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A conceptual model for electronic learning cycle on schoology

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Abstract. The growing up of digital literacy is very important to be integrated into the educational world. Learning in the novelty of technology is the key to achieve learning outcome through digital literacy. However, several types of research focus only on the dimensions of learning outcomes. Therefore, this paper provides learning insight by developing a conceptual model for Electronic Learning Cycle on Schoology (ELCoS) based on the syntax of Technology Learning Cycle (TLC). The cycle of ELCoS model is similar to TLC initiating from awareness, exploration and filtration, learning, personal and professional applications, sharing and reflection. A significant difference within the model is using Schoology. The ELCoS learning model in this paper serves as the basis for other technology-based learning models.

1. Introduction

Globalization and the digital world are rising fast. As a result, almost all areas of society use technology in their everyday lives as comfortably as in education [1]. The evolution of data technology will bring many positive impacts to the progress of knowledge nowadays. Especially computer and internet, which provide many offers and options for training to bear out the scholarship procedure. The speed of information, more attractive multimedia, and more interactive audiovisuals are some of the hallmarks of using applied science in learning [2,3]. Slowly but surely, traditional-conventional learning will decrease and begin losing its devotees [1]. Emerging technology provides new nuances in classroom learning, and it is easy to deploy. Then, if it is in large amounts, it will be cheaper in setting up infrastructure facilities such as space, testing grounds, furniture, instructional media, libraries, etc. In response to these conditions, some education providers began to wait at the concept of Distance Learning is considered more efficacious and efficient.

Humanity is the creator of globalization and innovation. Therefore, humans must also be able to control, master, utilize and develop globalization for their lifetimes. Modernization and globalization are planetary operations that cannot be avoided and cannot be inevitable. Consequently, some attempts are demanded to organize young people earlier to face the 21st century requiring the learning of diverse skills [4]. The sciences of the 21st century are varied by problems solving, critical thinking, creative thinking, collaborative thinking, and equally crucial in skillful digital literacy [5]. The younger generation of the country should be taught these accomplishments. One room to explain is producing future-oriented or 21st-century learning approaches.

2. Method
The method used in compiling this article refers to the latest research review of literature on the syntax of online learning. The components of the review include a) electronic learning, b) technology learning cycle, and c) electronic learning cycle on schoology

3. The result of Literature Review

3. 1 Electronic Learning (E-Learning)
The world of education in the last few decades was struck aside from the fast and rapid growth of the digital universe, especially the internet. This condition can affect all areas of life, including education [6,7]. The impact can be either plus or negative depending on how to respond to the growth of the digital universe. The existence of the digital creation (the internet) brought about a significant change of culture. All elements around the world must adjust to the reality of the digital world. Digital literacy is one of the skill concepts that is developed in the digital world. Skill in utilizing the internet is one of the powers that must be mastered by all elements of society, especially students.

The field of education has grown and adapted to digital development. One of them is integrating the internet into learning activities at school [8]. The impact of this usage is the emergence of new strategies/models/learning methods tailored to the application of the internet in learning.

According to [9] Electronic learning or E-Learning is an interactive learning where the learning content is usable online and provides automatic feedback to student learning activities. E-Learning is similar to CBT (Computer Based Training) and CAI (Computer Aided Instruction), but the deviation is that e-learning requires internet to access stuff and supervise student activity. Not only that internet access is likewise utilized for communication between instructors and pupils, but also obtain more learning content in the e-learning center.

E-Learning has a synonym for web-based learning, online learning, technology-enhanced learning, and distance learning that involves electronic media in its application [9,10,11,12,13,14]. Distance education is a teaching or learning experience that is designed to promote the interaction of learners with teachers or staff. The primary feature in space instruction is between teachers and students separated by long length or not in one spot. To make the learning which needs media able to communicate by using the internet, it can be managed through a Learning Management System (LMS) [10]. Forms of distance education include individual participation, teleseminars, teleconferencing, Web conferences, electronic classrooms, and so on.

