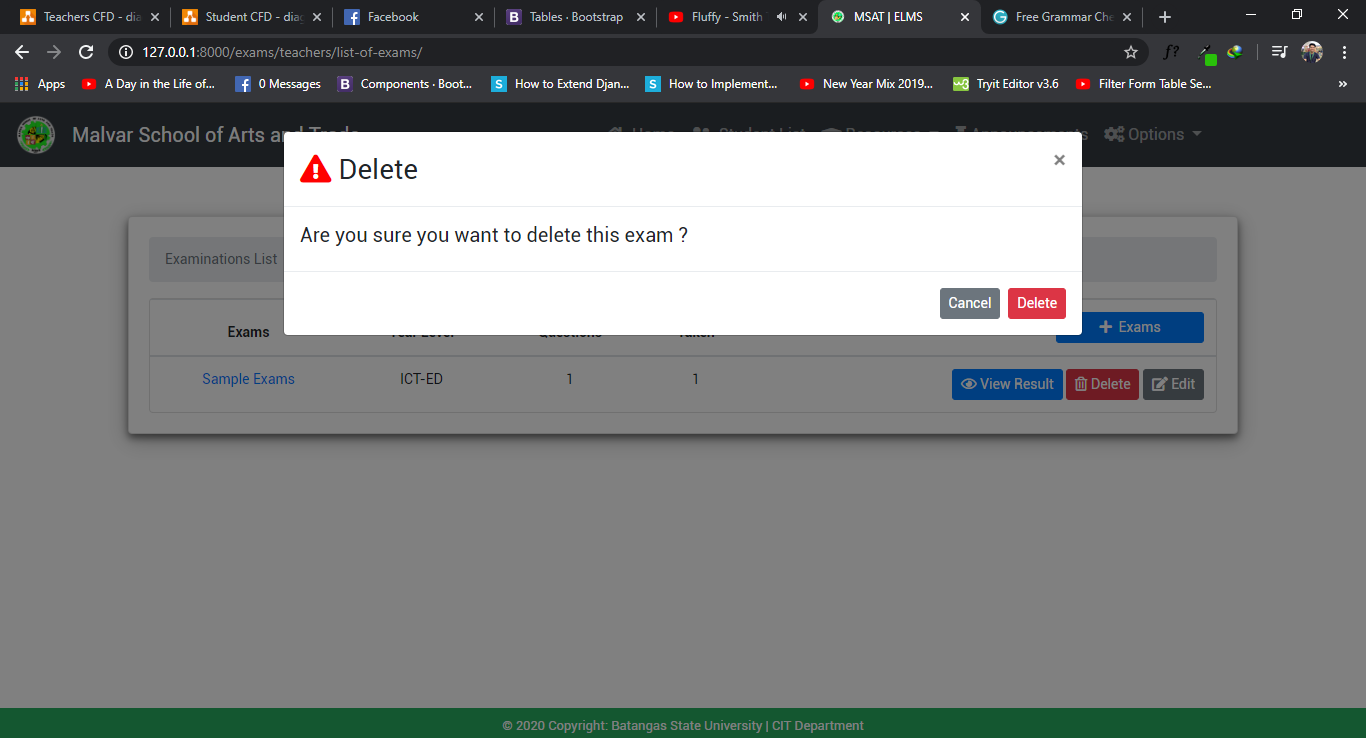
**Figure 16. List of created exams page**

This page shows the exams created by the teachers. They can now have the choices for viewing the results, deleting exams or editing it again.

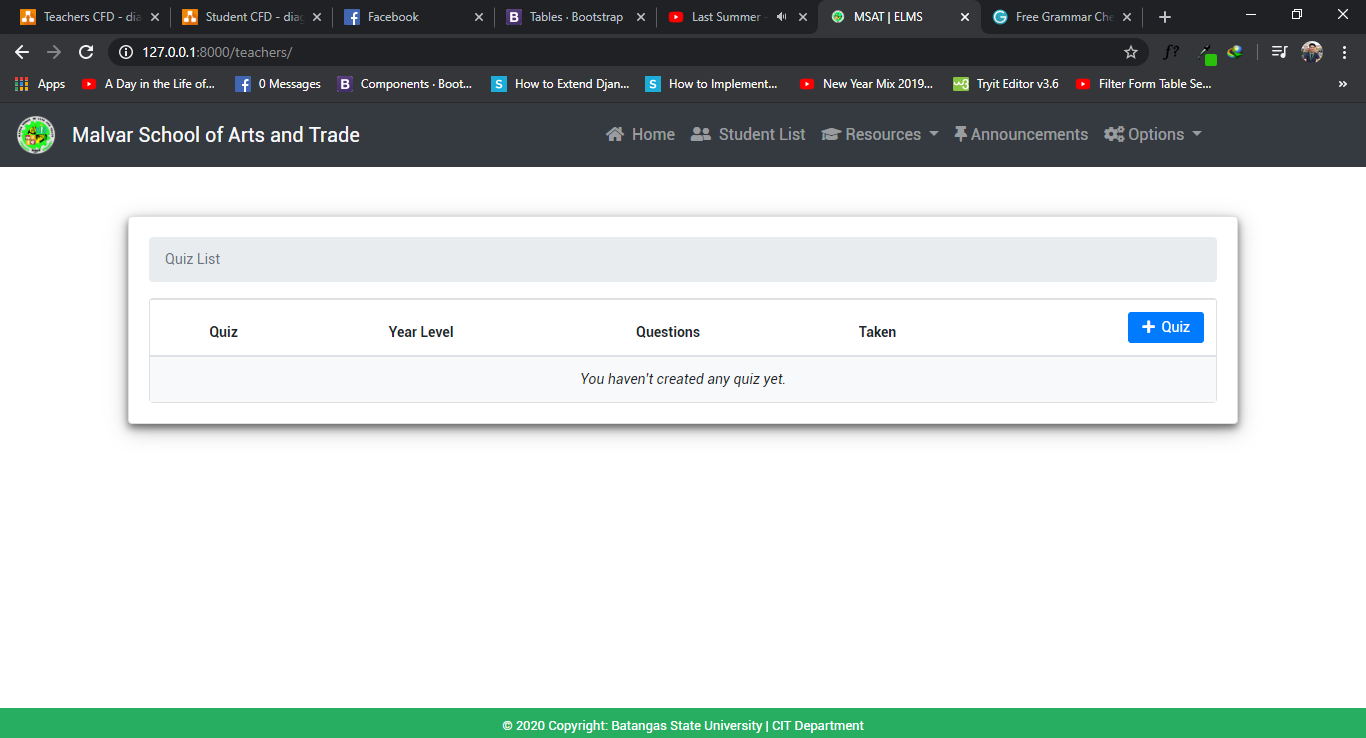


**Figure 17. Results page of scores and students who took the exam**

This modal form shows if the teachers click the view result button. Teachers can now see the list of students who took the exams and their scores. The ranking of the list will be based on their scores. Teachers can also see the time of when the students take the exams.

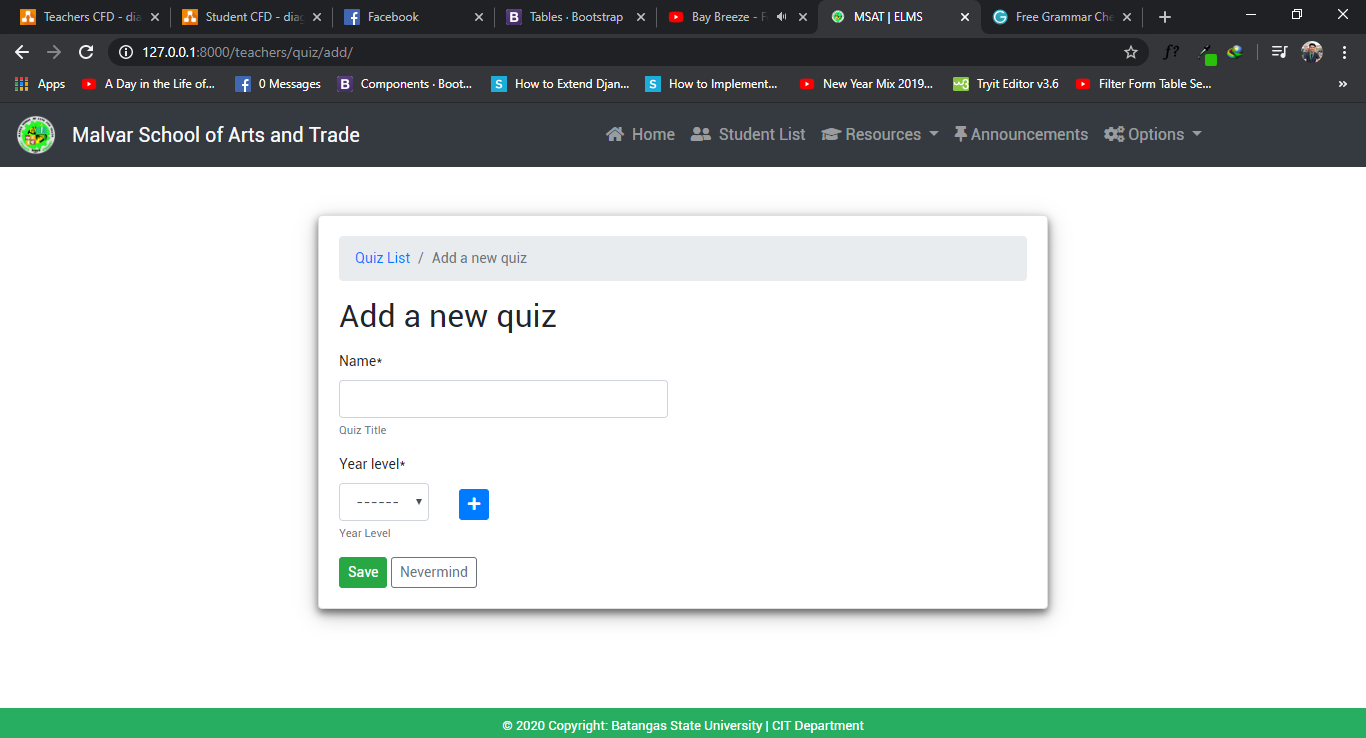


**Figure 18. Modal Form for deleting an exams**

 This modal form shows the confirmation for the teachers that they want to delete an exam.

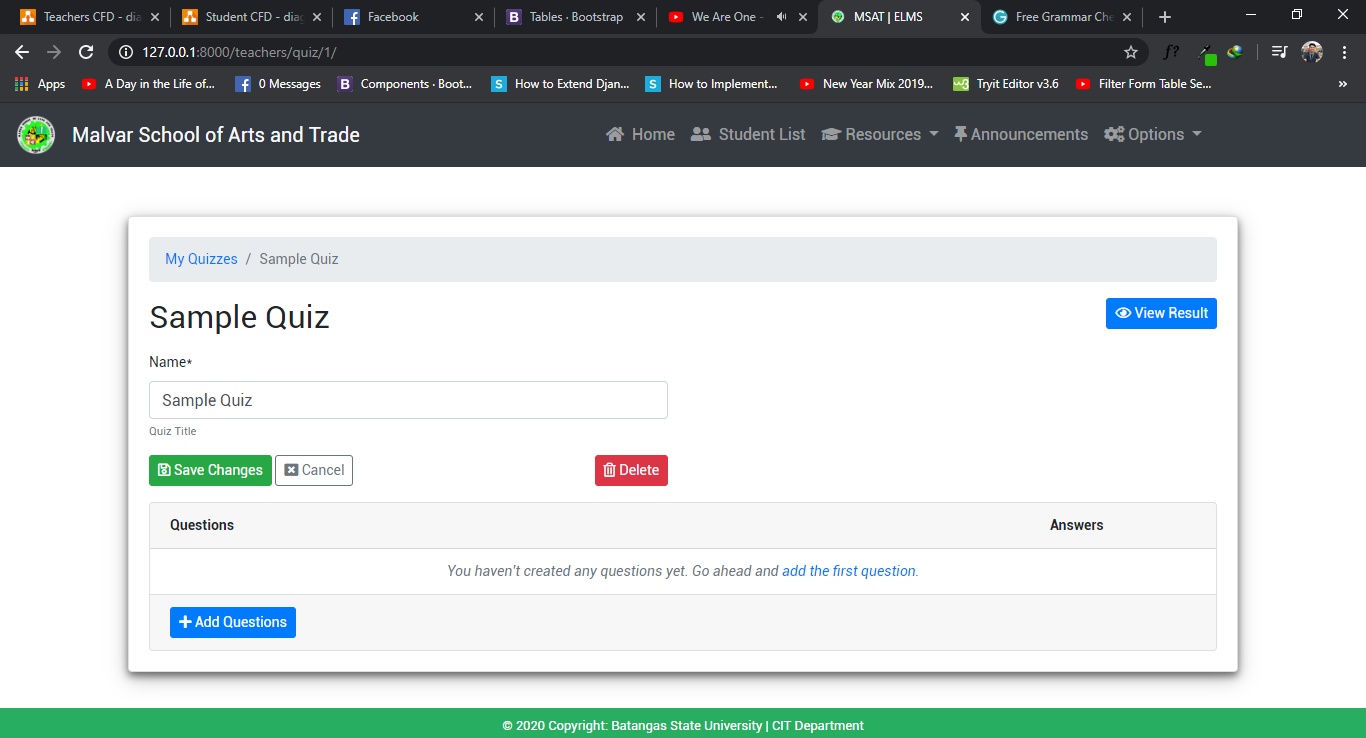
**Figure 19. Quiz List page**

This shows the list of created quizzes by teachers. The teachers need to click the quiz button in order to add a new quiz.

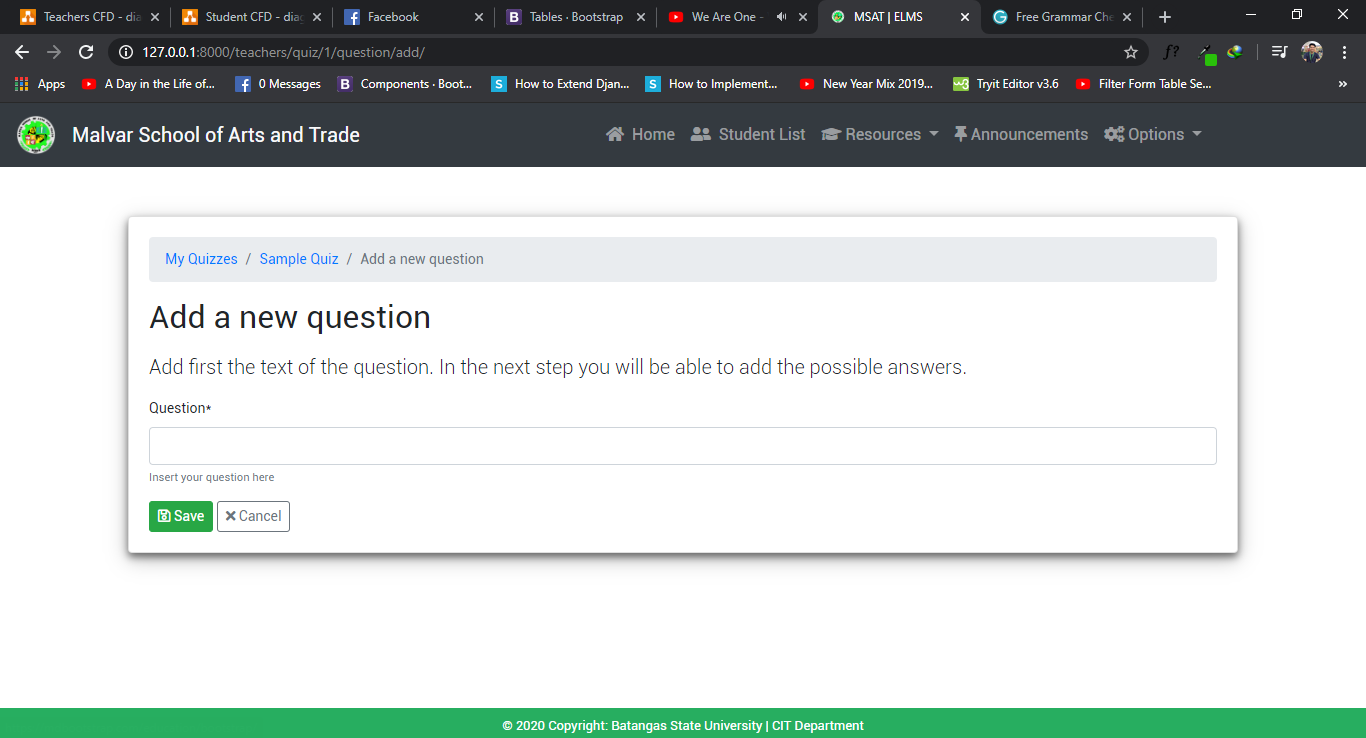


**Figure 20. Adding a new quiz page**

This page shows the form for adding a new quiz. Teachers need to fill up the name of the quiz and choose the corresponding year level they want to create quiz. Beside of the Year Level dropdown, there is a button that they can use if they want to add a new year level. Teachers must also click the save button to proceed in creating quiz or cancel button if they decide to cancel.

