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*Full Length Research Paper*

# Examining the effects of flexible online exams on students' engagement in e-learning

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**Online assessments are essential parts of online learning. There are some debates on quality of online assessments. Nevertheless the study considered online exams as an instructional activity and aimed to examine the effects of online exams on students' engagements related to course goals. The study was conducted on two cases, which are asynchronous online Bachelor's Degree Completion programs. While students were able to attend an exam in a day in the first case, students in the second case were allowed to attend exams anytime in a week. In order to collect data about views and preparations of students for online exams, 36 interviews were carried out. According to results, students had some individual and collaborative activities in the process of preparation for online exams. Most preferred collaborative activities included lecturing to each other, working on practice questions and getting informal instructions from experts. In general, students found online exams beneficial in terms of learning. In relatively low weighted online exams, communications between online students should not be seen as a problem, even if they have during the exam.**

**Key words:** Online assessment, flexible exam, e-learning, online exam, collaboration.

## INTRODUCTION

Online teaching and learning will continue to become more important to world universities in order for them to remain competitive and economically viable. As online teaching and learning become widespread, the attention to online assessment increases. In the online environment, assessment is no less critical than in traditional face-to-face environments (Byrnes and Ellis, 2006) because assessment and measurement became an even more critical part of the educational process (Kerka and Wonacott, 2000). Basically, assessment plays different roles in teaching and learning process. It provides teachers with a means of evaluating the quality of their instruction. Students also use it to drive and direct their learning. Online assessments can be offered at different time, location or even different test or different students (Harvey and Mogey, 1999). Thus, online exams are appropriate solution for assessment in online learning environment in which students learn at their convenient time and location (Xu and Wang, 2006). Online assessments are easily conducted via quizzes, forums and digital assignments. In many cases, online assessments are carried out using an institutional learning management system (LMS) such as BlackBoard, WebCT, or an in house product (Pullen and Cusack, 2007). There are many researches which stated the benefits of online assessment from the perspectives of systems, instructors and students. The benefits include the ability of online assessment to:

1. Increase student motivation (Bull and McKenna, 2004);
2. Increase feedback (Booth et al., 2003; Bull and McKenna, 2004);
3. Provide immediate feedback (Wall, 2000);
4. Increase flexibility (Australian flexible learning framework quick guides, 2002; Booth et al., 2003);
5. Reduce testing time (Bugbee, 1996);
6. Increase the objectivity and consistency of marking (Bull and McKenna, 2004);
7. Enable to assess larger classes effectively (Booth et al., 2003; White and Davis, 2000);
8. Increase administrative efficiency (Bull and McKenna, 2004; Byrnes, 1994);

9. Bring about less exam anxiety (Sambell et al., 1999; Ozden et al., 2004).

In addition, online assessment provides question banks and randomization of questions and automated analysis of results (Fluck et al., 2009). Online exams also minimize the cost of assessment per student particularly for a large number of students. Beyond the advantages, online exams may have some constraints. Students who have negative attitudes towards technology may show less performance (Leeson, 2006). Furthermore, it is likely to have technological problems with access during online exams. There are also some debates on validity or reliability of online exams (Horton, 2000; Rowe, 2004).

In terms of quality, online assessment should not differ from traditional assessment approaches (Harmon and Lambrinos, 2008). Booth et al. (2003) noted that quality assessment principles such as validity, reliability and fairness are the same in any form of online delivery. In fact, all assessment needs to be “valid, reliable, fair and flexible” (Booth et al., 2003). It can be more difficult to achieve it online than on paper. Cheating remains a major concern about validity and reliability on online assessments. People who feel more "distant" cheat more (George and Carlson, 1999; Burgoon et al., 2003). Common cheating ways of online learners are asking other learners what is on the test and using extra resources (Horton, 2000). They may not take exam simultaneously (Olt, 2002) and earlier students can supply answers to later students. There are many suggestions to prevent cheating. Heavily weighted face-to-face final exams may minimize the impact of cheating.

