

Towards Paperless Education : A Preliminary Research Applying E-Learning on Engineering Education

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Abstract- Education without paper is a popular issue today. The world was hit by the global warming due to the amount of deforestation everywhere. We all know that wood is the raw material of paper. With advances in information technology today allows a learning without paper. Some technologies LMS (Learning Management System) currently allows us to conduct distance learning. Attendance in the class will not be needed anymore. Moodle is an LMS that helps teachers and students to study without having to meet physically. Google Classroom is a product developed by Google to help education through the web. In this paper we will explains the effects and benefits of google classroom. it has several advantages such as shortening the distance and time for teachers and students. It has a positive effect on the attitude and spirit of students

Keywords : *Paperless Education, Learning Management System (LMS), Moodle, Google Classroom, Student Attitude*

1. Introduction

On this modern day and modern education, many methods was found to increase student performance on learning. Some methods using technology as media to transferring knowledge to their student. In order to create a best management system in education, we need a tool to arrange everything in our Education scenario such as : Student Assignment, Absent, Course Book reference, and many more. According to wikipedia Learning Management System (LMS) is a system or a software that manage administration, tracking and delivering education course (“Learning management system,” 2017). Main purpose of LMS is delivering course for increase performance of student. Even though main target were students, LMS also could advancing student administration and student progress. LMS system is providing a classroom in cyberspace that have no physical contact, but ensure that classroom with LMS system will gather information as classroom with a physical contact.

Nowadays, we introduced to LMS tools such as : Moodle, Atutor, Eliademy, FormaLMS, Dokeos, ILIAS, Opigno, Olat and now we've been introduced by google corporation on their new product call Google Classroom. There are several term or definition for LMS. In 2009 Ellis said that LMS is an automation System which could Centralized Administration, self-guided services, assemble and deliver learning content, and so on (Ellis, 2009). LMS is based on web platform, so we could access the LMS from anywhere while internet connection is available.

On this paper we try to described about google platform and everything about this new tool from google corporation. We hope what we have described in this paper may be a reference for teachers toward paperless education. We also want to explain the usefulness and benefits of google classroom in education. We compared multiple LMS tools that are free and open source. we used the literature to support the hypothesis in our paper. Our hypothesis is google classroom will bring a very positive impact, especially in improving the learning efficiency, saving time and space, and the use of computer technology which is enjoyed by students.

2. Learning Management System

Distance Education has been rapidly growth on this day. The question behind this fact is why Distance Education is more popular than any other Method of learning. Beatty on his paper said that distance education allow us to share and present course content on a distance space (Beatty and Ulasewicz, 2006). Distance Education can be done by using an internet connection as a platform.

In 1995 Sherry and her colleagues said that main Issue of distance learning theory, salient characteristics of successful delivery systems, technology selection, policy and management issue (Sherry et al, 1996). As mentioned earlier, the main purpose of the LMS is the efficiency achievement of knowledge transfer within the scope of space and time. In this present day we can find many tools that can be used in LMS. As we know Moodle is a popular tool these days. Moodle was developed by Martin Dougiamas along with Alejandro Fish. Moodle is released on 2002 written in PHP language and based on GNU General Public License (Dougiamas and Taylor, 2003). According to Dougiamas the most important thing in online learning were constructivism, social constructivism and social constructionism. Moodle screenshot can be seen on figure 1.

