Students' Activities and Behaviors in Virtual Class Environment

Lesson Learnt from Indonesian Private University

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Abstract—**The purpose of this study is to explore students' activities and behaviors in virtual class environment, at one of private universities in Indonesia. The methodology used in this study was first determining the indicators used, i.e. visit frequency, visit duration, module view, and discussion activity, then observing the system log files to get the data and analyzing whether any difference in the activities based on student's profiles, i.e. gender and department, using Independent Samples T Test. The sample used in this study was 84 students taught by 2 different lecturers. The results showed that mastery in information technology or computer self-efficacy has no effect on students' activeness. Students from Information System department, which are considered to have more knowledge about information technology, are less active than Economics students. Female students are more active than male students. Student activeness is influenced by institutional policy and the role of lecturer as a facilitator and mediator.**

Keywords—**virtual class, visit frequency, visit duration, module view, and discussion activity**

I. Introduction

Utilization of information technology, especially the Internet, has been applied to various fields such as commerce (e-commerce), banking (e-banking), social (social media), government (e-goverment), and education (e-learning). This gives the advantage of information availability, which can be accessed at any time without any distance limitations.

Implementation of e-learning in education is one of the variables that affect the success of the learning system. E-learning implementation in Indonesia has been stipulated in Government Regulation Number 17 Year 2010 concerning the management and the organization of education [1]. Article 16 states that the management of the national education system develops and implements a national education information system based on information technology and communication, facilitated by national information networking, which can give access to educational administration information and to learning resources unit for education at all levels, types, and path. In addition, the government has issued the Regulation of Minister of Education and Culture of the Republic of Indonesia Number 24 Year 2012 concerning the implementation of distance education in higher education, in which the rule states that distance education is education learners apart from educators and learning using a variety of learning resources through technology and other information and communication [2].

Both of mentioned regulations underlie the e-learning implementation at various levels of education, especially higher education in Indonesia.

Although its implementation has been done in several universities in Indonesia [3], but it is still necessary to prove that it is optimally used by students.

The research objective is to explore some activities and behaviors of Gunadarma University students in using virtual class (v-class), as a kind of e-learning. It would be interesting to see the activeness of its students based on the gender and department, knowing that Gunadarma University is an IT based campus and Gunadarma University's v-class is only a complement for a lecture process.

II. State of the Art

Some research about e-learning in Indonesia, especially in university level, has been conducted. Research by Jati [3] and Kuntoro [4] stated that several universities in Indonesia has implemented e-learning.

According to Ali in [5], there are four factors that should taken into consideration in order to make the application of e-learning effective, i.e. learner, learning materials, learning atmosphere, and technology. But constraints still exist in the implementation of e-learning in Indonesia, which are about the government policy, the infrastructure of technology, the curriculum, the financial aspect, and the human resources [6].

Arman, El-Arif, and Elgazzar stated that the attitude of students towards e-learning or learning content management systems is important factor [7]. It was found in [8] and [9] that computer self-efficacy plays a role in intention to use. This means that when individuals believed they have the ability to operate a technology, they would in turn be favorable to use the new technology.

Computer Anxiety does have a potential for gender inequity in e-learning. As stated by Myers and Bright their research [10] that females are more computer anxious, females will also be more Internet anxious; therefore, more unwilling to register for online/distance learning courses which will result in gender inequity in accessing a possible avenue for education. Results from Liaw and Huang's research [11] also showed that computer experience is a positive predictor on e-learning attitudes, and male students have more positive e-learning attitudes.

Regarding gender differences, Ong and Lai also found that women were more strongly influenced by perceptions of computer self-efficacy and ease of use, and that men's usage decisions were more significantly influenced by their perception of usefulness of e-learning [12].

After computer self-efficacy, Park in [13] found that subjective norm is the second most important construct that affects both behavioral intention and attitude towards e-learning. Therefore, it is the university task to put more emphasis on e-learning by offering a greater variety of e-learning courses and advertising the benefits of e-learning to attract students.

But first, university should make an effort in boosting university lecturers' e-learning self-efficacy and motivation. The role of lecturers in managing the v-class has much more influence. E-learning self-efficacy should be trained for lecturers from all departments, not only for non-IT lecturers, as raised by Golden, McCrone, Walker and Rudd, that lecturers' use of e-learning was associated more with their own attitudes and confidence than with their personal background characteristics [14].

III. **Methodology**

This study took place in Gunadarma University, one of private universities in Indonesia. Lecture system at this university consists of conventional lectures in classroom, lab work conducted in the laboratory and virtual class conducted using a web-based application with Moodle platform as shown in fig.1.

Figure 1. Homepage

The v-class is integrated with conventional lecture. The number of meetings in conventional lectures within one semester is 14 times, and 3 of them are conducted virtually. It is used for all departments but not for all courses. Lecturers have the authority to provide and manage their learning content in v-class.

