

# *Comparative Study of the Three Different E-Learning Management Tools: A Basis for Development of Knowledge Based Management System*

Dr. Marmelo V. Abante

Dr. Lorena W. Rabago

Dr. Bartolome T. Tanguilig

**Abstract:** The Internet had been experiencing considerable improvements recently. Being involved in such rapid modernism, the Internet therefore attained the significant aspects which have the capabilities of providing an even more extensive approach on how society preserves and develop knowledge. Considering these facts, the internet had been utilized by lecturers specifically those within the fields of higher education to convey information with ease. The Internet is used to deliver initiatives with regards to learning aspects and indeed this has created a more sophisticated approach in teaching. Utilizing the internet for teaching, along with other technological mediums is then referred to as E-Learning. Nowadays, E-Learning has been traversing the conceptual path of innovation with haste, due to this certain instance, educational institutions have to be able to adapt to the fast evolving environment in which it is involved in. A variety of teaching and learning techniques; specifically reorientation, are to be incorporated through a tactical method. These methods are to be attenuated in order for them to be able to provide and uphold a more flexible performance when it comes to learning styles and stratagem. A lofty university education requires a pre-requisite of certain key elements for it to be considered adept of betterment. Employers have the need to endow with a major programme of staff amelioration. Training and support are undoubtedly required to make sure that technological modernism could be prompted into the daily routines of an individual and for it to be utilized with percipient efficiency and effectiveness. Lecturers of an extensive number of departments were prompted to investigate computer aided learning in order to meet the objectives and motivating factors derived from the perspective of new students. However, many of these students had complaints regarding the lack of improvement and sustenance for this particular matter. This had been the reason why several schemes, methodologies, and proposals were introduced in order to improve and develop E-Learning management tools. On the other hand, the most recent advancement of knowledge-based systems has been to adopt the technologies for the development of systems that use the Internet. The Internet often has to deal with complex, unstructured data that can't be relied on to fit a specific data model. The technology of knowledge-based systems and especially the ability to classify objects on demand is ideal for such systems. Being a knowledge based system, E-Learning seeks to provide an easier approach in solving problems with complexity. This paper examines the issues surrounding the implementation of eLearning into higher education, including the structure and delivery of higher education, the implications to both students and lecturers and the global impact on society, determines how effective E-learning

could serve as a knowledge based system, and also includes the mapping of three E-Learning tools which may help to find out the differences between the commonly used E-Learning tools today namely Moodle, Blackboard and Claroline.

**Keywords** – E-Learning, Moodle, Claroline, Blackboard, mapping, LMS

## **I. Introduction**

Education is one of the key fundamental natures of life and to take a hold of things quickly whilst applying it is perhaps more significant. Being educated provides individuals with a perspective that would serve as a motivating element in order to achieve a progressive success. However, being successful necessitates an extensive allotment of time and effort. Education and success, being associated with each other, therefore also shares the same requirements in order for positivity to prosper.

To be able to cope with the fast paced growth of technological innovation, aspects concerning the progression of education also undergo such improvement. The instigation of the LMS (Learning Management Systems) to such teaching approaches is one particular method which is widely implemented by an extensive number of institutions in order to hone the adaptation and deliberation of knowledge to their students and as well as their employees. Here in the Philippines, online education is starting to make its presence felt as it is now being put into practice by schools such as UST (University of Santo Tomas) and OLFU (Our Lady of Fatima University). Having utilized the online education process, these particular institutions are now most likely to be more adept in providing an easier and more comprehensible approach in teaching and as well as developing those people associated with it.

The implementation of E-Learning factors to the current programme that certain colleges are using plays a considerable role in improving the academic, as well as the social aspects of those who are involved in its field. The progress of the online education scheme is of purposeful standards which had been the reason why certain tools are promulgated in order for its users to adapt to it with ease. Tools like Blackboard, MOODLE, and Claroline are the most suited examples for E-

Learning development. However, these tools are of lofty costs and to offer an alternative would definitely require a concentrated determining on how to diminish the cost while still providing the same level of quality. A vast number of LMS are available on the market today, which is why choosing what to use would be a difficult task, for there are a number of factors to be considered like user-interface, functionality, and the number of additional features available on the system.

