

Short Paper

Centralized Learning and Assessment Tool for Department of Education – Division of Laguna’s Araling Panlipunan Subjects

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Date received: July 2, 2017

Date received in revised form: August 15, 2017; September 13, 2017

Date accepted: October 13, 2017

Recommended citation:

Mauricio, J. Q., Cagayan, K. B. I., Serrano, J. R. M., Balahadia, F. F., & Sandoval, F.-I. V. (2017). Centralized learning and assessment tool for Department of Education – Division of Laguna’s Araling Panlipunan subjects. *International Journal of Computing Sciences Research*, 1(2), 21-35. doi: 10.25147/ijcsr.2017.001.1.08

Abstract

Purpose – This research project seeks to design, develop, and test the acceptability innovative e-learning management system to transform traditional methods into Information Communication and Technology (ICT) based approach, to improve the quality of education, enhance teachers’ teaching strategies, and to meet the demands of the 21st century teachers and learners as a result of the implementation of the K to12 ICT integration in Araling Panlipunan (AP).

Method – The researchers conducted a series of surveys and interviews with the ICT heads, AP department heads, master teachers, and district supervisor. Questionnaires and literature were also employed to gather relevant information vital to planning, designing and development of a prototype. The design of the system is responsive to mobile and another portable device. The system development was divided in four phases: requirement planning, user design, construction or development and cutover. The developers used software development languages, such as HTML5 and PHP. The programmers employed MySQL database. In addition, other necessary software requirements were also used like internet browser, Notepad++, Adobe Dreamweaver, TinyMCE and XAMPP. Alpha and Beta testing were used to minimize the errors experienced by respondents. The result of system testing was analyzed descriptively using frequency, rank, and weighted mean.

Results – The system was tested and evaluated using the ISO 9126 Evaluation Model to determine the acceptance level of the proposed system. The overall acceptance rating in terms of functionality, reliability, usability, efficiency, maintainability and portability is highly acceptable. It was a good indication that the developers met the necessary requirement of a learning management system by incorporating additional features.

Conclusion –The goal of creating this alternative approach of teaching and evaluation process is to support teachers and students' adaptation to e-learning and e-assessment. The study also achieved its goals to meet the demands of 21st century teachers and learners as a result of the implementation of K-12 curriculum through customized online-based responsive e-learning and e-assessment tool. These trends for Philippine education systems will empower the teachers and students to become more confident and competent in the use of technologies, shared resources, and collaborative learning.

Recommendations –The system will bring new educational experiences to the young generations of both elementary teachers and students in particular to the DepEd-Division of Laguna. The system may be presented to the Department of Education for implementation as basis for creating e-learning tool not only for Araling Panlipunan but for all courses with more interactive and collaborative features in the system.

Implications –The implementation of the said system is highly recommended to cope with the emerging trends of ICT in Education as a result of the implementation of the K to 12 programs. Furthermore, learning and assessment process can become more exciting and productive when ICT is being applied in public schools which can be a new student-centered assessment means to gauge learners and likewise recognize diverse learning styles.

Keywords – Araling Panlipunan, DepEd, education, K to 12, online assessment, online learning

INTRODUCTION

The quick development of information and communication technology (ICT) apparently changed the substance of learning and made data all-inclusive (Tinio, 2017). In education-centred countries like the Philippines, incorporating ICT in teaching and learning has turned into an extraordinary concern (Bonifacio, 2013). The Department of Education (DepEd) recognizes the key part of ICT in boosting the level of learning by planning and rapidly executing the ICT integration programs in primary education. An example of primary education course is Social Studies. It is a course that inculcates on students nationalistic identity and civic duty. This will make them actively-involved as they become aware of their roles and responsibilities to the society. In relation to this, schooling in all societies obliged teachers to teach students the knowledge, skills, and attitudes needed for them to function as responsible citizens (Guimba, Aguino, & Abbas, 2016). In Philippines Education, Philippine history is one of the components and most influential topics of HEKASI (Geography, History and Civics) or Araling Panlipunan. The intensive teaching of history starts at grade 5. Inciong (2008) stated that based on the Basic Education Curriculum (BEC) of 2002, grade 5 students should learn Philippine history from prehistory to the 21st century within 1 academic year. In terms of learning, the results of the National Achievement Test (NAT) from 2008 to 2012 indicated that elementary students failed to achieve mastery of HEKASI (Geography, History and Civics) or social studies (Agcaoili & Oshihara, 2014). Yet, the results of the national examination imply that these attempts are not sufficient. The researchers believed that the instructional practices of teachers have greater influence on students' learning than the national curriculum and that ICT could be a tool for enhancing student's interest in studying Social Studies or Araling Panlipunan (Agcaoili & Oshihara, 2014).