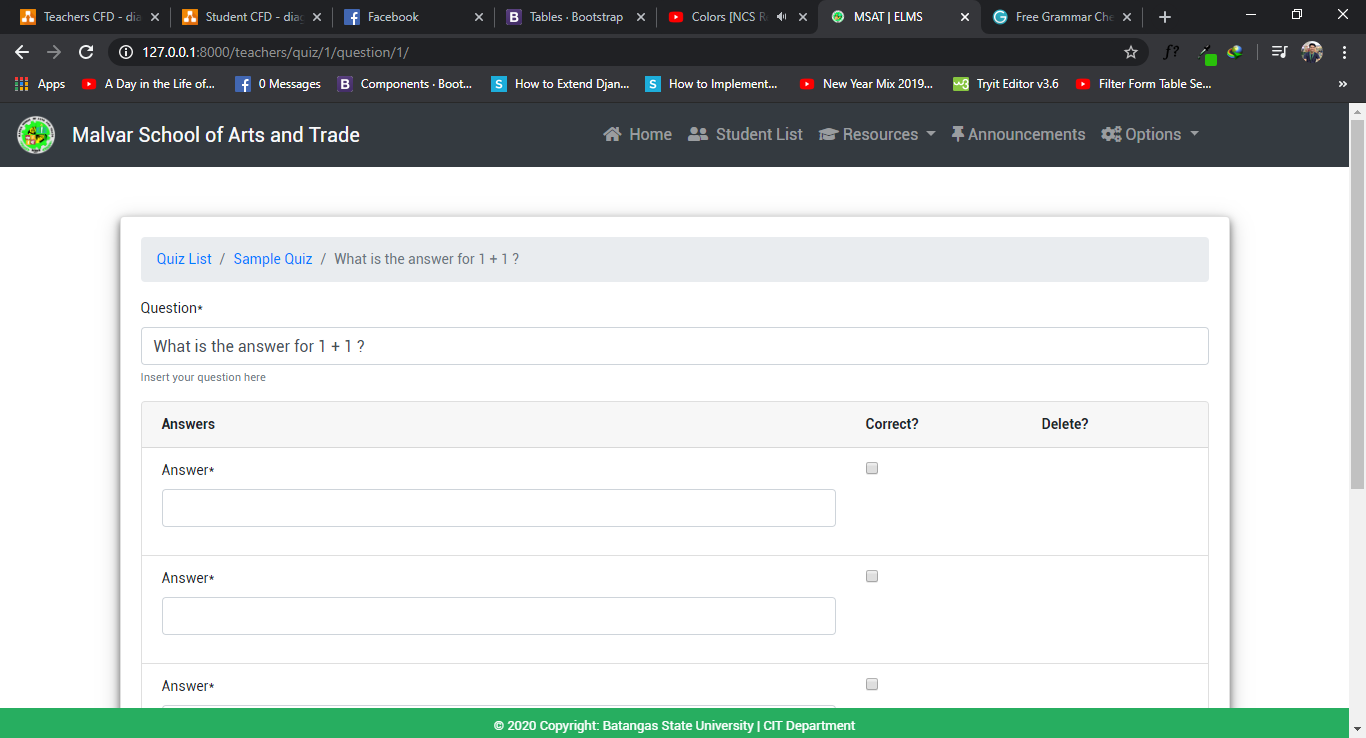


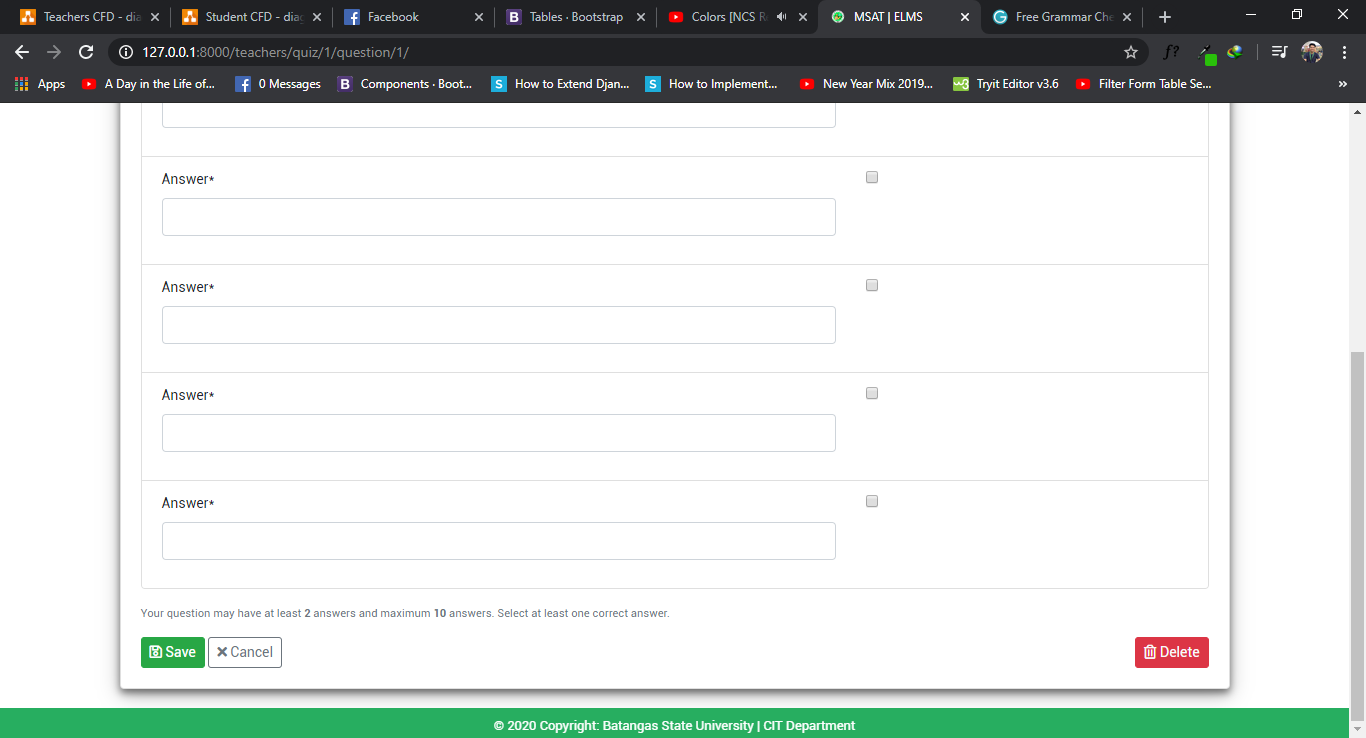
**Figure 21. List page of questions for quizzes.**

 This page shows the list of available questions in creating quiz. If the teachers are not yet adding a question, so they can click the add question button to add a question. There are also buttons for saving changes, canceling the quiz, or deleting quiz. On the top right corner, teachers can use the view result button if they want to see the students who took the quiz and their corresponding scores.

**Figure 22. Adding a quiz questions page**

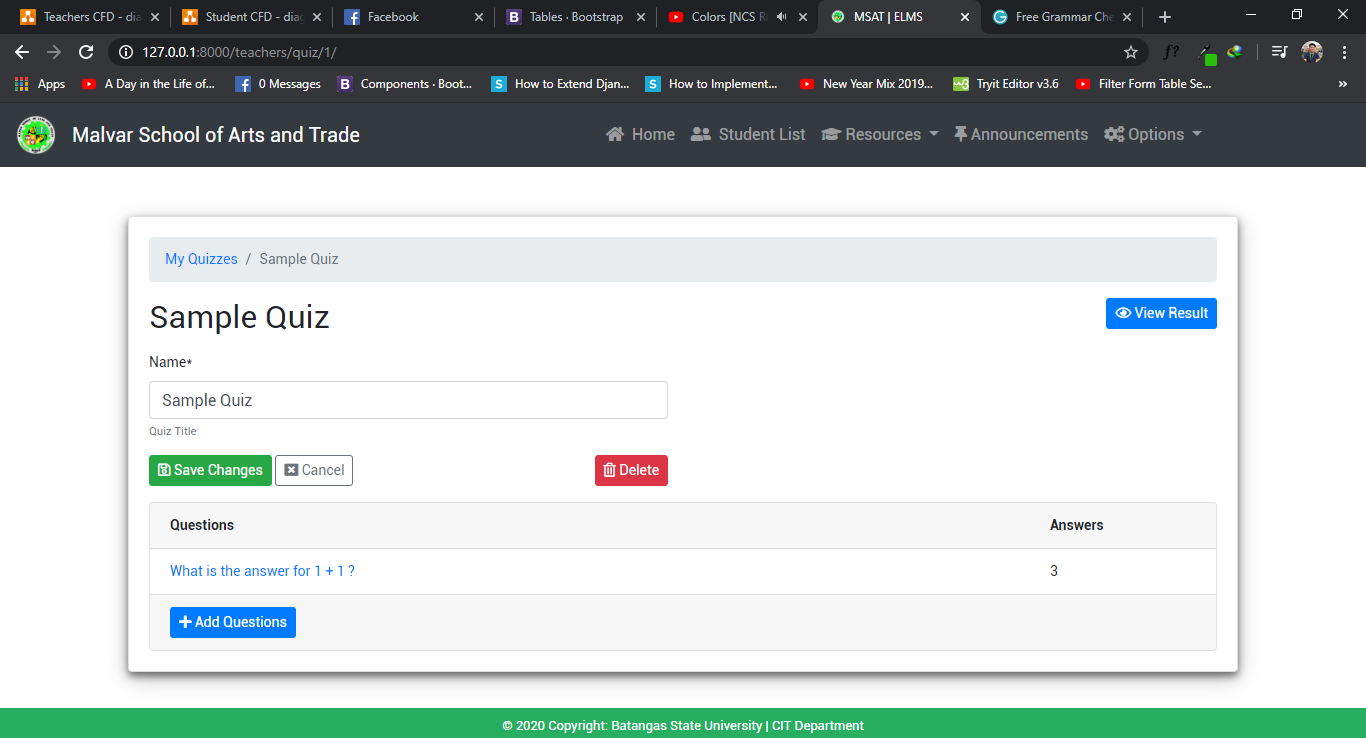
In this page, teachers can add questions for their created quiz.





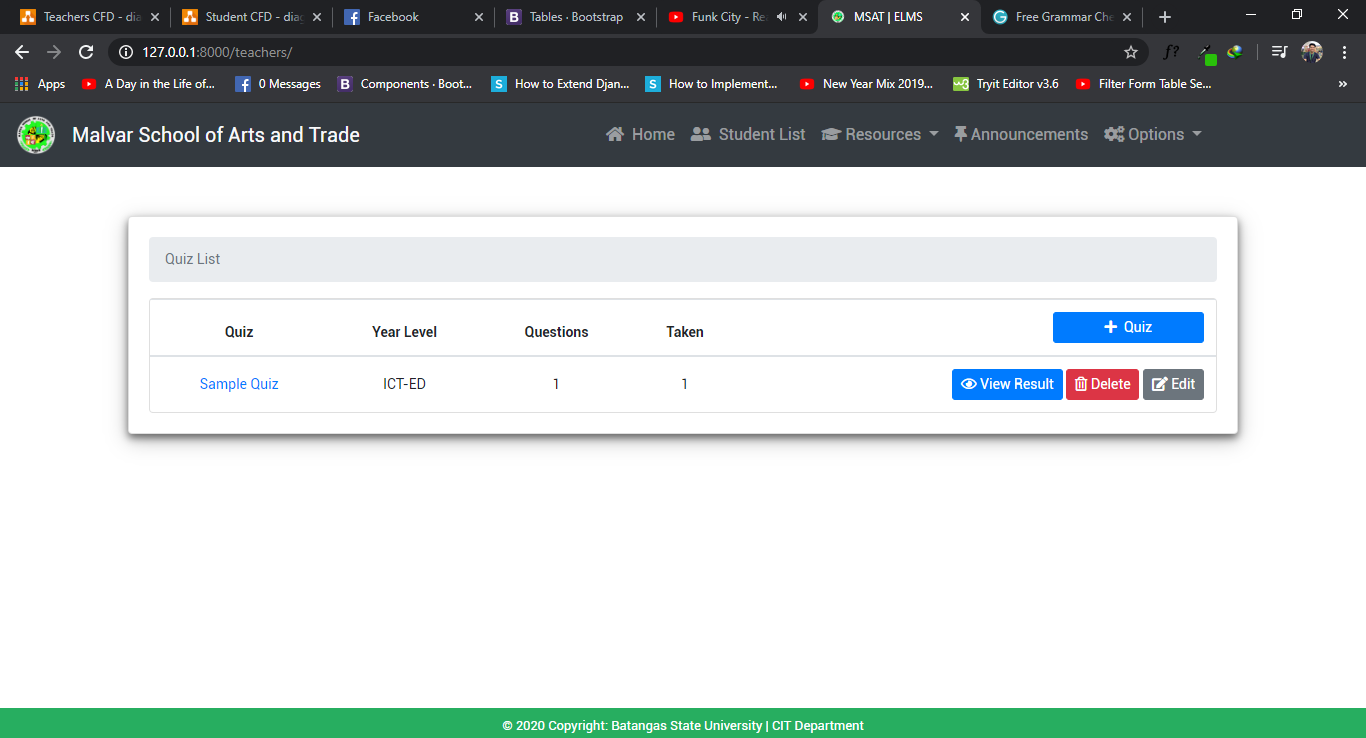
**Figure 23. Adding answers for quiz question**

In this page, teachers can now add answers for their created questions. Teachers must add at least 2 answers choices and a maximum of 10 choices.



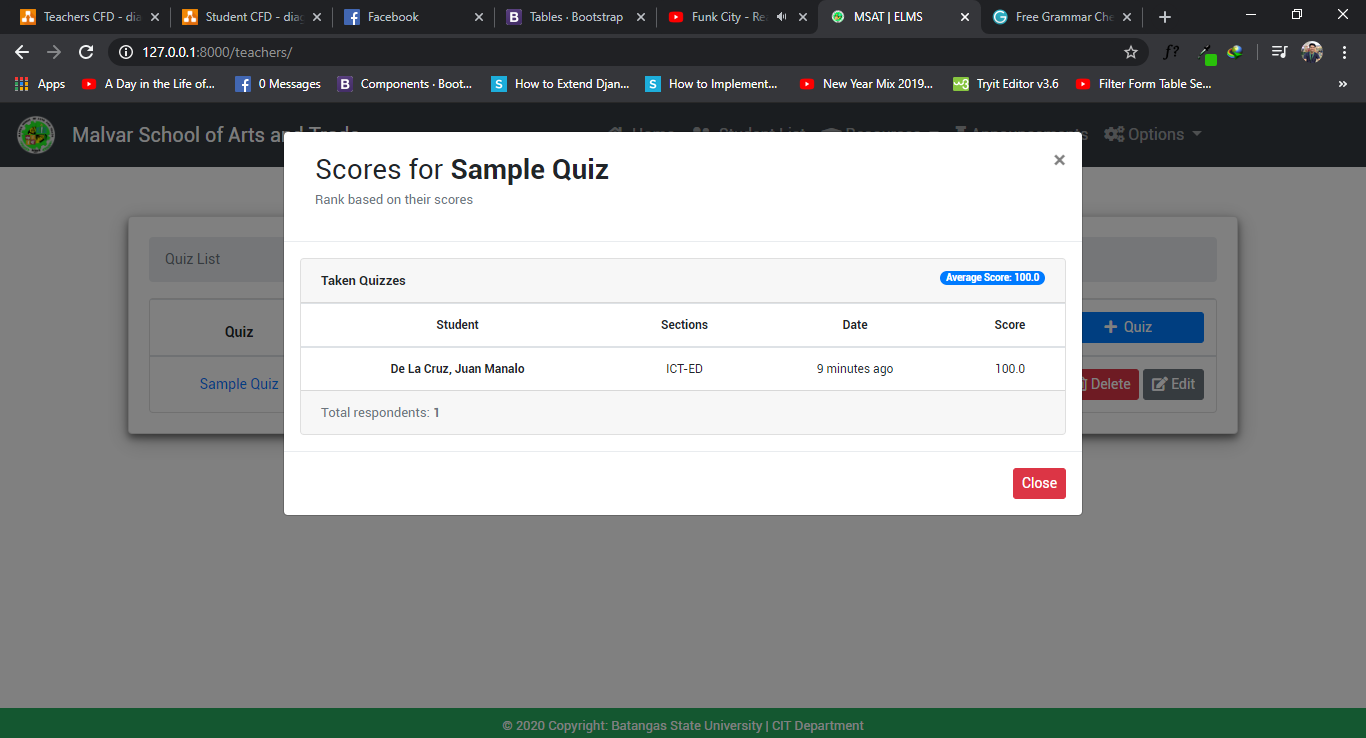
**Figure 24. List of created exams page**

This page shows the exams created by the teachers. They can now have the choices for viewing the results, deleting exams or editing it again.

