Design and Evaluation of Electronic Class Record in University of Perpetual Help System-Laguna

Nancy P. Mercado

Abstract: ***This study aimed to design, develop, deploy and evaluate an electronic class record. Electronic worksheet software is used to develop the electronic class record and several arithmetic operators and functions like VLOOKUP, IF, AVERAGE, COUNTIF. A worksheet template was developed to accept name of teacher, course title, section, schedule, room, student name, date of each classes, base grade, test items, attendance and performance of the students. The electronic class record automatically computes the grades of the students following the prescribed grading system of College of Engineering of University of Perpetual Help System Laguna. Developmental process and prototyping method were utilized to develop the electronic class record. Testing, deployment and evaluation have been initiated to observe its acceptability. The electronic class record will be used effective School Year 2016-2017.***

Keywords: Electronic Class Record, University of Perpetual Help System Laguna

I. INTRODUCTION

Grading is one of the most important parts of teachers' activity in evaluating students' performance in the class. It is the process of applying standardized measurements to students' activity such as assignment, examinations, projects and report. It is used to provide incentives for achievements and assist in identifying problem areas of student. Students' grades are vital information needed in advancing to the next grade or year level. Because of these, grading is considered critical and must be evaluated fair, comprehensive and accurate. But such process adds heavy workload for teachers. It takes time in recording and computing for the grades of their students other than preparing lessons, advising and even researching. With the advent of computer technology, teachers are taking advantage of spreadsheets that can eliminate manual computation and recording of grades. However some problems are still encountered using advance spreadsheet like excel especially to those faculties that is not well adept to computers. The common problem is the entering of formula to excel to automatically compute the grade of the students. If the faculty is not careful enough it will result to inaccurate grade value. Changing the parameters of computation for already existing grade template is another problem since it is not designed to be flexible to changes. It also results to repetition and redundancy for it must address different format for every subject matter.

Revised Version Manuscript Received on May 05, 2017.

Nancy P. Mercado, Faculty College of Engineering, University of Perpetual Help System-Laguna, City of Binan, Laguna, Philippines

Due to the following problems mentioned above, the proponents of this study would like to develop an electronic class record in excel that will automatically compute the grades of the students. The system will serve as a template for all faculties in this university to simplify the process being done to produce the grade of the student. But the development of the system requires a long process and stages to complete. To be specific it will undergo three phases; namely, first is the consideration determination, second is the design and testing stage, and lastly the evaluation stage. The proponent believes that this study will create a great impact to the faculty as well as to the school administrators.

A. Literature Review

According to Dellosa (2013), the deployed electronic class record was very useful to teachers and resulted to an overall evaluation of an average mean of 3.46 and average standard deviation of 0.538 with an overall interpretation of agree result. *User-friendliness* ranked as first with the highest mean value of 3.8. The output's *security and flexibility* were rated with *strongly agree*. In terms of *accuracy, reliability, validity, and efficiency*, the output was rated with *agree* which also implies that the evaluators were satisfied on the developed system. It is found out that the deployed electronic class record is acceptable in terms of accuracy, efficiency, reliability, security, user-friendliness, flexibility and validity. The study entitled "e-DoX: DEPED Student Grade Records Management System with Implementation of Advanced Encryption Standard and PKI Infrastructure for the Department of Education in the Province of Cavite (2013)" which aims to develop an online based application to aid private and public schools in submission of reports on promotions in the province of Cavite was used to guide the researcher on how to treat and interpret data and results. An electronic class record for the LPU-Laguna and LPU-St. Cabrini is developed as a substitute to the conventional ways of recording the performance of the students. The researcher based his method of developing the electronic class record to lessen the activities and customized the content of the output (Dellosa, 2013). DEPED Order No 73, Series of 2012 entitled "Guidelines and Assessment and Learning Outcomes under the K-12 Basic Education Curriculum" was used to guide the researcher as the basis of computation of grades. The level of assessment that includes knowledge, process or skills, understanding and product and level of proficiency are some of the useful information that serves as inputs in the completion of the study.

Sommerville (2011) discussed that security is one of the important attributes of the system to protect itself from accidental or incidental attacks.