According to Diokno (2009), because of too much emphasis given to memorization, students fail to develop historical thinking skills such as chronological thinking, contextualization of events, analysis, interpretation, and historical writing. Diokno (2009) found that textbooks contain conceptual and factual errors; hence, violating the basic tenets of history regarding facts, the validity, and veracity of data. The use of technology can enhance students' interest because of their familiarity to the technology and expanded enjoyment to learning from computer-based guidelines (Cox, 2011). On the other hand, the use of online tools for Social Studies course are the favored type of technology integrated into classroom instruction and evaluation (Odongo, 2008). Study revealed that the students' learning experiences are relatively higher when enhanced through the use of video lectures, assignments and materials designed for online courses (Soffer, Kahan, & Livne, 2016).

Humanities and Social Studies-related subjects are still neglected by the students (Khare & Yadav, 2016). The need to differ instructions, dependence on book and dislikes of the subject are some of the concerns of AP Teachers (Kelly, 2017), while few students considered the subject as somewhat boring particularly to learners who do not love to listen about history and some social issues (PressReader, 2017). Incidentally, the convenience and effectiveness of e-learning had long been acknowledged by educational institutions and education officials. A number of schools in the country have embraced with enthusiasm emerging education technology such that lectures are boosted by computer-based, or gadget-based (Espinosa, 2016). The division joined the entire education sector to coordinate the ICT to some of the subjects in the primary level. In an interview by DepEd Division's ICT Head Frederick B. Zaide, he stated that only few existing systems and learning materials with ICT integration were intended for AP subjects that is why Araling Panlipunan is considerably boring for some of the students.

The study aims to utilize ICT as an e-learning tool for engaging students' interaction in Araling Panlipunan. Specifically, it aims to integrate the different assessments, learning material tools, and to assess the level of acceptance of the Centralized Learning and Assessment Tool for the Department of Education - Division of Laguna's Learning and Assessment Tool for Araling Panlipunan Subjects.

REVIEW OF RELATED SYSTEMS

The integration of ICT in Philippine education system for K to 12 curricula is rapidly implemented by the DepEd to contribute to the holistic development of learners (Bonifacio, 2013; Ronda, 2012; Castillo, 2011). Despite this, Flor (2008) analyzed certain deficiencies of ICT potentials in the Philippine Education Sector. Additionally, Miraesiwinya (2010) and Edinson (2011) considered that implementing ICT is quite costly and needs further preparation and support coming from the higher sectors in implementing K to 12 and integrating ICT. Several factors and challenges that should also be considered are the teachers' skills and availability of learning materials (Moreno, 2015; Nadayag, 2011; Andoh, 2012). With regards to the concern of the Social Studies subjects, the use of computer-based instruction, interactive lessons, images and video can motivate students to love studying and learning the subject (Cox, 2011; Odongo, 2008; Soffer et al., 2016; and Heafner, 2004). Among the benefits that the technology-based learning and assessment system could offer are the availability of centralized learning materials, different settings for conducting assessment, convenience in tracking learner's progress and immediate implementation of the said system (TLT Team, 2011; Chaffe, 2016; Valuy, 2017; Pappas, 2016). In contrary, the effectiveness of teaching Araling Panlipunan does not solely lie on utilizing technology since the subject also involves the use of different strategies and approaches that should be performed traditionally (Sandig, 2015; Bartolome, 2013; Reyes, 2013).

Aco and Franco (2014) developed the Laguna State Polytechnic University e-learning system with Android Client Application for college students to share module content only by uploading the file of the lesson in different subjects. Students can collaborate with their teachers and other students using the system. Similarly, an e-learning web- application developed by Osama (2014) provides services like uploading learning materials, creating exams and viewing results. Yet, the exams are limited to multiple choice types of question only; the lessons are limited and it can only upload document files.

KITE Academy is a learning management system that promotes the creation of interactive classrooms using e-learning solutions for interactive lesson creation to boost the competitiveness of schools (CE Publishing, 2017). It also offers separate programs in creating lesson, viewing library and managing classes. Edmodo and Schoology are full-fledged e-learning management systems. That means one may find therein all customary teachers modules like assessment, announcements, gradings, and lectures (Winstead, 2017). The mentioned e-learning systems are helpful in the academe but nevertheless have drawbacks. In Edmodo, a learner messaging is not an available feature, no attendance, limited option for creating quizzes and posting of news and announcements can only be display in chronological order (Winstead, 2017; Bunte, 2017). If students do not have access to a computer and the internet, or to a mobile device, they would not be able to use the tool. There is no face-to-face interaction that can lead to feelings of isolation. Additionally, lag time in feedback response from peers and/or teachers is missing. Student assignment submissions are more than a one step process to submit work for an assignment. Teachers must set sharing permissions when adding Google Drive resources through the library.

