**LEARNING MANAGEMENT SYSTEM**

**WITH INTERACTIVE ACTIVITIES**

**FOR**

**BUCANDALA ELEMENTARY SCHOOL**

A Capstone Project

Submitted to the Faculty of

College of Information Technology

Cavite State University

Imus, Cavite

In partial fulfillment

of the requirements for the degree of

Bachelor of Science in Information Technology

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A capstone project outline submitted to the faculty of the Department of Information Technology, Cavite State University, Imus, Cavite in partial fulfillment of the requirements for the degree Bachelor of Science in Information Technology with Contribution No.\_\_\_\_\_\_. Prepared under the supervision of Mr. Carlo Malabanan.

**INTRODUCTION**

The progress and flexibility of education provided to students drive technological advancements. Another innovative educational platform is the capstone project "Online Examinations and Learning Management System." The project at hand is a web-based system and an Android application that allows for the easy and efficient electronic administration of exams and classes. The use of information technology to evaluate tests is known as a web-based or Android application. E-assessment, digital assessment, or computer-based evaluation are all terms used to describe it. to supply students with a high-quality education using application software. Bucandala Elementary School in Bukandala 2, Imus City, Cavite was the site of this research. The introduction of an online exam system for a learning management system, according to proponents, will make school management of exams and learning easier. Researchers intended to build and expand regular classroom examinations and classes online and electronically so that students could continue to receive high-quality education even as the COVID-19 pandemic spreads. Originally, students were enrolled in schools. When the COVID-19 epidemic develops, however, it restricts people's physical interactions, resulting in school cancellations. The COVID-19 epidemic has had a significant influence on higher education, with schools closing their doors and countries closing their borders as a result of lockdown measures. It is challenging to make education more efficient and sophisticated for our country by employing numerous media. Using educational strategies, students may be able to improve their abilities in a variety of subjects. However, the teaching medium used by schools for their students may not be adequate, especially now when we are in the midst of a pandemic. Schools have been banned to prevent huge numbers of youngsters from becoming ill. It can cause a loss of concentration and enthusiasm for learning. Despite the epidemic, the Department of Education (DepEd) has implemented innovative teaching methods to fulfill the needs of students. Most of the ways require an internet service connection to continue the lesson here in the Philippines. Students, on the other hand, can choose from a variety of approaches or just rely on printed materials to suit their needs. Many people are rushing to have an internet connection so they can engage in online activities. The majority of people in this town already have internet connection. This system could be beneficial in the classroom. It can be used to conveniently manage, post, and evaluate exam results. Even if face-to-face classes are not permitted, the system can be used to review and continue the session, as well as to establish a conventional classroom in which teachers and students can perform tests and classes without physically interacting.

**Project Context**

In the present COVID-19 outbreak, technology has played a key role. The lockdown caused schools to close their doors and countries to close their borders, which had a tremendous impact on higher education. As a result, several schools have been closed to prevent the COVID-19 virus from spreading further. Although universities were quick to replace face-to-face lectures with online learning, these limitations had an impact on all students’ learning and examinations. At Bucandala Elementary School, these restrictions had an impact on all pupils’ learning and assessments.

Students can now learn in a variety of methods, including exploring the internet for a wealth of information, enrolling in online classes and subjects, and so on. Despite this, many Bucandala students only use their phones with cellular data for online lessons. However, classes and tests for pupils in grades 1 through 6 will be conducted using this approach. This method will be used in other academic programs as well, such as ALS and SPED. The most major obstacles Bucandala faced when undergoing online learning, according to the data, were technological issues. Some students experienced difficulty accessing the internet, getting into classes, and obtaining subject materials.

The goal of this study is to develop an “Online Exam and Learning Management System” that will make school exams and learning management easier. Exams are generally held in a four-walled corner classroom with written questionnaires, as we all know. Face-to-face lessons are also offered to fit the needs of pupils. The researchers aimed to develop an Online Exam and Learning Management System that would allow them to virtually extend traditional classroom tests and classes over the internet. The web-based method aims to allow teachers and students to conduct online assessments and lessons without having to physically contact. When the technology is implemented, teachers and students will be able to conduct exams and lessons more easily and efficiently. Teachers can add lessons and quizzes for students onto the system. Students would just need to register in the system to enroll in classes and take tests. The online platform is efficient, dependable, and simple to use.

**Objectives of the Project**

The researchers generally aim to design and develop a system that will automate examination and conduct of classes which will enhance the traditional method of the examination and teaching-learning system.

The researchers specifically aim the following objectives:

1. To create a virtual classroom that helps students to attend their classes virtually.
2. To make the learning effective for students by posting them online.
3. To improve educational processes and eliminate traditional teaching methods.
4. To help the students and teachers to communicate easily.
5. To reduce the workload and responsibilities of teachers.
6. To considerably save time, energy and money.
7. To create a simple, effective, rapid, and accurate method for students to take classroom activities anytime and anywhere.
8. To evaluate the system’s functionality, usability, dependability, performance, and security.

**Purpose and Description**

The project will be conducted in order to develop a learning management system with online exam for Bucandala Elementary School in order to extend the traditional classroom examination and classes virtually. The web-based system is designed to allow teachers and students to conduct examinations and classes virtually without the need for physical interaction.

The Learning Management System has the following capabilities:

1. Extend traditional classes and examination virtually. Students can attend their schooling without having to engage with physical interactions.
2. Learning activities will be easier and accessible for the students by using the system.
3. Innovative and effective meetings for the students and teachers
4. Convenient communication that will help the users to communicate with each other easily.
5. Reduce the workload of the teachers and helps them to manage their classes easier and more efficient.
6. Save time, energy and money of both the learner as well as the institution by implementing classes virtually so they do not need to spend money on commuting that will saves their time and energy also.
7. Improve the system’s e-learning processes. It will make e-learning possible at any time and place
8. Evaluate the System’s functionality, usability, dependability, performance, and Security to know if it is convenient and understand any issues that the user is facing.

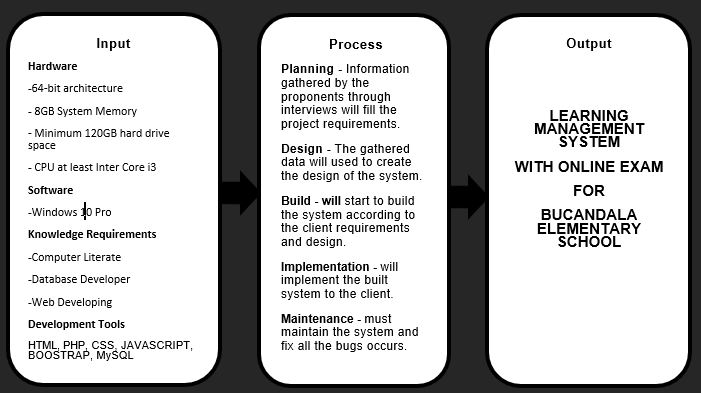
The propose study is a response to the difficulty of providing excellent education in the midst of a pandemic by establishing a system that would improve learning management in place of traditional classrooms. The research will now assist with exam and class innovation and automation.

