ISSN 2278-3091
Volume 9, No.1.2, 2020
International Journal of Advanced Trends in Computer Science and Engineering
Available Online at http://www.warse.org/IJATCSE/static/pdf/file/ijatcse1991.22020.pdf
https://doi.org/10.30534/ijatcse/2020/1991.22020

Learning Management System to Enhance the Research Capability of Public School Teachers

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ABSTRACT

This study determined the learning management system that fits to enhance the research capabilities of public elementary teachers in the northern district, schools division of Nueva Vizcaya. It also provides comparison of different available learning management tools. Descriptive design was used as the methodology of the study. An evaluation of the research capability of teachers was determined. The study found out that the MOODLE and Edmodo are the most appropriate learning management system for public school teachers of Nueva Viscaya, Philippines. Although some differences in terms of functionalities among selected learning management system are observed, the most recommended learning management system are MOODLE and Edmodo.

Key words: Edmodo, MOODLE, Research capabilities, Research management support, Research skills

1. INTRODUCTION

The research endeavor is one of the very important things for opportunities for improvement. Through research, man gains social, economic, cultural and political benefits. Its value cannot be underestimated for it is directed towards the preservation and improvement of quality of life [1]. Over the years, research has become a prevailing phenomenon of our civilization. Scholars, graduate students, and professionals in the academic discipline are engaged in research. Research on the other hand, influenced the operation of the school system in terms of teaching and learning [2]. According to [20] the Philippines is one of the active users of Learning Management System (LMS) that mostly used academic discussion, learning assessment and submission of subject requirements. It is also included in the Enhanced Basic Education of Republic Act 10533 to implement other way to deliver learning through online platform [21]. DepEd promotes and strengthens the culture of research in basic education. Department Order No. 16, s. 2017, provided a guideline that manages the research is the Research Management Guidelines of DepED provides the guidelines in managing research. However, because of overpopulation in the public schools in the Philippines, the teachers have limited time in other aspect of the pillars of education.

In the study of [3], school administrators must be the driving force and role models that initiate the movement for change or facilitate the movement within their schools. By using the process of action research, the school administrator not only models the importance of learning and assessing personal practice but also introduces innovative strategies. As [4] affirmed administrators help their teachers by working collaboratively and helping in their professional development. The study of [4] further states that action research is to find a fact to solve the issue. This is a good opportunity to integrate this information technology platform. It is also found out that [5] proves that leaders who engage in action research find the process an empowering experience. In this case, leaders have influential factors for the research output of the teachers. To be able to capture the interest of the teachers in research is to explain to them that research is easy and can be done in simple way like action researches. Again, the need to time to do research is necessary, with the growing students every year in public schools, the teacher has no enough time to fulfill the 2nd and 3rd pillars of education which is research and extension. Also [6] suggests that the provision of adequate support for research is one of the most important factors in promoting research activities. Funding, Information, communication and technology equipment, books/references from libraries, and the most common, verbal encouragement from superiors, are forms of support that a researcher needs to undertake scholarly research studies. In the study of [7], researchers have shown previously that research productivity depends heavily on how much time one spends on research-related activities.

Further, in the study of [8] he affirms that the teaching load has effects on research productivity that occur across the differing fields and clusters of departmental areas. This is one of the main reason why teachers cannot do research. He further stresses that more than 10 hours of teaching load lead to less time for research. From an environmental perspective, [9] conclude that faculty members who are limiting their network to division or school members are less productive than those who maintain a wide network of colleagues in their field. The ongoing problems on time management of teachers motivated the researcher to come up with this study.

2. METHODOLOGY

This study employed the descriptive research design. Some of the methods used by [17], [18] and [19] are also considered in this study.

The respondents of this study were the public elementary school teachers of the different schools in the Northern District, Schools Division of Nueva Vizcaya. Due to differing geographical locations, multi-stage sampling was used.