V-class facility in Gunadarma University has been implemented since 2006. Nowadays, it is noted about 100 lecturers using virtual class, with 105 courses. Standard features which are used include content upload and download, online assignment, quiz, and discussion forums as shown in fig. 2. There is no distinction of activities between male and female student, in accordance with the research conducted by Yukselturk and Bulut, which states that it cannot be recommended that females should be treated differently in online courses in comparison to males [15].
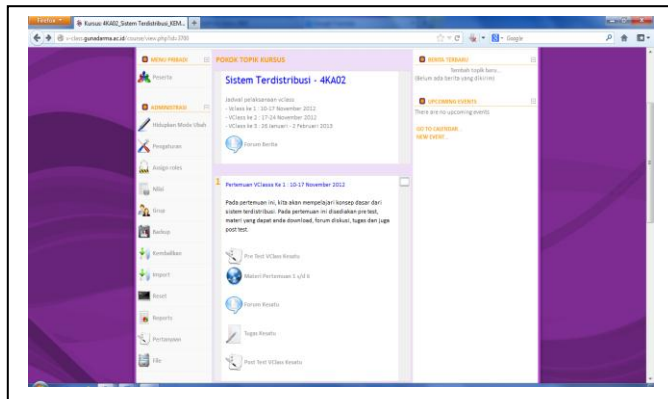

Figure 2. Standard Features

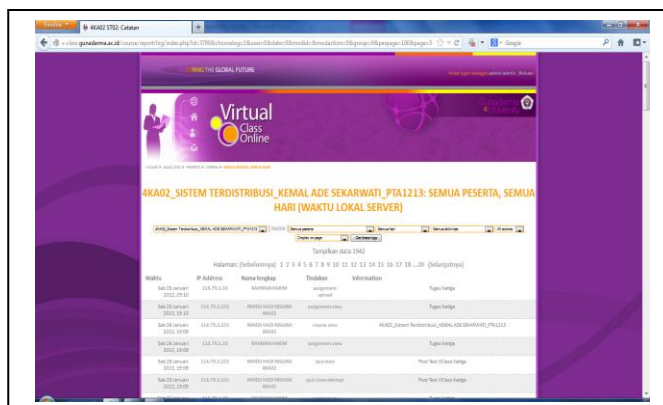The students and lecturer activities can be monitored as shown in fig. 3.

Figure 3. User Activities Report

Discussion forum is available for interaction among participants. Regarding the benefits of this discussion forum, Johnston, Killion, and Oomen stated that stated that provide a student forum board for the students to interact with each other to address student-student contact and reduce feeling of isolation [16]. The interaction is asynchronous mode. fig. 4 shows the discussion forum board.
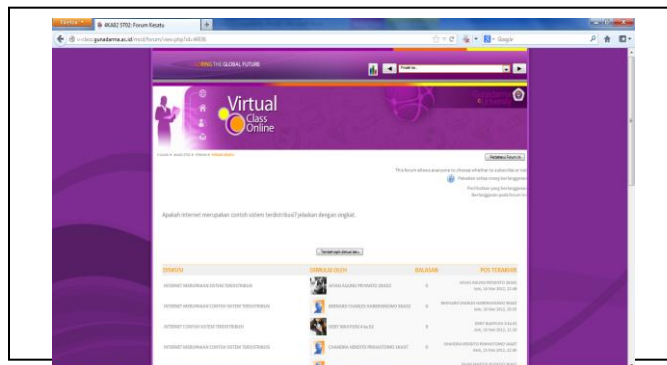
Figure 4.   Discussion Board

The method used in this study consists of several steps. First, identifying indicators that will be used as an instrument for observations about the activities carried out by students in v-class environment. They are visit frequency, visit duration, module view, and discussion activity. Discussion activity in the v-class is conducted a forum. This indicator is further divided into forum visit (where students visit the forum without joining the discussion), and discussion response (where students respond or leave a comment).

The second step is data collection. It was done by reading the log files, to look at data of students' profiles and activities in using v-class. Observation was conducted in September 2012 - January 2013. The number of sample used in this study is 84 students consisting of 32 students from Information System department and 52 students from Economics department, who are taught by two different lecturers.