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication Pvt. Ltd.

He also tackled some of the methodology on how to develop the system including Rapid Application Development, prototyping and formal methods. The researcher focused on the use of prototype method information and applied it in this study. Chen's (1997) study entitled "Computer-based Document Management System", leads to an efficient way to automatically import, index, categorize, store, search, retrieve, manipulate and archive electronic documents. This will be entrant information for online application. The researcher used the discussion and output of this study to come up with a study recommendation that online grade viewer is possible. According to Chua, B.B. & Dyson, L.E. (2004), there is a widespread use of e-learning systems and investment in them but there is no consensus on a standard framework for evaluating the quality of the output.

II. CONCEPTUAL FRAMEWORK

The input includes the basic knowledge of Microsoft Excel application software, which is capable of arithmetic computations. The process includes brainstorming with the possible users, development, training and evaluation. Several arithmetic operands and functions include VLOOKUP, IF, COUNTIF and other arithmetic functions are also utilized.

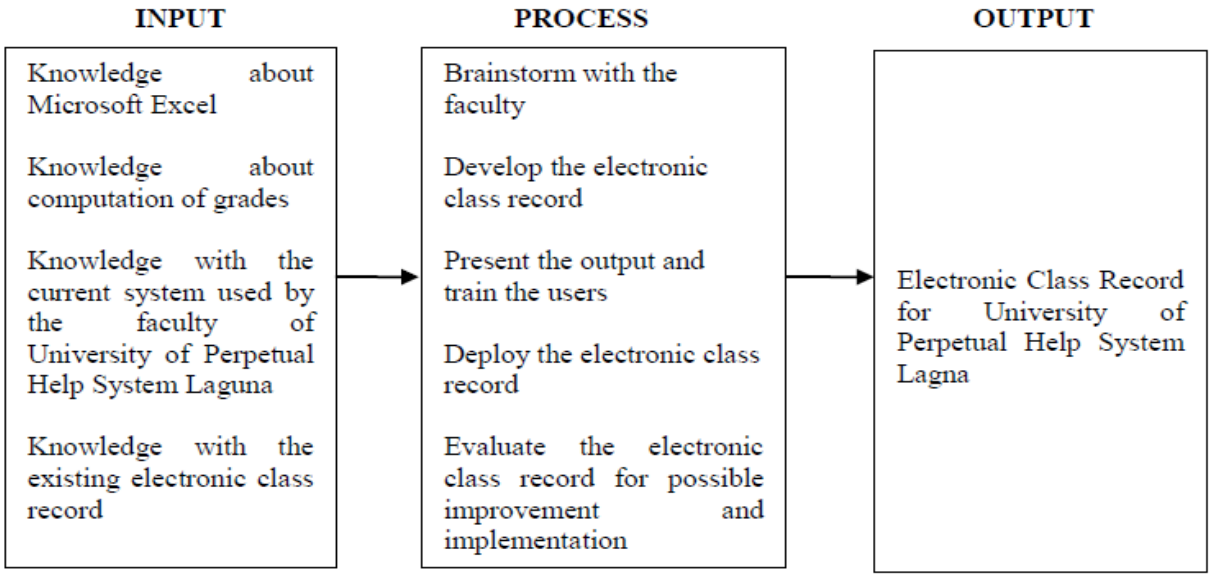

Figure 1. Developmental Framework

A. Objectives of the Study

The general objective of this study is to develop an electronic class record for University of Perpetual Help System Laguna. Specifically, the study aimed to:

1. develop an electronic class record following the prescribed grading system of University of Perpetual Help System Laguna
2. test the functionality of the electronic class record
3. determine the acceptability of the electronic class record for possible implementation.

B. Significance of the Study

This study has great significance to end users of the institution and the University of Perpetual Help System Laguna The end users will benefit for the reason that the study will make their life easier for grade computation. The University of Perpetual Help System Laguna will benefit because this would contribute to uplift the application of technology.