There have been a number of studies which aimed to compare the features of the Blackboard, MOODLE, and Claroline to other E-Learning tools available on the market and very few actually has the capabilities which situates to either of the three. However, the learning effectiveness had not been considered significantly which makes this study result into providing a user experience as well. The researchers then seeks to develop a more effective but economical system which will provide the same effectiveness with combined

features as the three E-Learning tools which are being discussed.

## II. Method

The researchers used the comparison search method for the mapping and evaluation of the three E-Learning tools namely Moodle, Claroline and Blackboard. The researchers congregated various data regarding these three learning tools and as well as information concerning Learning Management systems while comparing its advantages and disadvantages to one another. . The researchers analyzed the data gathered in order to develop a new system which is more likely comparable to the features and effectiveness of the three learning tools combined. Below is an illustration of the research paradigm which the researchers used in order to analyze data.

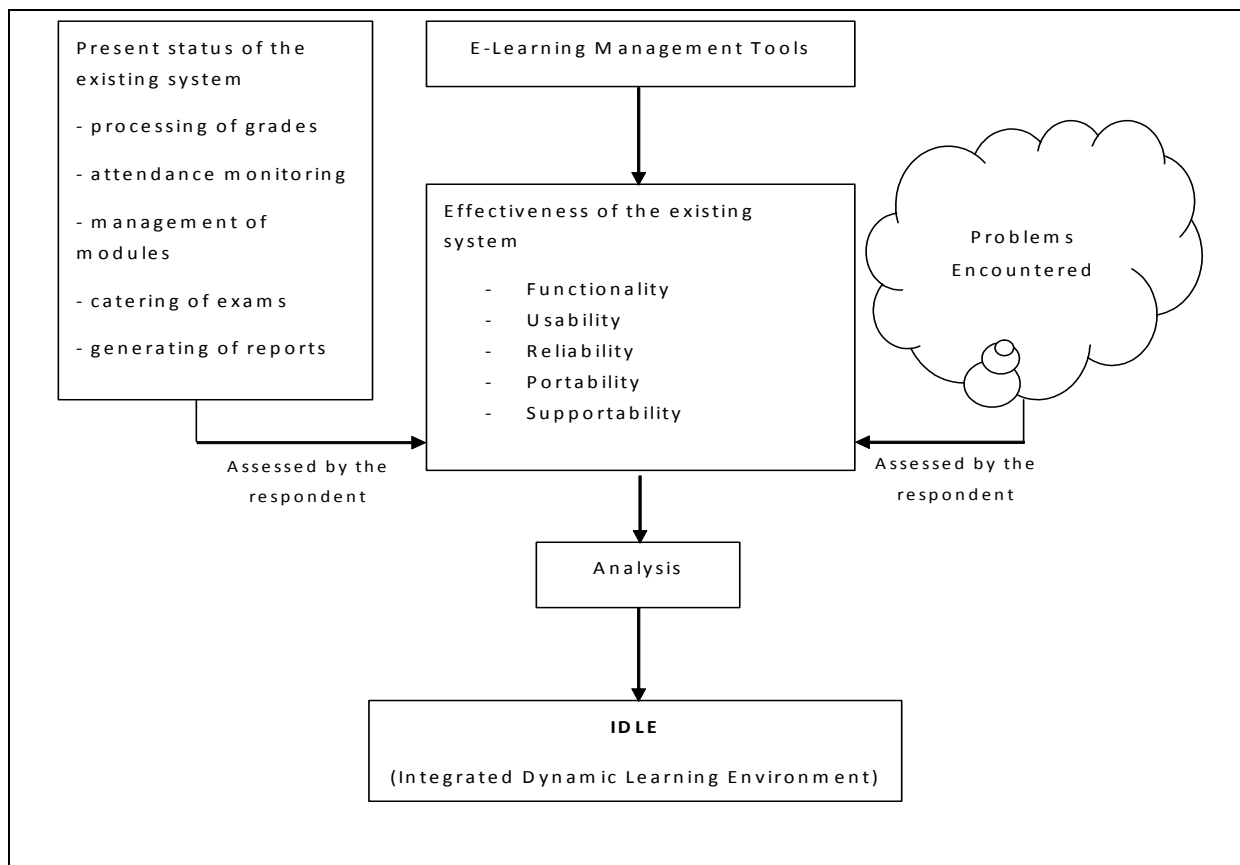


Figure I. Research Paradigm

This figure shows the research paradigm of the proposed system whereas the existing system is test by functionality, usability, reliability, portability and supportability and whenever the problem arises. It will analyse the data to develop a new system which is the Integrated Dynamic Learning Environment (IDLE).