Next step is the analysis on the activities of students using Independent Samples T Test. The purpose of the analysis is to determine the factors that influence the activeness of the students. Analysis conducted based on gender and department. The model of the study can be seen in fig. 5.
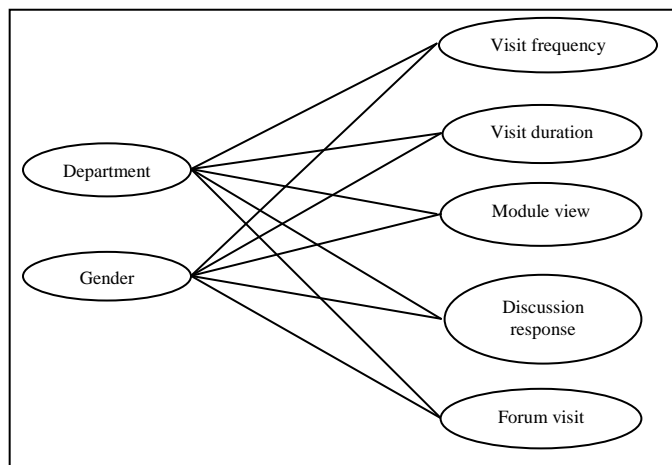

Figure 5.   Model of the study

IV. Results and Discussion

A. *Activities of Students in V-class*

Statistics of students' activities were taken from the v-class log files. Log files still need to be converted into data which are ready to be processed. The descriptive statistics can be seen in table I.

TABLE I.   DESCRIPTIVE STATISTICS

	N	Min	Max	Mean	Std. Deviation
Module views	84	0	15	2.40	2.626
Forum Visit	84	0	48	10.01	11.141
Discussion response	84	0	5	1.68	1.300
Visit frequency	84	1	12	3.89	2.303
Visit duration	84	909	150120	33565.86	42494.787
Valid N (listwise)	84				

In general, students are not utilizing v-class actively. This could be due to institutional policy which does not apply v-class for the entire meetings in one semester. V-class is just a complement of the lecture in the classroom.

Students are very rarely involved in the discussion forum. They seemed a lot more only visiting the forum and read without giving any response or comment to the discussion topic created by the lecturer. The condition could be caused by several factors, such as boring topics, students' low discussion abilities, or technical difficulties in using the facilities. This condition requires special treatment, for example by giving a special score to the discussion activity. Discussion forum has not been optimally utilized by lecturers who are being sampled of this study.

B. *Differences between Department and Gender*

Economics students are more active than the Information System students. It can be seen from the total view, forum visit, discussion response, and visit frequency, as shown in the fig. 6. Information System students just have longer time in using v-class based on the duration of their visit. Independent Samples T Test results shows significant differences in the total view, forum visit, discussion response, and frequency, but not significant for the duration.

The difference in the field of study that reflects computer self-efficacy seems to have no effect here. Information System students which are considered to dominate the information technology, have much lower value of activities.
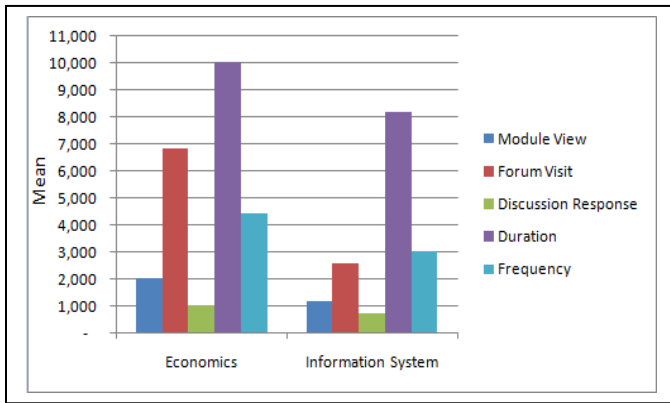
Figure 6.   Activities based on department

There are several factors which can explain the differences. First, the two departments have two different lecturers managing the v-class, so they have their own way or policy in treating it. The role of lecturers in the application of v-class is very important and dominant, especially in providing teaching materials, discussion topics, and online exercises. Other non-technical aspect is the activeness of lecturers in using v-class, including the responses to the discussion forums or questions from the lecturer.

Therefore the difference is not due the ability to master information technology, but more due to the role of the lecturer as a facilitator or a motivator in using v-class.

Female students in general are more active than male students, as shown in fig. 7. The male students have lower visit duration than the female students. The results due to the male students consider that v-class is neither very useful nor important because it is only conducted 3 times, which is only 20% of the entire meetings within a semester.
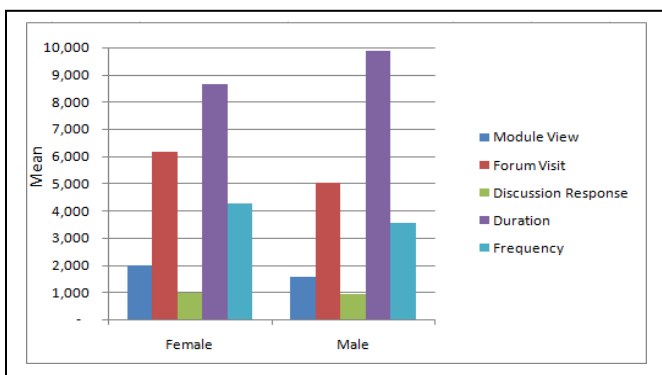

Figure 7.   Activities based on Gender

Although descriptive statistics vary, but the results of Independent Samples T Test shows no distinction of activities between male and female students for all study variables. The difference is only about their behavior.

