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Student Interaction and Engagement

By

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Abstract

Nural Azhan, Mohd Hafriz(2014/02/03)With the advent of Internet and web-based services in networked settings, the teaching and learning (T&L) landscape has changed considerably. Students are granted the ability to engage in integrated learning by online curriculum distribution and training. They have some influence over their learning method over time, position and speed. Active learning applies to T&L strategies so that the accountability for learning can be assigned to the students. Part of T&L should be achieved in mixed curriculum, utilizing a learning management system (LMS). It makes for collaborative tasks outside of the school. This could also lead to a loss of constructive learning for students. This paper discusses the usage of LMS using the push-pull approach to improve student experiences using LMS in the scheme. It also explains the usage of the LMS utilizing a Just-in-Time Teaching (JiTT) method to increase student participation in the classroom and their contact with the lecturers. It combines web-based preparatory events, such as classroom learning tasks. It also gives direct input on the students ' learning. When the push-pull and JiTT are used, it is observed that the students become more involved in accessing the LMS and reacting to orders from the lecturers.

Keywords: E-learning, Blended learning, Active learning, Just in Time Teaching.

Introduction

Despite the fact that virtual worlds have been mainly implemented as computer-aided 2D or 3D digital landscapes (Bainbridge 2007; Dickey 2005) targeted at serving recreational needs (Bartle 2003), they have made significant strides during the last decade and have fulfilled numerous uses such as socialization, entertainment, discovery, teamwork and schooling (Begg et al . 2005; Hockey et al . 2010. The findings of these experiments are of

significant value in e-learning or distance learning contexts (Dickey 2005; Hockey et al. 2010; Minocha and Tingle 2008); nevertheless, Shukla and Conrad (2011) also emphasized the significance of parallel analysis of both a 'intrinsic' and a 'extrinsic' perspective of virtual environments. The concept of gazing at simulated environments from all viewpoints contributed to the creation of a modern word, the so-called immersive experience or mixed learning. While Khan and Lindquist (2002) say this concept is very recent, Akkoyunlu and Yılmaz-Soylu (2008) suggest that their definition has been around for decades. Several defnitions have been given to this concept defining it as a mixed-reality system in which the actual and simulated universe are intertwined through encounters (Bower et al . 2010; Hoshi et al. 2009; Sharpe et al . 2006; Singh et al . 2001; Williams 2002). We strongly agree with this concept and our research is aimed at defining the synergies between instructional design and learner choices, while experiences are the mechanism for achieving higher levels of learner involvement with the virtual environment and, by implication, with educational content.Learning is described as a process that integrates cognitive, emotional , and environmental factors and experiences to learn, improve, or make changes in one's skills, ability values, and world views[1] Lara, V (2007). It includes learning and changing skills , competencies, tactics, values, attitudes and behaviors. It also requires emotional, auditory, sensory and social competencies which may take several types. T&L is performed in e-learning (EL) using computers [2] Jay F. Nunamaker, Jr. (2004).Online teaching and learning (T&L) is handled by a learning management system (LMS). It helps log and track the success of the students during their time of study. It also facilitates direct contact between students and their lecturers. Will teaching materials be distributed using the different contact methods such as emails, SMS and other Web2.0 resources at the required optimized period? Web2.0].A digital library provides a collection of T&L resources [3] Helen Beetham and Rhona Sharpe (2007). The role of digital libraries in e-learning settings has been recognised as a central component of successful T&L supports.Productive learning (AL) applies to teaching and learning strategies such that the accountability for learning rests with the students? AL]. AL. Any AL events include class meetings, sessions for student debate, class quizzes, or class play. Technology will help AL while retaining the pedagogy used in learning. Table 1 introduces some exercises for AL (Thiagarajan, 2005).