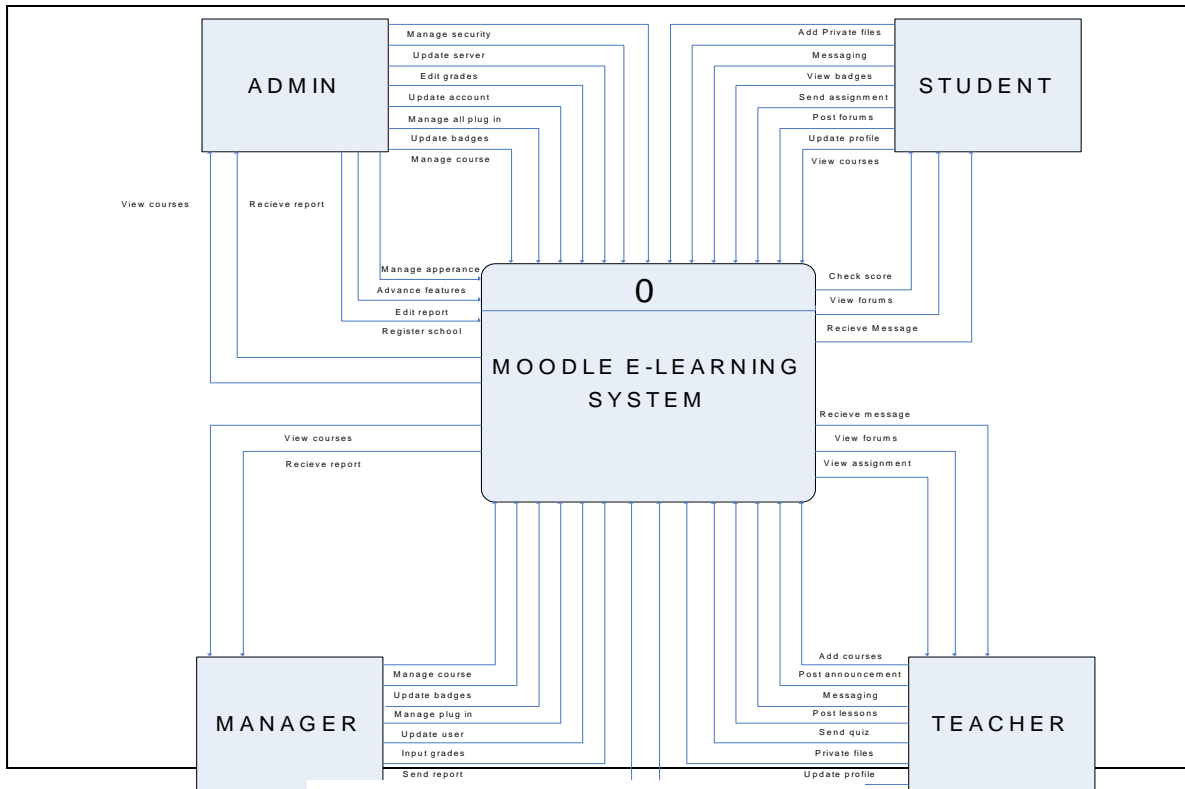
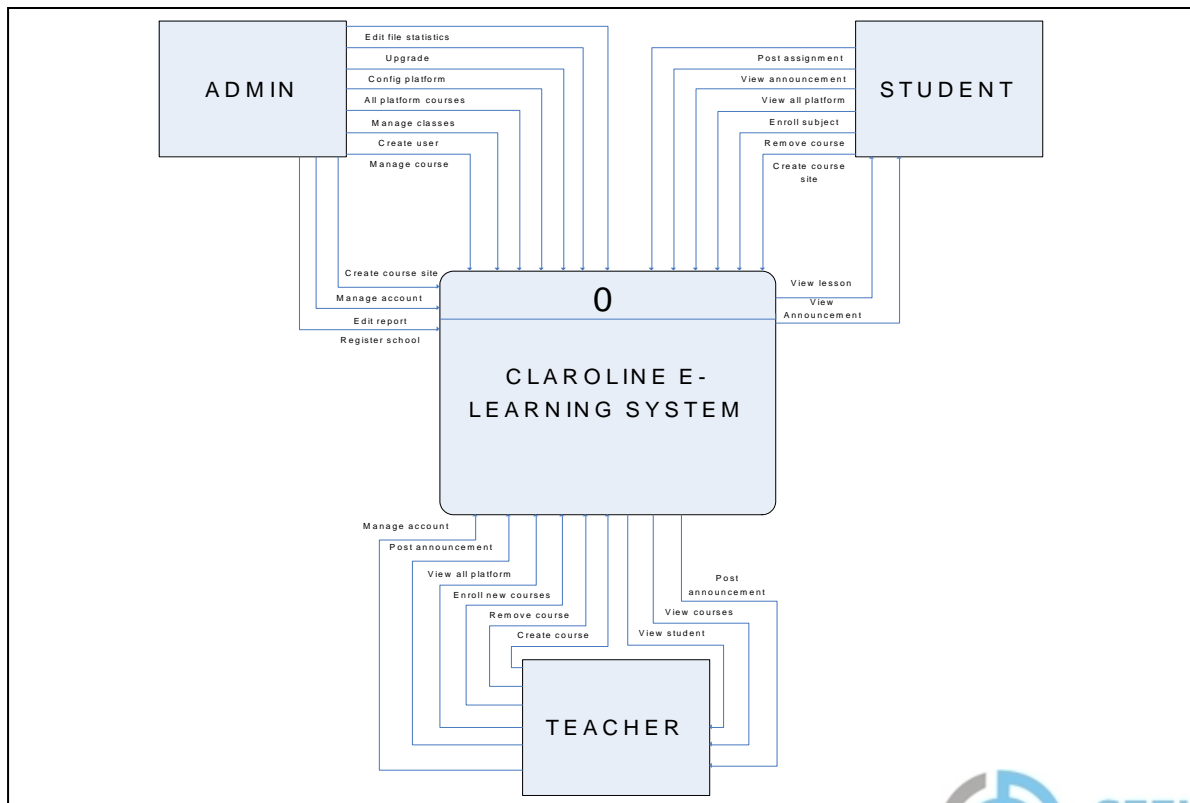


