

Integrated Educational Management Tool (IEMT) for Adamson University

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Abstract— The research project developed the Integrated Educational Management Tool (IEMT) for Adamson University. Its main objective is to provide integrated system for academic processes which aid the institutions faculty for having more effective and efficient in conducting examination and giving of student grades, redundancy of data and efforts, accessibility and reliability of information in terms of examination and grades. Its features are composed of two academic main modules and sub-modules namely: examination management module that facilitates creation of examination, collections of examination answers, auto marking and submission of scores to the electronic class record and produce printable reports; student grading system that provides electronic class record and seat plan; faculty loading of subjects; has student enrolment; content management of web site; information banking of employee and student information; and management of different user accounts that provides privileges. The system was built using various open source technologies such as PHP, HTML, CSS, XAMMP, JavaScript and MYSQL for database. The developed system was tested based on the academic standards of Adamson University. The system was rated “Excellent” with a mean average of 4.77 by the respondents under with the Information Technology and Management department, which proves that the system can be a useful tool for educational institutions academic processes.

Keywords— Content Management System, e-Class Record, Exam Auto Marking, Examination Management System, Information Banking, and Integrated Educational Management, Student Grading System.

I. INTRODUCTION

The implication of technology in education nowadays leads the educational institutions to become more effective, efficient, accessible, and reliable especially the roles in teaching – assessment process. Diversity of assessment approaches and systems have been proposed over the past years [1]. As information technology keeps on moving, the integration of assessment and student performance records have been transformed from traditional paper and pencil to computerized and web based format.

Accordingly, test questionnaires for quizzes, major exams, and other forms of assessment are ideally meant to be readily available for instructional use in a school. This efficiently enhances teachers' time and effort to be favourably available for other value added areas for their overall productivity.

Furthermore, this practice is more to be on a personal level of a teacher rather than institutional. Meaning, there is no scheme in an institutional level to preserve test

questionnaires that can be retrieved later for its purpose. In addition, most of the teachers prepared exams, quizzes, even seatwork, or assessment materials in which similar tasks are being repeated over and over again, thus duplication of efforts.

Additionally, no teachers are alike, same is true with their created examination manuscripts, some could be easier and others may be the hardest experience they could ever have. Even a bright student could get a lower grade under a tough exam as compared to an average student taking easier exams. This could be unfair for students under different teachers handling them. That is why they have created departmentalized exams to standardize exams at an institutional level. Likewise, preparation for such this, takes tedious coordination and effort among teachers to take place. So it has been practiced to select only few subjects to be under such scheme, and those faculties do this only for major exams. If faculty and administration can bring this scheme further down up to quizzes or even seatwork, this would make the class instruction for every student to be truly standardized and fair.

Moreover, production of exam manuscripts has never been cheaper. Whereas, there are computer laboratories that can be made available for this purpose, this is an opportunity to go green with the environment. Teachers can make use of these facilities as the efficient venue for student assessment. This would also help eliminate the most tedious part of giving tests, which are checking and recording. In manual process, it is highly subjected to human error, intentional or unintentional.

Furthermore, educational institution also would only hope for the best for their students in terms of academics and their overall well-being. Nevertheless, along the way, students have many obstacles to overcome in order to achieve optimal academic performance. Different types of stress, such as social activities, psychological and etc., will pose threat to student's academic performance. That is why the guidance office is in place which handles very well such aspects to help students go back with their track positively. Furthermore, in university setting, it's hard to tell which student suffers from these various obstacles in their life that affect their academic performances. One key indicator would be the student grade as he/she progresses.

Moreover, in most cases, referring to these records – grades that both students and guidance office look upon to evaluate, these are already the final grades or maybe periodic grades occasionally. These final or periodic grades are still being built around out of the student's class performances such as quizzes, seatwork, exams and etc.

Additionally, if students and guidance office keeps track his/her performance down to its detail, there would be a very good chance for improvement before having his final grade. Having these data systematically available to students and these data streamlined for guidance and counselling requirements, it would be a very good indicator for guidance and counselling to keep students in efficient action.

With the underlying situation, the “Integrated Educational Management Tool (IEMT) for Adamson University” has come its way as a solution. The IEMT is a generic web based system that integrates academic – based tasks particularly in terms of examination and class record which are commonly conducted in an educational institution that helps educators work easier and more enjoyable.

This study provides solution to the following problems, namely: (1) how available the class record and test materials when in need? (2) how much time does a teacher would spend for preparing exam materials, checking and recording exam results? (3) does the time-frame for examination preparation in contrast to its test delivery has something to do with the quality of its content, (4) how frequently does a teacher prepares and/or update similar examination materials for same subject? (5) what will happen to the old questionnaires? (6) are there any practice tests being provided to the students? (7) are teachers collaborating with fellow teacher to synchronize their subject teachings which would reflect in its examination questionnaires? (8) how does a student monitor his/her examination, attendance, and other class performances? and (9) how much is the costs for generating test manuscripts and class records.

A. Conceptual Framework

No more than Internet-based technologies have been already become a significant part of many services that can be found in many different aspects in the society. Replicating this with any tasks/procedures in a school would only promote efficiencies in various perspectives.

Moreover, conceptual framework presented as shown in fig. 1 shows the different stages of the process involved to achieve the objectives of the study.

Assessment materials for giving quizzes, exams, and the likes, are the primary data of the systems application. Different teachers under the same subject would have collaboration with each other, regarding the most appropriate questionnaires that they could give in a uniform and standard set. This test questions are efficiently stored electronically and can be retrieved for the next batch, which save the duplication of efforts for test preparation. Additionally, these test items can be changed or updated easily. Moreover the examination questions can be selected to be activated during test.