Table 1: *Activities for Active Learning (Thiagarajan, 2005)*

Learning Domain	Domain Definition	Sample Topics	Suggested Formats
Informational Domain	Involves technical and factual content	• The information superhighway • The Americans With Disabilities Act • Chemistry of common household cleaners • A brief history of our organization	• Best Summaries • Bingo • Crossword • Essence • Frequently Asked Questions (FAQs) and Fakes • Intelligent Interruptions • Press Conference • Selected Questions • Team Quiz • Thirty-Five • Twos and Threes • Words and Pictures

Procedural Domain	Involves step-by-step activities	• How to deal with senior-citizen customers • Financial planning • Retirement planning • Poster design	• Fishbowl • Item List • Job Aids • Multilevel Coaching • Team Teaching • Thirty-Five
Conceptual Domain	Involves categories, definitions, and examples	• Types of interview questions • Causes of performance problems • Organizational climate variables • Cultural factors	• Brainstorming • Confusion • Egg Hunt • Idea Map • Questionnaire Analysis • Superlatives
Principles Domain	Involves the use of rules and relationships among different concepts	• Sexual discrimination • Soccer rules • Leadership styles • Basic principles of message design	• Idea Map • Item List • Questionnaire Analysis
Interpersonal Domain	Involves concepts, procedures, and principles related to interpersonal interactions	• Impact of management styles • Cross-cultural communication • Methods for conducting a workshop • Ways of handling sexual harassment	• Fishbowl • Questionnaire Analysis • Role Plays • Shouting Match • Items List • Interactive Story
Affective Domain	Involves attitudes, values, and beliefs	• Affirmative action • Gun control • Conflict resolution • Cultural values	• Shouting Match • Interactive Story • Debrief

This paper describes the use of LMS with the push-pull method to enhance the student interactions in the system to enhance student interaction with LMS. It also describes the use of the LMS with an approach called Just-in-Time Teaching (JiTT) to enhance engagement of students in the classroom and their interaction with the lecturers.The application of the push-pull mechanism (P-P) to enhance student access to an LMS is outlined in this paper. This mechanism delivers the appropriate learning materials to the students at the appropriate configured time using the various communication tools.

Review of Literature

Schrader (2018) described four distinct combinations that equate technology with learning, namely 'technology learning,' 'technology learning,' 'technology learning,' and 'technology learning.' Digital environments offer the requisite framework for various forms of encounters with either the users and the world's material, or the objects. Item formation (Allison et al . 2016; Dalgarno and Lee 2016) and modification (Bredl et al . 2016; Dalgarno and Lee 2016;), landscape editing (Allison et al . 2016) and worldwide navigation (Herbet et al . 2016; Hockey et al . 2010; Johnson et al. 2017) are common instances of these forms of encounters. Communication is, in effect, another significant aspect that enhances user contact opportunities; whether it be synchronous or intermittent, verbal or written (chat) or by utilizing avatar movements (Carter 2012; Hockey et al . 2010; Johnson et al. 2009). Digital environments have been seen in multiple paradigms since they offer fertile ground for diverse learning types, such as problem-based learning, exploratory learning, and distance learning (Christopoulos 2013). Vygotsky's (1978) Social constructivist learning theory has significant functional relevance in virtual environments as it addresses topics such as the assumption that

students become active learners when improving their cognitive constructs and skills across the dynamic network of experiences that enable them to communicate with the virtual environment and the learning content. Indeed, as Jones (2011) indicates, learners have the potential to actively influence, modify and improve the virtual world's material in a way that will enable them to develop their cognitive schemes and interact with the topic they are learning.

Zhao et al. (2010) further expand the above argument and further propose that learning becomes more self-directed and student-centered, whereas educators assume the position of curriculum planners or sponsors of programs aimed at involving students in learning (Anasol et al. 2012; Schrader 2008). The 'modern' position of educators has sparked the conduct of many studies focused on the virtual worlds' interactivity and the in-world experiences that can—or ought to—be built to meet the learning needs of the students. Some reports explore the usage of virtual environments in distance learning contexts (de Freitas et al. 2017) with the goal of defining an appraisal tool for assessing the learning experiences of students, whilst others address the abilities that students gain while beginning to utilize virtual worlds (Childs 2010). Another group of studies focused on the factors that influence the interactivity of a virtual universe (Steuer 1992), while others have tried to approach the above subject from a separate viewpoint (Chafer and Childs 2008) as new criteria have been established. However, several of these experiments in connection with the simulated environment ignore the experience of studying in the real classroom (Camilleri et al., 2013). Just a few experiments attempted to analyze relationships from both the inside and the outside, based on the analysis of the literature we have done.Levesque and Lelievre (2011) propose that by utilizing hybrid virtual learning (HVL) methods, significant focus should be put on optimizing experiences, both in the virtual environment and in the actual classroom. De Freitas et al . (2010) further highlight the significance and need for more research into the capacity and demands of hybrid spaces of physical and interactive student involvement at the same time. Other researchers (Elliott et al . 2012) emphasize the absence of comprehensive taxonomy of all experiences relevant to the instructional usage of virtual environments, which will assist in a clearer interpretation of their afordances, a more expedient implementation of instructional programs and a more rigorous use of their capacity.