C. Scope and Delimitation

The study was conducted in College of Engineering of University of Perpetual Help System Laguna from April 13, 2016 to May 25, 2016. Microsoft Excel is used to develop the electronic class record. Inputs from the end users, the dean and faculty members, were carefully analyzed. During deployment, revisions were made for further improvement and acceptance. Training sessions with the dean and faculty members on how to use the electronic class record were also conducted. Other unexpected events such as power outage and the Microsoft Excel issues and updates from Microsoft are no longer part of the study.

III. MATERIALS AND METHODS

A. Research Design

In this study, the researcher used developmental method that includes designing, developing, testing and evaluating the study. Series of tests were conducted to determine acceptability in terms of accuracy and reliability of computation of grades.

B. Locale of the study

The researcher conducted focus group discussions to determine the requirements and prescribed grading system of the school. Evaluation from the end-users of University of Perpetual Help System Laguna was conducted to determine the accuracy, efficiency, reliability, security, user-friendliness, flexibility, validity of the system. The usefulness of the electronic class record was also determined by evaluation.

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication Pvt. Ltd.

C. Respondents of the study

The researcher conducted a focus group discussions and evaluation from the dean and faculty members of College of Engineering of University of Perpetual Help System Laguna. The development stage was conducted from January 2016 –February 2016 wherein dean and faculty members were asked about the current system used in computation of grades, prescribed class record and the current system.

D. Research instrument and technique used

The researcher used survey and evaluation instrument. The objective of the focus group discussions is to determine the requirements in which survey is integrated. The researcher adopted an evaluation instrument from the study of Rommel B. Dya, Mary Jane A. Laridab and Dr. Bartolome T. Tanguilig entitled "e-DoX:DEPED Student Grade Records Management System with Implementation of Advanced Encryption Standard and PKI Infrastructure". The evaluation instrument are composed of respondent's profile, software characteristics in terms of accuracy, efficiency, reliability, flexibility, security, user-friendliness and validity and respondent's suggestions and recommendations for the improvement of the developed electronic class record.

E. Statistical Treatment of Data

The researcher used descriptive statistics to determine the acceptability and respondent's suggestions and recommendations for the improvement of the developed electronic class record.

F. Research Process

Prototype model was used in developing the electronic class record. The following are the research process of the research: 1. **Planning and analysis** In this phase, information are gathered to be able to determine the need of the study. This will also guide the researcher on what procedures and actions to be used in the study. The type of user, capability of the output, implementers and the environment where output will be used must be obtained during this phase. It will also determine the currently used system by the users and will introduce new idea on how to apply the output of the study that has advantages over the existing system. Functionality of the system will be also defined in this stage. 2. **Testing** This phase will determine the output's performance in terms of accuracy and acceptability. **3. Deployment** The use of this phase is to determine if the system is easy to use. It is also expected feedback from the users will be collected and further improvement will be applied for possible implementation. 4. **Evaluation** This phase will let the prospect users answer the survey and evaluation form in the form of focus group discussion to determine the acceptability of the system. Below is the step-by-step procedure during the conduct of the study:

1. Plan and analyze the current system and establish objectives and solution to current need.
2. Gather necessary data from the dean and faculty members.
3. Design the electronic class record with the use of Microsoft Excel.
4. Present the electronic class record to teachers for further improvement
5. Integrate in the revision the comments from the teachers and prospect users.
6. Deploy the output to the faculty members.
7. Conduct training sessions to end-users.
8. Get feedback from the faculty members and revise as necessary.
9. Evaluate the electronic class record.
10. Finalize the study document.
11. Submit the end product to the University of Perpetual Help System Laguna and the research document to the research department.