Furthermore, the system designs particularly the eClass record was customized and fitted with the institution’s requirements (for high effectiveness and efficiency to adapt to this implementation.)

The examination deliveries are in the form of either manual or computerized. By taking advantage of the use of computer laboratories, which are not commonly being used during major exams, it could facilitate for this

purpose. Administration could save tremendous resources with this setting. Results and recording would be automated. For some subjects, not having a computerized classroom, still its manual process would do the same, but the contents of its exam materials were already generated from a standardized set of test materials that have undergone collaboration and review, for fair and effective assessment.

Generation of different type of sets for exam becomes easier. From a number of questions on a test bank, the faculty could choose, how many items there are in the test, and the system randomly selects active questions until the required numbers of items are filled up. This process could have different sets of test.

Examination construction has rules according to academician, especially specializing Education. This system would follow the said rules such as alphabetically arranged items for multiple choices, shortest phrase to longest phrase and etc.

Examination results were printed automatically on the bottom part of the computerized exam. This provides feedback at once to the student taking the exam. It generates histogram of taken tests to review student performances. The teacher has an option, if the results will go automatically to the class record.

Teachers can analyse item per item, how effective the questions and/or the overall assessment they have given.

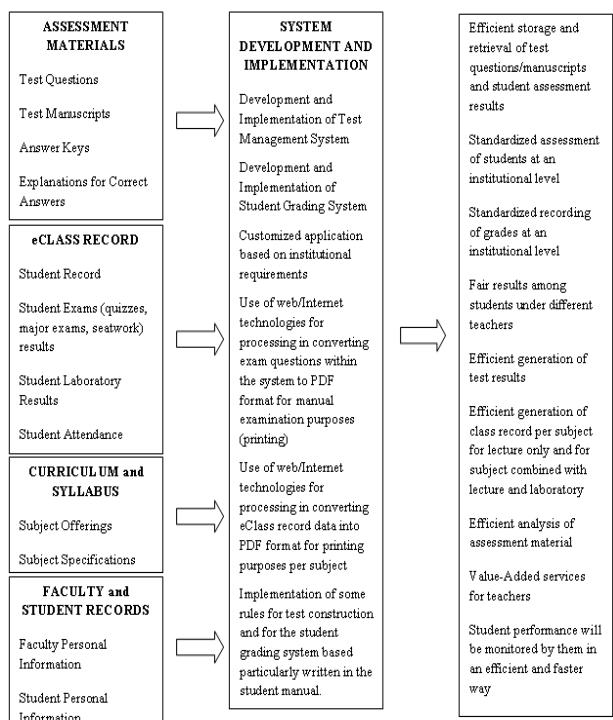


Fig 1. Conceptual Framework of Integrated Educational Management Tool of Adamson University

II. RELATED LITERATURE

According to Paul Monroe, “Educational management is a comprehensive effort dealing with the educational practices. It deals with educational institutions - right from the schools and colleges to the secretariat. It is concerned with both human and material resources [2].

Moreover, Sir Graham Balfour cited that, "the purpose of educational management is to enable the right pupils to receive the right education from the right teachers, at a cost within the means of the state, which will enable pupils to profit by their learning" [3].

Information system plays a very important role in the institution of the higher education nowadays. As stated by Gulbahar (2008), educational institutions around the world are reconsidering and restructuring the way in which they are preparing to use information technology to enhance more in terms of efficiency, accessibility, reliability and accuracy in their academic – based tasks [4]. Furthermore, as solutions for efficiency, and competitiveness in terms of academic activities, many educational institutions nowadays adopted and used information system, but less of them have the means to accommodate and flexible to the growth of their institutional needs which change the organizational structure, policy, regulations, and change the technology itself (Suwardi and Permatasari, 2007) [5].

According to Hua and Herstein (2003), in no hesitations, the education contributes to the advancement and enrichment towards cultural, social and economic development in all societies by providing individuals with the means to improve their health, skills, knowledge, and capacity for productive work. Many years of research have provided clear evidence that education is a key factor for growth and development [6].

According to Rashad (2008), the growth of the Internet, and in particular the World Wide Web, is already influencing the way science is taught and will undoubtedly do so to greater extent in the future. In areas of education it offers a medium that has the potential to be more responsive to students.

In the past decades, a variety of assessment approaches and systems have been proposed. And as information technology keeps improving, numerous of them have been transformed from traditional paper – and – pencil to computerized and web – based format in recent years. It is urgent to develop an automatic grading system which can grade the operating questions as well as the objective ones.

Moreover, Web – Based Examination system could be used via Internet or intranet for managing student examination. The Web –based assessment is widely used to support students in learning and help them to achieve their learning goal. Furthermore, application of examination management systems includes assessment of learning process itself (Rashad, et. al. 2008) [7].

Also, Yuan (2003) proposed a multi-layer based exam system based on Microsoft DCOM technology. The system was not reliable enough and it uses a specific copyrighted technology instead of open source technology. The system was designed specifically for computer science students and was not designed for general students [8].

Furthermore, Jelica (2001) also proposed a system that is expected to evaluate student's knowledge in a massive examination that also provides an efficient means of generating and scoring tests with multiple choices answers [9].

Additionally, Jordi (2001) also presented a study that used wireless technology for a trade – off solution between examination security and flexibility [10].