Blended learning delivers an attaractive curriculum platform through the usage of computer technologies to integrate the T&L practices. A student learns in this process , at least in part, by providing material and instruction electronically with some aspect of student influence over time , location, direction or speed [REF]. The T&L can use an LMS for the online teaching and learning (T&L) management. [4] Elizabeth A. Eschenbach (2003), It can log and track the success of students during their span of study. It often allows flexible contact between students and their lecturers. Teaching resources may be provided at the required optimized time using different collaboration methods such as emails, SMS and other Web2.0 software?]. Web2.0], web2. Students are unpredictable with their learning speed and period with the aviability of a digital library. Figure 1 demonstrates a framework for a regular LMS. [Cavus, 2010]. You will find a comparative analysis of many LMSs at [Awang & Darus, 2016].

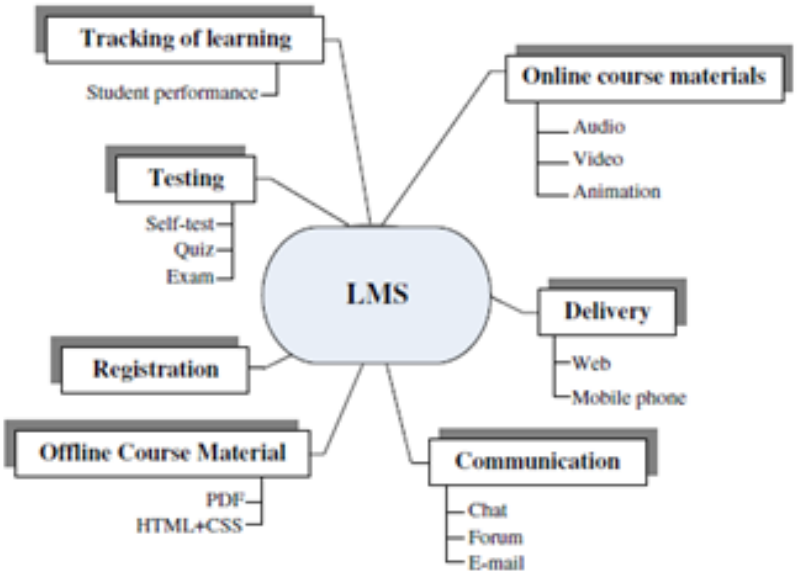

Figure 1: *LMS Structure (Cavus, 2010)*

In blended learning, a form of learning called flipped classroom is perceived to be a suitable technique for T&L [?REF].This method of T&L may also be described as JiTT. Students will have to complete certain preparatory tasks before coming to class. The lecturers will discuss those answers and comments in the classroom. With the aid of an LMS, students may perform their learning through the online contents. They may take an online quiz, do an assignment and submit it online or watch video lectures before coming to class. In the face-to-face classroom with the presence of the lecturer, the solutions of the assigned problems may then be discussed. This offers a more personalized guidance and interaction with students, instead of lecturing [REF].Thus, the students come to class more prepared and motivated to learn.Thus, the lecturers spend more time on difficult topics or common misconceptions [REF].[5] Saeed Rezaei Sharifabadi, (2016)

Enhancing Interactions in Blended Learning

In this paper the use of LMS with the push-pull (PP) method to enhance the student interactions in the system is outlined. This paper also describes the use of the LMS with an approach called Just-in-Time Teaching (JiTT) to enhance engagement of students in the classroom and their interaction with the lecturers. It blends web-based preparatory activities such as assignments with classroom learning. It also provides immediate feedback of the learning of students.