Figure II. Context Diagram (Moodle)



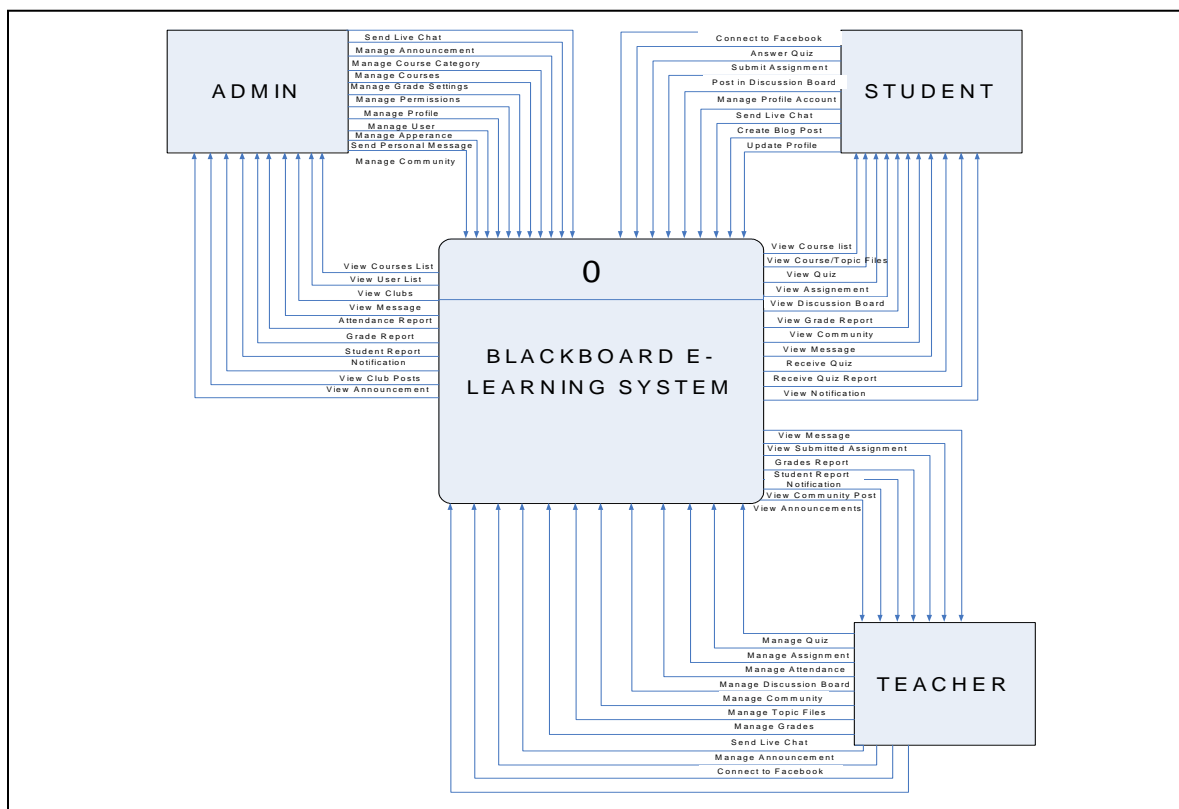


Figure III. Context Diagram (Claroline)

Figure IV. Context Diagram (Blackboard)

The three (3) figures above (Figure II) (Figure III) (Figure IV) shows the Context Diagram which portrays the environment of the different E-learning management tools. The context diagram provides a deliberate approach to discuss the whole settings of current learning tools. It is also used to define the significance of different tools, and to construct a new conceptualization based from the subject.

For the study of the Implication of the three Different E-Learning Management Tools, the researchers intends to use the survey method.

The survey is a non-experimental research method which requires a vivid examination approach. Surveys can be functional when a researchers wants to gather data on phenomena that cannot be observed. Surveys are used expansively in library and information science to measure approaches and descriptions of a broad variety of themes, from the eminence of user-system interfaces to library user reading habits. By using a survey, population sampling must be utilized.

The researchers seeks to carry out a two-way survey, each test taken in separate times. The pre-test, which is to be taken first, is to be performed to those respondents without familiarity to the subject at all, while the post-test surveys those who had experienced using the subject already. This

method perhaps would be of aid in order for the proposed system to be an efficient and effective one.

### iii. Result

There are three E-Learning Management tools to be compared, namely Moodle, Claroline and Blackboard; below is the summary of the features and backgrounds of the tools being discussed.

Moodle - is a software package for manufacturing Internet-based courses and web sites. It is a global expansion plan considered to sustain a societal constructionist structure of education. Moodle is provided freely as Open Source software (under the GNU General Public License). Essentially this means that Moodle is copyrighted.