Furthermore, Chien Lin (2003) designed a prototype automatic quiz generation system for a given English text to test learner comprehension of text content and English skills. After the emergence of modern technologies in the field of Information Technologies, virtual learning has attained a new form. The way of announcing exams grades is important topic in e-learning. For announcing exams grades on the web, various methods have been proposed [11]. In his paper Shirale –Shahreza (2008) introduced three new methods for announcing the grades of some courses at the some Iranian universities are provided [12]. Rashad, et. al. (2002) stated that secure electronic exams are one of the most difficult challenges. The relevance of the examination process for any academic institution implies that different security mechanisms must be applied in order to preserve some security properties during different examination pages.

According to Suzanne Pitner, accurate education records don't happen by accident. The teacher must plan and set up a system that will be easy to follow and that will track grades as well as the many paper records that must be kept on file. These papers include parent communications, notes, student work examples, records, seating charts, informal evaluations, and behavior records [13].

Grading system is an integral part of the various tasks that need to be done by every faculty member on a regular basis. As cited by Rosas (2005), grades are one of the major realities of higher education. They are used for merit scholarships. Employers use grade points to hire the most capable job candidates. Academic merit as evidenced by high grades is extolled and praised by civic leaders. By not using grades to differentiate students from each other, teachers fail to provide vital information to corporate recruiters [14].

One of the companies who produced this kind of system is the MySchool, a Web Based School Management Software which makes the teachers' life easier, by simplifying the collection and production of grades reports. The system gives teachers online access to all their resource allowing them to submit their contributions at their own time from home, school or anywhere with internet access [15].

The attendance system is one of the most important data within the class records of the teacher. According to Richardson, L. (2010) this data is based around tracking student absences. In addition, the attendance record contains namely: the date and the period of absence; student number of the student; the reason for the absence; the subject-section of a subject for subject based attendance; a late field to track minutes late (little used) [16].

As cited by Mustafa, M. et al. (2011) who developed an E-Kehadiran, a Malaysian model for controlling and monitoring student's absence misconduct via online. According to the researcher, the problem of school absenteeism is a phenomenon of student's misbehaviour that is becoming increase among pupils (primary) and students (higher institution) [17].

According to the Attendance Policy of Adventist University of the Philippines (2012), no student can absent himself/herself from a large number of classes without

losing significantly from the learning opportunity available to him/her [18].

Furthermore, evaluation is a systematic determination of merit, worth, and significance of something or someone using criteria against a set of standards. It is often used to characterize and apprise subjects of interest in a wide range of enterprise, including the education and other services as cited by Capariño et al. (2009). She also stressed out that there are professional groups who will assert the quality and firmness of the evaluation process according to the level of the topic interest [19].

III. PROPOSED SYSTEM

This research study used both descriptive and software developmental methods of research. As stated by Ariola (2006) descriptive method attempts to analyse interpret and report the present status of a subject matter [20]. According to Calderon and Gonzales (2014) this method defined by best in the following way as: "it describes and interprets what it is. It is concerned with conditions of relationships that exists; practices that prevail; beliefs, processes that are going on; effects that are being felt, or trends that are developing". Also, descriptive research reveals problems or abnormal conditions so that remedial measures may be instituted (Calderon et. al. 2014) [21].

On the other hand, developmental method of research was a creative development of a model or system based on a systematic determination of the present situation or system and the goals sought as cited by Santelices (2014) [22]. Moreover, based on the study of Knight, Steinbach and Kellen, in the field of information technology, this kind of research method refers to the framework that was used to structure, plan, and control the process of developing information system [23].

In employing a descriptive method in this research, the researcher came up with the description of the status of Adamson University in terms of examination and student grading system. This gave the researcher into a deeper understanding, analysis, interpretation of the present nature, prevailing conditions of how a faculty and the institution behaves or functions in the present situation. As a result of using the said research method, the researcher developed an information system that can be used as a tool for Adamson University in terms of examinations. The researcher also developed a student grading system processes that provides benefits both for the administration side and the faculty who were involved on the said processes.

Furthermore, the applications of developmental method of research in this study were applied by the researcher during the careful planning, designing, and actual development of the sought information system as proposed.

In the gathering of data, the researcher used and applied the Purposive and Pure random sampling techniques. In purposive technique, the researcher selected the Information Technology and Management (IT&M) Department in Adamson University based on the purposes and variables of the study. Furthermore, the pure random sampling technique applied where in everyone in the Information Technology and Management Department has

an equal chance of being included as respondents of the study.

The researcher randomly selected from the department coordinator and faculty members. These respondents were the eleven (11) faculty members and one (1) department coordinator. The system was presented to the respondents by an actual presentation and demonstration of the whole functions of the system. The presentation likewise was conducted for the respondents to evaluate the quality of the system by rating it based from the criteria reflected on the evaluation form. The functions and processes of the software were also discussed during the presentation to ensure that the respondents could evaluate the system properly. Suggestions and recommendations from the respondents were properly noted for the improvement of the system. In addition, the primary goal of the evaluation form was to test the performance of the system in user's view.

Moreover, the evaluation form helped the researcher came up with concrete data on the level and degree of evidences towards the realization of the study.

Before implementation and deployment of the developed system take place, the researcher has to ensure the accuracy of the program meeting the expected functionality, reliability, usability, efficiency, portability, content, design, technology used and the originality of the system as required. For this reasons, the researcher prepared evaluation form to evaluate the whole system, to ensure that all features of the system functions perform according to required specifications. Based from the evaluators' comments and suggestions, the researcher corrected errors and formulated feature enhancement of the system.