When we look at online exams as an instructional activity, it is appeared that online exams have many different functions. Assessment is not only for determining learning level but also an important part of learning process (Wright, 2003). Online exams may promote engagement in course materials and reflection on course topics. Online exams also increase the number of communications among the peers. In this context, online assessment can play an important role in a constructivist learning experience (Kerka and Wonacott, 2000). Moreover, there are some studies on collaborative exams. On the other hand, online environments have many interaction and collaboration options (Arbaugh and Benbunan-Fich, 2007). There is a need to have new approaches to design online exams more effective as an instructional activity. This study examines online exams in terms of instructional activity rather than evaluation process. The study investigates time flexibility of online exams with two cases. While students were able to attend an exam all day in the first case, the students in the second case were allowed to attend the exams during a week.

The theoretical framework of this study includes motivational effect of assignments and constructivist activities. Motivational effects are related to need for achievement, goal orientation and appropriate challenge. Collaborative engagements arising from assessments can be examined from the perspective of social constructivism. Assessments provide a challenge and competence. Competence is the core of achievement motivation (Elliot and Deck, 2005). Assessments also give an immediate goal connected to get degree at the end of program. When immediate goals perceived related to future outcome, the goal will be stronger (Keller, 2010) and motivation to accomplish the goals strengthened. The study may provide scientific clues about instructional potential of online exams. It also may give some foundations to guide students to be prepared for online exams. The results may be useful on the selection of appropriate study tools to support online students. Since the study also focused on time flexibility, it may help designers on determining duration of online exams availability on the system. The purpose of this research is to examine the effects of flexible online exams on students’ engagement. Research questions guided this study are given as follows:

1. How do students prepare for flexible online exams? a. With whom do the students communicate? b. Which contents do students study on in order to prepare for online exams?
2. What are the students’ perceptions on flexible online exams?
3. What are the differences in perceptions of students who take daily flexible or weekly flexible exams?

## METHODS

### Subjects

The study was conducted on two cases, which are asynchronous online Bachelor’s Degree Completion programs. The courses in these online programs were given through interactive learning packages, lecture notes and videos on the Learning Management System (LMS). In the first case, participants were from Nursing Bachelor’s Degree Completion Program (HELITAM). In this two-year program, students have taken 5 courses in a semester. There were more than 13 thousand students in the program. Since they were working as a nurse, they had many colleagues in the same program. The second case was Divinity Bachelor’s Degree Completion Program (ILITAM). There were 490 students who attended the program. Students who joined the program, had 2-year college degree and most of them were working for public or private companies, and they took 6 courses in a semester.

The main difference between the two cases, which is important for this study, results from the flexibility of exams. In the first case, students were given a week for five exams. They were able to take exams in anytime through a week. In the second case, students were given one day to attend an exam. They were allowed to take the exam any time during the exam day. Students in online programs had an online exam and a paper based exam under observation. Online test has 20% contributions to final score. Final score is mostly (80%) composed of paper-based exam under

**Table 1.** Activities at preparation periods from content analysis.

| Activities at preparation period | Collaboratively | | Individually | |
|---|---|---|---|---|
| | Case 1 (%) | Case 2 (%) | Case 1 (%) | Case 2 (%) |
| Answering practice questions | 53 | 24 | 89 | 100 |
| Reviewing content | 42 | 6 | 95 | 100 |
| Joining /Reading the discussions about questions | 5 | 6 | 58 | 6 |
| Lecturing or explaining some issues | 47 | 53 | - | - |
| Taking the exam together | 32 | 0 | - | - |
| Being lectured by an expert | 26 | 24 | - | - |

**Table 2.** People online students prefer to study for the exam together.

| People | Case 1 (%) | Case 2 (%) |
|---|---|---|
| Colleagues from same work place | 45.8 | 0 |
| Medical doctors or other experts | 25 | 37 |
| Classmate (online) in same city | 20.8 | 44 |
| Old friends who live in another city | 8.3 | 19 |
| Total | 100 | 100 |

observation. Online exams were carried out in the middle of semester. Students were given a pilot online exam, so that they were familiar to the online exam tool. 36 students (19 from case 1 and 17 from case 2) were selected randomly for interview.