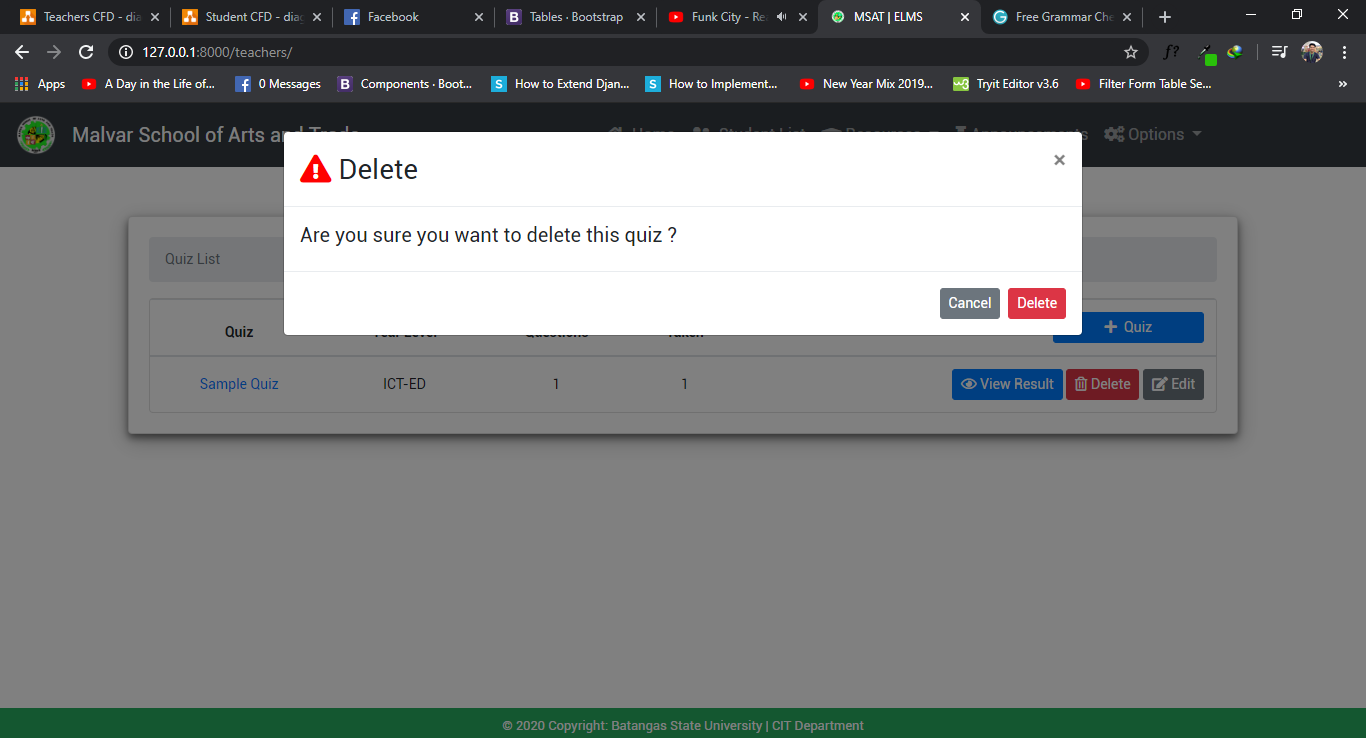


**Figure 25. List of created quiz page**

This page shows the quiz created by the teachers. They can now have the choices for viewing the results, deleting quiz or editing it again.

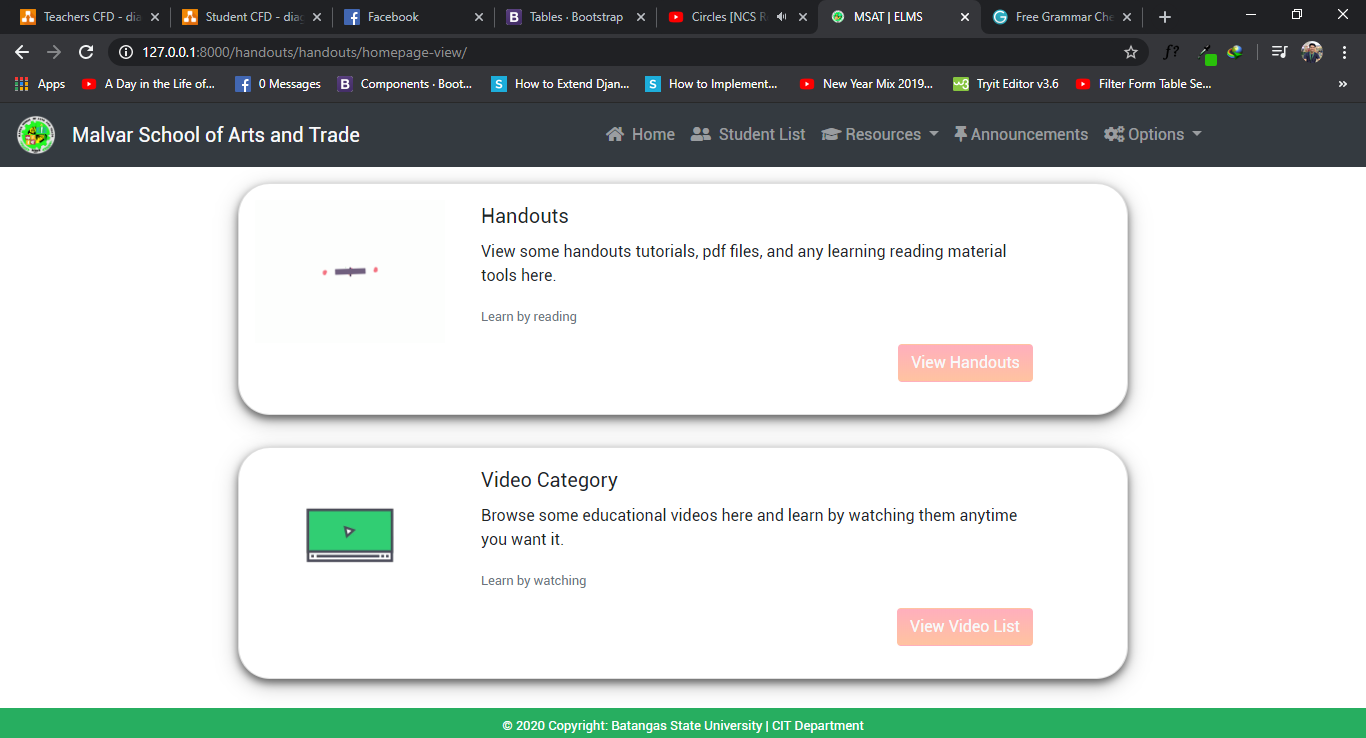


**Figure 26. Results page of scores and students who took the quiz**

 This modal form shows if the teachers click the view result button. Teachers can now see the list of students who took the quiz and their scores. The ranking of the list will be based on their scores. Teachers can also see the time of when the students take the quiz.

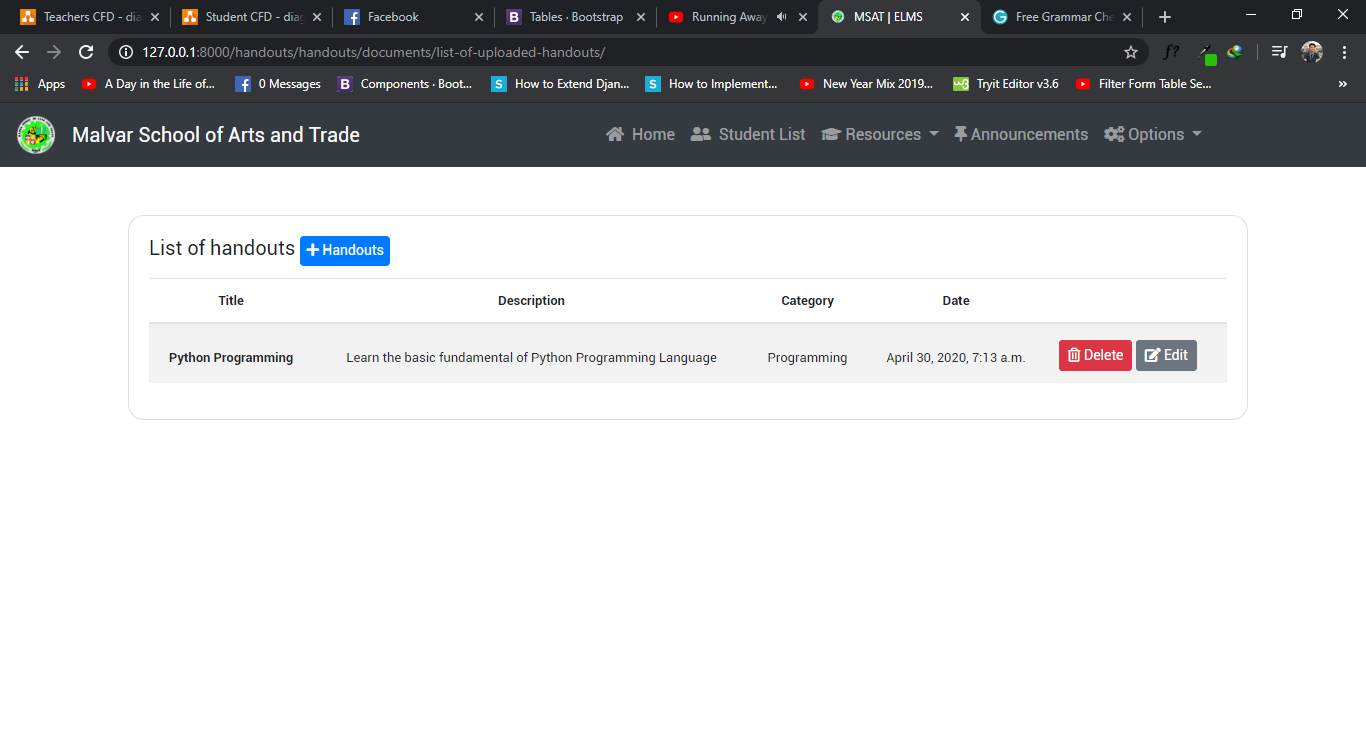
**Figure 27. Modal Form for deleting a quiz**

This modal form shows the confirmation for the teachers that they want to delete a quiz.



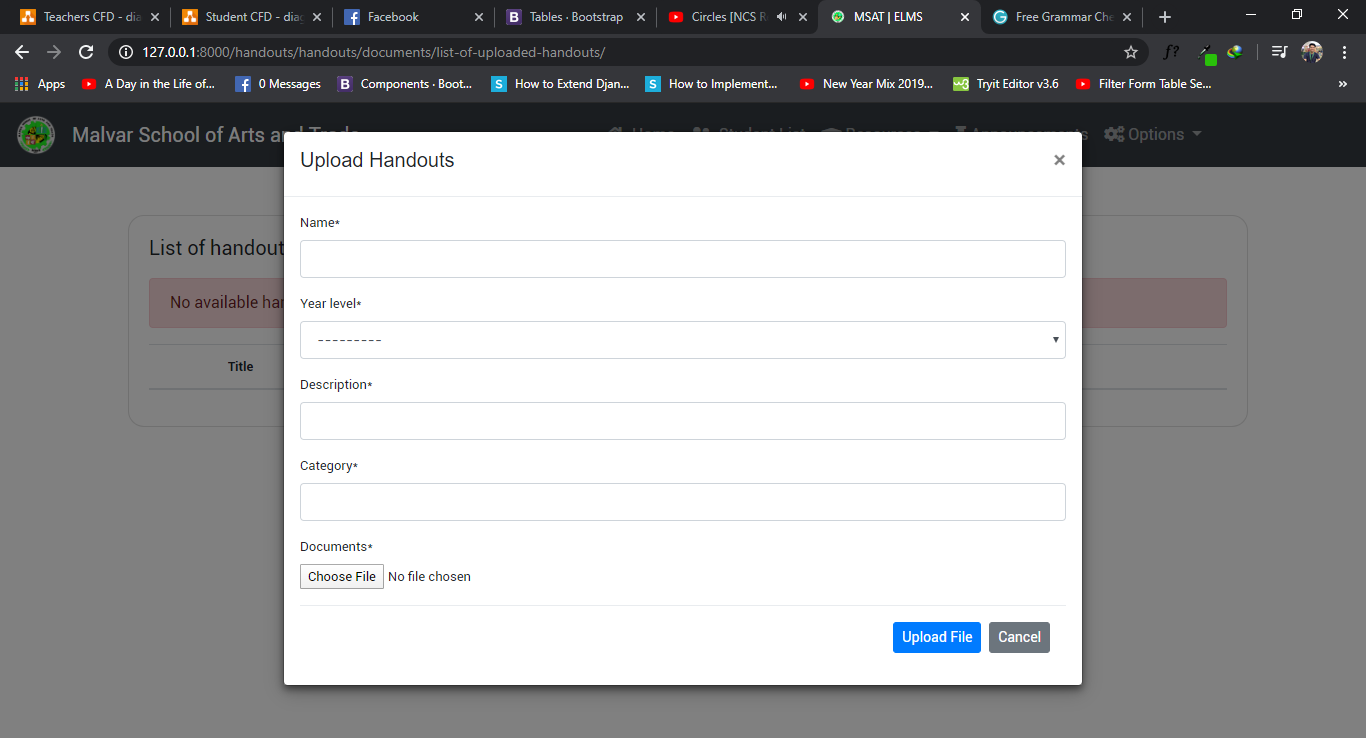
**Figure 28. Resources page for Handouts and Video Category**

This page shows the menu for handouts and video category.



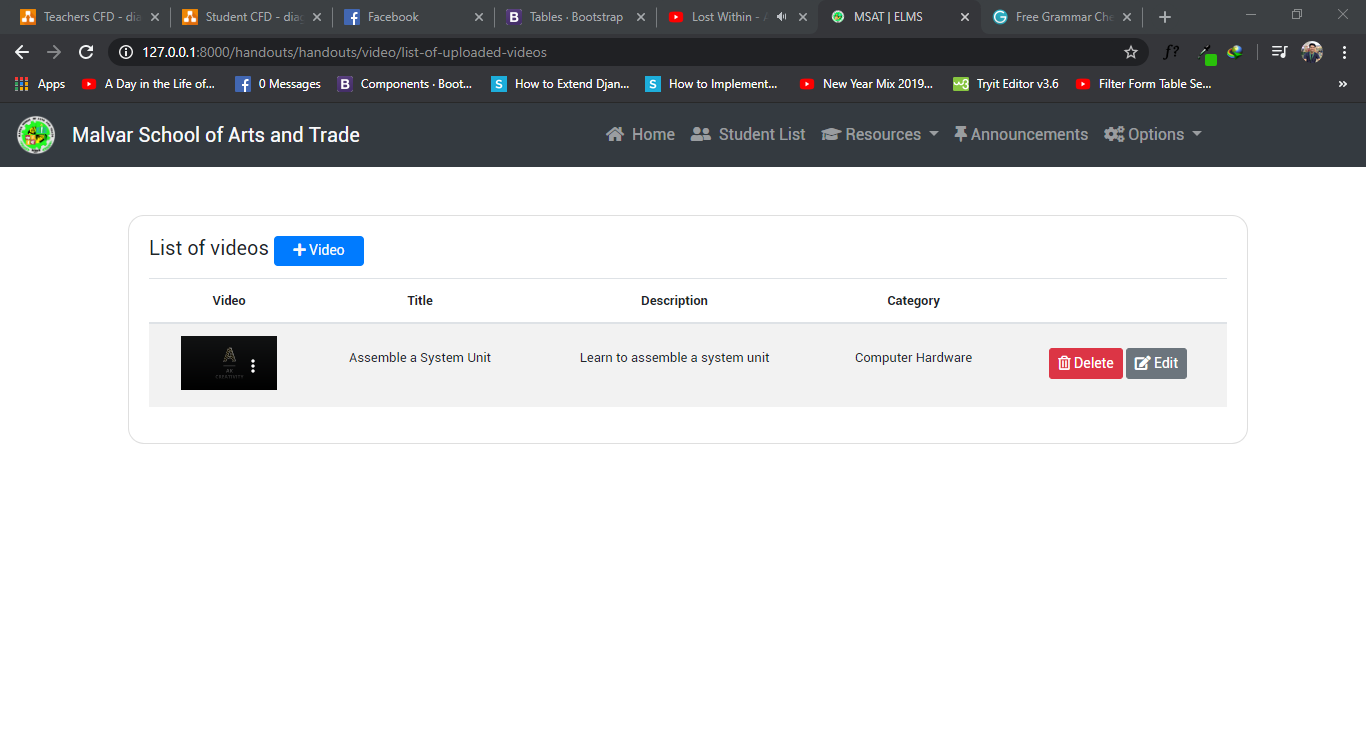
**Figure 29. List of uploaded handouts**

This page shows the list of uploaded handouts made by the teachers.