The evaluation form was composed of five (5) criteria. This criteria used were defined by the International Organization for Standardization (ISO) 9126. The ISO 9126 is a quality model standard for both software development and software evaluation. The five criteria used were the system functionality, efficiency, usability, reliability, and portability.

TABLE I
LIKERT'S SCALE

Scale	Equivalent	Mean Rating Scale
5	Excellent	4.50 – 5.00
4	Very Good	3.50 – 4.49
3	Good	2.50 – 3.49
2	Fair	1.50 – 2.49
1	Poor	1.00 – 1.49

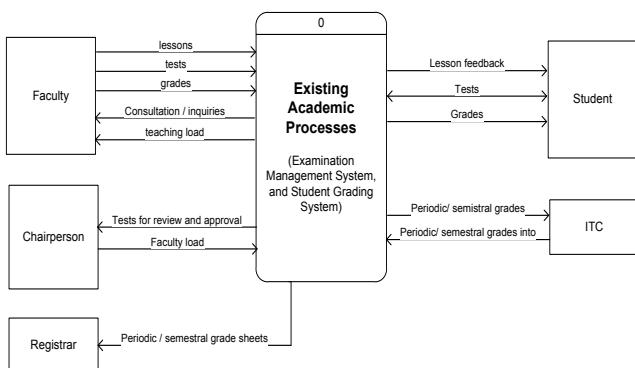
The Likert's scale shown in table 1 above were used in the software evaluation, its equivalent interpretation and mean score rating which was designed to capture ranges probability after averaging the scores.

Furthermore, this study used the descriptive statistics in interpretation and analysis of data collected. This

includes the frequencies and weighted means. Simple frequency count was applied in tallying responses while weighted mean was utilized to determine the average response for every criteria description. Also, weighted average mean for each of the five criteria were also computed by adding all the weighted means divided by the total number of descriptions for every criteria. Lastly, an overall weighted mean was calculated to get the overall quality characteristics of the system perceived by their respondents.

A. System Design

In any software development process, design methodology was employed first in order to come up with effective and desirable results. In order to achieve the goal of having an effective and desirable system, current systems should be explored and evaluated first.



The Existing Context Diagram shown in Fig. 2 deals about the entities involved and the input / output flow of information into and from the academic processes as a whole. It focused on the processes where this study was concerning with such as grading processes, provision of tests, loading of subjects to a faculty, and student's admission and enlistment.

This context data flow diagram showed the typical academic processes that an educational institution has. It was determined by the researcher through observations in its long experienced in the field of teaching from various institutions, that the following entities and flow of information were identified.

The researcher conducted the study for enhancing the following areas such as student performance evaluation, recording and computation of grades. It was also imperative to include how Students started to be admitted by providing their information to the school (student information), and be enlisted (selected subject schedule) in a class; how a subject was being offered (semester subject offering) by the Registrar during enrolment, and how additional subject sections (new/additional subject opening) may be requested by a Chairperson to be opened; and how a Chairperson gave a teaching load assignment (teaching assignment) to a Faculty (teaching load). Including these areas for the study, were greatly enhanced the capabilities of the proposed system.

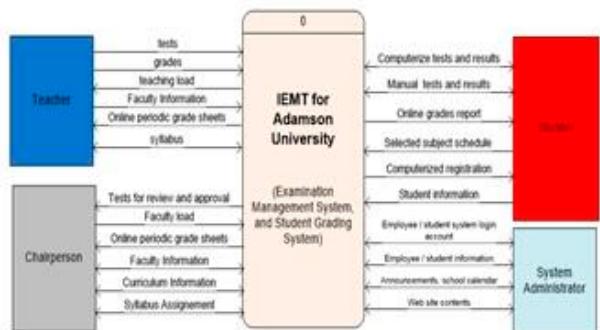


Fig 3. Context Data Flow Diagram of Integrated Educational Management Tool for Adamson University

Fig. 3 shows the Context Flow Diagram of Integrated Educational Management Tool for Adamson University. In the said figure, there were several changes in the information that flows in and out of the system from the entities as the existing. Since that several information were made available online (LAN-based and/or internet), some of the data/information have also changed. In contrast to the existing system; several automated processes were included to enhance the existing processes. Included among them were the following:

(a) Examination Management System has been included to assist the Student Performance Evaluation. These were used for storing and retrieving test materials electronically, thus eliminating repeated tasks for the faculty in tests/ examination preparations. It also allowed for a computerized test for students providing significant advantages for the school, it creates a paper-less testing, thus saving paper and printing costs, and eliminates the time and effort for checking. The score results can be exported to the grading system for automatic recording of student's performance. All tests were entered electronically in the system even if computerized testing is not possible, the saved questionnaires can be retrieved easily for printing, and use it the conventional way.

(b) eClass Record (Student Grading System) eased the burden of the faculty in class record keeping, and grades computation. Unlike other conventional automated grading system, this one, records all class performances including quizzes, seatworks, attendance, and others, thus providing the faculty an electronic class record. These records were extracted to automatically generate the necessary grading sheets as required by the chairperson. And also the student grades in detailed were viewable thru online.

(c) Curriculum Management used for the creation of the curriculum of the courses offered by each department of an institution by which the Chairperson and the Dean approved that newly created curriculum.

(d) Syllabus Management was connected to the Curriculum Management. These was used when the Teacher create / update subject syllabi which was assigned to them by the Chairperson. The created syllabus by the faculty and approved by the chairperson and the dean were visible by both students and faculty.

The database of the proposed system shall be implemented to manage all of the necessary data and information that the whole academic processes were using.