Moreover, Schoology is a learning management system that offers a platform for collaboration, communication, organization, discussion boards and a place to submit assignment. Teacher can review student work and provide feedback through the system (Instructional Technology, 2017). The learning styles and preferences here is not included when creating student profiles. Help section requires using a search box and grades accessed only through home page. Codes for students are too long making it difficult to navigate quiz and attendance pages. Additionally, no two accounts can be opened at the same time on a computer and student comments/discussions cannot be moderated by teachers.

SYNTHESIS OF LITERATURE REVIEW

The proponents created a customized responsive web application to enhance the interest of the students in class discussions by adding multimedia items, interaction between teachers and learners, item analysis and additional options in creating quizzes. The proponents consolidated all the ideas and integrated all the features in too one application such as managing lessons, assessments, libraries centralized announcements and monitoring student's progress. The system features offer the same functionality as Osama's E-Learning Web Application. Whereas the developed system is a responsive web-based application that can cover the learning and assessment procedure in teaching the whole coverage of the Heograpiya, Kasaysayan at Sibika (HEKASI) 5 and 6 subjects. The system provides an alternative approach and supplementary tool for AP 5 and 6. The whole learning competencies and lessons in the system is a perfect learning tool that can be used independently in lectures. Teachers of AP can easily share resources to other and communicate to the students through conversions threads. Different resource materials such PowerPoint presentation, reference link in the library, lessons and modules, videos can easily be uploaded and downloaded.

METHODOLOGY

The study was conducted during the academic year 2016-2017. The system can cater subjects of the AP course such HEKASI 5 and 6. Primarily, it can be used within the public schools under the DedEd Division of Laguna. The division is composed of 25 municipalities excluding cities like Binan, Sta. Rosa, Cabuyao, Calamba and San Pablo. The system was tested in selected Municipalities in District IV of Laguna such as Siniloan, Pangil, and Sta. Maria including elementary teachers and students under Grades 5 and 6.

DedEd Laguna was selected as the end-user of the system. Given that the proponents have access in gathering the needed requirements. A series of surveys and interviews with the ICT head, AP department heads, master teachers and district supervisor were conducted to determine the current methods, process of teaching and assessment of students in the entire division. Set of questionnaires was created for Grades 5 and 6 mentors. This was to determine their views of integrating technology in teaching and studying AP. It was followed by gathering other relevant literatures and studies as basis of conducting the study. After consolidating all the gathered relevant information from different sources, the developers started to plan and design a prototype.

After gathering the requirements needed to design the system, the proponents proceed to the development of the system, at the same time consistently consulted the beneficiaries and clients of the system. Rapid Application Development (RAD) methodology was implemented (Rouse, 2016). It involved minimal planning and focused on the quality of the system. The development was divided in four phases: requirement planning, user design, construction or development and cutover. The first phase focused in group discussion regarding the needs, project scope, constraints, and system requirements. The data was processed and analyzed in continuous interactive development that allowed users to understand the system. Applying the RAD phases, the developers initiated brainstorming to identify the target users of the system. The respondents are 15 Araling Panlipunan Teachers, 3 heads of Araling Panlipunan subjects in Siniloan, Pangil, and Sta. Maria. These towns were selected because the proponents live in the said municipalities. It also involved 150 students from Grades 5 and 6. This was to gather relevant information and to identify some of the problems encountered in Araling Panlipunan subjects. The information gathered was reviewed and analyzed to come up with important data needed for developing the system and its prototypes.

The next phase concentrated in the investigation of the requirements for coming-up with a system design. The researcher reviewed various learning management systems feedback necessary for developing the UI design and

features. A series of e-learning systems experiences were conducted to get vital features for creating better process of the system as well as produced quality input and output. The researchers also searched through the library and reviewed past related systems to add supplementary features to the proposed system. The proponents also interviewed a number of Information Technology/Computer Science instructors to validate the views and processes. This stage allowed the developers to understand, modify, and eventually approve a working model of the system that meets the DepEd-Laguna needs. The third phase was the construction stage which revolved around programming, application development, coding, unit-integration and system testing. In unit-integration and system testing, the developers performed an Alpha and beta testing by gathering 10 IT faculty or instructors of the College of Computer Studies of Laguna State Polytechnic University to identify errors, bugs, unexpected issues and all possible alterations.