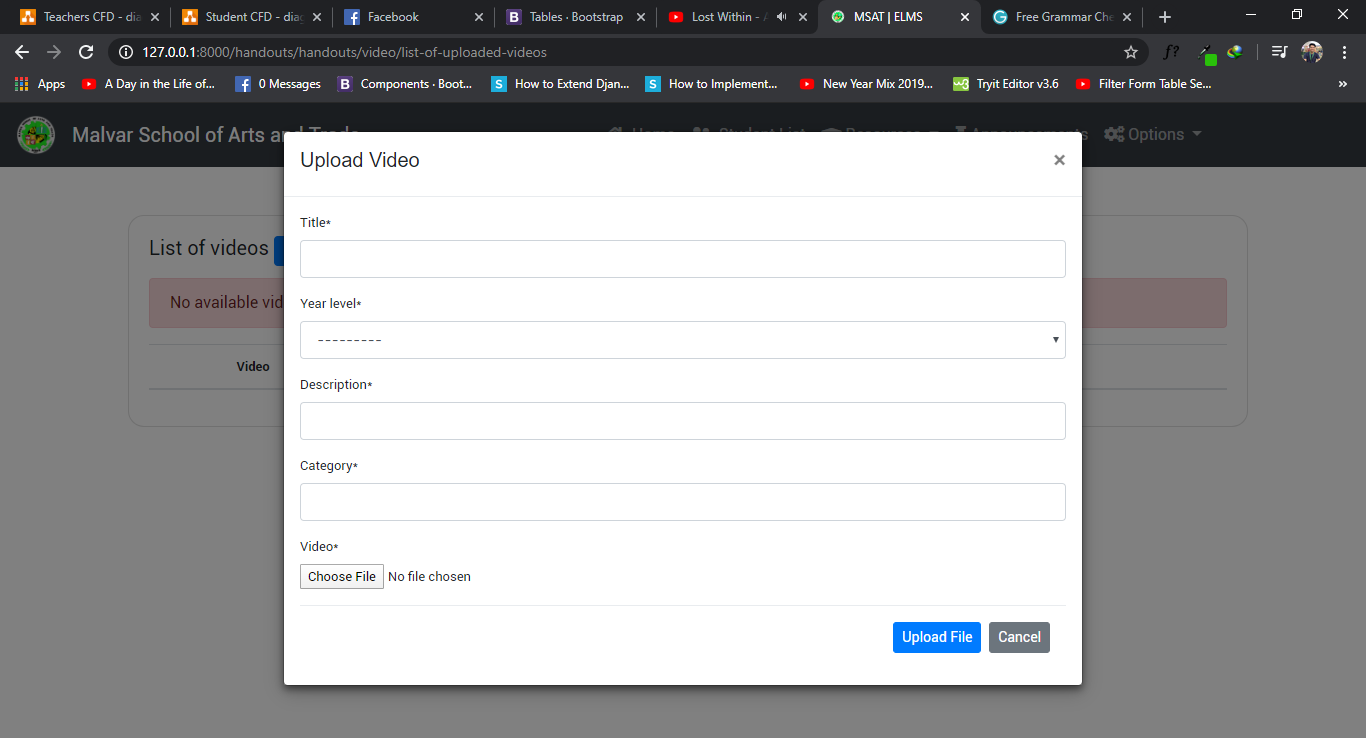
**Figure 30. Uploading a Handouts**

This modal form is used by the teachers if they are going to upload a handout. Teachers need to fill up the handout’s name, year level, description, category, and choose the file they want to upload.



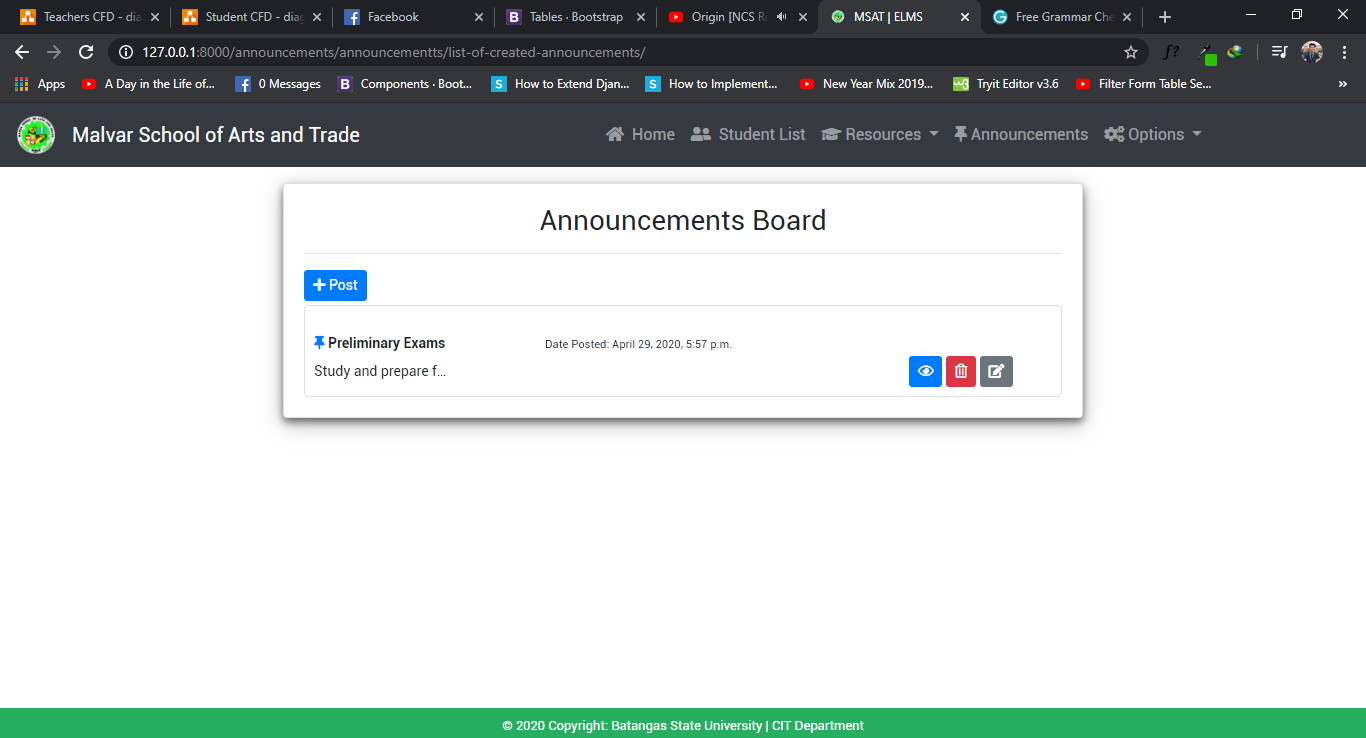
**Figure 31. List of uploaded videos**

This page shows the list of uploaded videos made by the teachers.



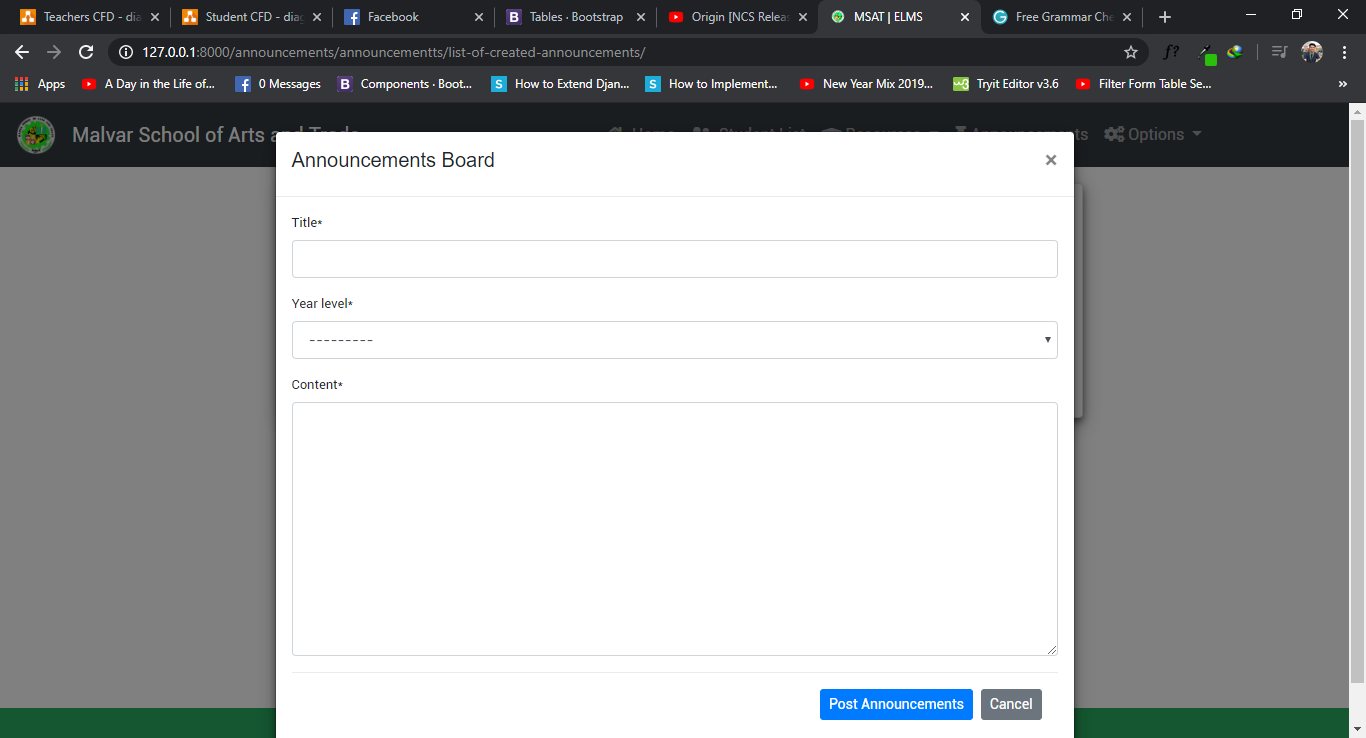
**Figure 32. Uploading a Video**

This modal form is used by the teachers if they are going to upload a video. Teachers need to fill up the video’s name, year level, description, category, and choose the file they want to upload.



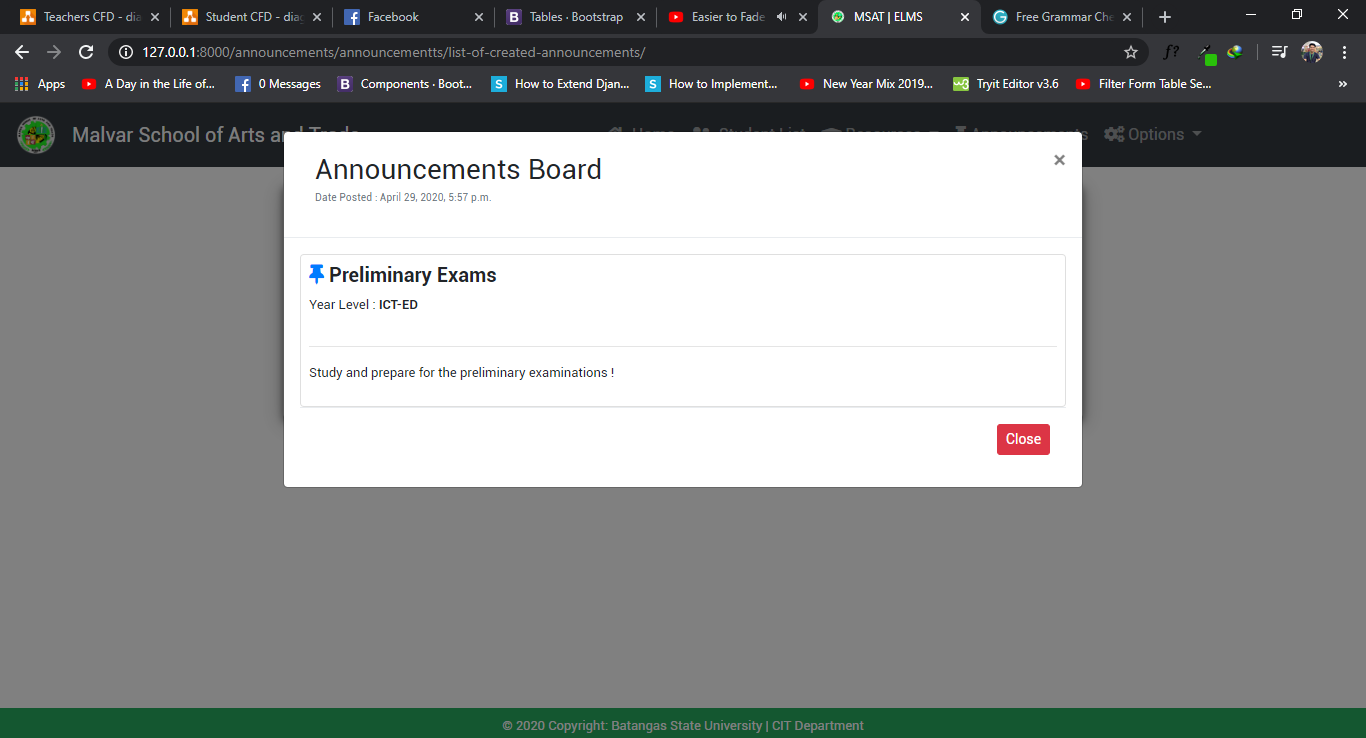
**Figure 33. Announcements Board**

This page shows the announcements board. Teachers can have the access to post new announcements, view, delete, or edit an announcement.



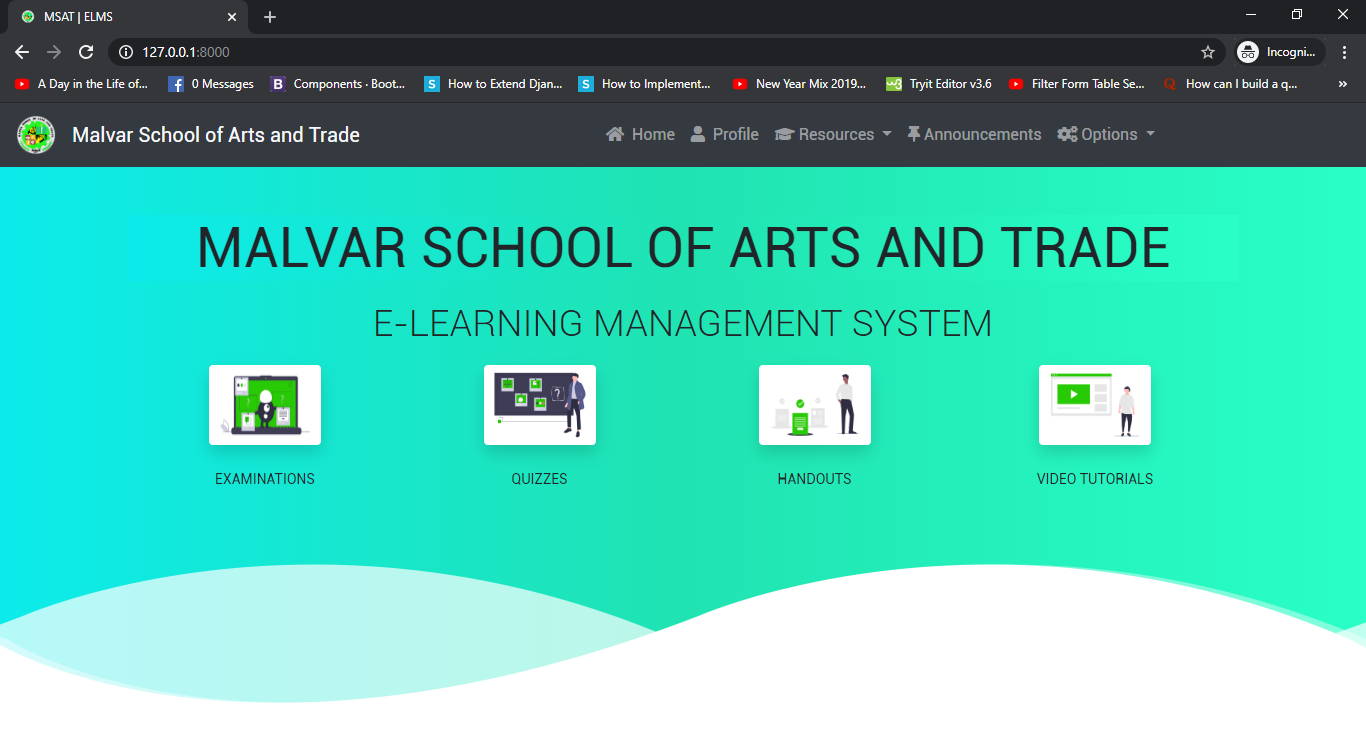
**Figure 34. Posting Announcements**

This modal form page is for creating a new announcement. Teachers can have access to this feature if they want to post a new announcement.