A single repository of data provides several advantages as opposed to the multiple data store of the existing system. It eliminates data redundancy and data discrepancy. Data and information were easily available to an intended user. Academic processes were very interrelated processes, and it was the systems integration of these several processes can help the institution achieve a higher level of efficiency and effectiveness in data processing.

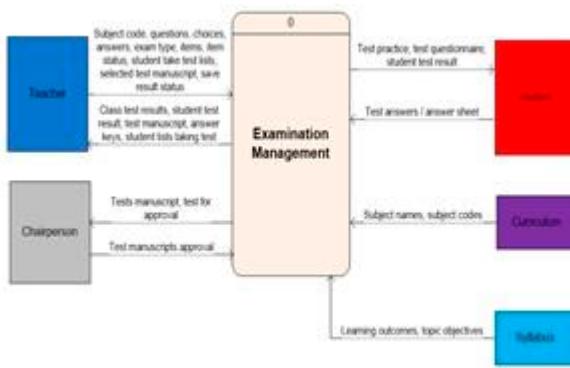


Fig 3a. Context Data Flow Diagram of the Examination Management Module

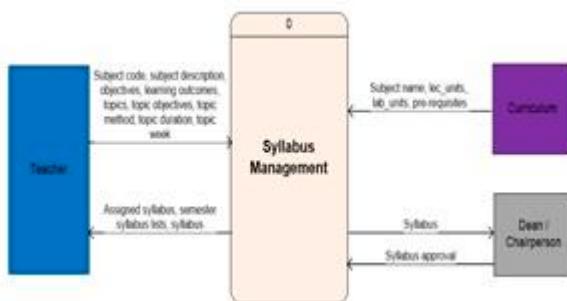


Fig 3b. Context Data Flow Diagram of the Syllabus Management Module

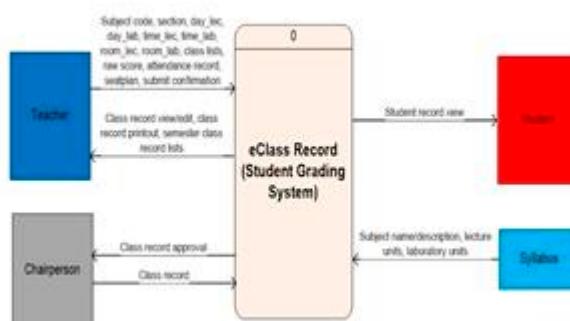


Fig 3c. Context Data Flow Diagram of the Student Grading Management Module

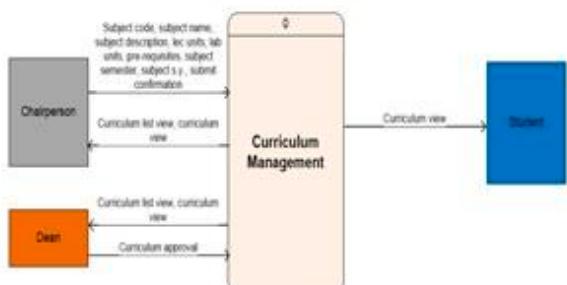


Fig. 3.d Context Data Flow Diagram of the Curriculum Management Module

B. System Development Process Model

The software development process used in this study is prototyping. This software development methodology "addresses the inability of many users to specify their information needs, and the difficulty of systems analysts to understand the user's environment, by providing the user with a tentative system for experimental purposes at the earliest possible time" as stated by Janson and Smith (1985) [24]. In addition, this method was suitable for online system, where web interfaces have a very high amount of interaction with end users.

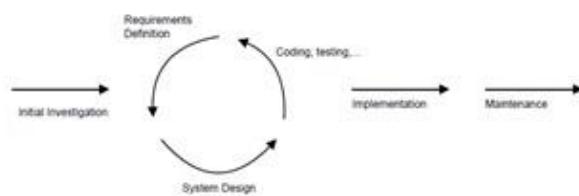


Fig 4. Prototyping Software Development Model of IEMT for Adamson University

IV. RESULTS AND DISCUSSION

The Integrated Educational Management Tool (IEMT) for Adamson University is composed of different users such as administrator, faculty, chairperson, and students.

For the administrator, it is the only account that can create, edit, view, and delete users' account of the institution's employees and students. They are capable of giving privileges to the different employees and students during the creation of their user accounts. Moreover, for the meantime, he/she is also capable of managing the main page of the system which is composed of articles, main display, and column one, column two and column three and importantly he/she is capable for all other features of the system but did not include for the task of the chairperson and faculty. The administrator cannot completely view the user accounts of the employees and students and have no capability to view, delete, and edit the works done by the other users of this system such as the faculty, chairperson, students.

Furthermore, the faculty account has three privileges such as Student / E – Class Record Management, Examination / Test Management, and Syllabus Management assigned by the chairperson or administrator. The faculty is provided full capabilities to manage and control the operation of the three main modules of the IEMT System as mentioned above. Additionally, the faculty can edit the username and password of their user account created by the administrator as well as they can create and edit a course syllabus depending on what their chairperson assigned them to do. The faculty cannot edit the E – Class Record of the previous semesters. The faculty also cannot view the class records of other faculty and the shared examinations from other faculty cannot be edited.