Push-pull mechanism in LMS

AL exercises will involve students in their T&L in classes. During their face-to - face seminar, they will have time and space to communicate with their lecturers. This usually doesn't happen in an EL setting, though, because tasks in EL are often performed asynchronously. It has been stated that at the beginning of the course, lecturers will upload their teaching materials into the LMS. In the other side the students are going to use certain resources for their own readings. This is classified as LMS [ref hafriz] refrigerator syndrome. Figure 2 shows one scenario for this dilemma, extracted in 2012 from the Universiti Malaysia Terengganu.

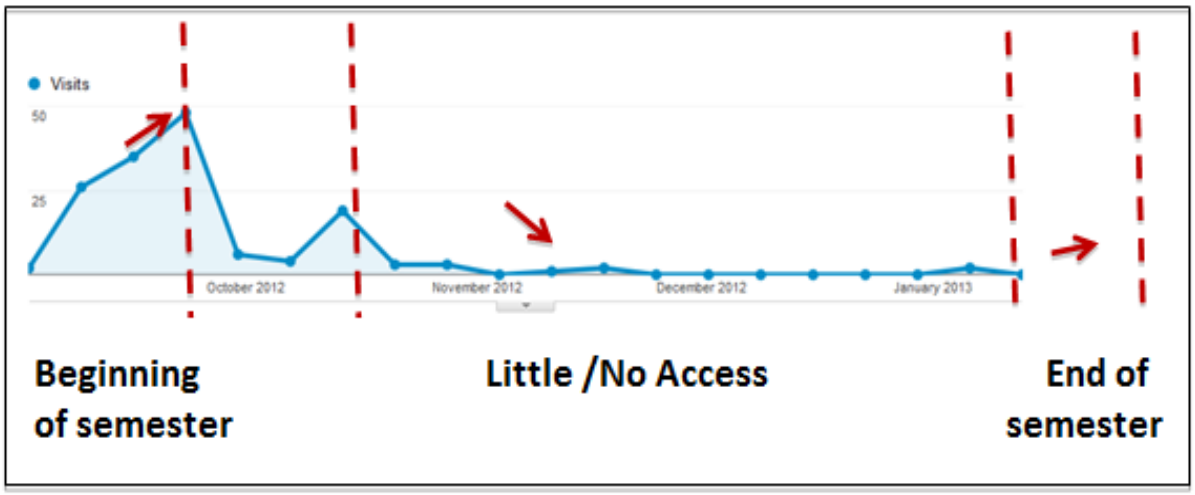

Figure 2 : *Refrigerator Syndrome in LMS*

To maximize the usage of the LMS, the automated distribution of T&L products and activities can be scheduled for several days. This allows the daily connection to the LMS simpler. The process is called the push-pull [pp] technology. T&L 's information repository is supported by the LMS. The push feature will distribute the required learning materials to different contact devices, such as emails, SMS and other web 2.0 resources, at the required configured time. After the information is distributed, a student will actively execute the pull feature on the materials, directly to the tasks obtained. The LMS tracks the specifics of all push and pull periods. For their course materials, the device may produce different reports about the student activities. Online learning has become a recent step in e-learning, with the increasing growth of mobile technologies and software creation[6] Mei-Yu Wang, (2013). Three forms of communication channels were established to promote mobile learning. They are Short Message Service (SMS), Email, and Very Easy Syndicate (RSS). RSS has been found to do well on material consistency and adaptability than SMS and text.

To facilitate student connections in the T&L, usage of LMS with the push-pull approach was introduced. This process is expressed in Figure 3. The learning material is transmitted (or pushed) to the learners in the push process, without needing to search and drag the information. In the other side, in the pull approach, the information is provided as the students make the attempt to receive it, i.e. pulling the material.[7] Yu-Feng Lan, Y.-S.S., (2010) Students' behaviors are monitored and evaluated. Temporary monitoring is conducted on the students' access hours. The students will then be grouped into classes of successful and less involved learners. Depending on the outcome of the clustering, effective steps should then be taken to enhance the interactions.