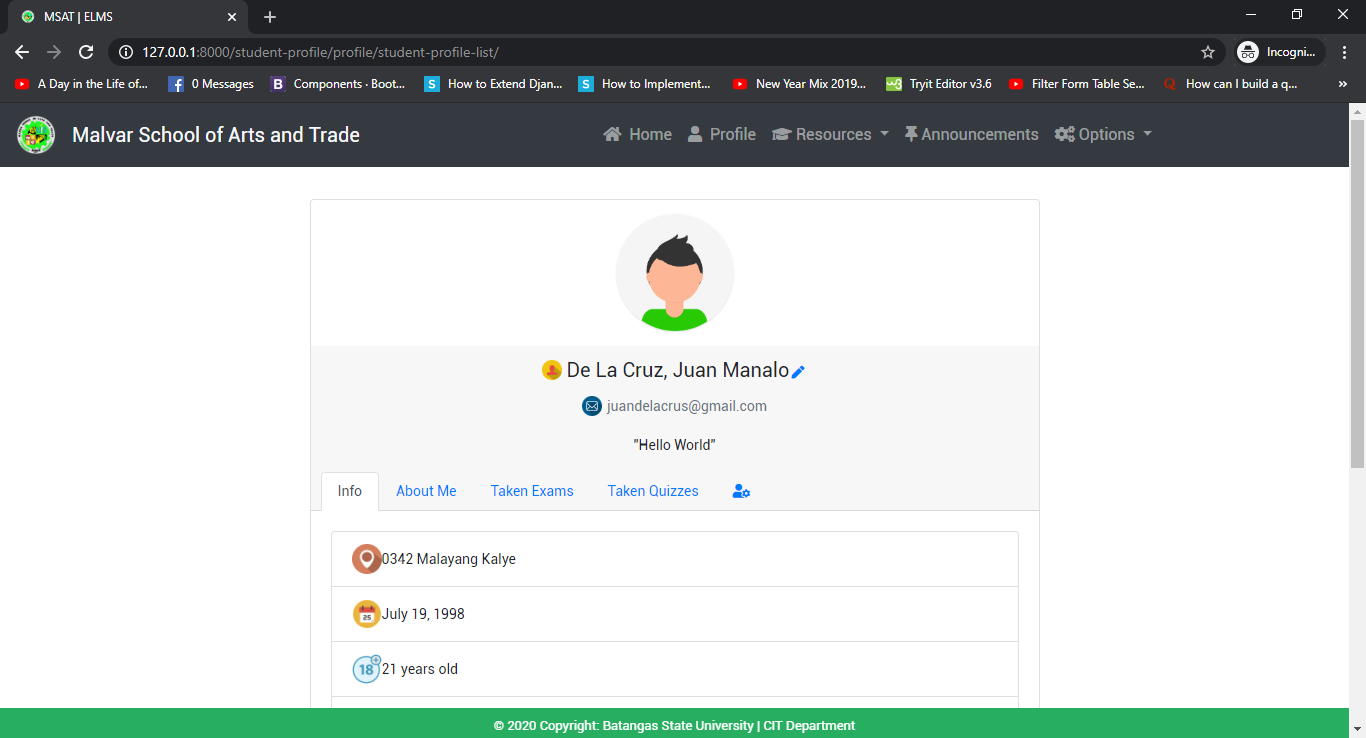


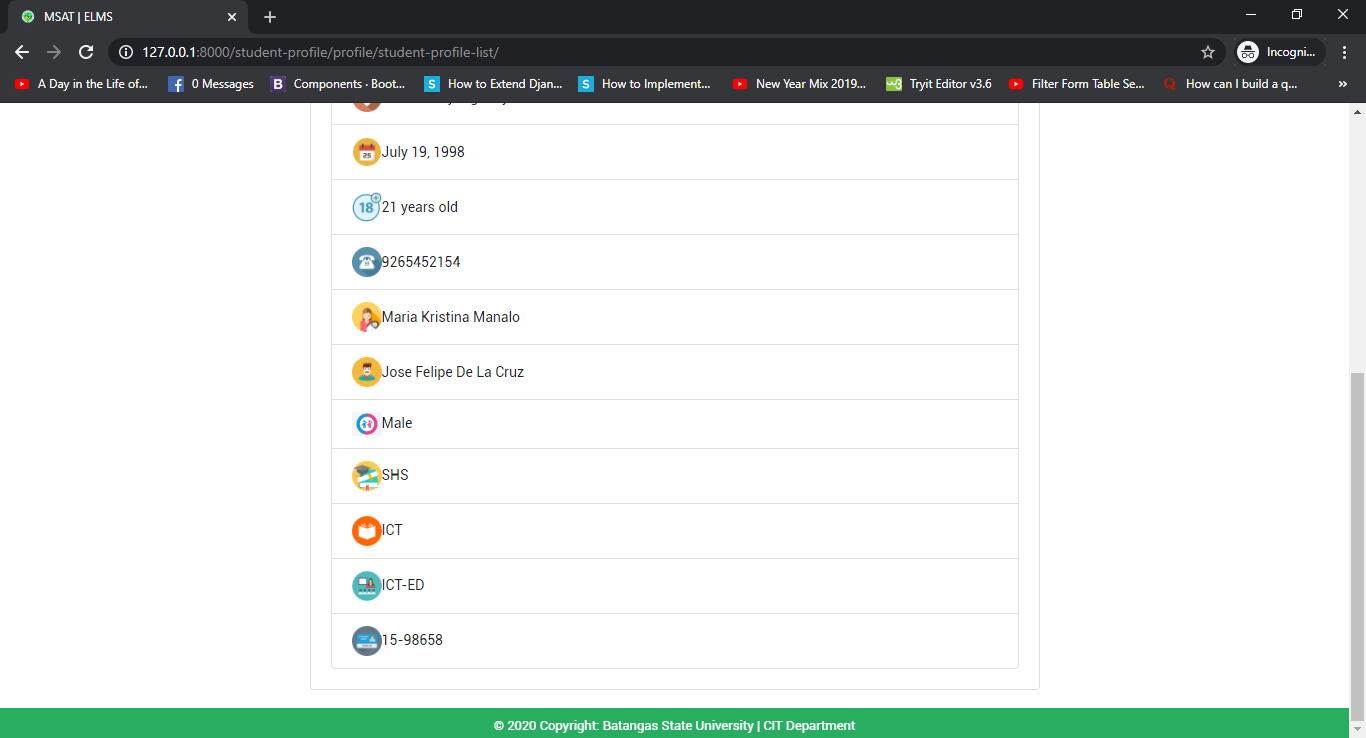
**Figure 35. Viewing a posted announcement**

This modal form page is for viewing the posted announcements. Both teachers and students can have access into this feature.



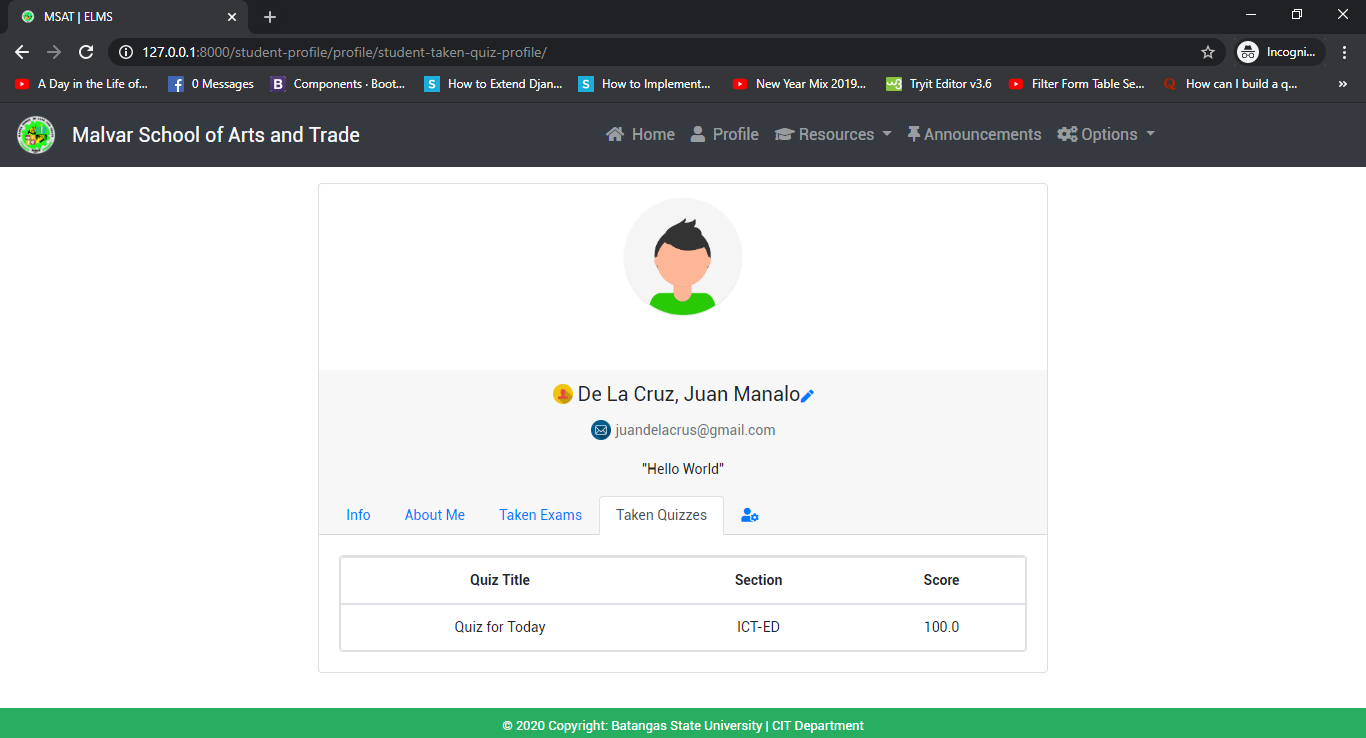
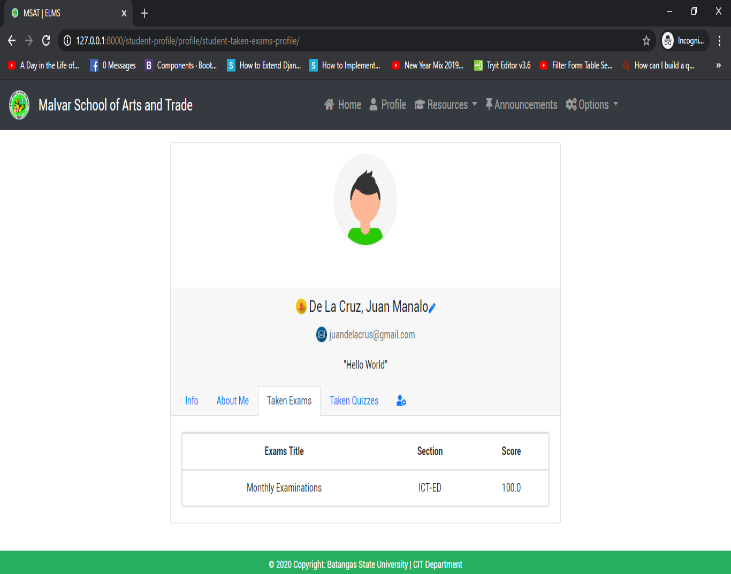
**Figure 36. Homepage for student’s account**

 This figure shows the homepage account for students. On this homepage, the user can see the navigation bar at the top, the logo and name of school, the name of the system and the menu for easily accessing the features of the system.



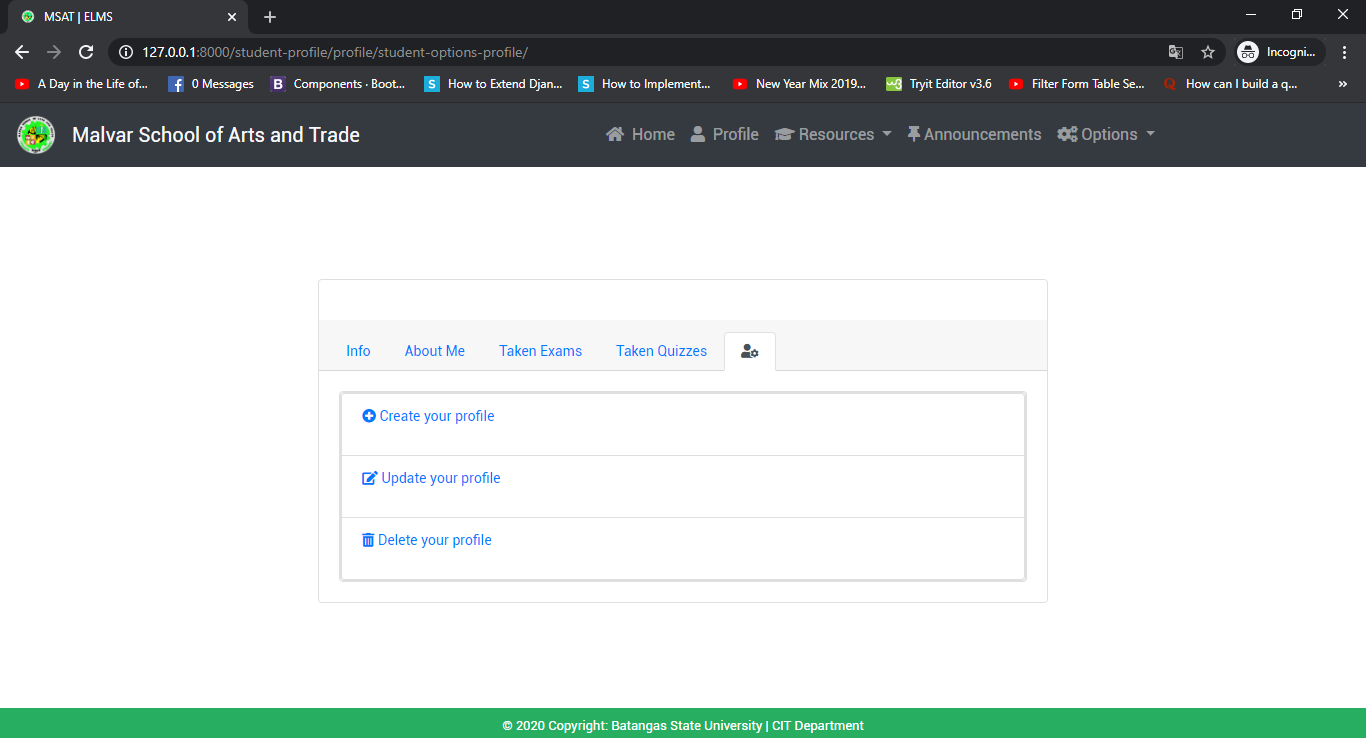
**Figure 37. Profile page for students**

This page shows the profile page of the students. Students can see their personal information, taken exams, taken quiz, and also the options for creating, deleting and editing their personal information