As for the chairperson, they have specific tasks and privileges (Chairperson_Tasks) assigned as chairperson of the department. The chairperson has the same privilege with the faculty since chairperson has academic task and teaching load. In this system, the chairperson can have one

or two user accounts with specific privileges such as chairperson and as faculty. As a faculty, he/she has full privileges with E-Learning Management, Examination / Test Management and E-Class Record. Also he / she have full privilege with Chairperson Tasks. The chairperson of the department is the only one who can create a new curriculum, and can edit the created curriculum of the courses offered by that department. Additionally, the chairperson of the department is the only one who can assigned faculty to create a course syllabus, approves the created syllabus assigned to the faculty, who can activate the syllabus to be viewable by the other users of the system particularly the faculty and students. Also, the chairperson can assign one syllabus to multiple faculty members.

For students', their capability in this system is to fully view their subject grades for currently enrolled subjects and old subjects that are already taken by the students. They can take examinations as activated and created by their teachers in their specific subjects enrolled. Additionally, they can also view and print the results of their exams taken. Viewing of curriculum and subject syllabus is also available for them. In addition, the student can send and receive messages to their classmates individually.

A. Project Evaluation

There were two ways used to evaluate the capabilities of the project, these are the actual testing and the evaluation process.

The actual testing involves two ways: (1) the testing during the development of the system using a standalone computer set as web server and the testing of the system uploaded to the internet via webhosting processes; (2) the testing has been done both local area network and uploaded to the internet via web host which all the functionality, processes and performance are to test if the system's performance conformed as what the desired output should be.

Part of the actual testing is the demonstration of the project to the respondents. The features, capabilities, and limitations of the system were explained to make sure that it was evaluated accordingly. The evaluation form was distributed to the Faculty and Department Coordinator of Information Technology and Management Department of Adamson University as the respondents of the study with the total of twelve respondents in all.

Furthermore, the respondents were composed of eleven IT&M Faculty and one Department Coordinator. Respondents were able to accomplish the evaluation form based from the actual processes of the system. Below are the figures of evaluation ratings of each criterion and their corresponding interpretations.

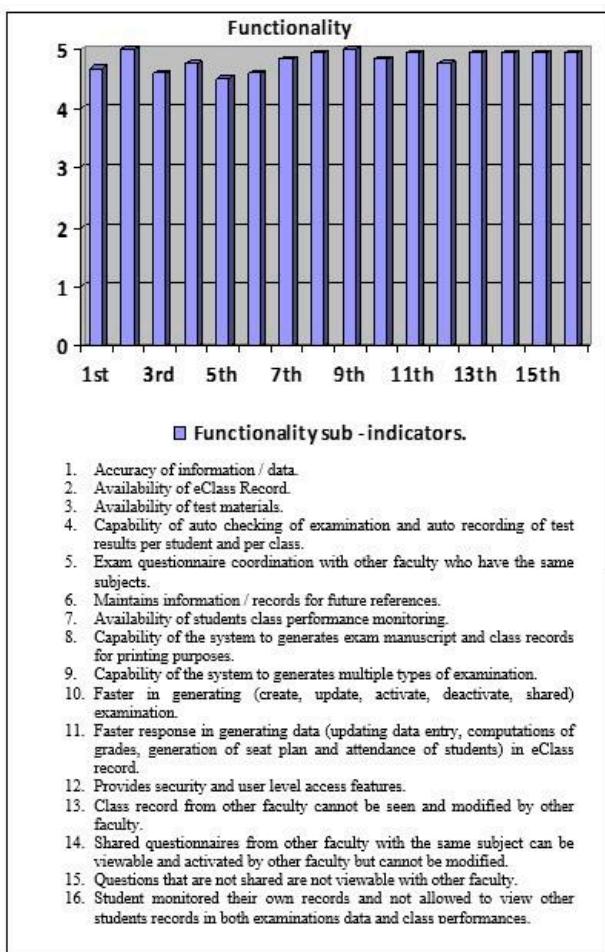


Fig 5. Evaluation Results of Functionality Indicator

Fig. 5 shows the responses of the respondents in terms of the systems functionality. Based from the results presented in the given figure, item 2 and 9 got the highest weighted mean of 5.00 and items 8, 11, 13, 14, 15 and 16 got the second to the highest weighted mean of 4.92. Furthermore, the items that got the 3rd to the highest weighted mean of 4.83 are items 7 and 10, the 4th to the highest weighted mean of 4.75 are items 4 and 12, and the 5th to the highest got the weighted mean of 4.67 is item 1. Moreover, the second that got the lowest weighted mean of 4.58 are items 3 and 6 and the item that got the lowest weighted mean of 4.50 is item 5 which mean that the system features for the exam questionnaire coordination with the other faculty who has the same subjects must be restudied and needs more planning by the researcher. The overall weighted mean average of this criterion is 4.81 with an equivalent mark of "Excellent" which means that the functionality of the developed system successfully attained and conform the objectives of the study.

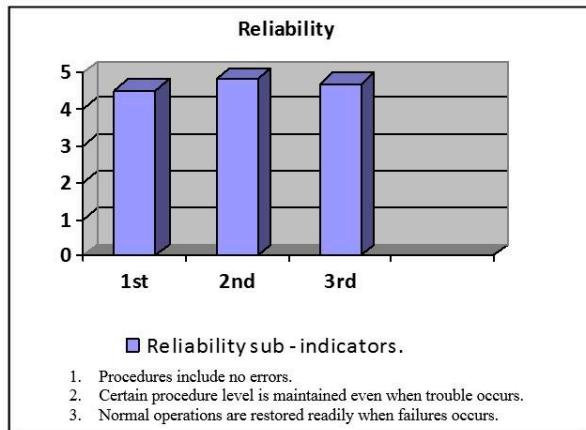


Fig. 6. Evaluation Results of Reliability Indicator

Fig.6 presents the responses results from the respondents of this study in terms of the systems reliability. From the given figure, the data shows that item 2 got the highest weighted mean of 4.83, followed by item 3 with weighted mean of 4.67 and item 1 got the lowest weighted mean of 4.50. Furthermore, the average of all weighted mean for reliability of the system is 4.67 with the equivalent mark of "Excellent" which shows that the developed system delivered the desired and expected output based from the objectives and goals of the study.