The prototype was designed according to the client’s requirements and actual scenarios of disseminating centralized lessons. The system design is responsive for mobile and portable devices. The developers used software development languages, such as HTML5 and PHP. The programmers employed MySQL database. In addition, other necessary software requirements were also used like the internet browser, Notepad++, Adobe Dreamweaver, TinyMCE and XAMPP. In the last phase of the development, the proponents performed Beta testing to determine the level of acceptability of the proposed DepEd-Laguna supplemental e-learning system. An innovative and responsive supplemental learning tool is thus built, delivered and placed in operation.

The system was tested and evaluated using the ISO 9126 Evaluation Model to determine the acceptance level of the proposed system. The functionality of the system (i.e., ease of operation, user-friendliness, provision of comfort and convenience), reliability (i.e., conformance to the desired result, absence of failures, accuracy in performance), usability (i.e., intuitive design, ease of learning, efficiency of use, memorability, error frequency and severity, subjective satisfaction), efficiency (i.e., level of performance, amount of resources used), maintainability (i.e., ease of maintenance, provision for diagnostic and procedures for fixing problems, enhancement and modifications), and portability (i.e., adaptability, installability, and replaceability) were tested to determine whether the system met the necessary requirements set forth by the client. The respondents rated the system on a per sub-category basis from a scale of 1 to 4 where 4 is the highest. When responding to a 4-point questionnaire item, respondents specify their level of agreement to a statement presented in Table 1. The result of the system was analyzed using frequency, rank, and mean.

Table 1. Respondent’s system evaluation range of ratings

Scale	Range	Descriptive Rating
4	3.26 – 4.00	Highly Acceptable
3	2.51 – 3.25	Acceptable
2	1.76 – 2.50	Fairly Acceptable
1	1.00 – 1.75	Not Acceptable

THE PROPOSED SYSTEM

Figure 1 represents the system use case diagram of the project titled “Centralized Learning and Assessment Tool for DepEd – Division of Laguna’s Araling Panlipunan Subjects”. It shows the interaction and privileges of the 3 end-users who could access the system. They are the administrators (with highest privileges), teachers and students. It is a web-based mobile application. It requires an internet connection before the users could access the pages and all the contents of the system using any preferred web browser installed in the user’s devices. All data saved by the users shall be stored in the system’s database. Meanwhile, all the information accessed by the users shall be obtained from the server storage.

The developed system allows the admin (EPS) to create centralized daily lessons and disseminate them to all AP teachers in the division. The lessons created and posted by the admin can also be used by the teachers as reference materials. HEKASI 5 to 6 teachers and students can access the system by viewing the lessons, assessments, and other necessary electronic materials. Teachers, in turn are afforded ease and convenience in lesson preparation as well as databank in student performance evaluation.

Figure 2 shows that teachers and students can download electronic materials relevant to the class module or lessons as references. Figure 3 illustrates the admin and teachers privileges to upload files and other useful

electronic materials that can be downloaded by other users. Figure 4 shows a display of the system's interface of viewing daily module lessons created by the Admin. Module lessons can compose of uploading relevant photos and videos to motivate the students to listen and participate in discussions.

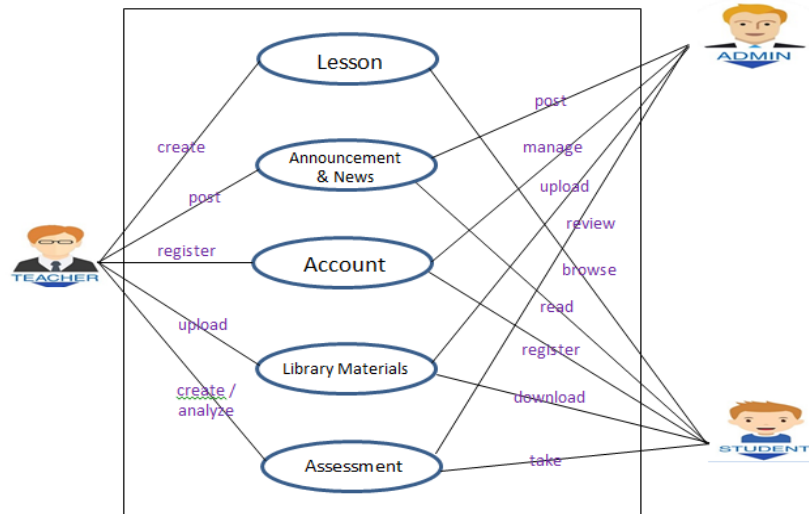


Figure 1. Use case diagram showing the actions or functions from the users and its privileges.