Once the Bucandala Elementary School’s learning management system is in place, it will be important to consider the following:

1. **School Admin** – the project’s success will enable them to provide pupils an extended and flexible teaching-learning system from the comfort of their own homes. This would enable them to provide students with an accessible and available exam and class platform.
2. **Teachers** – the solution will let them conduct digital assessments and provide effective learning sessions for pupils. They can use the system to deliver exams and classes online with ease.
3. **Students** – the technology will give them with a viable alternative for taking examinations and attending virtual classes.
4. **Researchers** – will use their skills and knowledge to build successful programs for the project.
5. **Future Researchers** – the study can be used as a guide for carrying out their own version of the project.

They will have enough information from this study to create and build a learning management system.

**Conceptual Framework**

**Figure 1. Conceptual Framework**

In this part, the conceptual framework lays out the needed requirements and flow to create the system. And through this, constructing the system will be easier to follow.

**Scope and Limitation of the Study**

Only the event of a Learning Management System with an Online Examination is covered in this study. The researchers are primarily focused on establishing a system that would aid in the administration of exams and classes.

This system also includes a mobile device-friendly responsive design. There are three types of users in the system: administrators, teachers, and students. The admin is responsible for keeping crucial information such as a list of subjects, classes, and teachers.

This technique may be beneficial now that a number of classes are offered through Modular Distance Learning. The school or teacher can use this method to offer soft copies of learning resources to students, as well as build an Exam or Quiz and Assignment for a specific category. Students can respond to the teacher’s exam or quiz, but they are limited to the time allocated by the teacher. It includes a messaging feature that allows students and teachers to communicate.

The disadvantages of this strategy include:

1. It is unable to develop an enumeration-style test.
2. Only true or false and multiple-choice exams/quizzes are possible.
3. You must have an online connection to use the system or take the exam.
4. The system does not support playing or viewing media files that have been uploaded.
5. Bucandala Elementary School pupils and staff are the only ones that have access to the system.
6. The system is the only other option for assisting students with their new educational style.
7. There are numerous modules in this system.
8. A computer literate person is required for this system.

**Definition of Terms**

To understand the study, the below terms are operationally defined:

**COVID-19** refers to the Corona Virus Disease 2019 which is caused by the virus known as the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2).

**Modular Distance Learning** the use of Modules made by teachers with different tasks and learning activities based from the essential learning competencies.

**Pandemic** an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people.

Virtual Classroom is an online teaching and learning environment where teachers and students can present course materials, engage and interact with other members of the virtual class, and work in groups together.

Web-Based System is an application that is accessed via HTTP. The term web-based is usually used to describe applications that run in a web browser.

Online Exam is a great way of conducting tests and other important exams with help of the internet. An online exam needs a device capable of accessing the internet such as a computer or a smartphone

**REVIEW OF RELATED LITERATURE AND STUDIES**

**Technical Background**

Learning management systems, or LMS, are highly popular nowadays. It's an educational system with its own set of learning and teaching methods. This approach can also aid in the reduction of various abnormalities that teachers may encounter.

The improvement and flexibility of education delivered to pupils is driven by technological developments. Another unique platform for educational institutions is this system, "Learning Management System with Online Exam." The project is a web-based system that enables for the simple and effective electronic administration of examinations and classes.

Students were once confined to classrooms. However, when the COVID-19 virus spreads, it restricts physical interactions between people, forcing schools to close. Exams are traditionally conducted in a four-walled corner classroom, with pupils receiving printed questionnaires. Lessons are also conducted face-to-face to provide pupils with the information they require. However, this exam and teaching style must be extended outside of the classroom for unexpected scenarios such as the present pandemic, which limits our physical interactions.

This chapter includes the related literature and studies that will serve as information needed for this study.

**Foreign Literature**

***Evaluating a learning management system for blended learning in Greek higher education***

The rapid uptake of campus-wide LMSs is changing the character of the on-campus learning experience (Coates et al. 2005). Indeed, according to several studies (e.g., Wang 2010) delivering information via the web is gaining popularity among both students and staff. LMS can support an entire university’s teaching and learning programs.

In Greece LMSs started to be used after 2000. For example, the Aristotle University of Thessaloniki (AUTh) installed Blackboard in 2003 (Veglis and Pomportsis 2005). In an effort to expand the usage of LMSs in higher education in Greece in a uniform way, the Greek University Network (GUNet) distributed the platform Open eClass. Furthermore, it provided support for the implementation of Open eClass in any institution by facilitating its installation and operation. In addition, Open eClass provides an internal structure for each lesson, which promotes communication between learners and educators, learning with active participation and ensuring open and free access to educational material (Papachristos et al. 2010).

As a result, Open eClass was adopted by most of the Universities and TEIs. Indeed, reports have been found for the usage of Open eClass in the TEI of Chalkida (Papazoglou et al. 2005; Spathopoulos 2007), Alexander TEI of Thesaloniki (Tzitzolaki et al. 2014), University of Thrace (Vernadakis et al. 2009), TEI of Epirus (Giannelou et al. 2005), TEI of Athens (Georgouli et al. 2005; Karolidis et al. 2005; Tsiakas et al. 2005), TEI of Lamia (Tziallas et al. 2005), Hellenic Open University (Papadakis et al. 2005), TEI of Crete (Vassilakis et al. 2005; Kalogiannakis et al. 2005), TEI of Larissa (Blanas 2008), Harokopio University (Chalkias and Anagnostopoulos 2004) etc.

Pange and Lekka (2012), in a pilot study examining the educational packages offered via Internet by Universities and TEIs in Greece, found out that 72 % of the randomly selected courses were delivered by Open eClass. Although the official LMS of most Universities and TEIs is Open eClass, the flexibility of Moodle as well as the fact that it is free to download, have made it attractive to many universities that use it as a secondary LMS. However, the use of Moodle is not official in most cases.