The advantages of using e-learning include: a) accessing easily [9,11,12,13,15,16,17,18] b) getting accurate information [11,12,19,20] c) raising students' ability to analyze problems [11], [20,21,22], d) increasing students' learning attractiveness [20,22]   e) increasing students' self-confidence in e-learning applications [11,17,23,24], f) Applied in large classes [25,26,27,28] , g) producing long term memory of material [11,29], h) improving academic communication [11,12,15,21,30,31] i) improving the pattern of cooperation between students and between teachers/lecturers [12,32,33,34,35] j) updating material easily [12,19,20,28].

Despite its advantages, e-learning also has the following disadvantages: a) requiring a quality internet connection [36]–[39], b) requiring additional skills to operate e-learning applications [11,12,40,41,42], c) tending to be the same as the previous class [10,12,40] d) reducing the teacher's role in clarification and material explanation [11,12,40] e) do not develop teacher communication well [40,42], f) requiring periodic maintenance to computers/laptops [14,40,42] g) reducing social relationships between teachers, students and parents [10,12,14,40,42,43].

3. 2 Technology Learning Cycle
Each learning model has syntax or stages in one continuous cycle. The existence of technology extends the impact on the technology learning cycle model (TLC). The TLC was developed to train teachers in the future to utilize technology in their learning [44]. Preliminary experimental results of the TLC model showed the quite effective use of applied science in learning [45]. TLC grew out of dissatisfaction with the "techno-centric" perspective of teachers who were overly dominant in using applied science and otherwise it was based on the idea that people should be lifelong learners in developing the educational technology. TLC focuses more on improving teaching and learning using technology than developing a technology device [46]. Technology Learning Cycle is a tool to reflect

on the technology applied in learning. In this TLC, there are points to imagine just about how a teacher decides to use new technology and implements it in teaching and learning activities. The TLC was developed in the late 1990s at the University of Missouri to assist teachers who train teachers in the use of applied scientific discipline. The principle in this example is that a teacher should take a lifetime of technology [47]. Here is a step or syntax in the Technology Learning Cycle in figure 1 below [44].
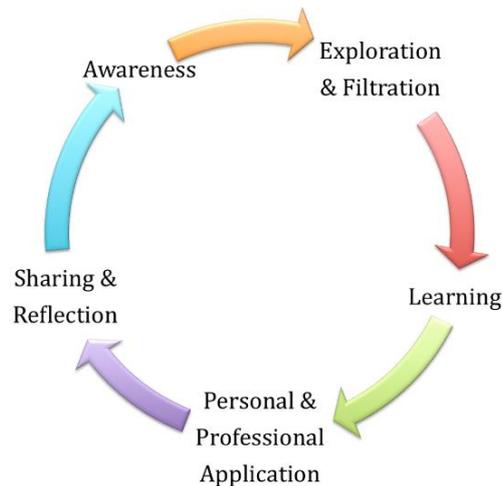

Figure 1. Technology Learning Cycle

Accounts in each level:
(a) Awareness, knowing the importance of technology through media, friends, family, colleagues, and students.
(b) Exploration and Filtration, examining the various technologies to be used and choosing tools or techniques that are easy to use both by yourself and in the classroom.
(c) Learning, developing and utilizing technology in professional learning. This tin is answered based on:
Techniques - learn the basics of the advanced technology.
Pedagogical - preparation, planning, and practice using tools to enhance learning.
(d) Application - implementing projects designed by using technology to achieve learning objectives.
(e) Sharing and Reflection, criticizing and discussing learning, and applying it on its own to restart the cycle from the beginning.
Each cycle is usually more sophisticated than the previous one. TLC is designed to be sewn to each stage of the learner to be more specific about the technology employed. Teachers may start by building knowledge or awareness of the technology used, but other learners have entered the learning stage and are ready to apply their skills [47].