The low utilization of v-class requires some policy or improvements in teaching methods. V-class position as a supplement to classroom learning can be a constraint for its optimization. Students are still relying on the material in conventional classroom.

One alternative to be done is to give additional mandatory assignments for the students in the v-class. Discussion groups can also be done and give some incentive scores. Other factor that could affect is the low ability of communication between students related to the topic of the lecture.

V.   Conclusion

The results of the study showed that computer self-efficacy does not affect the activeness of students in v-class. The role of lecturer in managing the v-class much more influence it. Gender's perception of e-learning usefulness affects students' behavior but does not show any distinction in type of activity. Therefore, it is necessary for the university to put more emphasis on e-learning by offering a greater variety of e-learning courses and advertising the benefits of e-learning to attract students.

For further research, this study can be expanded to include more students or more departments to see the variation of results. It would be interesting if we include also the exam results achieved by students as the indicators of v-class utilization performance.

References

[1]   Government Regulation Number 17 Year 2010 concerning the management and the organization of education (Peraturan Pemerintah Nomor 17 Tahun 2010 tentang pengelolaan dan penyelengaraan pendidikan).

[2]   Regulation of Minister of Education and Culture of the Republic of Indonesia Number 24 Year 2012 concerning the implementation of distance education in higher education (Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 24 Tahun 2012 tentang penyelenggaraan pendidikan jarak jauh pada pendidikan tinggi)

[3]   H. Jati, "E-Learning System Using Open-Source Implementation in Indonesian Universities", Seminar Nasional Penerapan ICT dalam Pembelajaran (National Seminar on ICT Implementation in Learning Process), Yogyakarta, 25 Juli 2009.

[4]   R. D. Kuntoro, "E-Learning in Higher Educational Institutions in Indonesia", Journal of Information & Knowledge Management, Vol. 2, No. 4, pp. 361-374, 2003.

[5]   M. Ali, E-learning in Indonesian Education System. Seminar-workshop on e-Learning: The seventh Programming Cycle of APEID Activities, 30 August – 6 September 2004.

[6]   H. Yuheti, "Use of ICT in Education in Indonesia", A paper submitted for the experts' group meeting for documenting experiences in the use of Education and SchoolNet operation, Bangkok, 2003.

[7]   A. Arman, T. El-Arif, A. Elgazzar, The Effect of e-learning Approach on Students' Achievement in Biomedical Instrumentation Course at Palestine Polytechnic University, Communications of the IBIMA, Volume 9, 2009.

[8]   N. Mohamed, N. Shahriza, and A. Karim. " Open Source E-learning Anxiety, Self-Efficacy and Acceptance – A Partial Least Square Approach", International Journal of Mathematics and Computers in Simulation, Issue 4, Volume 6, 2012.

[9]   R. G. Saadé and D. Kira, "Computer Anxiety in E-Learning:The Effect of Computer Self-Efficacy", Journal of Information Technology Education, Volume 8, p.177-191, 2009.

[10]   B. Myer and L. Bright, "Computer Anxiety: The Potential for Gender Inequity in E-Learning", In T. Reeves & S. Yamashita (Eds.), Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, pp. 2630-2636, 2006.

[11] S.S. Liaw and H. M. Huang, "Gender difference, computer experience, self-efficacy, motivation and intention toward e-learning: a case study of the Blackboard system", In T. Bastiaens et al. (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, pp. 1762-1770, 2009.

[12] C. S. Ong, J. Y. Lai, "Gender differences in perceptions and relationships among dominants of e-learning acceptance", Computers in Human Behavior, Volume 22, Issue 5, September 2006, Pages 816-829, ISSN 0747-5632.

[13] S. Y. Park, "An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning", Educational Technology & Society, Vol 12 No. 3, pp. 150–162, 2009.

[14] S. Golden, T. McCrone, M. Walker and P. Rudd, "Impact of e-learning in Further Education: Survey of Scale and Breadth". National Foundation for Educational Research, 2006, Retrieved January 30, 2013 from http://tna.europarchive.org/20081023171340/education.gov.uk/research/data/uploadfiles/rr745.pdf [accessed on January 30, 2013].

[15] E. Yukselturk and S. Bulut, "Gender Differences in Self-Regulated Online Learning Environment", *Educational Technology & Society*, *12* (3), pp. 12–22, 2009.

[16] J. Johnston, J. Killion and J. Oomen." Student Satisfaction in The Virtual Classroom", The Internet Journal of Allied Health Science and Practice, Vol.3, No.2, April 2005.