Just-in-Time Teaching

As stated earlier, several academic institutions have adopted and applied an method named just-in-time teaching (JiTT) to improve the participation and connection between the students and the lecturers in the classroom [4]. It combines web-based preparatory events, such as classroom learning tasks. JiTT receives direct input on the students ' learning. This is a core component of JiTT. This approach has proved effective. There was a rise in student enrollment in class and a reduced turnover (Novak et al . 2014, Rozycki 2010).

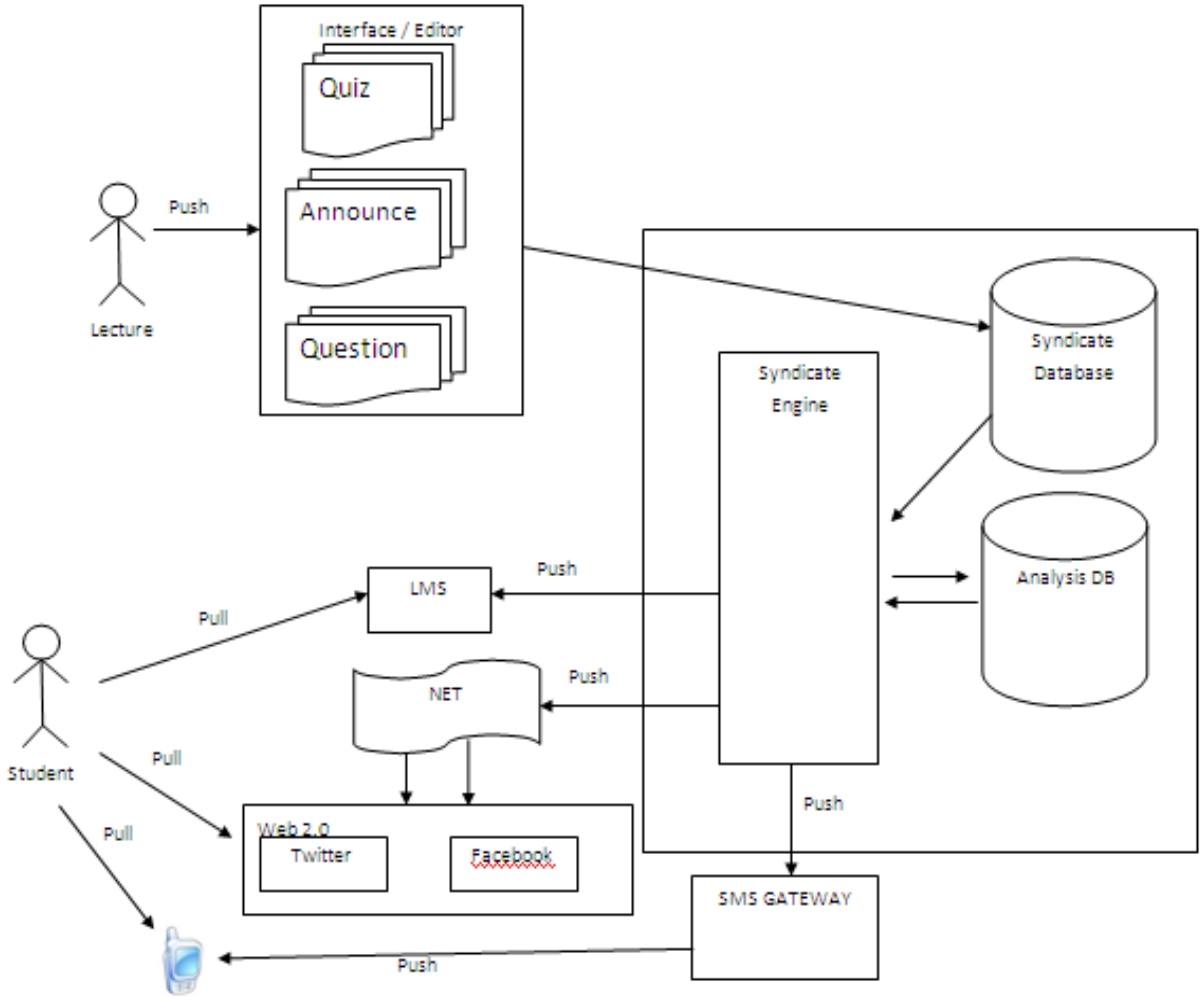

Figure 3 : *Push-Pull mechanism in T&L system*

In order to hire JiTT, the lecturers would have to prepare assignments relevant to the topics of the lectures that the students must perform before they appear in class. These preparatory assignments or tasks can be provided in an LMS in blended learning, and pushed to the students. In learning these preparatory materials, students may experience problems and difficulties. They may have the resources, though, and can ask their peers for support in seeking further information. The students would then come to class with a well-prepared awareness and enthusiasm for studying. In the other side, the lecturers might be investing more time in general topics and myths. They don't waste time on content students because they grasp quickly.

An LMS provides many collaborative resources for students to engage in studying in an e-learning environment, several of the platforms provided include quizzes, forums and video conferencing facilities. They provide an easy way of performing JiTT. Students take them online for the quizzes and apply their answer before class starts. Besides analytical or essay-type questions, questions like multiple-choice questions and fill-in-the-blank questions have immediate scoring. This can boost their ability to learn. The professor reads the responses and responds only in time for curriculum discussions in the school. Student interests in debates can be quickly formed as some can put their Assumptions' claims on the topics can be clarified. This in the classroom will boost the constructive learning techniques. The students are still interested in the textbooks and come to class in a practiced manner.