***The Social Benefits of E-learning in the Study of Foreign Languages in Romanian Education***

The development of new technologies in communications leads to new approaches to the educational process. E-learning is a new concept that designates a specific way of distance learning training. E-learning is a term that designates a learning process that relies on the use of computers as source of information and access to knowledge. The term e-learning is synonymous with the E-learning, online education, online education, web education, distance learning, etc. Distance learning physics involves the distant between teacher and pupil / student communication between them achieved by exchanging messages or electronic documents. In distance education, a particularly important role is held by the technological factors which should ensure that the pupils / students, and communication between them and their teachers. A professor in the education system can address simultaneously a large number of pupils / students, but can have a dialogue with each of them individually. Those who study in this way can benefit from knowledge and experience of renowned teachers that could not address directly. We can say that within distance education, the role of the human factor is the guidance. This type of training is available to anyone regardless of age, or level of education and access to information through modern technology. The following courses in distance learning systems are able to gain information as to his skills and abilities according to their own pace of study, choosing his own place and time they are willing to study. Meanwhile, students can express their creativity by making interdisciplinary connections between the concepts presented, revealing new interpretations of data. The lack of this fellow or teacher can stimulate the timid. Multimedia presentation of information stimulates attention, their understanding and interpretation of data, leads to active assimilation of knowledge. Current information from all over the world can be found at any time using the Internet. Economic factors should not be overlooked, pupils / students significantly reducing transport costs or accommodation. The educational system can have a negative effect on relationships, the creation of emotional ties, or in terms of integration in society, lack of face-to-face contact between students and peers or their teachers. The efficiency of this system of education depends largely by the desire of those who follow such training courses. We appreciate that distance learning is an opportunity for those who wish to study, but for various reasons, such as those of material nature or lack of time cannot attend the full time similar. Over 20 universities in Romania have implemented this method. The rapid technological changes and the spread of the Internet pose no threat to the education, on the contrary they make a flexible and attractive learning tool, one more adapted to the requirements of the modern lifestyle and more suitable for the computer addicted generation. E-learning facilitates learning and knowledge sharing, develop creativity, prepare the young for the future and bring together people from different places, with the most diverse experiences. Teaching foreign languages through e-learning is a challenge and also became a modern part of teaching. This paper aims to present the benefits of online teaching modern languages both for teachers and students. Due to the Internet’s flexibility people are offered many resources but they also use the Internet for communication and collaboration. This paper aims to present some methods of teaching English with the help of the computer, as a possibility of personal development, and also to offer the student better chances for the future.

***E Learning and International Education in the Netherlands***

The best cases in the study involved staff of institutions in different countries who knew each other personally, often through international research networks. These staff are the pioneers in international education. To make their efforts sustainable and to mainstream them requires clear support from the top leaders of the educational institutions and formal letters of intent between institutions as prerequisites.

The most important adage of technology and organization is, keep it simple! Technical problems grow when crossing country borders. We also concluded, however, that what is now considered complex will change over time. Until quite recently, video conferencing was an expensive, labor-intensive, and unreliable technology. Over the past five years this has dramatically changed—video over IP is cheap and simple, and it works.

Timetables proved another obstacle. Many different course-calendar arrangements exist in our international academic world, making joint timetabling quite a hassle.

Staff who engage in international education with e-learning need a wide array of professional competencies, often new to them. To engage successfully with foreign students, a teacher needs cultural sensitivity and an understanding of educational practices in other countries. In online educational settings, this seems even truer.

In a general way, the report’s conclusion can be summarized as follows: E-learning in international education is a challenging and promising field, one in which education should come first, internationalization second, and technology third.

***E-Learning in Saudi Arabia***

The future of e-learning KSA is promising, since raising ICT awareness and promotion in education is now a national policy. However, in order to maximize the benefits from e-learning, concerted efforts need to be made in enhancing the professional capacity of building them by teachers and ensuring smooth and uninterrupted internet facilities to the students. Policies also need to be changed to allow students to take virtual online degrees, no matter where the university may be. Professional support base, such as educational theory and instructional design for e-learning, should be incorporated at university level. Clear vision and strategic planning with prospective e-learners in mind are essential to make e-learning programs a big success.

It is important to provide academics with considerable instructional support, giving those encouraging incentives to as a way to value their work, decrease their workload, and taking their innovative work into account for promotion and tenure. One way to increase awareness among support staff in administration is by offering rewards to motivate them for better productivity and higher performance. Reward systems include salary increases, fringe benefits, promotion, and recognition. The incentives that higher education institutions offer and the activities they reward convey the organizational values of those institutions. In addition, academics involved in web-based learning need their work to be recognized and supported.40 With proper organization and management, the technical support and infrastructure required by different organizations would be easier to identify, and thereby improve the efficiency and effectiveness of the pursuit of the national objectives appropriate in e-learning in KSA.37 In order to overcome the problems and challenges, there is need to redefine or amend some principles, policies and tasks associated with the current e-learning environment, in order to re-orient it toward collaborative learning; to provide training and technical support to faculty staff as they revise their teaching materials and methods; and to redefine/amend principles, policies and tasks of the LMS.

***Online Learning or E-Learning***

According to Shivangi D. (2020). Online learning can be termed as a tool that can make the teaching–learning process more student-centered, more innovative, and even more flexible. Online learning is defined as “learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere(independent) to learn and interact with instructors and other students” (Singh &Thurman, 2019).

The e-learning platforms are the backbone of e-learning strategies given the capacity to successfully simulate orthodox classrooms through the innovative and engaging use of virtual classrooms that induce interaction with students, teachers and can include university input adding another layer of pedagogical and andragogical quality. Social networking, given its instant messaging capacity, has become a technological phenomenon connecting people with ease, especially teenagers. New approaches to online communication are fundamentally revolutionary. The future design of e-learning platforms is likely to become quite flexible and adaptable to the preferred mobile device screen activity of potential users. Thus, the first objective of this article was to examine the on-screen activity on mobile devices when people were connected to the Internet, thus predicting the future directions of e-learning platforms based on the results from an online self-administered survey.

Social networking connects people with fluidity and ease that negative consequences are emerging. Some people may seek professional treatment because

of addiction while others may need help because of cyberbullying, especially amongst young Internet users. Social networking has developed as a main online communication conduit globally. This leads to the second objective of this current study was to assess the knowledge of Thai Internet users regarding the age restriction stipulated in the “Terms of Service of Facebook” since Facebook is the most popular social networking in 2015 - not only for teenagers in Thailand but also in many other countries. This represents new information in the field based on original primary research.

**Local Literature**

***Philippines cited for e-Learning growth***

The Philippines has been cited as one of the top 10 countries in the world in terms of high growth in “e-learning” revenues in the next few years, according to a global report by US-based market research firm Ambient Insight.

Ambient Insight said in a statement that in Asia alone, the market for learning and training programs supported by electronic technology is expected to reach $11.5 billion by 2016, or more than twice the $5.2 billion in 2011.