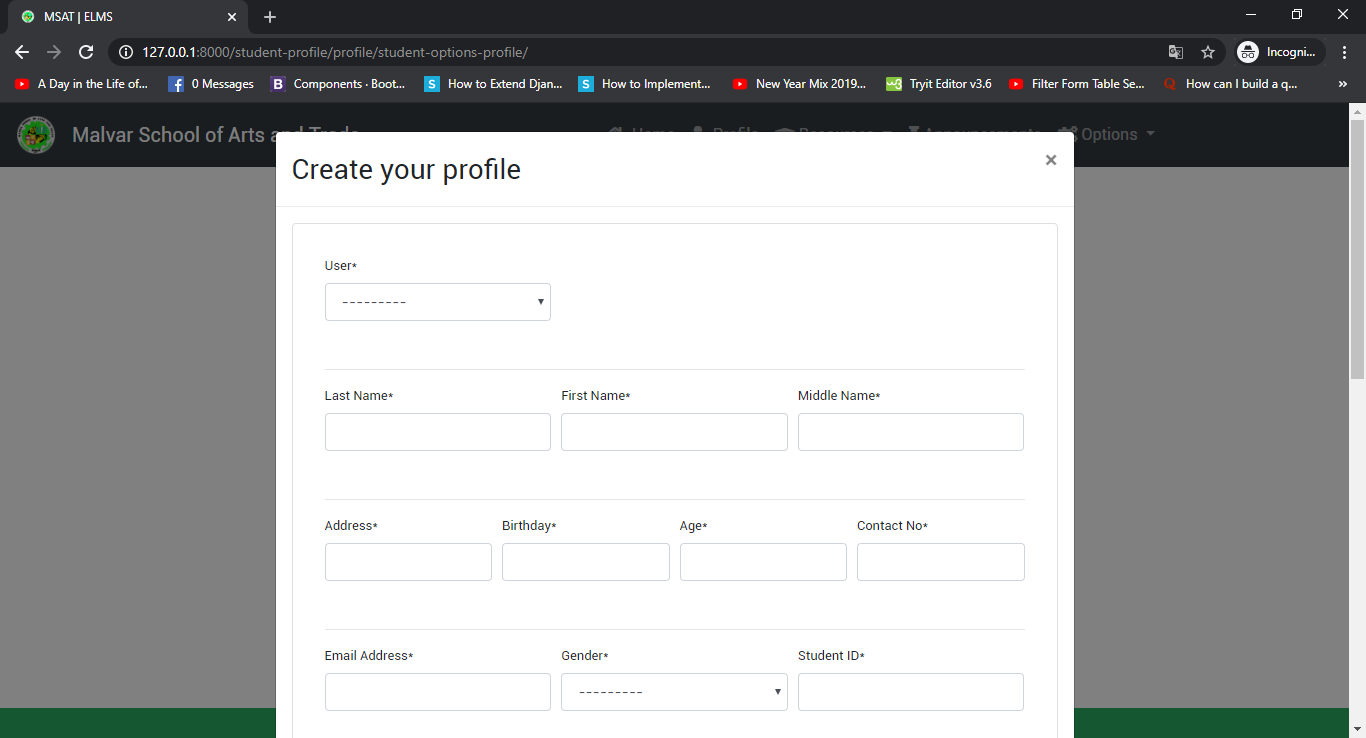


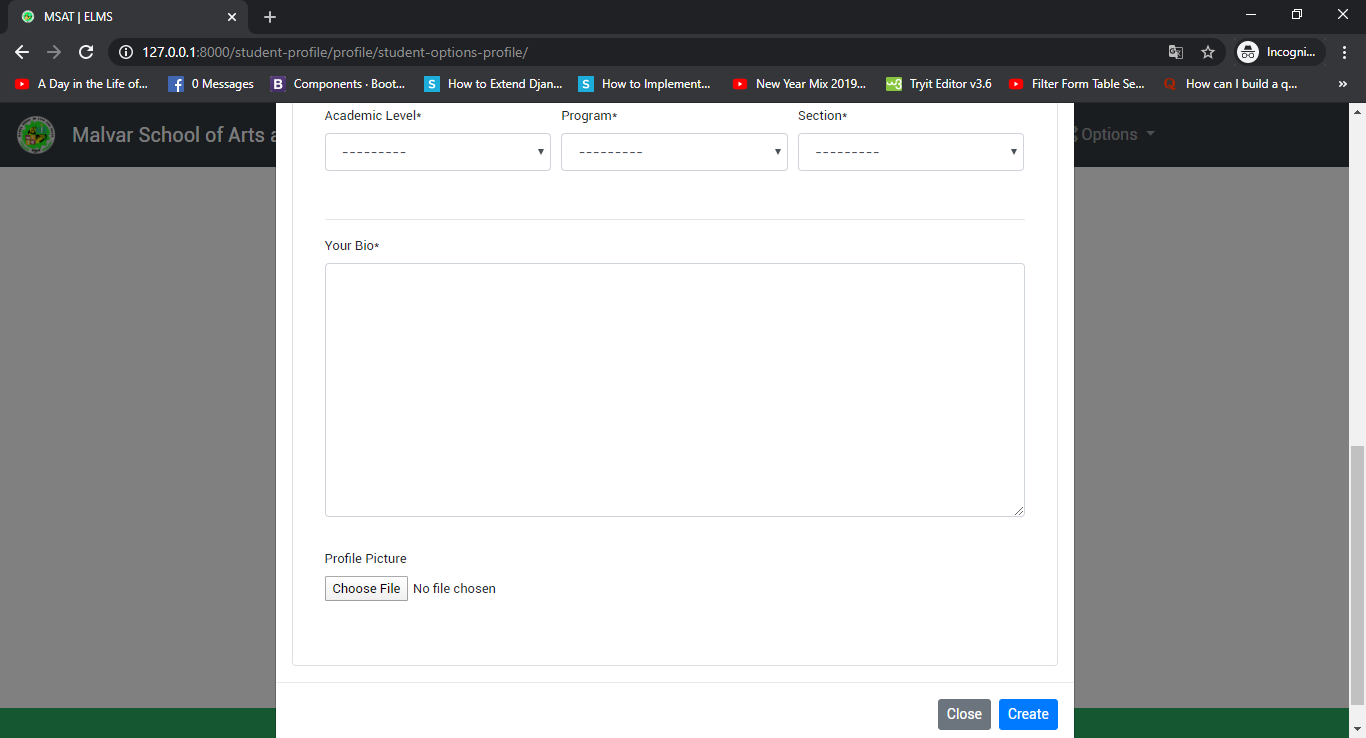
**Figure 38. Taken exams and quiz**

In this page show the scores and list of taken exams and quizzes by the students.



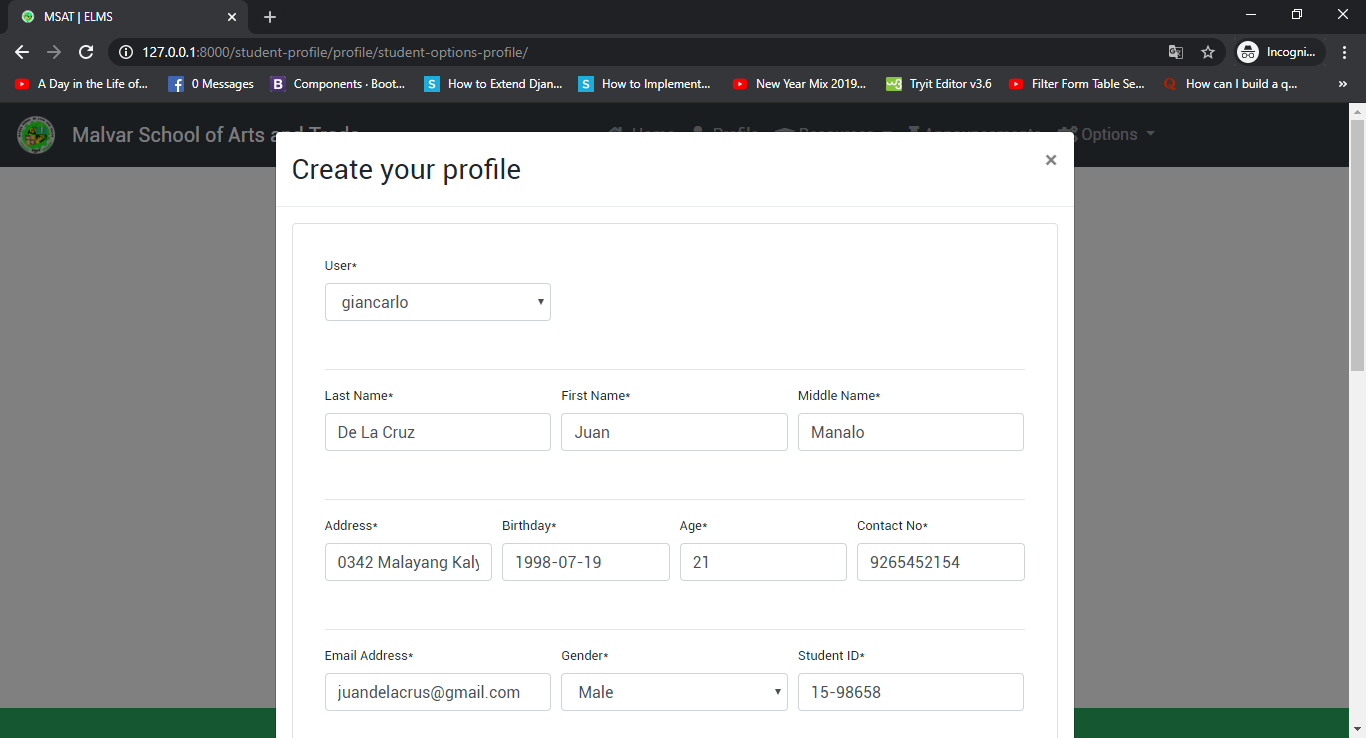
**Figure 39. Profile page options**

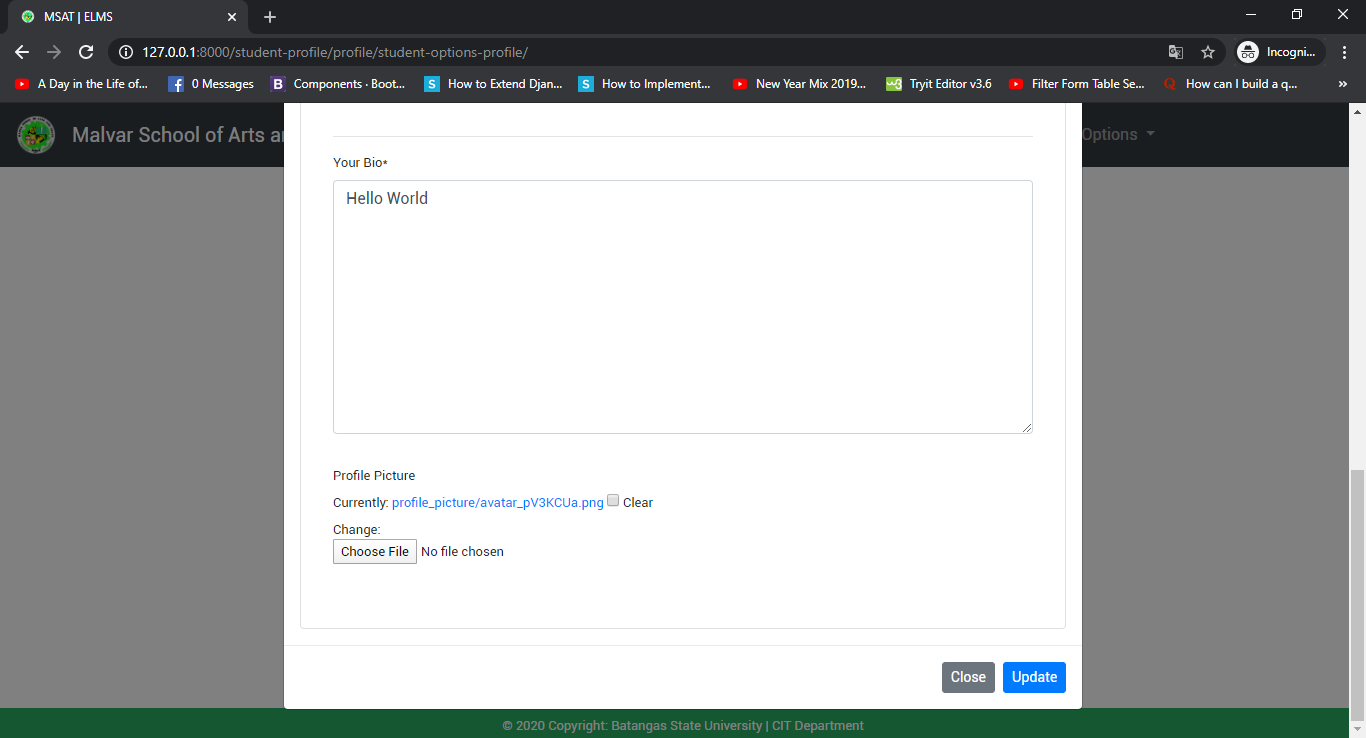
 In this page shows the options for creating, deleting and updating the student’s profile.



**Figure 40. Creating profile page**

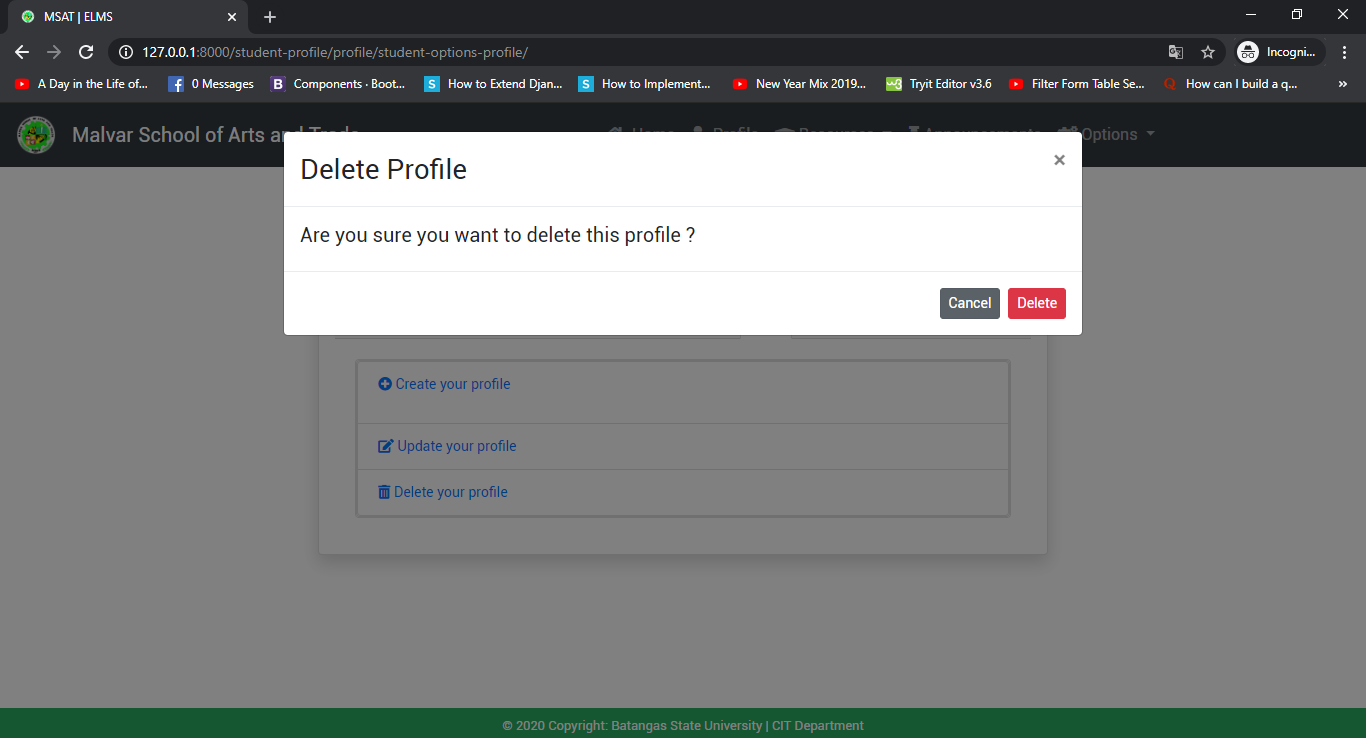
This modal from shows when students want to create their own profile page. Students needs to input all required information.





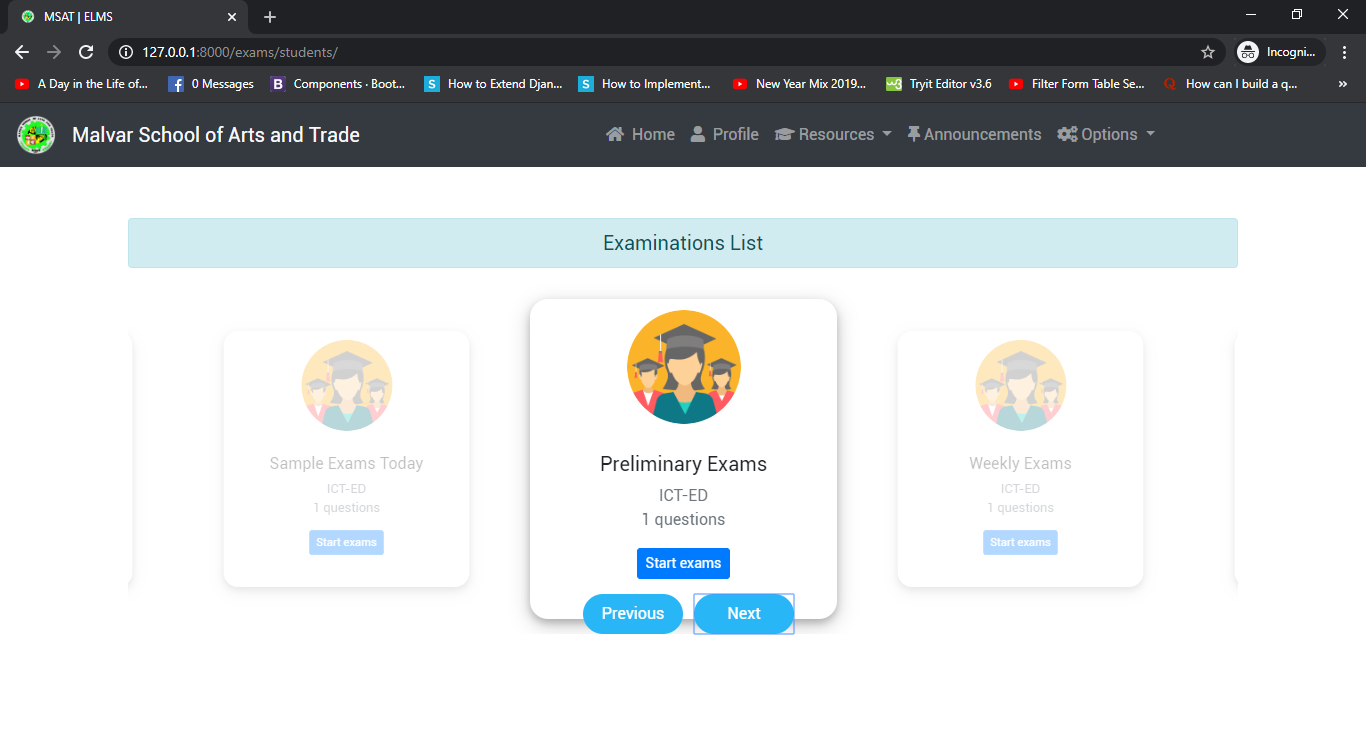
**Figure 41. Updating profile page**

This modal from shows when students want to update their own profile page.