Centralized Learning and Assessment Tool for Araling Panlipunan

Notifications
Library
My Account
Logout

Library Downloads

Upload Date	Level	Category	Filename	
2017-05-14	Grade-V	Week 1	AP Week 1 Day 1.pptx	📄
2017-05-14	Grade-V	Week 1	QUARTER-1-Aralin-7-AP5PLP-Ig-7-LM-1.docx	📄
2017-05-14	Grade-V	Week 2	Quarten-1-Aralin-8-AP5PLP-Ig-8-LM.docx	📄
2017-05-14	Grade-V	Week 3	Quarten-1-ARALIN-9-AP5PLP-Ig-9-LM.docx	📄

prev
1
next

Figure 2. Downloading of Electronic Materials

Library File Uploader

Select Level

-- select level --

Select Category:

-- select category --

File Description :

Enter File Description

DROP HERE
BROWSE

Figure 3. Uploading of Electronic Materials

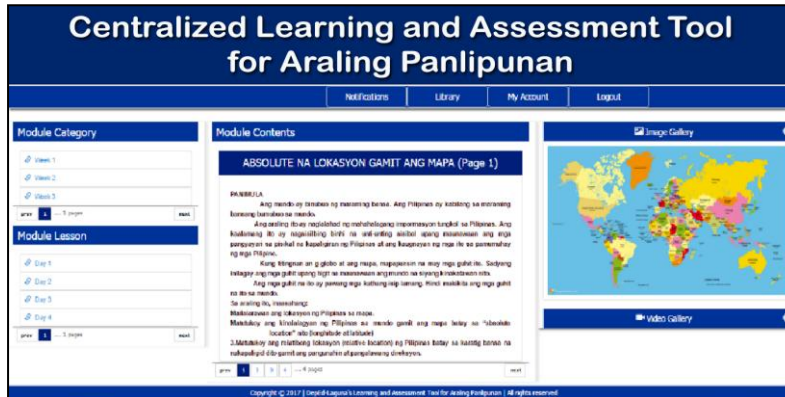


Figure 4. Viewing Module Lessons

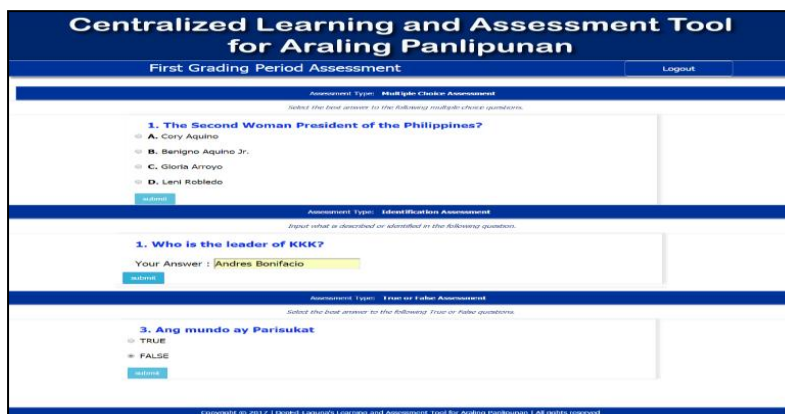


Figure 5. Taking of Assessment Interface

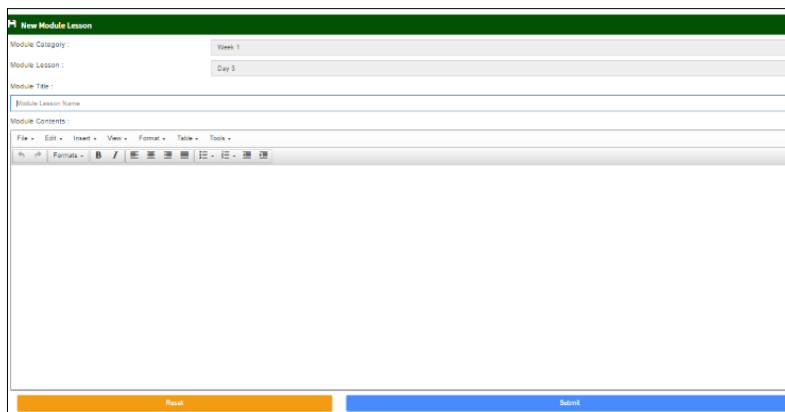


Figure 6. Module Lesson Interface

Figure 5 shows the screen that may only be seen by students who will take the assessment once it is activated by the teacher. It shows the question, choices (if multiple choice and true or false), and field to enter the answer (if identification), including the submit button to save the answers in the database. Creating a module lesson's interface under the authorization of the admin is shown in Figure 6. After selecting the module and grade level, inputting of text can also be managed using the options similar to MS Word. Uploading of images and videos are also included in this menu.