IV. RESULTS AND DISCUSSION

The Electronic Class Record of University of Perpetual Help System Laguna

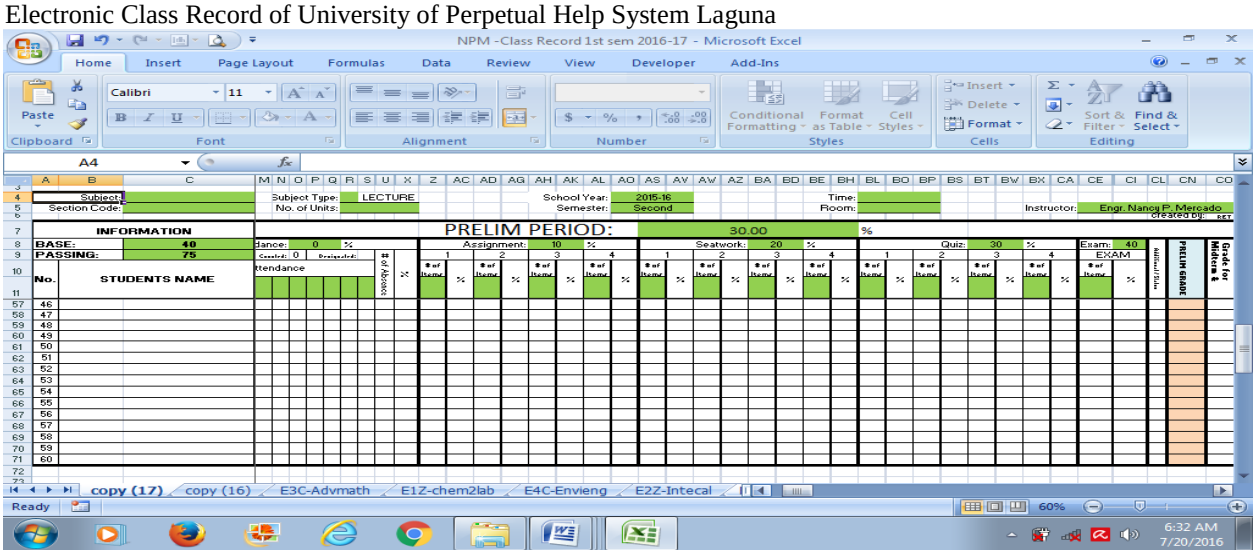

Figure 2. Worksheet Prelim Tab Output of Electronic Class Record

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication Pvt. Ltd.