The word Moodle was originally an acronym for Modular Object-Oriented Dynamic Learning Environment, which is mostly useful to programmers and education theorists. It is also a verb that explains the procedure of idly winding through something, doing things as it occurs to you to do them, an agreeable tinkering that often leads to insight and ingenuity. As such it applies both to the way Moodle was developed, and to the way a student or teacher might advance studying or teaching an online course.

**Blackboard** – is an industry-leading software application used to power virtual learning environments, supplement classroom education and as a platform for distance learning programs. Featuring a robust core set of capabilities that enable instructors to efficiently manage courses, author content, create assignments, and foster collaboration, among other key functions, the Blackboard Learning System help institutions accomplish mission-critical objectives related to instruction, communication and assessment. Excerpted from ([http://library.blackboard.com/docs/AS/Bb\\_Learning\\_System\\_Whitepaper\\_Capabilities.pdf](http://library.blackboard.com/docs/AS/Bb_Learning_System_Whitepaper_Capabilities.pdf))

Around the globe, Blackboard solutions are helping to improve every aspect of the education experience. Clients are using our technology to reach more students in immediate, personalized new ways. They are helping their educators become more effective. Keeping everyone informed, involved, collaborating together, and meeting the high expectations of today’s learners and they’re doing it in a cost-effective way that helps to sustain services and programs, even as outcomes are improved over time—finally, the new generation of education is here. Excerpted from (<http://www.blackboard.com/About-Bb/Who-We-Are.aspx>)

**Claroline** - the vision behind the project Claroline is a learning world, where everyone discovers well and better by cooperation, contribution, and building knowledge from others and by others. The Claroline project therefore seeks to make available to everyone, free and open the best platform to arrange and use instructive procedures for learning and collaboration.