The learning management system has the following basic functionalities [24]:

1. Site Management –This module is intended for the administration of the whole learning management system functionalities. The administration account is used for this purpose.
2. User Management – This module is intended for the management of user. The administration account is used for this purpose.
3. Enrolment – This module is intended for enrollment of the users in the course. The administration, super user and teacher accounts may be used for this purpose.
4. Roles – This module is intended to define the specific type of participants.
5. Course Management This module is intended for the management of the course. The administration, super user and teacher accounts may be used for this purpose.
6. Course Report – This module is intended for the report of grades of many kinds of online activities. The administration, super user and teacher accounts may be used for this purpose.
7. Assignment Module – This module is intended for the setting up of homework activities.
8. Chat Module – This module is intended for chat activities. Although the chat activities of LMS is subject for improvement, there is an on going development wherein the target of the developer is to come up with a messenger like application where in the real time is to be considered.
9. Choice Module – This module is intended for a survey of single question poll.
10. Forum Module – This module is intended for forum discussions or posting of forum.
11. Lesson Module – This module is intended for a series of pages for student to interact with the teachers.
12. Quiz Module – This module is intended for catering many types of quizzes.
13. Resource Module – This module is intended for the repository of media, document or audio files.
14. Survey Module – This module is intended to survey online which composed of built-in surveys.
15. WiKi Module – This module is intended to post and edit the idea's of everyone.
16. Workshop Module - This module allows assessment of documents that is manageable online.

3. RESULTS AND DISCUSSIONS

3.1 Leaning Management System

Proprietary Leaning Management System are not so popular because of the heritage of Computer Based Training (CBT) systems [20], which were ruling the market before the dawn of the e-Learning standards era, before adoption of Sharable Content Object Reference Model (SCORM). The function is limited compared with other e-learning components such as SCORM. A good example of SCORM is Edmodo, Canvas, Moodle and Blackboard. In addition, it is expensive. For the the public school teachers and its administration to invest in the proprietary LMS is not practical.

3.2 Standard Learning Management System

This is the fastest growing technology of LMS. The standard LMS is implemented for interconnections and reusability of data from different forms. Also the standard will also dictates how the LMS will be interacted with the fast phasing technological changes.

3.3 The Determination of the LMS to be Used

The determination of the LMS to be considered in the school depends on financial and laboratory facilities. However, most of the public school teachers has already an internet connections and they can access the cyber space anytime. The following are the four LMS types according to [22]

1. Proprietary LMS
2. Proprietary and partially Standard
3. Standard Based LMS
4. Open Architecture LMS.

3.4 Tables of LMS Comparisons

Table 1: Table of LMS Comparison

Functionalities	MOODLE [23]	Blackboard [23]	Edmodo	Canvas
Page	Available	Available	Available	Available
URL	Available	Available	Available	Available
File	Available	Available	Available	Available
Folder	Available	Available	Available	Available
Legend	Available	Available	Available	Available
Book	Available	Available	Available	Available
Lecture	Available	Available	Available	Available
Syllabus	Not Available	Available	Not Available	Available
Dictionary	Available	Available	Available	Available
Lesson Plan	Not Available	Available	Not Available	Available
Video	Not Available	Available	Available	Available
Integration	Available	Available	Available	Available
Discussions	Available	Available	Available	Available
Chat	Available	Available	Available	Available
Reports	Available	Available	Available	Available
Inquiry	Available	Not Available	Available	Not Available
Comments	Available	Available	Available	Available
Quizzes	Available	Available	Available	Available
Assignment	Available	Available	Available	Available
Statistics	Available	Available	Available	Available
Proprietary	Yes	Yes	Yes	No
Free Version	Yes	Yes	Yes	Yes
Ease of Use	No	No	Yes	Yes

Table 1 shows the comparisons of LMS in terms of its functionality. It is noted that blackboard [23] and canvas LMS are almost complete in terms of its functionalities. However, the Canvas and Edmodo are the most user friendly graphical user interface. The MOODLE is the most effective learning management system as found out by [24]. Moreover, all of the mentioned LMS are proprietary with limited functionalities when using the free version.

3.5 Level of Respondents' Research Capabilities in Terms of Research Skills and Process

The respondents' research capabilities are one of the important factors on how to determine the appropriate learning management system. The study of [25] has proven that the skills of a person are useful input to decide on the appropriate learning management system. Table 2, 3 and 4 presented data on level of respondents' research capabilities which is used to determine the appropriate learning management system.