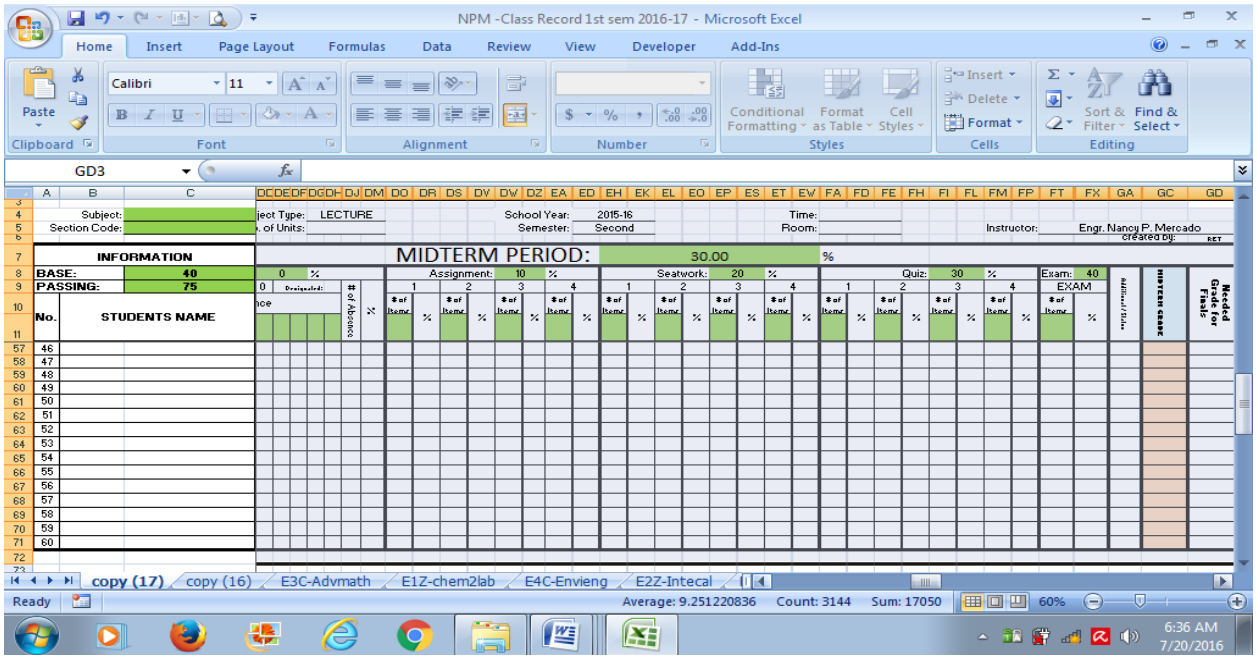

Figure 3. Worksheet Midterm Tab Output of Electronic Class Record

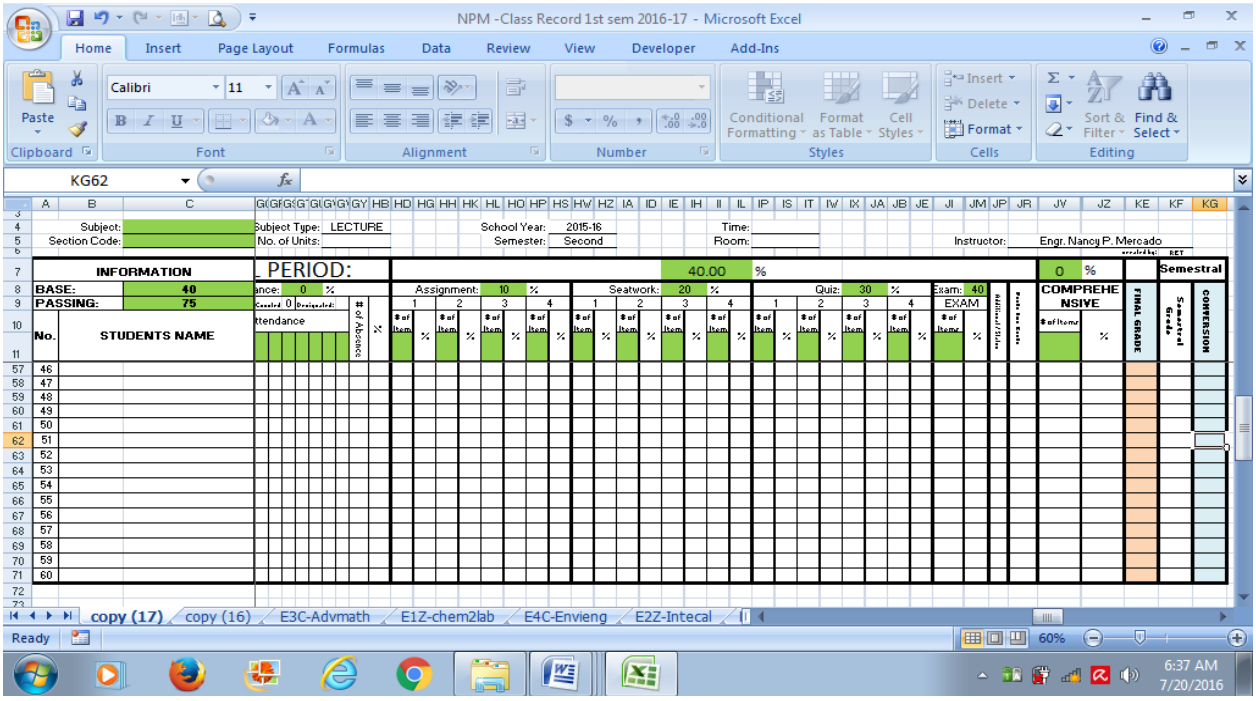

Figure 4. Worksheet Final Tab Output of Electronic Class Record

Figures 2, 3 and 4 are the prelim, midterm and final tab that perform the computation of grades of students. Initial set up of electronic class record should be done prior to its use. The subject, subject type whether lecture or laboratory, number of units, section code, schedule, room assignment, semester, school year, name of faculty should be encoded to its designated location. User input such as grade base, passing percentage, total number of items or percentage must be encoded to the cell locations. The attendance tab is used to tabulate the absences and tardiness of students. Figure 2 and 3 shows the grade sheet of class record for prelim and midterm and the needed grade for midterm and final to pass the subject. Figure 4 shows the grade sheet for final term, the semestral grade and its equivalent.