The report, titled “The Asia Market for Self-paced e-Learning Products and Services: 2011-2016 Forecast and Analysis,” finds that Asia has the highest growth rate for e-learning worldwide at 17.3 percent yearly and the growth in some countries “is nothing short of remarkable.”

In terms of growth rate in e-learning, the study places the Philippines at seventh. The country joins Azerbaijan, Thailand, Kenya, Slovakia and India with growth rates of between 30 percent and 35 percent.

The two countries with the highest growth rates in the world are Vietnam and Malaysia, respectively at 44.3 percent and 39.4 percent.

Also in the top 10 are Romania and China. “The vast majority of revenues will be generated from the sales of packaged content, (which) is rising so rapidly in many countries in the region that suppliers are scrambling to meet the demand,” said Sam S. Adkins, Ambient Insight’s chief research officer.

“Authoring tools will generate the second-highest revenues after packaged content during the forecast period,” Adkins said. “The growth rate for cloud-based authoring tools and learning platforms in Asia is a robust 22.7 percent, the highest growth rate of all products. Authoring tools are in high demand as commercial suppliers and internal organizations rush to meet the demand for content.”

According to Ambient Insight, the major factors driving growth include the massive content digitization efforts across the school systems “in every country in the region” and the large-scale deployments of tablets in the academic segments, as well as the explosive growth of online higher education enrollments.

Other factors cited are the strong demand for e-learning in the corporate sector in many countries and the strong demand for digital English-language learning products in both the academic and consumer segments across Asia.

In the Philippines, e-learning has been gaining ground in the education and agricultural sectors, with a big push from government efforts.One group that has been actively promoting and using e-learning is the Philippine e-Learning Society, or Pels, whose members are mainly colleges and universities in both the public and private sectors.Also, the Department of Agriculture is running an extension program called e-learning for Agriculture and Fisheries with the Agricultural Training Institute as the lead implementing agency.

The program is being carried out with help from other government agencies, state universities and colleges and nongovernment organizations.

***Learning Management System for LPU-Laguna***

Moodle is an active and evolving work in progress. Development was started by Martin Dougiamas, who continues to lead the project. As a young IT professional at the Curtin University of Technology in Perth, Australia, his frustrations as system administrator of the university’s WebCT installation inspired him to take on the challenge of developing a system better than Blackboard™, and making it available for free for teachers to creatively and seamlessly move their teaching skills into the internet. His passion in the field also led him to complement his career in Computer Science with a Masters and then a PhD in Education. He is particularly influenced by the epistemology of social constructionism, which not only treats learning as a social activity, but focuses attention on the learning while actively constructing artifacts, such as instructional materials, for others to see or use.

Today Moodle is being used more widely. It is used in universities, high schools, primary schools, non-profit organizations, private companies, by independent teachers and even homeschooling parents. Moodle also has gained an international following as people from all over the world are now also contributing to the evolution of Moodle in many ways. Moodle.org provides a central point for information, discussion and collaboration among Moodle users, who include system administrators, teachers, researchers, instructional designers and of course, developers. Like Moodle, this site is likewise always evolving to suit the needs of the community.

***The effectiveness of e-learning***

So, what are the main reasons why some Philippine companies/schools go into e-learning?

For Assumption College, Lyceum of the Philippines, La Consolacion College and Mapua Institute of Technology, the need to be abreast with technological advances is critical. This is the main reason why they implement an e-learning system within their campuses. As one of the IT professors at Assumption College, told her students: "If you do not embrace such a technological breakthrough as e-learning, how will you compete in the IT world?"

For STI and the Technological Institute of the Philippines (TIP), the need for standardization of content propelled them into the e-learning world. Both schools decided that despite having several campuses with different faculties, graduates should be able to achieve equal-leveled and global standard knowledge through the use of e-learning.

Meanwhile, St. Benedict College and San Sebastian College realize the primary importance of having their curricula aligned with vendor-accredited courses that lead to global certification. Both institutions stress their desire to be the best in IT in their geographical areas. And e-learning would assist them in achieving this goal. In Cebu, the University of San Carlos (USC) has cited Yapster e-learning courses to be a complete package of the required standard of IT courses set by the school, especially for its high school students. Coupled with instructor-led sessions, e-learning has become a higher level of learning and enhancement for budding future leaders. To quote La Consolacion Manila’s Vice President for Academic Affairs, Dr. Ronald Pastrana, in a recent press statement, "E-learning will greatly enrich the learning experience of our students, making the school one of the pioneers in implementing e-learning, and more importantly bringing us up to pair with world standards."

These companies and schools not only achieved all their unique goals for going into e-learning, they later discovered that there is an "icing to the cake." Aside from being technologically advanced and the first Philippine college to implement accounting e-learning courses, Assumption now also boasts of e-learners with a 93 percent average grade in accounting in just one semester.

Lyceum of the Philippines achieved a 181 percent average learning curve from its computer classes.

Like I mentioned in my last article, implementing e-learning does not result in overnight success. It has to be done properly and thoroughly. And often, the main objective in implementing e-learning will be realized. The exciting part is experiencing the "bonuses" that you never imagined possible. Achieving the main goal to implement shows e-learning’s effectiveness but numbers reveal that there are so much more benefits to uncover. It’s like having your cake and eating it too. It just does not get any better than that.

***Philippine eLearning opens Its Doors to the World***

On December 6-7, 2013, the Philippine eLearning Society will host the International Congress on eLearning 2013 at the Heritage Hotel Manila, Pasay City, Philippines. The Philippine eLearning Society (PeLS) has been the country’s leading organization in promoting the development of eLearning competencies through education, training and collaboration among various stakeholders in government, industry and academe. The congress will be forum for an international exchange of research, innovation, experiences and best practices in eLearning.

The theme of the congress is “The eLearning Q.U.E.S.T: Harmonizing the Elements of a Global knowledge society." In the last decade, countries have focused on evolving into knowledge societies and developments in information and communication technology (ICT) have opened more opportunities for borderless collaboration and co-creation. In this stage of growing interdependence and multidisciplinary perspectives, there is a need to synergize the requisite components to nurture a global knowledge society. This congress aims to provide a collaborative model of teaching and learning online by determining the many elements that must be managed to create e-learning programs and to stimulate participation across diversity.

Specifically, the congress aims to:

• review and examine the technical, pedagogical/andragogical, management and social challenges associated with eLearning implementation and develop a model for collaborative eLearning in the global arena;

• strengthen the convergence of technology and learning theories to form meaningful settings for learners with different academic, industry and support needs and to ensure quality in eLearning practice and delivery; and

• Organize educators, researchers, educational technologists, instructional designers and students in discussing the issues related to the development of quality online education and the challenges of ensuring pedagogically sound eLearning practices.