It also implies that this tool is available to all because of its straightforwardness, suppleness and constancy. Claroline requires virtually no learning, whether at the level of the learner or trainer, the instructor is not constrained in their educational choices and it has tools that can organize and use according to their needs. The successive versions of the platform, developed according to stringent requirements in terms of quality, are made available to users when they have been sufficiently tested to minimize the risk of residual defects program may hinder the user.

Claroline is a project that lives and evolves through the joint action of many people worldwide. The team leading the project aims to rely on each member of the community to construct a project in which everyone can recognize.

## A. *Key Similarities and Differences*

The table below (Table I) shows the key similarities of three electronic learning management systems, box that was not been checked that is in lined with their corresponding system has no module included to that e-learning system. In terms of important module the three structures are comparable to each other, while the other modules can’t be found at the Claroline system.

TABLE I. SIMILARITIES

Features	Moodle	Blackboard	Claroline
Student enrolment in courses	✓	✓	✓
Restricted access	✓	✓	✓
Customization	✓	✓	✓
Uploading files (e.g. Word docs, PowerPoint, audio files)	✓	✓	✓
Linking to external web sites	✓	✓	✓
Zip course & provide on CD to students	✓	✓	
SCORM compliant	✓	✓	✓
Discussion forum	✓	✓	✓
Synchronous chat	✓	✓	
Quizzes, Tests	✓	✓	✓
Drop box	✓	✓	
Course calendar	✓	✓	✓
Grades	✓	✓	✓
Monitoring student participation	✓	✓	✓
Copy course over from semester	✓	✓	
Customized template	✓	✓	

The table below (Table II) shows the difference of the three E-Learning Systems, in terms of bandwidth connections, plugins, learning advantages, etc.

TABLE II. DIFFERENCE IN KEY FEATURES

Feature	Moodle	Blackboard	Claroline
Bandwidth	All features work on dial-up	Bandwidth hog, may time out	Powerful servers provided by host1 plus ensure excellent LMS performance. Runs on dial-up because of low minimum req. for connection
Plugins		Heavily dependent on current JAVA plugins	Automatic installed plugins are given; users can also download from the website for more plugins.
Learning Curve	Can use without a manual or training. Provides excellent, easy to use “help” website at moodle	Not as intuitive, many components need to configure initially. “help” website complicated	Many teachers become familiar within two or three hours without any dedicated technical training. This way, they can concentrate on the most important content and a good educational scenario.
Discussion	Photos, nested threads	See posts at one time, not nested	When you post a new topic or a reply to an existing topic, you are taken to the posting form. And it is nested threads
Tools	Blog, wiki, journal, workshop	Whiteboard	Wiki, journal, forums and blogs
Cost	Free	Paid	Free
Customization	Open Source, so can change locally	Need to request change from WebCT(may not happen)	Just open the file called <i>textzone_top.inc.html</i> and insert the HTML or PHP code you want to include at those places on your home page.
User Stats	Chart Comparing students; number of visit per page	Time student spent on each page	There are several default profiles on the platform.  Other profiles can be created according to your needs from the Administration page.