Figure 7. Creating and Posting Announcements

The system administrator has the capability to create or post of announcements, events, updates, and notifications. It also has an uploading mechanism that can accept files such as MS Office documents, pdf file, videos, music, and images. The announcements created will be posted directly to other user’s homepage presented in Figure 7.

Centralized Learning and Assessment Tool for Araling Panlipunan

Assessment Report for First Grading Period / Grade-V / Narra

Student Name	Score	No. of Items	Assessment Code
Cagayan, Keith bryan I.	9 /	15	1GP
Lumangaya, Jan A	12 /	15	1GP
balquiedra, benedick A	8 /	15	1GP
mauricio, mauricio mauricio	9 /	15	1GP
keith, keith keith	5 /	15	1GP
kari, kari kari	4 /	15	1GP
james, james james	1 /	15	1GP
jenjen, jenjen jenjen	8 /	15	1GP

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Figure 8. Viewing and Printing of Assessment Result

After every assessment, teachers can view the result of the assessment taken by their students showing total scores out of the total number of questions on a per assessment category as shown in Figure 8. The students may likewise select to print the file by clicking the printer icon above.

Figure 9. Teacher’s Registration Form

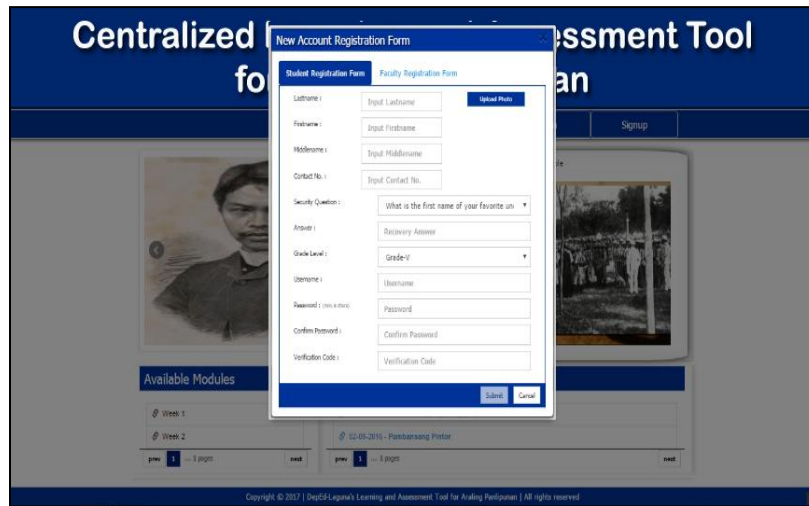


Figure 10. Student's Registration Form

Figures 9 and 10 display the teacher and the student registration forms. Teachers may create assessment based on the assessment category created by the admin, as shown in the figure below. There are three (3) types of assessment that can be created. They are multiple choice, identification, and true or false. The directions per assessment are already given. The only fields to fill out are the questions, choices (for multiple choice and true-or-false) and answer key as reference in generating the result. The teachers can store unlimited contents in the question databank and may choose how many items are to be shown on the student's side since the items will be randomized as represented in Figure 11.

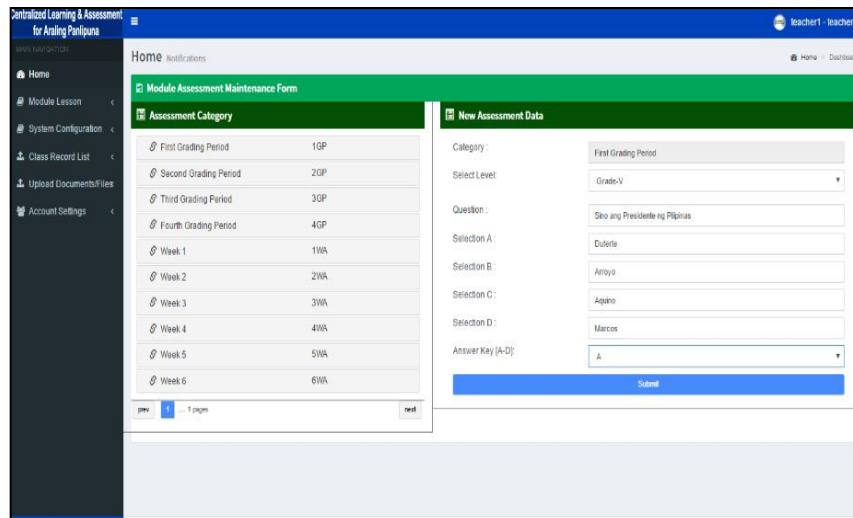


Figure 11. Assessment Content Module

The teacher can check the level of the student's proficiency on a per topic basis through the item analysis report showed in Figure 12. The report presents the total number of students who answered the question correctly or incorrectly as well as the equivalent percentage out of the total number of examiners. The percentage of the incorrect answers will appear red if it is 50 and above. It means that the specific question is the one that requires a remedial discussion. Students can see the results right after every end of assessments showing their total scores over total number of questions answered as shown in Figure 13.