The keynote speakers are Dr. Grace Alfonso, Chancellor of the University of the Philippines Open University and Dr. Ashley Tan, Head of the Centre for e-Learning of the National Institute of Education in Singapore. The lineup of international plenary speakers includes representatives from Desire2Learn, Edu 2.0, Kocorolab, DigitalFilipino, Electude, Polytechnic University of Hongkong and eLearningindustry.com The congress also features paper and poster presentations as well as roundtable discussions and virtual sessions.

***Best strategies of eLearning in the Philippines***

In the Webinar conducted by Enderun Colleges worldwide on e-Learning, one of the speakers said some of the best strategies of e-learning in the Philippine setting, most especially in giving assessments. Teachers should consider the type of internet access and device; academic load, and current level of digital proficiency. Also, teachers should provide more time, chances, or attempts for students to complete assessments, and give more focus on facilitation over control. In comparison, Ismailova, et.al. discloses that the role of e-learning tools in higher education provides students and teachers with solutions to tasks such as providing internet access at all times and from various locations for each participant in the educational process, creating a common knowledge space and making efficient use of educational resources.

One possible way to make the e-learning classrooms work is to train those people involved in the e-learning program of an institution by some experts in the field of educational technology and development of e-resources. Second, in terms of emergency, be prepared to overcome possible problems. Therefore, in lieu of textbooks and references, there could be online materials for the faculty members and students to read and work with. Finally, it is advisable to utilize synchronous online learning because the students could benefit more on this approach. Teachers could utilize a simple video and interact with their students at the same time. This will allow students to feel isolated and improve quality of interaction.

The whole world is experiencing similar experiences, although students do enjoy learning online, they also struggle to find solutions to their own problems in order to learn and receive instructions from their professors online. Those who could do something even amidst this COVID-19, are those who are really willing to learn and continue to nourish their minds with knowledge. Those who could not do anything could not be blamed because they had no means to do it even if they try all their best.

**Related Studies/Systems**

***Alternative Learning System***

The Brownsville Herald U.S. Immigration and Naturalization Service-approved schools across the country are beginning to enroll in a preliminary program called the Student and Exchange Visitor Information System, or SEVIS, which will allow them to admit foreign exchange students. The program is part of new measures to tracking foreign students, imposed after Attacks on Sept. 11 demonstrated flaws in the student visa system as evidenced by news accounts said Art Moreno, INS spokesman for the Harlingen District. The SEVIS program is an Internet-based computer system that enables schools to send notice of events or other electronic information to the INS during the foreign or exchange students stay in the United States.

According to Herald archives, 514,723 foreign students attended U.S. colleges and universities in the 1999-2000 academic year. Texas had 35,860 foreign students in the same academic year, the third-highest concentration in the nation.

The University of Texas at Brownsville and Texas Southmost College enrolled 195 international students for the 2001 fall semester and only 75 held student visas. Moreno said the program would not monitor what students do on or off campus, but ensure the students comply with the requirements of an F-1, or academic visa. If the student drops out, school officials will enter that fact into the system. The State Department and INS will know they are no longer enrolled and out of status if they are still in this country, he said.

According to the INS field guide, an F-1 visa requires a student to take a full course load, equivalent to 12 credit hours at the college level. Moreno said the student must be passing all subjects in order to maintain legal status in the country, in addition to a full course load. While being employed is not required, a student who chooses to work during the first year of study is limited to employment on campus only. After the first year the student may take a job off campus as authorized by a designated school official. If a foreign student does not meet the F-1 visa criteria at any time during his or her stay, the visa is revoked and the student must return to his or her home country. Moreno said participating schools must enroll any existing and incoming foreign students into the program. The preliminary enrollment period is limited to post-secondary, language and vocational schools accredited by and agency recognized by the U.S. Department of Education and public schools with the proper certification. Schools began enrolling into the program on July 1 and have at least until Aug. 16 to enroll in the program. All schools wishing to enroll foreign students must be enrolled into the SEVIS program by Jan. 1, 2003.

***Foreign Student Tracking System***

The researcher learned that the program is part of new measures to tracking foreign students, imposed after Attacks on Sept. 11 demonstrated flaws in the student visa system as evidenced by news accounts.

According to Carol Corbett Burris and Delia T. Garrity, by the time the Rockville Centre School District began to examine its levels of courses, rigid educational systems—ones that formally assigned students to college prep, general, or vocational curricular paths or schools—had been largely dismantled in the United States and replaced with somewhat less rigid tracking systems characterized by curriculum differentiation. In modern tracking systems, students are assigned to different levels of the same course, or to a course with a different curriculum that is either more or less rigorous (Lucas, 1999; Oakes, 2005).

In still others, students and their parents are allowed to choose a tracking, with certain conditions attached to the placement. A common example is allowing students to take an honors class provided that they maintain an average of 90 or above. Standards for tracking placement are uniform in some schools; in others, each department determines the number of tracking and tracking placement.

***Forma.LMS***

This free open-source Learning Management System focuses exclusively on online training as opposed to other Learning Management Systems that target academic training as well.

• Classroom Management

Forma.LMS empowers online facilitators in controlling every aspect of a course including attendance, different locations for each online training meeting or scheduling with their online calendar feature.

• Reports And Talent Management

You can create reports on online learner performance as well as course statistics and directly export them to Excel or send them to specific online learners. What’s more, you can also produce skills gap analysis to monitor and assess the skills of your online learners.

Plans and Pricing

• No Premium Options Available

Forma.LMS does not require any subscription money.

**Ilias**

This open-source Learning Management System was the first one to be SCORM 1.2 and SCORM 2004 compliant. It is generally praised for its versatility, customization options, scalability and responsive design that functions on any device.

* Customization And Scalability

ILIAS is significantly customizable in terms of themes, eLearning scenarios as well as the parameters you can specify for each user to modify. ILIAS also has great flexibility in the number of users it can support ranging from a few to a few thousand.

* Industry Standard Compliance

SCORM 1.2, SCORM 2004, LOM metadata. IMS QTI Test &Assessment. XML, CSV and Excel exports. IMS LTI for external application embedding.

Plans and Pricing

* No Premium Options Available

ILIAS does not require any subscription money.