A. Result of test of functionality

A series of tests were conducted to determine the functionality of the electronic class record in terms of accuracy and reliability. These series of tests were conducted from April 2016 to May 2016. Feedbacks from the end users were collected to ensure that the output provides accurate and reliable result. This will also serves as the guide for the revisions of electronic class record. Feedbacks from the end users are accuracy of grade computation, worksheet tab dedicated only for the attendance of the students,

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication Pvt. Ltd.

variability of grade base and the outputs capability to compute the grade based on the encoded grade base and revision of worksheet labeling to become more user-friendly.

B. Results:

Table 1. Result of Acceptability Evaluation

Level of Acceptability Measures	Mean	Standard Deviation (SD)	Interpretation	Rank
1. Accuracy	3.29	0.654	Agree	6
2. Efficiency	3.38	0.561	Agree	5
3. Reliability	3.2	0.616	Agree	7
4. Security	3.55	0.51	Strongly Agree	2.5
5. User Friendliness	3.8	0.41	Strongly Agree	1
6. Flexibility	3.55	0.51	Strongly Agree	2.5
7. Validity	3.43	0.504	Agree	4
Average Mean & SD	**3.46**	**0.538**	**Agree**	

Faculty members of College of Engineering of University of Perpetual Help System Laguna attested that the developed electronic class record will be used this SY 2016-2017. With regard to acceptability, all of them believed that the electronic class record will make their record keeping easier compared with the existing method. The electronic class record will be implemented effective June 2016.

V. CONCLUSION AND RECOMMENDATION

Microsoft Excel application software was useful in developing the electronic class record. Electronic class record functionality is determined with the input data like the name of faculty, section code, subject, schedule, room, subject type, student name, base grade, passing percentage, total number of items, attendance and performance of the students.

Developmental process and prototyping method were utilized to develop the electronic class record. Testing, deployment and evaluation have been initiated to observe its acceptability. The attendance sheet in each term used to tabulate the absences and tardiness of the students. Prelim, Midterm and Final term tabs are of the same functions. Its function is to accept inputs from the end user. The inputs from the user are the total number of credit points and the actual score of the students for each activity. These worksheet tabs will automatically compute and provide grades in the designated cells.

A series of test and investigation were conducted to ensure acceptability of the output from the user. Focus group discussions were used to determine the acceptability of electronic class record.

VI. CONCLUSION

Based on the findings of the study, the researcher concluded that the electronic class record is developed for faculty members of University of Perpetual Help System Laguna. It follows the grading system as per University of Perpetual Help System Laguna standards. With the aid of computer system, class record can be easily made and grades can be easily computed. Finally, the electronic class record is acceptable and subject for implementation for College of Engineering of University of Perpetual Help System Laguna.

RECOMMENDATIONS

Several recommendations are made by the end users and administrators like the security of previous encoded grade must not be changed anymore once it is submitted. The output of the electronic class record may be the basis for semestral grade. Moreover, the output of the electronic class record may be considered as an input to the online grade viewer.

REFERENCES

1. Chua, B.B. & Dyson, L.E. (2004). Applying the ISO 9126 Model to the Evaluation of an E-learning System. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), Beyond the Comfort zone: Proceedings of the 21st ASCILITE Conference (pp. 184-190). Perth, 5-8 December. http://www.ascilite.org.au/conferences/perth04/procs/chua.html
2. Sommerville (2011). Software Engineering IE, 9th ed., Addison-Wesley
3. Dya, R.B., Laridab, M.A. & Tanguilig, B.T. (2013). E-DoX:DEPED Student Grade Records Management System with the Implementation of Advanced Encryption Standards and PKI Infrastructure
4. Dellosa R.M. (2013). Design and Evaluation of Electronic Class Record for the LPU-Laguna International School; Asia Pacific Journal of Multidisciplinary Research, Vol.2, No. 4
5. Dellosa R.M. (2014). Design and Evaluation of Electronic Class Record for the Makiling National High School; IOSR Journal of Engineering, Vol. 04, Issue 06

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication Pvt. Ltd.