The JiTT has its own advantages and disadvantages. This strategy requires sufficient time for lecturers to train themselves. But it has been shown to improve contact between students and their lecturers[4]. Eileen M. Cashman (2013).Their faith often improves when their responses are debated in classrooms, particularly those concerning confusion. It also improves in-class debates as the students have input. Allowing students to redo in order to enhance their assignments is often helpful. Nevertheless, one of the main issues found with this T&L approach is that students lack the incentive to execute the preparatory assignments.[8] Novak, Gregor, Evelyn Patterson (1997), The synchronization between computers and servers poses one issue that can minimize the incentive to conduct their preparatory assignments. This is especially relevant for activities including long-term viewing of recordings. Any students are more likely to come and only listen without completing any activities to the lectures. The issues here are how videos should be reasonably quick and engaging

A case study on the use of PP and JiTT has been carried out. It involves a group of 100 Bachelor of Computer Science students in Universiti Malaysia Terengganu.The study tracks the activities of the students accessing based on the PP technique. In Figure 4 the tracking of active students in LMS is shown. The reduction of refrigerator syndrome in LMS is given in Figure5.As mentioned above, one simple way to perform JiTT is to perform quizzes.[9] Novak, Gregor, Evelyn Patterson (1997), For the videos, to ensure the students watch the materials until the end of its length, quizzes are embedded in the videos. Some video editing tools such as Camtasia [REF] allow the video developers to easily perform this task. Figure 6 shows one example given in the case study.