3. 3 Electronic Learning Cycle on Schoology (ELCoS)
Schoology is one type of Learning Management Systems (LMS) that facilitates online teaching and learning activities. The use of LMS in recent learning experiences becomes more interesting than the traditional learning model [37]. Many states are setting about to understand that learning does not always give birth to be face-to-face, whenever and wherever they can take. Thus, many countries are likewise beginning to clear regulations about learning done without face to face.

The learning system using the current LMS continues to be expanded, even ten times more using the LMS than the conventional face-to-face learning system in the classroom [11], [48]. More details, [48] it is stated that on the Continent of Africa, Asia, Eastern Europe and Latin America the use of LMS is doubled. Progress on the use of LMS creates new problems in learning. Some of the main issues that arise are variations in student learning outcomes, the ideal composition between face to face with online learning and what aspects are the most influential on students' learning experiences [37,49,50]. This paper does not address the problem-solving in the use of LMS, but the focuses on the

development of new learning model concepts that are adopted from the cycle of learning based on technology or so-called Technology Learning Cycle which in its application using LMS learning system; that is Schoology.

A critical aspect of the use of Schoology as one of the LMS, namely Schoology is electronic learning that uses the Internet, extranet, intranet or another network as a means of transfer of knowledge to be processed, secured, reproduced to support teaching and learning activities [51]. Moreover, Schoology as one of the LMSs allows students to set their learning tempos to suit their abilities and needs [52,53,54]. Furthermore, the LMS is intended to assist teachers to send learning resources that are accessible at any time and to follow at the same time knowing the learning evaluations that the learners are achieving [40,54].

The learning model of Electronic Learning Cycle on Schoology uses TLC syntax that begins with awareness, exploration and filtration, learning, personal and professional application, sharing and reflection. For more details, notice the following table 1 as a lesson plan of the beginning activities in class, during class and after class adopted from [55].

Table 1. The Design of Learning Activities In Pre-Class, In-Class and After-Class Using ELCoS

ELCoS	Stages	Learning Activities	Schoology Support
Awareness	Pre-Class	Teacher: (a) Learns to guide students using Schoology (b) Introduces students to the various tools in Schoology Students: (a) Take into account the teacher's explanation of Schoology's use in learning (b) Try to open and pay attention to the tools in Schoology	(a) As an LMS tool
Exploration and Filtration	Pre-Class	Teacher: (a) Selects, develops and prepares the teaching materials to be used for next week's activities on Schoology (b) Monitors student readiness and offers assistance if it is needed through Schoology Students: (a) Open Schoology and get teaching materials for next week activities. (b) Use discussion tools on Schoology to pose questions and get help when encountering difficulty in microcontent if it is necessary.	(a) Learning resources: web, link URL, etc. (a) Discussion forum and assistance interaction (b) Monitoring records of readiness of student's pre-class
Learning	In-Class	Teacher: (a) Provides a pre-test to check the readiness of students to follow activities in the classroom. (b) If the student are not	(a) Quiz for pre-test, post-test, and other formative assessments (b) Learning resources: web, link URL, content, and storyboards, referenced by in-

		ready, the teacher explains the basic concepts needed for the activities in the classroom. (c) Consults and shares issues with students. Students: (a) Engage in the-class activities both individuals and groups, conduct guidance, utilize teaching materials and tools provided through Schoology (b) Before the teacher terminates the class, students must complete activities and report through Schoology (c) Take group work and peer review	class activities (c) Assignments as the product of the actions (d) Forum for sharing group works (e) The Forum used for asynchronous interaction (f) Workshop for peer-review (g) Questionnaire for three-minute reflection report
Personal and Professional Application	In-Class	Teacher: (a) Displays new problem-solving skills. (b) Conducts structured activities in the classroom to interact with students. (c) Provides a post-test to determine student learning progress.	
	In-Class	Students: (a) Perform formative assessments as scheduled for some time such as quizzes, and midterms exams	
	After-Class	(b) Continue unfinished assessments in the previous week, or consolidate what is learned, using resources, self-assessment and interaction tools on Schoology	
Sharing and Reflection	After-Class	Teacher: (a) Reflects on teaching according to the results of the assessment and suggestions provided by students from weekly self-reflection reports (b) Prepares lesson plans for the next week, such as adding additional content	(a) The questionnaire is for three-minute reflection report. (b) Quiz for self-assessment. (c) The assignment for a reflection report. (d) Forum to share the medium term reflection report