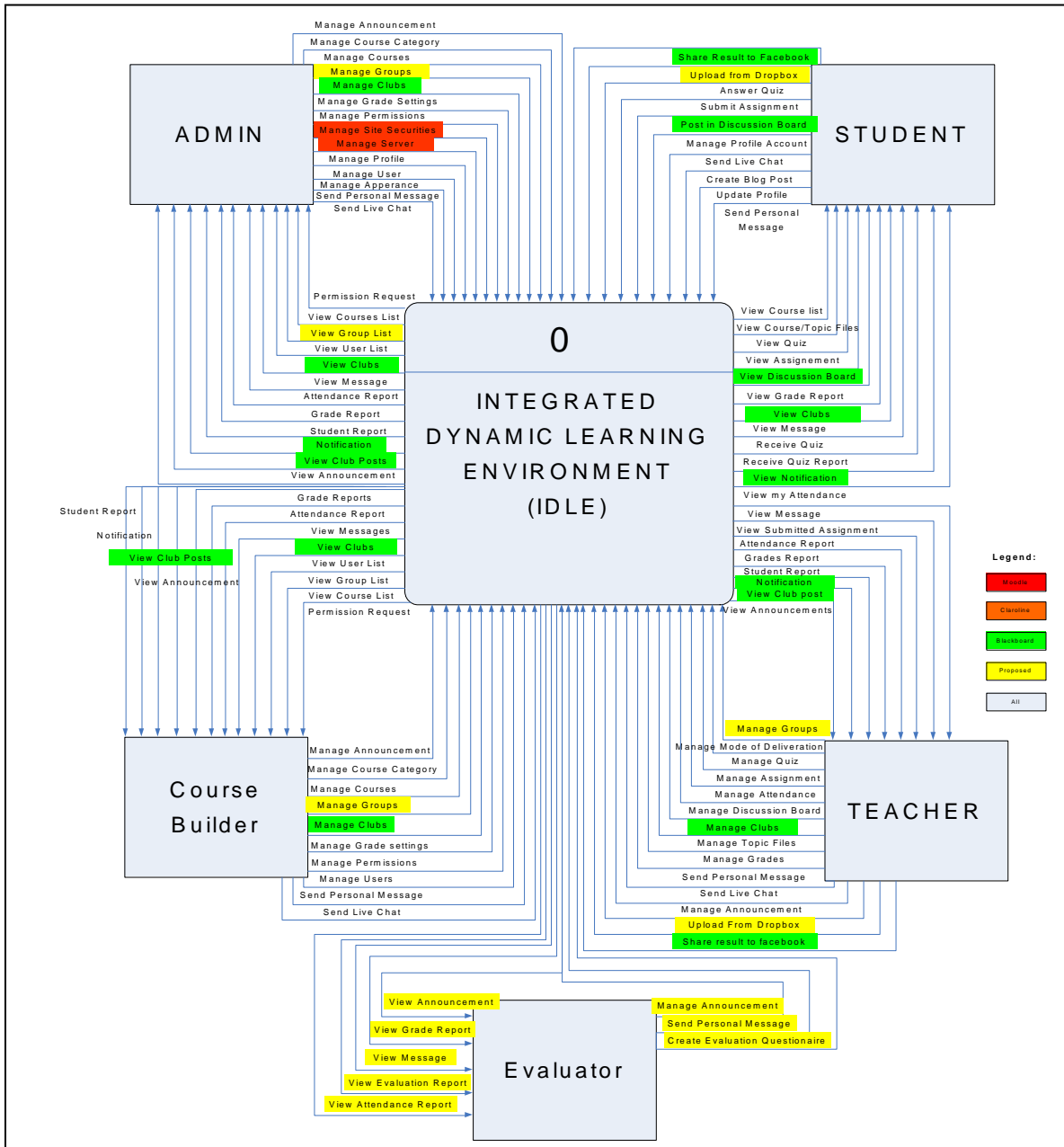


Figure V. Context Diagram (IDLE/Proposed System)

The figure above (Figure V) shows the context diagram of proposed system namely IDLE “Integrated Dynamic Learning Environment”. The color coding is used to site where the module came from. Red indicates the module is from Moodle, orange is for claroline, green is for blackboard and yellow is created or added by the researchers and the color blue is the module that is commonly used from learning management tools which may not be removed from the proposal. This diagram was based from the current learning tool which represents the new settings of learning management tools developed by the researchers.

## iv. Discussion

Different institutions compete for the better of the improvement of higher education. This had been the reason why various E-Learning procedures are being produced and those available on the market are being further developed. Several E-Learning management tools also play a significant role in ameliorating the performance and cause improved enthusiasm to the students and to their respective instructors as well.

This study had discussed the methods and specifications concerning the Learning Management Systems as well as the tools that could be instigated along with it. Several aspects are also tackled in this particular study among such topics is the resemblance of the well known learning management tools to each other and also their differences and advantages if to be compared to other designs. This study is essential in providing knowledge regarding the specified topic and perhaps on progressive instances, develops the technology present within E-Learning systems.

## v. Conclusion

Development in E-Learning is as hasty as institutions race to contend for an allocation of the augmented and altering stipulation for higher Education. E-Learning could potentially have foremost effects on the way higher education is considered, implemented and conveyed. Despite the perceptible advantages of E-Learning there are certain drawbacks such that some students are not contented with the delivery course content. This shows that the drawback is not due to failure in efficient delivery of the course materials but the lack of appropriate technical sustenance.