Table 2: Level of respondents' research capabilities in terms of research skills and process

Indicators	Mean	SD	Qualitative Description
1. Identifying relevant classroom/school-based problem/s	3.72	0.83	Highly Capable
2. Crafting research problem/s (research title) together with specific questions.	3.43	0.86	Highly Capable
3. Developing research paradigm/ framework that will serve as guide in the research study.	3.34	0.82	Moderately Capable
4. Determining relevant theories and concepts relative to the framework of the research study.	3.31	0.78	Moderately Capable
5. Developing a new strategy or approach to address the identified research problem.	3.30	0.84	Moderately Capable
6. Organizing related studies and literature based on the identified research problem.	3.32	0.75	Moderately Capable
7. Preparing correct prescribed bibliographic format like APA style of referencing.	3.23	0.84	Moderately Capable
8. Developing valid and reliable research instruments and tools.	3.23	0.86	Moderately Capable
9. Identifying appropriate statistical tool in analyzing the gathered data.	3.22	0.90	Moderately Capable
10. Using different sampling procedures appropriate for the study.	3.28	0.89	Moderately Capable
11. Analyzing, organizing and interpreting qualitative and quantitative data.	3.26	0.91	Moderately Capable
12. Preparing the summary of the study, drawing conclusion based on the findings and identifying doable research recommendations.	3.34	0.88	Moderately Capable
Overall Mean	3.33	0.85	Moderately Capable

Table 1 confirms that teachers were highly capable in identifying relevant classroom /school-based problem/s ($\bar{x}$=3.72) and crafting research problem/s (research title) together with specific questions ($\bar{x}$=3.43).

Additionally, teachers are moderately capable in developing research paradigm/framework that will serve as guide in the research study ($\bar{x}$=3.34), preparing the summary of the study, drawing conclusion based on the findings and identifying doable research recommendations ($\bar{x}$ =3.34), organizing related studies and literature based on the identified research problem ($\bar{x}$=3.32), determining relevant theories and concepts relative to the framework of the research study ($\bar{x}$=3.31), developing a new strategy or approach to address the identified research problem ($\bar{x}$=3.30), using different sampling procedures appropriate for the study ($\bar{x}$=3.28), analyzing, organizing and interpreting qualitative and quantitative data ($\bar{x}$=3.26), preparing correct prescribed bibliographic format like APA style of referencing ($\bar{x}$=3.23), developing valid and reliable research instruments and tools ($\bar{x}$ =3.23) and identifying appropriate statistical tool in analyzing the gathered data ($\bar{x}$=3.22). Generally, the overall mean of 3.33 indicates that teachers were moderately capable in terms of research skills. This implies that the research capabilities of teachers in terms of research skills were moderate indicating that they conducted research with minimal assistance from research mentor.

In the study of [10], he found out that teachers lacked the necessary skills, such as constructing data gathering instruments, doing statistical treatments and interpreting findings. Likewise, in the study conducted by [11] on the Effectiveness and Training Needs of Tertiary Faculty, respondents were in great need of research trainings with the end view to hone and sharpen their research skills that will eventually redound to the improvement of classroom instruction. Moreover, [11] views research as a tool and process to acquire feedback.

3.6 Level of Respondents' Research Capabilities in Terms of Research Dissemination.

Table 3: Level of respondents' research capabilities in terms of research dissemination

Indicators	Mean	SD	Qualitative Description
1. Presentation of research output in various forms.	3.27	0.96	Moderately Capable
2. Publication of research output in research journal.	3.15	0.97	Moderately Capable
3. Dissemination of research output through social media like Facebook, blog, twitter, etc.	3.12	1.00	Moderately Capable
4. Dissemination of research output through radio broadcasting and television.	3.01	1.03	Moderately Capable
5. Incorporating research output in the production of instructional materials, modules, etc.	3.15	1.04	Moderately Capable
Overall Mean	**3.14**	**1.00**	**Moderately Capable**

Table 2 reflects the overall mean of 3.14, which indicates that teachers were moderately capable in presenting of research output in various forms ($\bar{x}$= 3.27), publishing of research output in research journal ($\bar{x}$=3.15), incorporating research output in the production of instructional materials, modules, etc. ($\bar{x}$=3.15), disseminating of research output through social media like Facebook, blog, twitter, etc. ($\bar{x}$ =3.12) and disseminating of research output through radio broadcasting and television ($\bar{x}$=3.01). Based on the table, although the respondents rated themselves moderately capable, the teachers still needed to be capacitated with the research dissemination in order to produce a quality research.

These findings run moderately better than the scenario established by [12] which showed that the extent of faculty researches conducted, dissemination of research findings, and use of research findings were limited while the faculty participation as reviewers of research was minimal. The study further pointed out that research-based factors, research-related factors and organization-related factors moderately hindered the participation of the faculty along the conduct of research, dissemination of research, review of research, and use of research. In the study of [12] he concluded that the extent of faculty participation in research

activities was lower than the expectations of the university and the mandates of CHED, and faculty participation in the review of research was greatly constrained by factors related to nature of research capability and attitude and the research climate in the work setting.