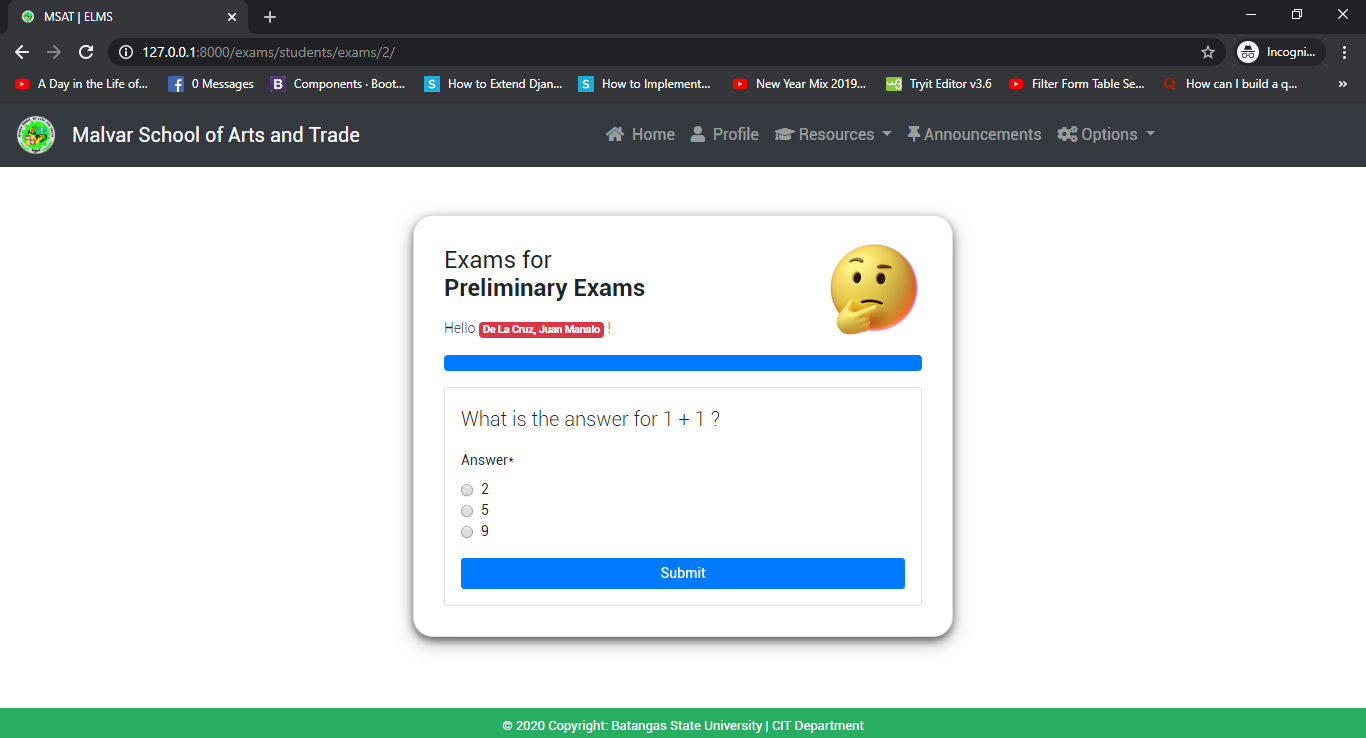
**Figure 42. Deleting profile page**

This modal from shows when students want to delete their own profile page.



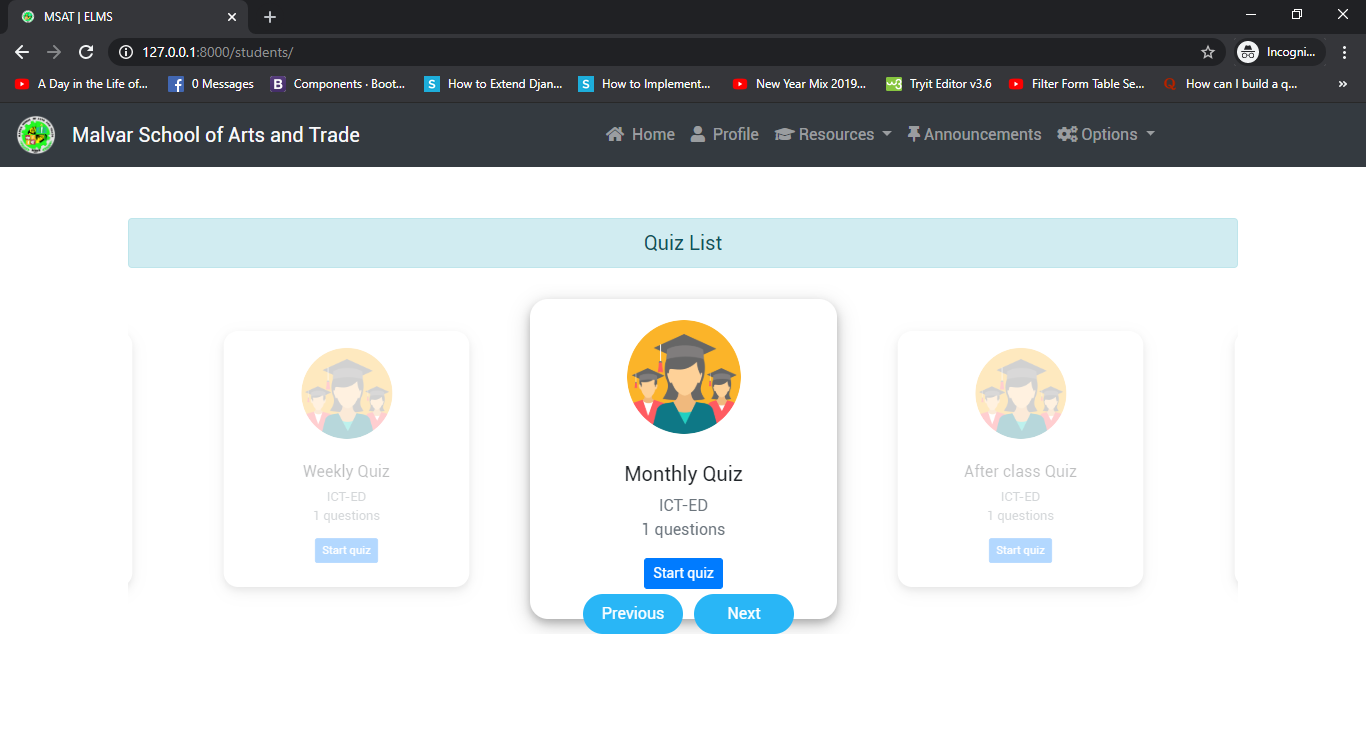
**Figure 43. List of available exams**

This page shows the available exams for students.



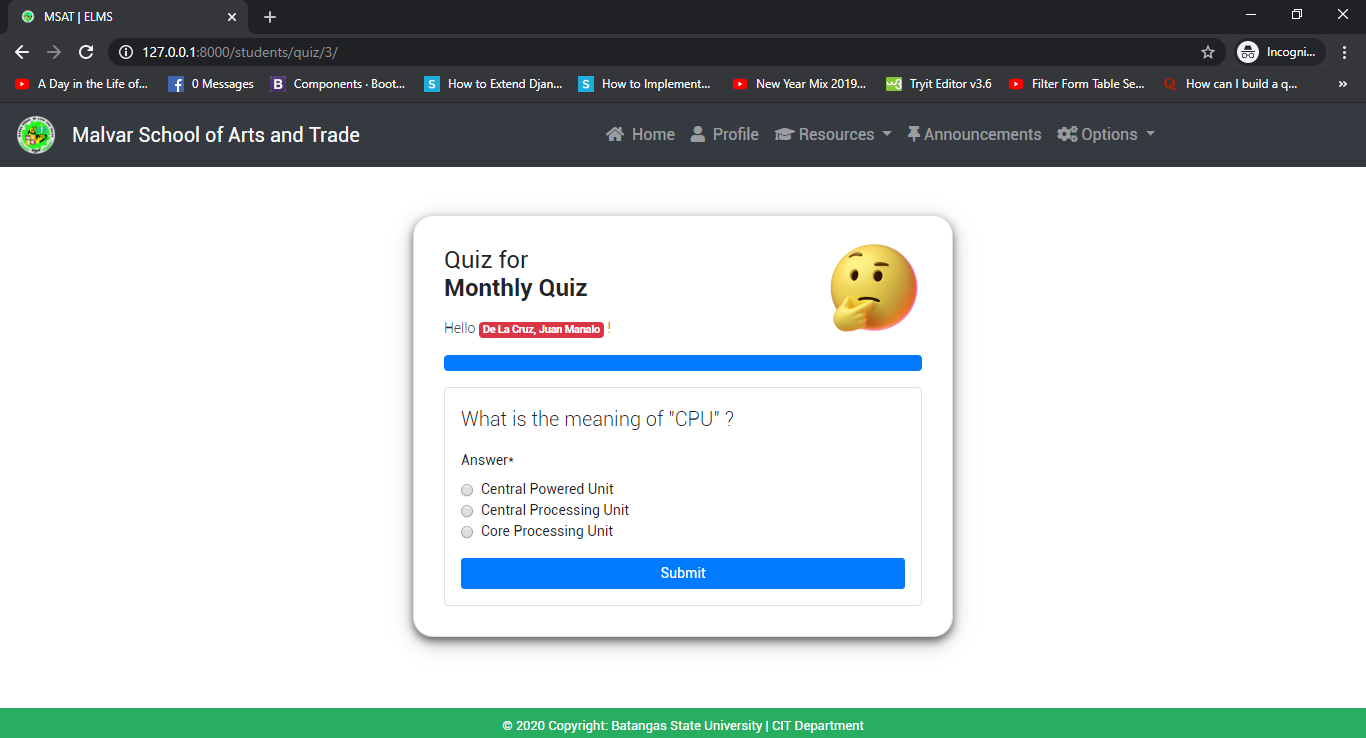
**Figure 44. Answering exams page**

This page shows if the students wants to answer their exam’s questions.



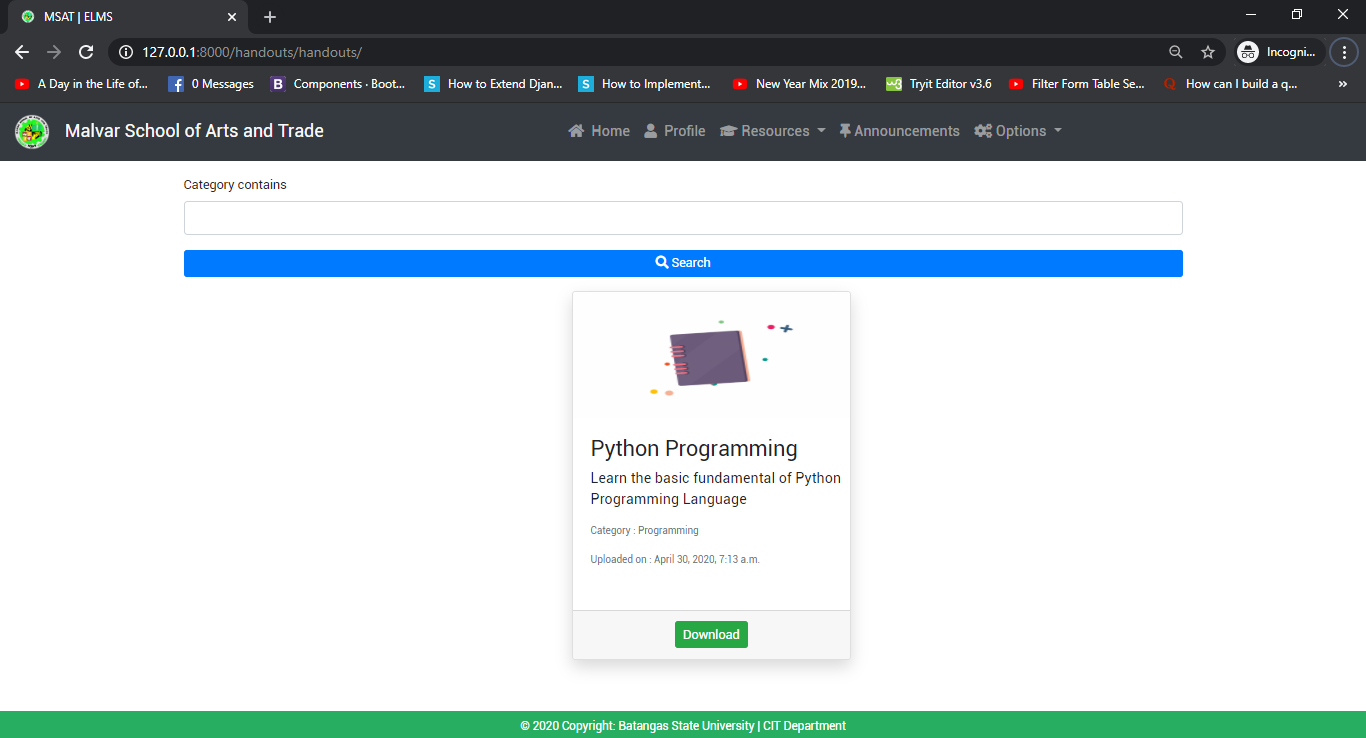
**Figure 45. List of available quiz**

This page shows the available quiz for students.

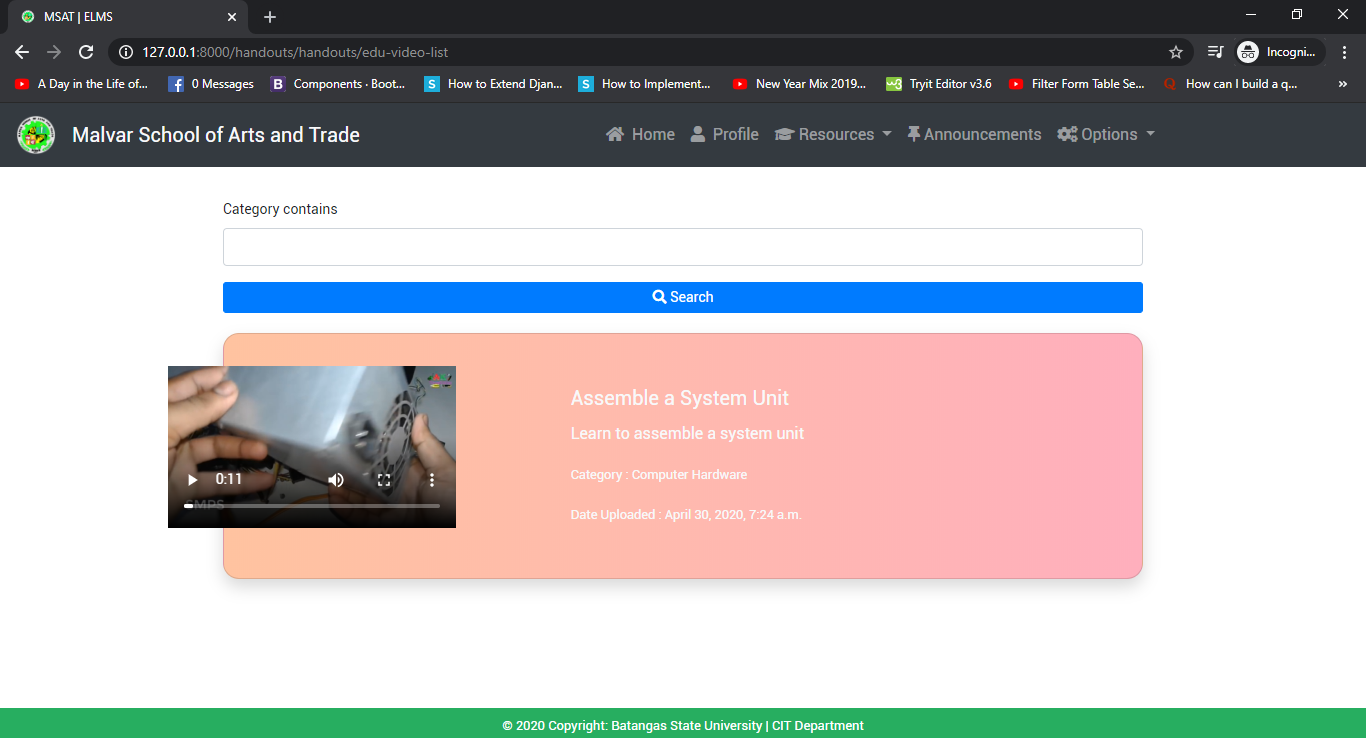


**Figure 46. Answering quiz page**

This page shows if the students wants to answer their quiz questions.



**Figure 47. List of handouts page**

 This page shows available handouts for the students. Students can see the available handouts based on their year level. Students can also search the category they want to see.

**Figure 47. List of video category page**

This page shows available videos for the students. Students can watch the available videos based on their year level. Students can also search the category they want to see.



**Figure 48. Announcements Board**

This page shows available announcements for the students. Students can view the announcements posted by their teachers.