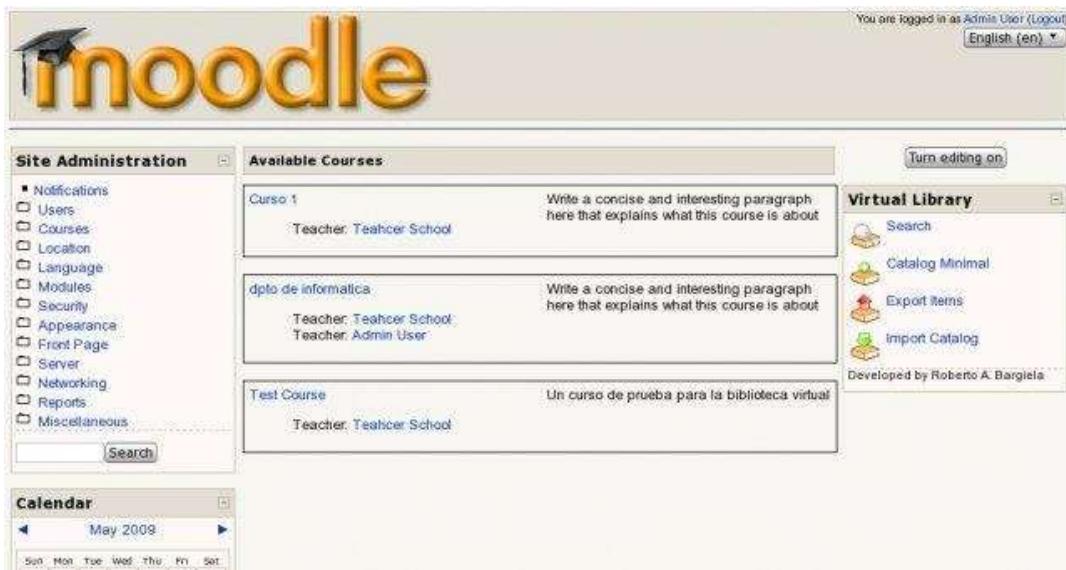


Fig 1. Moodle Screenshot (“Virtual Library for Moodle,” n.d.)

On moodle as shown on figure 1, we have some available course. We can said that moodle is an application program that can change a learning media into web forms. This application allows students to enter the digital classroom to access the learning content. By using Moodle, we can create learning materials, quizzes, electronic journals and others. Moodle itself is an acronym for Modular Object-Oriented Dynamic Learning Environment (<https://moodle.org/>) Some task or facilityt that are suport by Moodle :

- **Assignment**

This facility is used to give the assignment to the students of an online learning. Students can access the learning material and the task. Their collecting the results of their duties by sending files from their account.

- **Chat**

This facility is used to make the process of chatting (online conversations). Between teaching and learning participants can engage in dialogue text online

- **Quiz**

With this facility makes it possible to do exams or tests online.

- **Forum**

An online discussion forum can be created in discussing a matter of learning. Learning between teachers and participants can discuss the topics learned in a discussion forum.

3. Google Classroom as LMS

If we ask teacher or all lectures that we could find on this world, they would say same thing about you could learn at any places in this world not only in a classroom. From this quote, we think even at

cyberworld (internet) we can do learn and teach. Another reflection says the internet could unite all the people in this world. Further in other case teacher and students have a chance to meet at internet world and begin teaching and learning activities. Launched in August 12 in 2014, google classroom product was created based on Google Cloud Platform. Before it launched, we already know about Google Drive (google doc, spreadsheet, google form). In Google Drive, it allows us to create document like word document and we shared it. Everything in google drive was shared jobs. Maybe you working on something in other side your friend also work on yours. We can use Google Docs to make an assignment to students. We could create some multiple choices questions, submit a paperwork, even we could create a Quiz in Google Form.

Google Classroom is designed to helping teacher Create and collect assignment without using a single paper. Another features including time-saving features for teachers such as the ability to make copies of Google Docs automatically for each student. Classroom can also create folders Drive for every task and every student, to keep things organized. Some of the new features Google Classroom for Teachers and Students such as discussion, Chat, and many more. Google Classroom preview shown in figure 1.

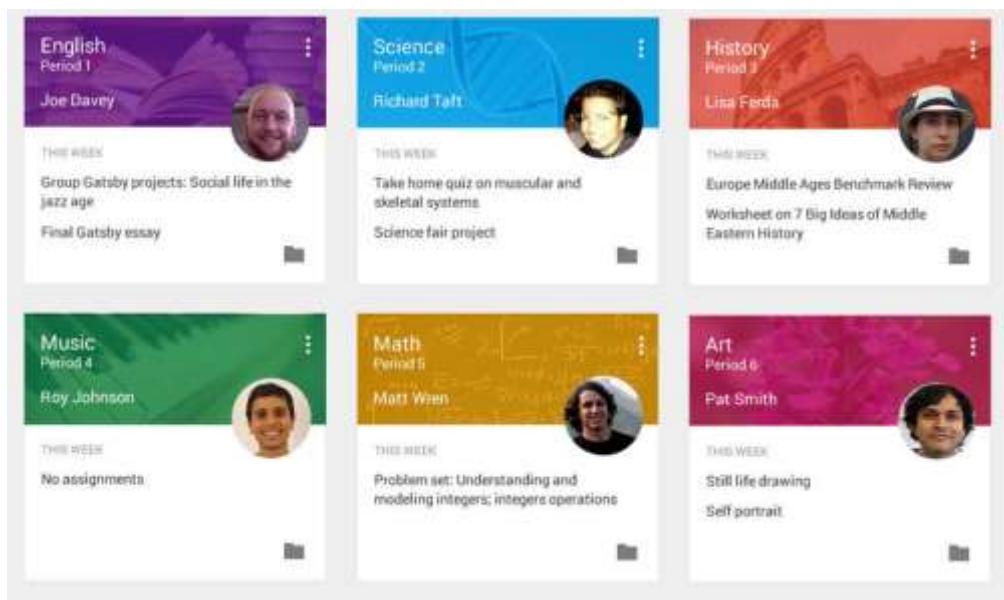


Fig 1. Google Platform Snapshot (<https://blogs-images.forbes.com/larrymagid/files/2014/05/classroom.jpg>)