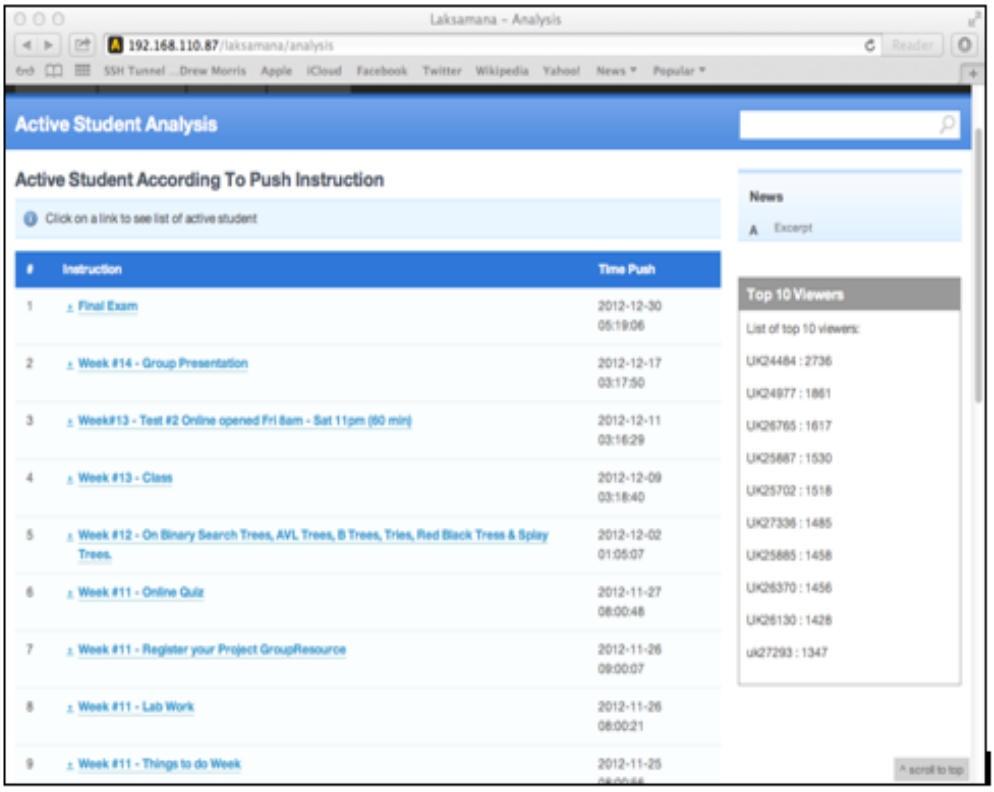

Figure 4 : *Tracking of Active Students in LMS*

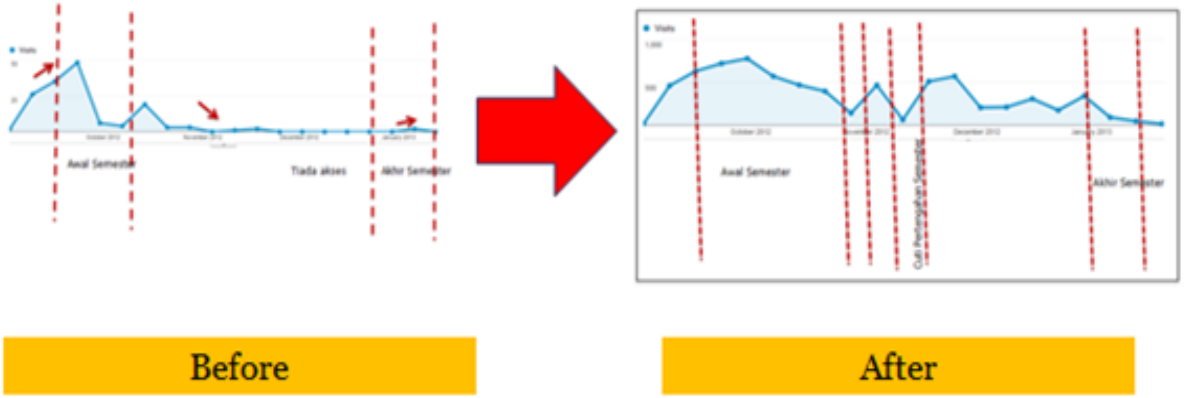

Figure 5: *Reduction of Refrigerator Syndrome in LMS*

Figure 6 : *Video with embedded quiz*

Conclusion

Particularly in a developing world such as Malaysia, the opportunities of elearning learning and mixed learning are massive. The question is how to improve the students' enthusiasm and how to conduct successful learning. This is especially relevant in the accessibility of e-learning systems to establish a healthy relationship between students and lecturers.[10] Rozycki, William (1999), In this study, it is observed that, when the push-pull and JiTT are used, the students become more involved in accessing the LMS and reacting to orders from the lecturers. The students are more involved in the curriculum, and are fairly well qualified to address the content of the course. Also, the students obtained positive reviews when the push-pull and JiTT techniques are incorporated into their blended learning.

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