Centralized Learning and Assessment Tool for Araling Panlipunan						
Assessment Report for First Grading Period / Grade-V / Narra Item Analysis Report - Periodical Assessment						
Code	Assessment Question	No. of student who answered correctly	Percentage of Correct	No. of student who answered incorrectly	Percentage of Wrong	Total examiners
Multiple Choice Assessment Data						
1	National Hero Shot in Luneta?	4	50%	4	50%	8
2	The leader of KKK?	3	37.5%	5	62.5%	8
15	National Anthem?	3	37.5%	5	62.5%	8
18	First Woman President?	3	37.5%	5	62.5%	8
19	The Second Woman President of the Philippines?	6	75%	2	25%	8
Identification Assessment Data						
1	Who is the National Hero Shot in Luneta?	1	12.5%	7	87.5%	8
2	Who is the leader of KKK?	5	62.5%	3	37.5%	8
3	Who is the Brain of the Katipunan?	4	50%	4	50%	8
4	First Woman President?	5	62.5%	3	37.5%	8
5	The Hero that killed Magellan?	0	0%	8	100%	8
True or False Assessment Data						
7	Ang Pilipinas ay nasa Asya	2	22.22%	7	77.78%	8
8	Ang aso ay matuturing na hayop	4	44.44%	5	55.56%	8
9	Ang tilapia ay matuturing na endangered species	5	55.56%	4	44.44%	8
10	Ang mundo ay Parisukat	8	88.89%	1	11.11%	8
11	Ang aso ay Horse	6	66.67%	3	33.33%	8

Prepared By: Clara, Maria A

Figure 12. Item Analysis Module

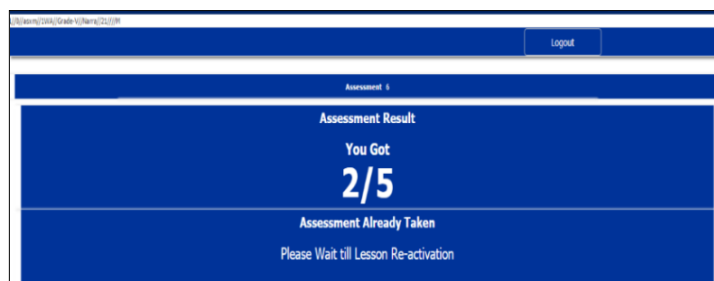


Figure 13. Viewing of Assessment Result

RESULTS AND DISCUSSIONS

Based on the rating for the overall performance of the system obtained through testing and evaluation, the research found that the student and teachers in the DepEd Division of Laguna could utilize the proposed system. Convenient sampling was applied in this study to get the respondents to simply assess the system as acceptable for implementation. The researchers attained the objectives to design and develop a responsive e-learning application that will provide a centralized learning and assessment tool in Araling Panlipunan. The proposed research project is acceptable to the client and could be implemented within the organization. The other features of the system were added to the effectiveness of the research project. The study met the intended software specificities. The ICT integration on the research project made it possible for the respondents to see that ICT inclusion will make Araling Panlipunan learning effective and beneficial. The students can enhance and develop their skills with frequent use proposed e-learning tool.

Table 2 shows the overall rating and acceptability of the developed system as proved by data gathered from the conducted testing of the system. The functionality, efficiency and portability appeared to have highly acceptable rating. Most of the responses from the sub-categories that fall under efficiency are ranging from the average of 3.24 – 3.75 and rated rank 1 among the categories. It shows that the level of performance and amount of resources used

responded highly acceptable. The functionality of the system provides ease of operation, user-friendliness, and provision of comfort and convenience to the respondents. In addition, the proposed system operates in almost all browsers, such as Google Chrome, Mozilla Firefox and Safari and may be used in different platforms. However, the rest of the categories were gauged as acceptable.