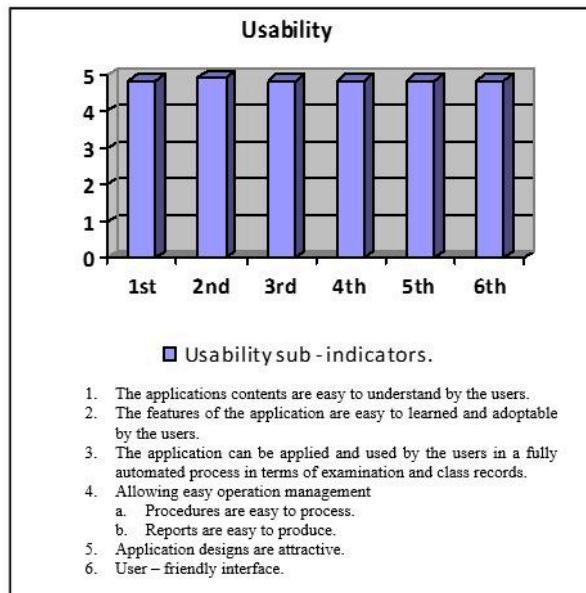


Fig 7. Evaluation Results of Usability Indicator

Fig. 7 displays the rating results from the respondents of this study in terms of the systems usability. As data presented in the given figure, it shows that the item 2 got the highest weighted mean of 4.92 and the rest of the items have the same weighted mean of 4.83 with the same total number of frequency rated by 5 and 4 by the respondents. Furthermore, the overall weighted mean average for the usability criterion of the system is 4.85 with the equivalent mark of "Excellent" which proved that the developed system is easy to learn and understand, adoptable and very easy to operate by the users.

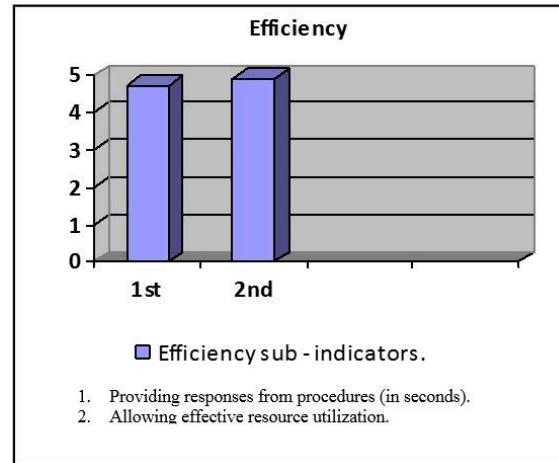


Fig 8. Evaluation Results of Efficiency Indicator

Fig. 8 shows the rating responses results from the respondents of this study for the developed systems' efficiency. As data shown in the figure, the item that has a highest weighted mean of 4.92 is item 2 and the lowest is item 1 with weighted mean of 4.75. Respondents find that the responses of loading of web pages of the system is not so fast, which means that the developed system needs to put in a better web server and effective for utilization. Nevertheless, the overall weighted mean average in terms of efficiency of the developed system is 4.84 with the equivalent mark of "Excellent" which shows that the developed system conformed the needs of the users.

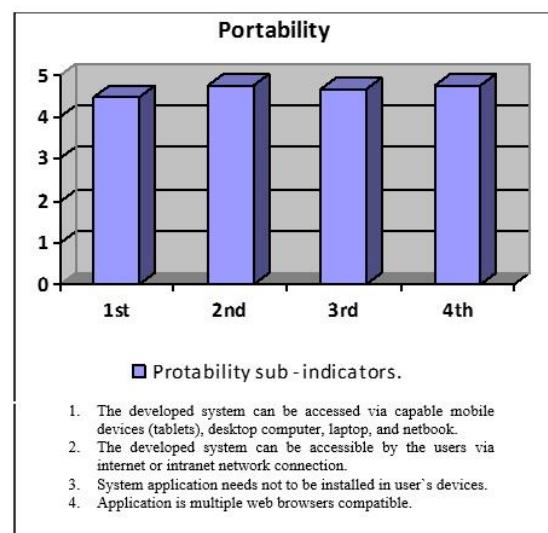


Fig 9. Evaluation Results of Portability Indicator

Fig. 9 displays the rating responses from the respondents for the portability criterion of the developed system. At the given figure above, the data displayed shows that items 2 and 4 got the highest weighted mean of 4.75 with the excellent equivalent rate which means that the developed system is accessible in any places its either within the premises of Adamson University or in any other places outside without compatibility issues in most common and well known web browser commonly used by most individuals. In addition, item 3 got the second

highest weighted mean of 4.67, item 1 got the lowest weighted mean of 4.50 in terms of the systems accessibility for mobile (tablet, smartphone), desktop computer, laptop, and netbook which mean that the systems' accessibility depends in the users devices internet connection capability. The overall weighted mean average for this criterion is 4.87 with an equivalent mark of "Excellent" which means that the developed system complied the portability issues based from the study's goal and objectives.