Figure 1 shows us about Google Classroom Snapshot. There are six Course subject such as English, Science, History, Music, Math, and Art. This preview taken from student side. This student follow six course subject. We can see on figure 1 every subject have different teacher and we can see the photo of each teacher. Student assignment on every subject can be found on five subject. Music has no assignment.

From the perspective of student, Google Classroom can individualized their work. Another Google Classroom features is Chat. This can provide teacher-student private connection. Student can ask their teacher about lesson they had before. In 2011 Jon Rimmer said that, mostly of withdrawn students had a difficulty to ask a question to their teacher and they need a private session (Rimmer et al, 2011). We thing if teacher use this feature, it can engage withdrawn/shy student motivation.

From teacher perspective, Google Classroom is a tool that could manage every task they had in a busy time, they can grade a lot of paperwork in a short time, monitoring student after school activities. Google Classroom will send a notification if student has complete their task. Teacher monitoring on student assignment shown on figure 2.

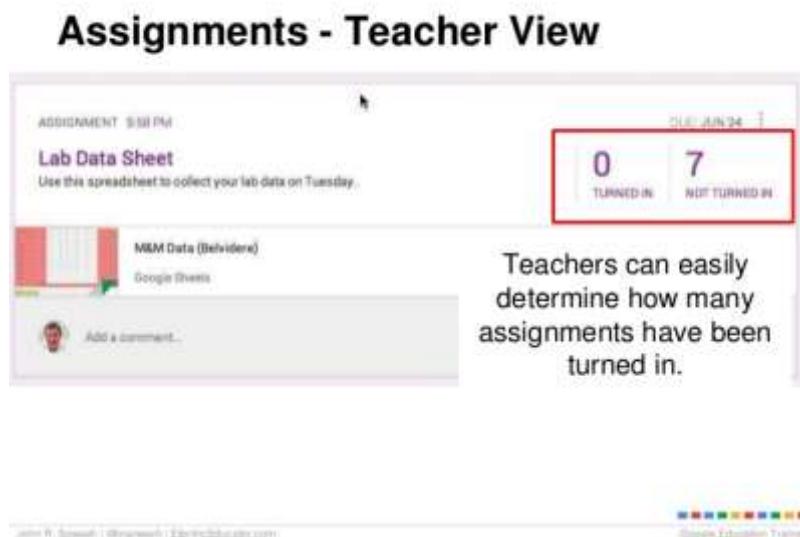


Fig 2. Teacher Dashboard on monitoring turned in assignment

(<https://www.slideshare.net/JohnSowash/google-classroom-set-up-and-tips-for-teachers>)

Figure 2 shows us about the monitoring of student assignment that have returned back to teacher. It may be beneficial for teachers where they do not have to show up in the classroom. The teachers or lecturers who have additional duties such as: research and community service may be helped with this technology.

4. Effect of Google Classroom

In 2016 iftakhar write some benefits if we use Google Classroom like: Goggle Classroom is very easy to use on learning. Because it is integrated with several Google products then Google Classroom can shorten the time to give assignments, provide an assessment on students task, even for some administrative tasks (Iftakhar, 2016). In 2015, Hults conducted research to determine the effects of learning without the paper (paperless). The results of the research say that there is a positive effect of the student Engagement and Attitude (Hults et al, 2015).

5. Discussion

The main focus in this paper is a discussion about Google Classroom and how about the effect of Google Classroom. Some features of Google Classroom have discussed in this paper, including distance learning. For further research we will conduct an experiment about the effects of Google Classroom on the performance of engineering students. The most important thing to understand is Google Classroom as well as MOODLE has the characteristics of constructivism and social constructivism.

6. Conclusion

By comparing the results of previous research, we conclude several things that will become the benchmark in our subsequent research. Google classroom formed by constructivism and social constructivism. Google classroom formed by constructivism and social constructivism. Google Classroom can enhance the learning process in less time and space. Using google classroom, learning process will be very interesting because it is a new technology and can be accessed via a smartphone. Google classroom gave a positive effect on student attitudes

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