## vi. Future Work

The researchers will investigate the opportunities to implement or add more such thing or tools which can be helpful in the proposed study. And the researchers believe that implementing such tools like e-learning will provide better flexibility to the current learning management system today.

### **Acknowledgment**

The author gratefully acknowledge the institutions namely University of Sto. Tomas, Our Lady of Fatima University Antipolo Campus and Saint John Bosco Cainta for sharing their experiences in using these e-learning tools: Blackboard, Moodle and Claroline.

The author adviser Dr. Lorena W. Rabago and Dean Dr. Bartolome T. Tanguilig III from Technological Institute of the

Philippines, Quezon City who serve as my mentor to make this study possible.

To my dearest panel members from Technological Institute of the Philippines who guided me the right direction to make this study possible and relevant.

To my colleagues Dr. Anna Liza Aranaydo-Ramos, Dr. Arvin R. Dela Cruz, Ms. Mylene S. Domingo and Ma. Lydia Cagang for the insights and inputs about e-learning tools advantage in the delivery of instructions.

To my students lead by Mr. Christian C. Bonion and the group namely: Kevin, Christian Joel, Angelo, Ralph David, Kenneth Mervyn, Iristhea, Jhudilyn, Mark Vergel, Arlyanna Marie in providing additional information about their experiences and their initiative to further study the effectiveness of the e-learning tools.

To my inspiration Ms. Aubrey R. Salonga and my loving family for the strength to live and reason catch the dream of success.


To our Lord God for the wisdom, blessings, protection and guidance He keeps on showering upon him.

## References

- [1] A. Hopkins, The IMRAD Research Paper Format, Finnish Institute Paper (Hopkins), retrieved from: <http://www15.uta.fi/FAST/FIN/RESEARCH/imrad.html>, April 2013
- [2] V.J.R.K. Radakrishnan, Implications of E-Learning – Implementation, Structure and Delivery Vasugi Jayamangalam Rajoo, S.I.T International College.
- [3] Charlesworth, A. (2002). Computer tutor, PC Advisor, pp. 177-181.
- [4] Coldwell (2003) Mapping Pedagogy to Technology - A Simple Model. In Advances in
- [5] Web-Based Learning - ICWL 2003 Vol. 2783 / 2003. Springer-Verlag GmbH, pp.180-192
- [6] Colis, B., and Moonen, J. (2001). Flexible learning in a digital world: Experiences and expectations. London: Kogan-Page.
- [7] Dobbs, K. (2000). The Coming Shake Out in ELearning. Training, 37(10), p. 114.
- [8] Evans, C. (2002). Lifelong learning through the Virtual University. Campus-Wide
- [9] Information Systems, 19(4), pp. 127-134.
- [10] Darling, L. (2002). Your ELearning Strategy: Make sure it's learning for results. Training, 39(3), p. 2.
- [11] Leiberman, J. (2000). Online Teaching. Training & Development, 37(3), p. 25.
- [12] Sadler-Smith, E. (2000). "Modern" learning methods: rhetoric and reality. Personnel Review, 29(4), pp.474-490.
- [13] G.Worton, (2009). "A Study Into The Effects Of eLearning On Higher Education".



About Author:

	<p>Marmelo Villanueva Abante is currently a Program Head and professor of the College of Computer Studies at Our Lady of Fatima University. He also a consultant at St. John Bosco Institute of Arts and Sciences. Regional Quality Assurance Team Member in Information Technology Education – CHED IV. President of Philippines Society of Information Technology (PSITE IV), Board of Director of PDK International – Manila Chapter, Secretary of Federation of Professional Associations in Region IV and Vice President of the Council of Deans in Information Technology.</p> <p>He obtained his master’s degree in Mathematics (MA) at the Eulogio “Amang” Rodriguez Institute of Science and Technology (EARIST) and finished his Master’s in Information Technology (MIT) at STI Southwoods. He is also finish his doctorate degree in education major in educational management, also at EARIST and <b>presently in dissertation writing in his second doctorate degree taking up Doctor in Information Technology in Technological Institute of the Philippines Quezon City.</b></p>
---	--