**Chapter V**

**SUMMARY, CONCLUSION AND RECOMMENDATION**

This chapter presents the summary, conclusions, and recommendations of the study. This chapter also considers the future enhancement of the system such as the software development or adding more features of its enrichment

**Summary**

The purpose of this study is to enhance the progress learning and teaching for students and teacher upon traditional educational methods. Activities can also offer customization to the student’s interest, which empowers students to own their learning experience and ensures relevancy. The researchers believe that students will have the E-Learning process because they are exposed through virtual learning.

Aside from that, is the collaboration module which is knowledge base, to develop the ability to reason out and answer questions given by the teachers. Online learning also fosters, collaboration and interaction. The interaction expands the sources of knowledge and allows students to be involved in the world, as well as their own studies.

This study is intended to develop an “E- Learning Management System for Malvar School of Arts and Trade that will benefit the teachers and students to take examinations and study the material.

Specifically, the study aims to:

1. Identify the current classroom interaction and approach being used in teaching and learning;
2. Design a system that may consider to use the different features of a Learning Management System as part of the methods and approaches;
3. Develop an E- Learning Management System that allows the students to study the material and examinations given by the teachers;
4. Test and evaluate the system using ISO (International Organization for Standardization) 9126 in terms of;
   1. Functionality;
   2. Reliability;
   3. Usability; and
   4. Efficiency.

The researchers gathered information through interviews, internet source and other sources related to study. Software testing and modification were also done to assure whether the system satisfies the specification and requirements.

**Findings**

After the analysis and interpretation of the gathered data, the researchers are able to find out the following findings:

1. The design and the development of the study was based on the need assessments that the researchers conducted in Malvar School of Arts and Trade.

2. The developed system called “Development of Learning Management System for Malvar School of Arts and Trade” is evaluated using ISO 9126 in terms of functionality, reliability, usability and efficiency.

3. The E- Learning Management System is going to be implemented to the chosen beneficiary of the researchers.

**Conclusions**

Based on the aforementioned findings, the researchers arrived at the following conclusions

1. The respondents have a great interest in attending their class for having an outstanding number of attendance.

2. The E- Learning Management System is functional, reliable, usable and efficient.

3. During the implementation, the researchers will issue a user manual to the chosen beneficiary to be able to learn how to use the system and maintains its functionality.

4. The conventional and the E-Learning methods of teaching and learning were both necessary for having an outstanding mean score of all the respondents.

**Recommendations**

Based on the findings and conclusions, the researchers offer the following recommendations:

1. Monitoring efforts should be emphasized for further improvements and conflict-resolution of the system.
2. A system that can be access and run through online anytime and anywhere with online courses.
3. To have PDF viewer of materials that allows students and teachers to print.
4. Ability to show the scores statistics of students and the ranking of best top scorers.
5. Implementation of the proposed system can be made by the school.
6. Future researchers may conduct similar studies for modification purposes.

**APPENDICES**

**APPENDIX A**

**LETTER REQUEST FOR ADVISER**

Republic of the Philippines

**BATANGAS STATE UNIVERSITY JPLPC-Malvar**

Malvar, Batangas

Date

**ASSOC. PROF. REGIDOR C. SUELTO**

Associate Dean, CIT

This University

Sir,

We, the undersigned CIT senior students are working on our undergraduate system development study entitled “**Development of E-Learning Management System for Malvar School of Arts and Trade”- Malvar, Batangas”.**

In this regard, we are requesting **Mr. Glenn A. Caraig** to be our adviser in this endeavor.

Thank you very much.

Very truly yours,

(sgd) Gian Carlo L. Garcia

(sgd) Nikka F. Margallo

(sgd) Joshua T. Morong

**The Researchers**

Noted:

(sgd) ASSOC. PROF. REGIDOR C. SUELTO

Research and Development Professor

Approved:

(sgd**) ASSOC. PROF. REGIDOR C. SUELTO**

Associate Dean, CIT

Conforme:

I hereby accept the assignment as an adviser as per request by the above mentioned students. I assume the students and responsibilities therein until the project is defended, approved and finally submitted.

(sgd) **MR. GLENN A. CARAIG**

**APPENDIX D**

**EVALUATION TOOL**

Republic of the Philippines

**BATANGAS STATE UNIVERSITY JPLPC-Malvar**

Malvar, Batangas

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**GRADE/MAJOR:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**DIRECTIONS:** The researchers propose a survey to find out your assessment of “Developing of E- Learning Management System for Malvar School of Arts and Trade”.

**Part I. Approaches in Teaching:** Kindly tick the box according to the kind of learning and teaching you are into.

Chalk and board PowerPoint Presentation

Pen and Paper Social Media

Books Email

Printed Handouts  Learning Management System

Others (please specify): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part II.** Kindly check that corresponds to your agreement and disagreement of the following statements.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **In terms of functionality, the E- Learning Management System for Malvar School of Arts and Trade..** | **4**  **Strongly**  **Agree** | **3**  **Agree** | **2**  **Disagree** | **1**  **Strongly**  **Disagree** |
| 1. generates results based on data inputs. |  |  |  |  |
| 1. has no broken invalid links. |  |  |  |  |
| 1. can evaluate examinations and other activities. |  |  |  |  |
| 1. secure access through password. |  |  |  |  |
| 1. is precise in executing the results. |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **In terms of reliability, the E- Learning Management System for Malvar School of Arts and Trade..** | **4**  **Strongly**  **Agree** | **3**  **Agree** | **2**  **Disagree** | **1**  **Strongly**  **Disagree** |
| 1. maintains specific level of performance. |  |  |  |  |
| 1. gives a warning and responses to invalid input data. |  |  |  |  |
| 1. offers clear response to the user. |  |  |  |  |
| 1. has no lag issues. |  |  |  |  |
| 1. ability to keep a given level of performance in case of faults. |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **In terms of usability, the E- Learning Management System for Malvar School of Arts and Trade..** | **4**  **Strongly**  **Agree** | **3**  **Agree** | **2**  **Disagree** | **1**  **Strongly**  **Disagree** |
| 1. uses images and animation centered around the services. |  |  |  |  |
| 1. has understandable user interface. |  |  |  |  |
| 1. is easy to operate and control. |  |  |  |  |
| 1. is easy to learn and use. |  |  |  |  |
| 1. provides relaxed user experience that includes user oriented presentation of services and information. |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **In terms of efficiency, the E- Learning Management System for Malvar School of Arts and Trade..** | **4**  **Strongly**  **Agree** | **3**  **Agree** | **2**  **Disagree** | **1**  **Strongly**  **Disagree** |
| 1. view results quickly. |  |  |  |  |
| 1. provides quick response to clients. |  |  |  |  |
| 1. offers loading condition with the expected time. |  |  |  |  |
| 1. quickly displays the system upon clicking the mouse. |  |  |  |  |
| 1. can be carried out effortlessly and not time consuming in using the platform. |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TASK ID** | **TASK DESCRIPTION** | **EXPECTED RESULT** | **RESULT** | **STATUS** |
| 1 | Teachers Login  (Administrator) | Administrator should be able to log in. |  |  |
| 2 | Add teachers  information | The information of the teacher must be added. |  |  |
| 3 | Update the teachers  information | The information of the teachers must be uploaded. |  |  |
| 4 | Update exams and quizzes for a specific year level | The administrator can add, delete, update exams and quizzes for a specific year level. |  |  |

**APPENDIX E**

**TEST CASE EVALUATION TOOL**

Republic of the Philippines

**BATANGAS STATE UNIVERSITY JPLPC-Malvar**

Malvar, Batangas

Functionality and usability test case testing was also used by the researchers to measure the rate of success in every task. If the grade 8-10 students and teacher’s responses were good to the system it is equivalent to 100% or higher of the system function work, that would be considered a success. But if its lower that 100 % was achieved that would mean a failed. The rate of the system was determined using the formula n/t\*100= success rate of percentage, t= the total number of test user.

**Test Case for Students and Teachers of Malvar School of Arts and Trade**

**Teacher as the administrator**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TASK ID** | **TASK DESCRIPTION** | **EXPECTED RESULT** | **RESULT** | **STATUS** |
| 5 | Post and update announcements in the announcement button | Announcements  are being posted and updated. |  |  |
| 6 | Upload handout materials by the teacher in the handouts button | Handout materials are being uploaded by the teacher. |  |  |
| 7 | Add video tutorials in the video category button | Teachers are able to add video tutorials in the video category. |  |  |
| 8 | Teachers are able logout | Teachers are able to logout. |  |  |

**Test Case for Students and Teachers of Malvar School of Arts and Trade**

**For the students**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TASK ID** | **TASK DESCRIPTION** | **EXPECTED RESULT** | **RESULT** | **STATUS** |
| 1 | Students Login | Student should be able to log in. |  |  |
| 2 | Add students  information | The information of the students must be added. |  |  |
| 3 | Update the students  information | The information of the students must be uploaded. |  |  |
| 4 | Students to take quizzes and examinations | The students can view and answer exams and quizzes for a specific year level and can view results of scores after. |  |  |
| 5 | Students are able to see posted announcements in the announcements button | Announcements  are being posted in the announcement button. |  |  |
| 6 | Download handout materials by the students | Handout materials are able to be downloaded by the students. |  |  |
| 7 | Able to watch video tutorials in the video category. | Students are able to watch video tutorials in the video category. |  |  |
| 8 | Students are able to logout | Students are able to logout. |  |  |

**APPENDIX F**

**USER’S GUIDE**

Republic of the Philippines

**BATANGAS STATE UNIVERSITY JPLPC-Malvar**

Malvar, Batangas

**User’s Guide**

After the system has been proven highly functional and acceptable in the BatStateU Malvar Campus, the end user needs to have a guide oh how to use and manipulate the system, the user guide contains guidelines and instructions of the developed system.

1. **Software and Hardware Requirements**

In terms of software requirements, the system has been developed using Django Web Framework as the back end language for web application due to its ability when developing the web application system. developing the web application system. Django is a Python based Web Framework that is free and open source. Django follows it's DRY (Don't Repeat Yourself) principle that helps the proponents for rapid development of the system and to have a much cleaner and short codes for the system. Django also follows the model-view-template (MVT) architectural pattern.

Since the system was designed as a web application system, the researchers also use the Hypertext Markup Language (HTML) for the proper presentation of data and information in the web browser. The researchers also used the cascading style sheet (CSS) and bootstrap 4 for the design of the user interface of the web application system.

The researchers use Xampp as MySQL Server, which is used as the database of the system. For the effective and efficient use of the system, the following minimum and suggested software requirements should be met. The table below presents the software requirements.

**Table 1**

**Software Requirements**

|  |  |
| --- | --- |
| **Minimum** | **Suggested** |
| **Operating System**  Windows 7, Windows XP, Windows 8.1 | Windows 8.1 , Windows 10, Linux, MacOs |
| **Programming Language**  Python 3.5 | Python 3.8 |
| **Web Framework**  Django 2.0 | Django 3.0 |
| **Browser**  Mozilla Firefox 7.5 | Google Chrome 81.0.4044.129 |
| **Database**  Xampp 1.7.4, MySQL 5.5.8 | Xampp 1.8.0, MySQL 5.5.25a |
| **IDE**  Atom 1.45.0 , Sublime Text 3.2.2 (BUILD 3211) | Visual Studio Code 1.44 |

The table shows the minimum and suggested requirements for the software in order for the system to function according to its expected capabilities. The software needed in the installation of the system should not necessary be the newest version. The lower version can be used as long as it would not affect the process of the system. The requirement for the programming language was (NOT YET DONE)

In terms of hardware requirements, the processor, memory, hard disk drive, and peripherals needed for the implementation and use of the system were considered. The needed requirements are presented in the table below.

**Table 2**

**Hardware Requirements**

|  |  |
| --- | --- |
| **Minimum** | **Suggested** |
| **Processor**  Intel Core 2 Duo, Quad Core,  Intel Core i3, | Intel Core i5 |
| **RAM**  4 GB Memory | 8 GB Memory |
| HDD    500GB | 1 TB |

The table shows the hardware needed for the system to achieve its intended function.

(NOT YET DONE, TELL SOMETHING ABOUT THE HARDWARE REQS USED)

1. **Accessing the system**

Once the system has been implemented, this can be access in a network-based computer area.

1. Click the MSAT logo icon in the desktop menu to start the system. You will see the command prompt interface. You will be redirected to your browser.
2. Click the log in button to access the system. You will be redirected to the log in page.
   1. If you don’t have accounts yet,
      1. Click the Create your account button
      2. Choose between you are a student or a teacher
      3. You need to fill up all required information such as username and password. For students, you need to choose your year level provided by the admin or your teacher
   2. If you have your own account, input your username and password and click submit.
3. **How to Take Examination**
4. To create an exam
   1. Click the Resources tab.
   2. Go to Exam Tab menu.
   3. You will see the list page of your created exams, click the Exam button.
   4. Input the name of your exam. Choose the year level you want to create an exam. Click the plus icon button if you want to add a new year level. Then, click Save.
   5. In the next page, click the add question button to add questions for your exams.
   6. In the next page, you need to add the choices for the answers for your exam. You can add at least 2 answer choices but a maximum of 10.
   7. Choose the correct answer by clicking the button beside the answer and below the correct label. Then, click Save changes.
   8. You will be redirected to the exam’s questions page. You can add again by clicking the Add question button.
5. To edit the exam’s question
   1. Go to exam tab menu.
   2. Click the Edit button.
   3. In the next page, you can now add questions.
      1. If you want to delete a specific question, click the questions. In the next page, you can see the page of adding the answer choices for your question, click the delete button below to delete the question.
6. To view the scores of the students and the list of students who took the exams
   1. Go to exam tab menu.
   2. Click the view result button.
   3. You can now see the list of students who took the exams, and also their scores.
7. **How to Take Quiz**
8. To create a quiz
   1. Click the resources tab
   2. Go to quiz Tab menu.
   3. You will see the list page of your created quiz, click the quiz button.
   4. Input the name of your quiz. Choose the year level you want to create a quiz. Click the plus icon button if you want to add a new year level. Then click Save.
   5. In the next page, click the add question button to add questions for your quiz.
   6. In the next page, you need to add the choices for the answers for your quiz. You can add at least 2 answer choices but a maximum of 10. Then, choose the correct answer by clicking the button beside the answer and below the correct label. And click Save changes.
   7. You will be redirected to the exam’s questions page. You can add again by clicking the Add question button.
9. To edit the quiz question
   1. Go to quiz tab menu.
   2. Click the Edit button.
   3. In the next page, you can now add questions.
      1. If you want to delete a specific question, click the questions. In the next page, you can see the page of adding the answer choices for your question, click the delete button below to delete the question.
10. To view the scores of the students and the list of students who took the quiz.
    1. Go to quiz tab menu.
    2. Click the view result button.
    3. You can now see the list of students who took the exams, and also their scores.
11. **Viewing of Handouts and Videos**
12. To upload handouts
    1. Click the resources tab.
    2. Click the handouts.
    3. Choose the handouts.
    4. You will ow see the page for uploaded handouts
    5. Click the handouts button
    6. You will see the form for uploading handouts. Fill up the name, choose the year level, description, category and choose the file you want to upload and then click upload file button.
13. To upload a video
    1. Click the resources tab.
    2. Click the handouts.
    3. Choose the video category.
    4. You will now see the page for uploaded videos.
    5. Click the video button.
    6. You will see the form for uploading handouts. Fill up the name, choose the year level, description, category and choose the file you want to upload and then click upload file button.
14. **Posting of Announcements**
15. To create announcements
    1. Click the announcements tab.
    2. You will now see the announcements board.
    3. Click the Post button.
    4. Fill up the title, year level and content of your announcements, and then click the post announcements button.
16. **To View the Student List**
17. To see the list of registered students in the system
    1. Click the student list
    2. You will now see the list of registered students in this system.
    3. You can filter the year level of students by choosing on the right side of this page.
18. **Adding Year level**
19. To add and remove year level
    1. Go to student list tab
    2. In the right side corner, you can now see the list of created year level. You can choose between add or delete icon.

**To answer exams:**

1. Go to resources tab.
2. Click exams.
3. Choose the exams you want to answer.
4. Click start exam.
5. And then choose the answer you want.
6. Click submit.

**To answer quiz:**

1. Go to resources tab.
2. Click quiz.
3. Choose the quiz you want to answer.
4. Click start quiz.
5. And then choose the answer you want.
6. Click submit.

**To set up your student profile:**

1. Go to profile tab.
2. Click the profile settings icon beside the taken quiz tab.
3. Choose the create profile. You can also delete and update profile in this page.
4. **Viewing of the Announcements**

To see the announcements board made by teachers:

1. Go to Announcements tab.
2. You will now see the list of posted announcements.
3. Click the view button.
4. **To View the Taken Exams or Quiz history**

To see the scores and history of taken exams and quiz

1. Go to Profile tab.
2. Click either taken exams or taken quiz to see the history and score of your previous exam or quiz.

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**(AFTER CHAP 1-5)**

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1. Unpublished Material
2. Journal
3. Electronic Reference

**CV here**