In-Class	Students: (a) Fill in a three-minute reflection report in the Schoology, integrate and look at learning progress on this day
After-Class	(b) Take a self-assessment on Schoology. (c) After the mid-term exam, each student submits a reflection report. (d) At the end of the semester, report the results of summative reflection.

Based on table 1 above, it shows that each cycle or stage in Electronic Learning Cycle on Schoology (ELCoS) has learning activities tailored to Schoology. One of the crucial points that the advantages of using Schoology as LMS is the presence of communication features [56]. Communication forums provided by Schoology can be performed both in groups and individuals. It can be between teachers and scholars and between students and pupils. Communication can be done immediately to talk about or ask questions about topics linked to learning materials, exercises, assignments, exams and self-observation reports.

ELCoS concept which is a derivative of Technology Learning Cycle has some steps in syntax; the goal is to adjust the use of technology more specifically by both teachers and students. Thus, the stages can start with another syntax depending on the material and context of the delivery of matter [47]. Because the syntax of electronic learning cycle on schoology (ELCoS) is a cycle in the learning stage, the learning stages can start with another scene adjusting to the learning outcome.

The learning activities in Table 1 also include guidance on the reflection of ELCoS model learning. The response to this question will be the key to the improvement at the succeeding encounter. The doubts about the teaching, consideration in the ELCoS learning model cycle can be seen in table 2 adopted and developed from [55] research.

Table 2: Questions Used to Scaffold Learning, Reflection at Different Results

Time Events	Questions for self-observation
After-Class (weekly)	(a) What is the most important in my scholarship today? □ material □ activities □ assessment □ lecture □ LMS (b) Are you filled with today's learning? □ Very Dissatisfied □ Dissatisfied □ Neutral □ Satisfied □ Very Satisfied (c) Make a summary of the lessons learned today? (Basic concepts, essential tips, skills, and so on) (d) Write down something that still confuses you!
After Midterm Exam	(a) What was my learning strategy? (b) How effective is the learning strategy? Why? (c) If not, how would you improve for the next lesson? (d) Is teacher assistance more helpful in my learning?
Final Reflection Report	(a) Write at least three items of professional knowledge or skills and a learning attitude you have learned in this lesson (b) Create an essay of at least 500 words about the experience (c) How will you improve your learning strategy for similar courses in the future?

Table 2 above describes some queries used for contemplation on the ELCoS learning models. The response to that question is a depiction of how useful learning in the learning model. The guidance on

the ELCoS learning model is done to help students in learning difficulties. In addition, through this guidance teachers also get feedback on the quality of learning. The questions that are given after the lesson, after the exam and the end of the semester guidance and reflection is done by filling out the questionnaire at LMS Schoology.

4. Conclusion

This paper proposes a conceptual model, the Electronic Learning Cycle on Schoology (ELCoS) model, for elaborating the learning with learning management system Schoology. A conceptual model for Electronic Learning Cycle on Schoology (ELCoS) is based on the syntax of Technology Learning Cycle (TLC). The cycle of ELCoS model is similar to TLC initiating from awareness, exploration and filtration, learning, personal, and professional applications, sharing, and reflection.

In future research, we will further build up the components and roles for each cycle in ELCoS. Through the implementation, we can revise the ELCoS model to make it more feasible for facilitating learning in class. Additionally, in the future, we will attempt to use the ELCoS model to empower higher order thinking skills (HOTS) as the thinking skills demanded in the 21st Century.

Acknowledgment

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