3.7 Level of Management Factors in Terms of Research Support to Enhance the Research Capabilities of Elementary School Teachers.

Table 4: Level of management factors in terms of research support to enhance the research capabilities of elementary school teachers.

Indicators	Mean	Std. Dev.	Qualitative Description
1. There are enough opportunities for research trainings /seminars in local, national and international level.	3.50	0.99	Much Provided
2. There are available research grants provided by the DepEd or by other funding agencies.	3.41	1.04	Much Provided
3. There are adequate provision of book and online references needed in doing research.	3.40	0.96	Much Provided
4. There is adequate ICT equipment and facilities such as laptop, printer, etc. needed in research work provided to researchers.	3.32	1.05	Moderately Provided
5. Technical research assistance is provided by the immediate supervisor or by an expert teacher.	3.44	0.93	Much Provided
6. Collaborative research work exists among colleagues.	3.40	1.02	Much Provided
7. Good instructional leadership in the conduct of research in the school is evident.	3.41	1.01	Much Provided
8. There are incentives (monetary reward, scholarship, etc.) given to teachers with research output.	3.22	1.08	Moderately Provided
9. Incentives grants are provided for approved research by either local, national, international funding agencies.	3.25	1.08	Moderately Provided
10. Office supplies are provided to researchers.	3.19	1.12	Moderately Provided
11. Research publication/journal/online are available.	3.20	1.03	Moderately Provided
12. There is a monitoring scheme of research conducted and research involvement of teachers.	3.31	2.41	Moderately Provided
Overall Mean	**3.34**	**1.14**	**Moderately Provided**

Table 3 indicates that the teachers were much provided in the following indicators: there were enough opportunities for research trainings /seminars in local, national and international levels ($\bar{x}$=3.50), technical research assistance was provided by the immediate supervisor or by an expert teacher ($\bar{x}$ =3.44), there were available research grants provided by the DepEd or by other funding agencies ($\bar{x}$=3.41), good instructional leadership in the conduct of research in the school was evident ($\bar{x}$=3.41).

However, there were incentives (monetary reward, scholarship, etc.) given to teachers with research output ($\bar{x}$=3.22), research publication/journal/online are available ($\bar{x}$=3.20) and office supplies were provided to researchers ($\bar{x}$=3.19) were given the least ratings indicating that the research support to the respondents were moderately provided.

Generally, the overall mean of 3.34 indicates that teachers were moderately provided in terms of research support to enhance the research capabilities of elementary school teachers. This implies that teachers should be provided more with research support to improve their research capabilities.

Further, [11] noted that technologies are indispensable state of the art. The use of computer and effective ICT integration is beneficial in the teaching-learning process and technology can change and improve the quality of learning outcomes if designed to support knowledge acquisition in a learner-centered learning environment.

It is convincing that the Public School teachers of Nueva Viscaya possessed the research capabilities which have some concerns of schedules due to overwhelming work in the school. In their Information Technology familiarization, the findings also shows that all of them are internet dependent. Cellular phones and computer are also becoming part of their day to day work. That is why the researcher that all of the listed learning management system is good for them, however, it is recommended by [24] that MOODLE would be the most appropriate learning management system for this type of respondents.

3. CONCLUSIONS AND FUTURE WORKS

The following conclusions were drawn:

1. Comparisons of different learning management system are already presented. The canvas and Edmodo are the most user friendly and the MOODLE is the most effective learning management system.
2. Public elementary teachers were moderately capable in their research skills and process indicating that they conducted research with minimal assistance from research mentors and they were also moderately capable in research dissemination.
3. The respondents considered support for research by management and the environment being conducive to research as moderately provided.
4. MOODLE is recommended as the most appropriate learning management system in Public School Teachers of Nueva Viscaya..

The following are the future work of the study:

1. The officials of the Department of Education may provide public elementary school teachers with the needed motivation to attend seminars on research capabilities via several learning management system. By this method of learning, the teacher can still fulfill the research activities which are one of the pillars of education.
2. The school may consider a proprietary learning management system and assign champions for that LMS to be able to use the LMS not only in their research capabilities seminar but other online learning activities.

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