In addition, the evaluation instrument used for this developed system was based from the ISO 9126 software quality evaluation. The results of the evaluation resulted to the satisfaction from the respondents rated the project with the mark of "Excellent", with an overall mean score of 4.77. Among the 5 components of the criteria, usability ranked first with the mean score of 4.85, efficiency ranked second, functionality was third, reliability and portability was ranked as fourth with the mean score of 4.67 as shown in fig. 10.

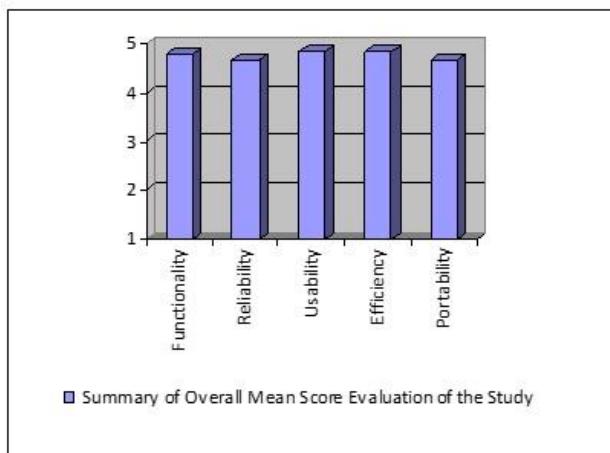


Fig. 10 Evaluation Results of All indicators

V. CONCLUSION AND RECOMMENDATION

On the basis of the evaluation conducted on the performance capability of system, the Integrated Educational Management Tool (IEMT) for Adamson University is a web based system that was assessed by the respondents as remarkable and was developed according to the planned design and specifications. The different components namely: the examination management system module, curriculum and syllabus management, student grading system, uploading of faculty loading, student and employee information management, online student to student coordination, and website content management module did not encounter any major and minor issues upon the demonstration with the selected respondents. The demonstration conducted and presented ran smoothly as the respondents easily learned and progressively adopted with the system.

A. Conclusions

The following conclusions were derived based on the concerns stated in the statement of the problem of the study and results of the evaluation conducted: (1) that the "Integrated Educational Management Tool (IEMT) for Adamson University", a web – based integrated system

was designed according to specifications for Adamson University with the following features that will address the stated problems of the study such as: (a) has capability to assign, create, edit, delete, open examinations for students individually or per class, and serves as examinations bank; (b) the examination management module are capable for creating, editing, deleting, deactivating different types of examination such as enumeration, identification, true or false and multiple choice; (c) with flexible and user – friendly electronic class records interface where the examination scores of the students coming from the examination module automatically recorded, has an alphabetically arranged seat plan that can be rearranged if necessary, and importantly, the students' data at the electronic class record are viewable individually; (d) the available electronic class records data of the faculty can be easily modified (insert, edit, update, delete for class records contents); (e) faster responses in the examination management module for the capability of auto checking the current examinations taken by the students, provides instant exam scores and results summary of the given examination, and exams results can be automatically or manually recorded to the electronic class record available in the system; (f) the examination management system can generates randomized questionnaires for computerized examination, and multi – set examination with answer keys for manual or traditional way of examination given to the students; (g) availability of questionnaires to review for quality purposes and reused it for another examination; (h) the previous questionnaires are stored in the system which are ready for retrieval and can be used as a reviewer or practice tests being provided to the students; (i) faculty with the same subjects can shared their created questionnaires, and shared faculty can only view and activate it but cannot edit or modify it; (j) has a user – friendly interface for the students to monitor or view their only own examination results summary and class performances (attendance, quizzes, major exams results, projects and more); (k) has a curriculum and syllabus ready to be viewed by the students in their own account; (l) has user – friendly interfaces to create and edit syllabus as assigned by the chairperson per faculty within the created curriculum; (m) availability of online electronic class records, and exam manuscript for computerized examination provided and taken by the students that result to costless for administration in providing usual class records and dissemination of examination; (n) has sub – system for the loading faculty loads, student admission, recording of employee's records and user account management; (o) has a curriculum and syllabus management modules where the chairperson manage the curriculum and syllabus to be activated and created by assigned faculties; (p) the system provides content management for the website where entries can be easily modified; and (q) accurate report generations of periodic grades sheets, semestral grades sheets, student grade reports, test manuscript, attendance report, and test results; (2) That the system was constructed under with the open source programming language, database, and other open source technology used in developing websites for cost consideration during the implementation of the system; (3) That the performance of the system was rated "Excellent"

based from the evaluation prepared and adopted from the ISO 9126 software quality standards that yielded an overall mean rating of 4.77 with excellent descriptive evaluation.

B. Recommendations

Integrated Educational Management Tool (IEMT) for Adamson University is a web – based system that needs to be updated, monitored and maintained. To be able to satisfy the importance of the study, based on the foregoing conclusions, the following recommendations are formulated namely: (a) that the institution must designate a person that will manage the system for the updates of the information's, backup the database regularly as required when the system is implemented and used, system monitoring and maintained the system; (b) that the system must be uploaded to a web hosting sites capable of faster response to the users; (c) that Examination Management System's way of scoring must be based from the given rubrics procedure provided by the faculty; (c) that future modification for improvement of the sub – module process for faculty loading, student and management information management can be considered to increase capabilities and features of the academic integration; (d) that web page and its contents must be responsive to the resolution of the different mobile devices as what many users have nowadays; (e) that future study and integration of table of specification and item analysis of the given examinations taken by the students for exam / questionnaires quality purposes; (f) that coordination by the departments who will adopt and use the system to the Information Technology Center of Adamson University are very much needed for more system users convenient; and (g) that tracking of users' activities in the system must available for security purposes.

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