***Establishing a Longitudinal Student Tracking System***

Basic principles and techniques for constructing a student tracking system, either at the institutional or system level, are presented and illustrated. The design, development, and utilization of the LONESTAR (Longitudinal Student Tracking and Reporting) system are described. The system, which provides information on student achievement, program effectiveness, student retention and persistence, and enrollment behavior, is based on a cohort tracking methodology. The following topics are addressed basic design issues; selecting and defining tracking system data elements (demographics, educational background, enrollment status, term tracking, follow-up elements, and derived data elements); constructing and maintaining the tracking database; and defining and generating system reports (institution-level and state-level reports; progress, performance and remediation status and evaluation reports; and interpreting results and using the database). LONESTAR data elements and sample pages from the LONESTAR data element dictionary are appended.

**Synthesis**

For people who are having issues in school, the educational process can be a significant topic. People are, however, increasing their knowledge to know more about technology than they previously thought. Because everyone connects everything to technology, a system would be required not only for education, but for everything that can benefit everyone.

Despite the lack of an LMS, students continue to be themselves. The LMS is gradually assisting students in improving and passing all prerequisites on time. Many schools desire their own learning management system. Online lessons might be difficult, but with the right framework in place, learning can be boosted again.

A unique system that is user-friendly and well-designed. To keep students interested at all times, LMSs should be simple to use and process. It is critical to ensure that all schools have this system and that it can provide online classes even after the pandemic has ended.

**METHODOLOGY**

This chapter presents the materials, methods, and data gathering techniques, data analysis, and implementation plan.

**Requirement Analysis**

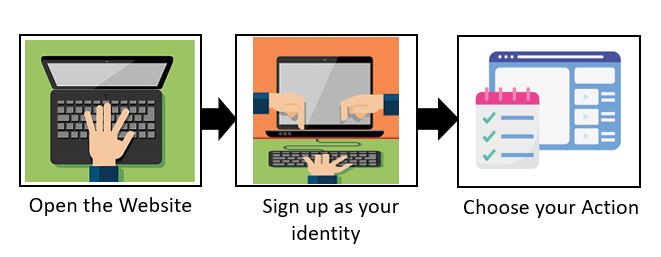
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Figure 2. Learning Management System with Online Exam

An online test and learning management system that allows you to administer exams and classes without having to meet in person. The technology will assist in the development of an effective digital platform for testing and e-learning.

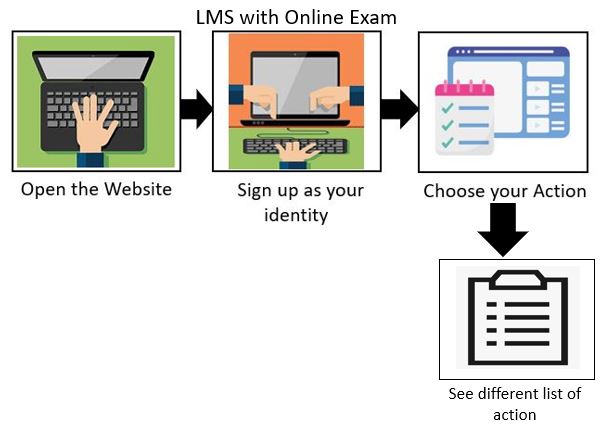
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Figure 3. Learning Management System with Online Exam

Any part of the system's data can be encoded or managed through the admin panel. The instructor panel can talk about and upload modules, quizzes, and exams into the system for the students. In order to attend classes and take exams, students would merely need to register on the system. Various LMS systems have been developed, but due to poor design and instructions, the majority of them are difficult to use. The supporters will make certain that the system they develop is well-designed and user-friendly.

**Requirement Documentation**

Based on the interview conducted with the client, the following features have been agreed:

Table 1. Features of the proposed system

|  |  |
| --- | --- |
| **Main Features** | **Detailed Features** |
| Data tracking | 1. Learning Management System shall use saved data to track a learner's journey. 2. LMS shall give them a greater understanding of how the courses and learners are performing all in one place. |
| Automated alerts and notifications | 1. An LMS shall deliver feedback to the appropriate people at the right time. 2. LMS shall provide auto-alerts to learners about their training deadlines or telling educators about a user's completion rates. |
| Centralized learning materials | 1. LMS shall allow instructors to customize how they test student knowledge. 2. An LMS shall provide features like multiple-choice, short essay questions and question randomization. |
| Manage User Profile | 1. The system shall allow user to create profile and set his information. |
|  |  |
| Educational materials | 1. A system shall provide learning materials could include training manuals, videos, docs, images. 2. This System allows the teachers to upload files and students to download files. |
| Communicate through message | 1. This System allows the teachers and students to communicate through a message. |

The following table, however, presents the non-functional requirements of the proposed system:

Table 2. Non-functional requirements of the system

| **QUALITY ATTRIBUTES** | **DESCRIPTION** |
| --- | --- |
| Time Behavior | The system must load within 5 seconds |
| Usability | The learning management system should ensure that all web pages have the same design and experience. |
|  | Colorblind folks will be able to use the learning management system. |
| Security | The back-end databases of the learning management system must be encrypted. |
| Scalability | The website attendance limit must be scalable enough to support 25,000 users at a time. |
| Compliance | The system must meet Web Content Accessibility Guidelines WCAG 2.1. |

**Software Design**

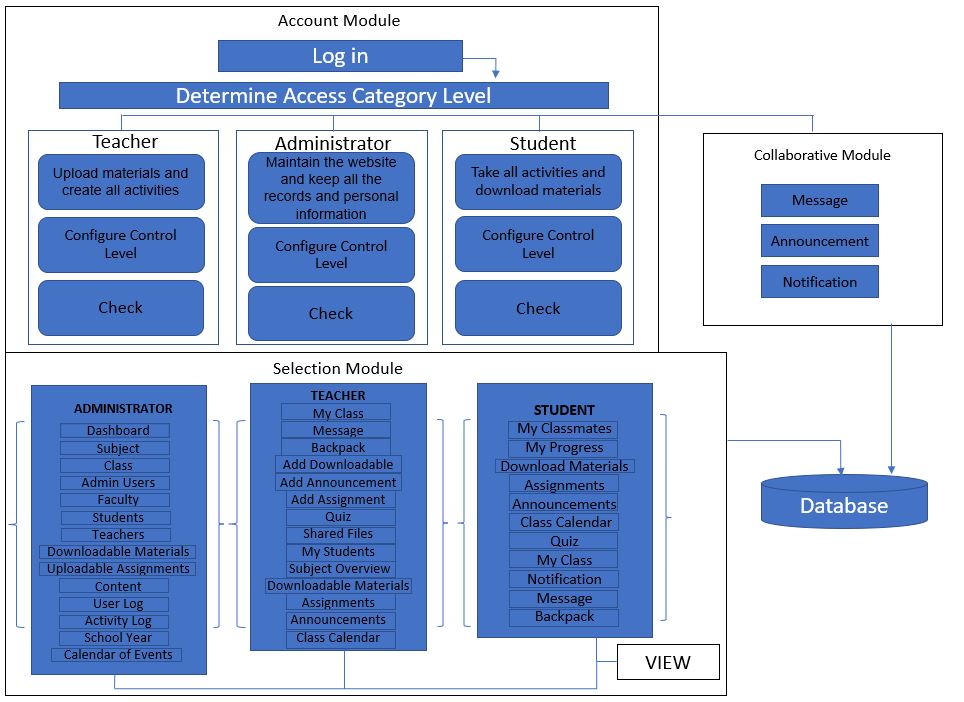
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Figure 2. System Architecture

The system architecture, presented in Figure 2, is composed of different modules:

**Homepage Module.** This module contains a background picture and fact information about client like contacts, address, motto, vision and mission. It also contains the students and teachers login form.