Table 2. Overall acceptance of the developed system

Category	Average Mean Response	Interpretation
1. Functionality	3.40	Highly Acceptable
2. Reliability	3.23	Acceptable
3. Usability	3.24	Acceptable
4. Efficiency	3.51	Highly Acceptable
5. Maintainability	3.03	Acceptable
6. Portability	3.34	Highly Acceptable
Overall Average Weighted Mean	3.27	Highly Acceptable

The usability responses gain of 3.24, which is verbally-interpreted as acceptable, means that the developers need to make minor modifications to make the user interface design more appealing to the users. The respondents' average responses for conformance to the desired result, absence of failures, accuracy in performance is within the range of 3.29 to 3.63. It means that reliability provides highly-acceptable output in the system. Lastly, maintainability scored 3.03 since the respondents encountered difficulties operating the system and also because some of the Araling Panlipunan teachers are not ICT ready. The data indicated that AP students are delighted and excited to use the new approach in learning Araling Panlipunan lessons and assessment as long as they have the internet facilities. Lastly, the overall rating and acceptability of the system is still highly-acceptable. It is a good indication that the proposed system can be implemented and it may bring significant contribution in transforming the traditional method into ICT based approach.

CONCLUSIONS AND RECOMMENDATIONS

The developed system provides the DepEd – Division of Laguna a new learning and assessment system for Laguna. It is expected that this will be one of the major key drivers in transforming the learning routine of Araling Panlipunan mentors and students. One of the major capabilities of the system allows the Education Program Supervisors to create a centralized access to the learning materials through a responsive web application as designed. It also allows the AP teachers to become more dynamic because it lessens their workloads in terms of preparing lessons and assessments. The e-assessment part of the system allows the students to become more participative in class discussions. The e-assessment likewise enhanced students' ICT skills upon taking electronic quizzes or exams.

Based on the user's evaluation, the developed system can be an indication of integrating ICT in AP. Its implementation may bring new educational experiences to the young generation of both elementary educators and students. The system also provides alternative approach for students to access and download learning materials in Araling Panlipunan. The goals of creating this alternative approach of teaching and evaluation process support teachers and students' development for e-learning and e-assessment. One major features of the system is that the Araling Panlipunan teachers can monitor the performance of the individual students. This trend will empower the teachers and students to become more confident and competent in the use of technologies, shared resources and collaborative learning.

IMPLICATIONS

The DepEd – Division of Laguna needs to address the challenges they will be facing upon the implementation of the developed system. Such factors to consider are ICT-enhanced education for educational policy and planning, infrastructure-related challenges and capacity-building. Despite the challenges, the implementation of the said system is highly-recommended in order to cope with the emerging trends of ICT in Education as a result of the implementation of the K to 12 programs in the Philippines. Furthermore, learning and assessment process can become more exciting and productive when ICT is applied in public schools which can be a new means to gauge student-centred assessment which could also cater to learning styles.

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APPENDIX A. QUESTIONNAIRE

CENTRALIZED LEARNING AND ASSESSMENT TOOL FOR DEPARTMENT OF EDUCATION – DIVISION OF LAGUNA’S ARLING PANLIPUNAN SUBJECTS SOFTWARE EVALUATION INSTRUMENT OF ISO 9126

Name (Optional): _____

Gender: _____

Instruction: Please evaluate the software material by using the given scale and placing a checkmark () under the corresponding numerical rating:

Numerical Rating and Equivalent
4 – Highly Acceptable 3 – Acceptable 2 – Fairly Acceptable 1 – Not Acceptable

A. Functionality				
Indicators	4	3	2	1
Ease of operation				
Provision for comfort and convenience				
User-friendliness				

B. Reliability				
Indicators	4	3	2	1
Conformance to desired result				
Absence of failures				
Accuracy in performance				

C. Usability				
Indicators	4	3	2	1
Intuitive design: a nearly effortless understanding of the architecture and navigation of the system				
Ease of learning: how fast a user (who has never seen the user interface before) can accomplish basic tasks				
Efficiency of use: how fast an experienced user can accomplish tasks				
Memorability: how easy a user can remember the system process so that it can effectively use it in future usage				
Error frequency and severity: how often users make errors while using the system, how serious the errors are, and how users recover from the errors				
Subjective satisfaction: How the user likes using the system				

D. Efficiency				
Indicators	4	3	2	1
Level of Performance				
Resource utilization/Amount of resources used				

E. Maintainability				
Indicators	4	3	2	1
Ease of maintenance				
Provision for diagnostic tools and procedures				
Provision for enhancements and modifications				

F. Portability

Indicators	4	3	2	1
Adaptability				
Installability/operate in different web browser and platform				
Replaceability				

Comments / Suggestions:

Respondent's Signature