**Admin Login Module.** In this module, system administrator will log in through the database registered username and password. If the username and password is incorrect then process will be failed.

**ADMIN PANEL:**

* **Dashboard Module.** In this module, the admin will see the progress, records and activity by the users of the website.
* **Subject Module.** In this module, all the given list of subjects by grade are displayed here. Admin can add and update subject title and description.
* **Class Module.** In this module, all the registered list of class by grade are displayed here. Admin can add, search and delete class each grade.
* **Admin Users Module.** In this module, all the registered list of administrators are displayed here. Admin can add, search and delete administrator users.
* **Faculty Module.** In this module, all the registered members of faculty by grade are displayed here. Admin can add, search and delete faculty and the person in charge each grade.
* **Students Module.** In this module, all the registered students by grade are displayed here. Admin can add, search and delete students’ records. Learners Reference Number or LRN is strictly required to add students.
* **Teachers Module.** In this module, all the registered teachers by grade are displayed here. Admin can add, search and delete teachers’ records.
* **Downloadable Materials Module.** In this module, admin will see and search the list of records of file uploaded in the downloadable materials.
* **Uploadable Assignments Module.** In this module, admin will see and search the list of records of assignment file uploaded in the uploadable assignments.
* **Content Module.** In this module, admin can add, search and delete contents like motto, vision, mission and etc.
* **User Log Module.** In this module, admin can search and observe all the users who log in and log out every time to the website
* **Activity Log Module.** In this module, admin can search and observe all the activities by the users who log in and log out every time to the website
* **School Year Module.** In this module, admin can change the school year.
* **Calendar of Events Module.** In this module, all the events are displayed here. Admin can add, update and delete events in the calendar.

**STUDENT PANEL:**

* **My Classmates Module.** In this module, the students will see all of their classmates here.
* **My Progress Module.** In this module, the student will see their progress in every activity they will need to do.
* **Downloadable Materials Module.** In this module, all the files uploaded by teachers are recorded here. Uploading a file to help their student and files can check in the backpack so that it will not be storage consumable.
* **Assignments Module.** In this module, the students will upload the finish assignment and submit to the teacher.
* **Announcements Module.** In this module, the students will see all the announcements that the school implementing events.
* **Class Calendar Module.** In this module, the student will see all the events in every class.
* **Quiz Module.** In this module, the student will see the all the quizzes they need to do by their teachers.
* **My Class Module.** In this module, the students will see all the class every grade that they need to update
* **Notification Module.** In this module, the students will see all upcoming activity and updated by the checking notifications.
* **Message Module.** In this module, the student will ably see and message all the teachers even other student if they have questions.
* **Backpack Module.** In this module, all the files they download it will be recorded here. They can remove the files in backpack.

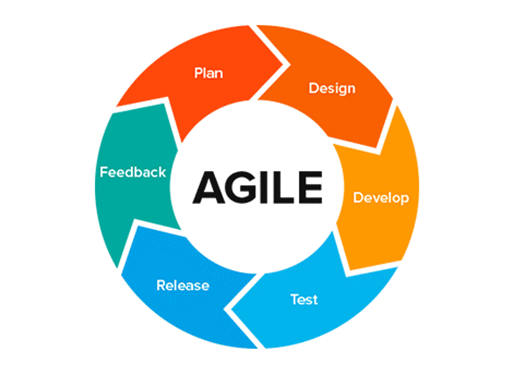
**TEACHER PANEL:**

* **My Class Module.** In this module, the teacher will see all the schedule of their class. Also, they can add and remove a class.
* **Notification Module.** In this module, the teachers will see all upcoming activity and updated by the checking notifications.
* **Message Module.** In this module, the teacher will able see all the messages from their students, they can create a new message each other and reply all the messages they got.
* **Backpack Module.** In this module, all the files they upload/download it will be recorded here.
* **Add Downloadable Module.** In this module, teachers are required to add materials to help their students to be updated. By uploading a file, put a description and choose the class.
* **Add Announcement Module.** In this module, teachers are also required to make an announcement for their students. And they can create an announcement then choose a class or select all the class.
* **Add Assignment Module.** In this module, teachers can make an assignment for their students by uploading a file, put a description about the assignment and choose the class. Assigning to students to make their assignments is to have knowledge before another lesson to be discuss.
* **Quiz Module.** In this module, all the quizzes they make for their students are recorded here. Teachers can set a timer to answer the quiz, delete, update and add quiz or choose a class want them to answer the quiz. All the students record who already done answering the quiz or who are not yet are recorded here.
* **Shared Files Module.** In this module, all the files that shared files by their students and other teachers are displayed here.
* **My Students Module.** In this module, teachers are able to see the list of their students every grade. And they can add a student to join the class.
* **Subject Overview Module.** In this module, the teachers are required to have a description about their subjects. It will display here.
* **Downloadable Materials Module.** In this module, all the files uploaded by teachers are recorded here. Uploading a file to help their student
* **Assignments Module.** In this module, the teachers are able to see who already take the assignments and who are not yet. It will display here quiz, delete, update and add quiz or choose a class want them to answer the quiz.
* **Announcements Module.** In this module, teachers can create and delete an announcement. For the sake of their students to not be worried about the upcoming activity they will have.
* **Class Calendar Module.** In this module, the teachers will see all the events in every month for their class.

**Development and Testing**

PHP, JQuery, CSS, JavaScript, and Bootstrap is the system development software used by the proponents, along with MySQL for creating the database, and Microsoft 365 for documentation. The system will be run on the proponent's computer, which has Windows 10 Pro Home Bit Operating System, AMD A6-7480 Radeon R5, 8 Compute Cores 2C+6G 3.50 GHz, 8 GB DD3L RAM, Quad-Core, and Intel HD Graphics.

The researchers will construct the web-based system using the Agile Scrum approach, which covers steps like Plan, Design, Develop, Test, Release, and Feedback and has a responsive design compatible with mobile devices for determining the Learning Management System with Online Exam.



**Figure 4. Agile Methodology**

Agile software development methodology is a process like Waterfall model, iterative model, and v-model. The word Agile means ‘ability to move quickly and easy’. The key aspect of this methodology is to respond smoothly to change.

The researchers use Agile methodology because it has sprints or loops that are shorter in length during the development and implementation of pre-determined features. With this methodology, it will look like a Waterfall model in which it will take several months or years to complete. Other users will not be able to see the end until the project is complete. At the end of this cycle, the project will have short maintenance before letting the user test it.

**Planning**

In this first phase, the researchers will need to check about to determine and identify the needs for the systems' full functionality. This can be seen in online research, journals, publications, and news.

**Designing**

This is the next level in the system's evolution. The specification of data gathered during the planning phase is required for design. The researchers will construct a system presentation based on the information gathered during the planning phase.

**Developing**

The proponents employed trial and error coding to see if the successful design had any errors. The flow and layout of the software will be authorized, intelligible, and ready to use after each execution or debugging. PHP, CSS, JavaScript, Bootstrap, and MySQL will be used by the developers.

**Test**

Following the development of the system, testing will be performed to ensure that it is operational and meets customer requirements. In this section, the proponents may make some amendments to avoid mistakes.

**Release**

Following the development of the entire system, the developer will install the program at Bucandala Elementary School so that it may be used to advance their learning system

**Feedback**

Upon the testing of the system, the proponents should seek client feedback on its performance. Check the system, especially if it needs to be updated, maintained, or upgraded to meet the needs of the customer.

**Data Analysis Plan**

An example of a data analysis strategy is shown below. Data sampling, equipment, and statistical analysis are all part of this.

HK verbatim transcribed the interviews. The data was examined using qualitative content analysis (Graneheim & Lundman, 2004; Lindgren et al., 2020). The interviews were reviewed several times to gain a better understanding of the topic and to uncover the meaning units in the material. During the analysis, a back-and-forth movement between the whole data material and sections of the text was required. Meaningful units related to the study's purpose were identified and condensed while the main message was maintained (manifest content). Finally, the distilled data was abstracted and divided into groups and topics (latent content). Qualitative content analysis and other "standardized" approaches are sometimes conceived of as technical tools for basic, shallow, and rudimentary text sorting, with shallow findings, scientific rigor, and proof. To improve the reliability of qualitative content assessments, we focus on abstraction and interpretation during the analytic process. There are few definitions of these concepts to our knowledge; this study aims to clarify and show the difference and interaction between abstraction and interpretation during the many stages of qualitative content analysis. We investigate the links between abstraction and interpretation when selecting, compressing, and coding meaning units and constructing categories and themes on multiple levels. The examples provided are based on our experience teaching and supervising students at various educational levels.

To acquire data, the researchers created a study question interview for the customer to complete. The interview questions establish the school's history as well as the benefits of the proposed method. The researcher interviewed users and looked into the school's rules and procedures. The researcher picked this technique because it is easier to acquire opinions and information through questions and interviews. It may take some time, but the customer will supply accurate information about the school of choice. The data gathered will aid the advocates in determining how the system should be planned and constructed. The data gathering process's end result summarizes all of the information that can be quite beneficial. The data gathering method's outcome summarizes all of the information that can be extremely useful and important in the development of the system.

|  |  |
| --- | --- |
| **SCORE** | **INTERPRETATION** |
| 5 | Excellent |
| 4 | Very Good |
| 3 | Good |
| 2 | Fair |
| 1 | Poor |

Table 3**.** Options in each question in the questionnaire.

|  |  |
| --- | --- |
| **RANGE OF THE WEIGHTED MEAN** | **INTERPRETATION** |
| 4.51 – 5.00 | Excellent |
| 3.51 – 4.50 | Very Good |
| 2.51 – 3.50 | Good |
| 1.76 – 2.50 | Fair |
| 1.75 AND BELOW | Poor |

Table 4. The Likert Scale

**Statistical Treatment of Data**

The following statistical tools were used in the presentation and analysis of data gathering in the study.

1. Mean. This is the calculated “central” value of a set of numbers.

The formula is: X = (∑x) / N

Where:

X – Weighed mean

x – Weight of each portion

∑ – summation

N – Total number of populations

1. Frequency and Percentage. This measured the ratio of frequency of respondent’s data. The formula is: P = (f / n) \* 100

Where:

P – Percentage

f – Frequency

n – Number of respondents

The computed mean used Liker’s Scale based on the descriptive interpretation.

Ranking. This is a relationship between a set of items such that, for any two items, the first is either “ranked higher than”, “ranked lower than” or “ranked equal” to the second.

**Implementation Plan**

Following the modification, the created system will be sent back to Bucandala Elementary School to be presented to the expected users. If the institution decides to employ the system, the researchers will pass it over along with the relevant paperwork. It will serve as a guide for the administrator in charge of system updates and maintenance. The researchers would get a letter stating that the system would be given to the university for free and that they would no longer be responsible for its upkeep. The researchers will use a variety of strategies if the system is deployed. These strategies are listed below.

|  |  |  |  |
| --- | --- | --- | --- |
| **STRATEGY** | **ACTIVITIES** | **PERSONS INVOLVED** | **DURATION** |
| Make A Practice Run | Make a test case that your administrators and users can use. Any concerns that arise should be documented and reported to the team members as well as the LMS vendor. | April Rose Cabalhug  (programmer)  Rica Rogero  (documentarist) | June to July 2022 |
| Evaluate and conclude | Examine and evaluate the LMS's technical performance, including page uploads, upload time, and overall user experience. | Rializa Magpugay  (documentarist)  Mary joy Terol  (documentarist) | June to July 2022 |
|  |  |  |  |
| Finalization | For as long as the LMS is operational, seek for methods to improve the system, optimize content, add more courses, and polish the user experience | Rica Rogero  (documentarist)  April Rose Cabalhug  (programmer) | June to October 2022 |

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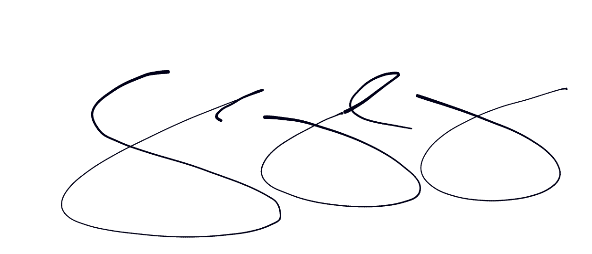
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