#### Instrumentation

Interviews were carried out in order to collect data about views and preparations of students for online exams. 19 students from case 1 and 17 students from case 2 were interviewed. Semi-structured phone interviews conducted by the help of an interview guide. The interview, lasted 10 to 20 min, has eight questions such as “How did you prepare for the exam?”, “Did you communicate to someone to prepare for the exam?” and “What do you think about the being able to take exam anytime in all day/week?”. Data from interviews were analyzed by using content analysis technique. Categories and codes were derived from interviews records. Codes were presented with frequencies under findings.

## RESULTS

The purpose of this research is to examine the effects of flexible online exams on students’ engagement. For this aim, qualitative data from interviews were analyzed. Results were presented in three subtitles according to research questions with support of codes, tables and sample expressions from interviews.

### How did online students prepare for the exam?

According to results, student had some individual and collaborative activities in the process of preparation for online exams. Data on methods of study for the exams were analyzed and results were shown in Table 1. Individual study activities are mostly consisting of reviewing documents and working on practice questions. The most preferred collaborative activities included lecturing to each other, working on practice questions and getting informal instructions from experts. In the first case, in which huge amount of students (nurses) were educated, students had more online classmates than case 2. Also, they had more colleagues who attended the same program. It may be the reason that they had more collaborative activities. Two students’ statements about how they studied for the online exams are shown subsequently.

*“...we did group study with my student colleagues from my department. It was very beneficial to work together. ”*

*“...we helped each other on difficult topics and solving practice questions particularly at the week before the exam. It reminded me my school years.”*

### With whom and how did the students communicate to prepare for the exam?

Students were asked about with whom and how they studied during the preparation for the exams. Responses were analyzed and codes were determined. Table 2 indicates the preferred collaborators and frequency of

**Table 3.** The codes about communication formats and frequencies.

| Communication formats | Case 1 (%) | Case 2 (%) |
|---|---|---|
| Face-to-face meeting | 58 | 56 |
| Facebook | 21 | 0 |
| Phone | 16 | 31 |
| Chat program or forum | 5 | 13 |
| Total | 100 | 100 |

**Table 4.** Benefits of preparation period for exam.

| Benefits | Case 1 (%) | Case 2 (%) |
|---|---|---|
| Much more review of educational contents | 88 | 88 |
| Feeling inclusive in the learning system | 71 | 29 |
| Awareness of own knowledge level | 71 | 76 |
| Realization of suitable study methods | 24 | 35 |

**Table 5.** Conveniences of flexible exam.

| Conveniences | Case 1 (%) | Case 2 (%) |
|---|---|---|
| Taking the exam at flexible time | 100 | 100 |
| Taking the exam at flexible place | 94 | 70 |
| Taking the exam when feeling ready | 82 | 94 |
| Less anxiety | 82 | 58 |
| Much sharing possibility | 29 | 0 |

codes. Students stated that they had communicated with friends and experts. Most of them were from the same department or city. It is possible to say that online students preferred the collaborators according to familiarity and distance. Table 3 indicates the type of communication online students preferred to study with someone else. It can be seen in Table 3 that students mainly (58%) chose face-to-face meetings in order to study with peers for the exams. They also used phone call to ask some questions to friends about course contents to get ready for the exam. A sample statement from interviews is as follows;

*"... for example we exchange information about the incomprehensible issues on the phone. Also, I looked at contents on computer with my friends."*

## Perceptions of the students about flexible online exams

Students were also asked about their ideas on online exams to reveal the benefits of exams. Benefits of online exams from the students' perspectives were presented in two aspects; benefits from studies for the exams and benefits from flexibility of online exams. Students' views on the benefits of online exams were categorized into four items. These benefits and frequencies were shown in Table 4. As shown in Table 4, students reviewed the content thanks to exam in both cases. Exams also provided awareness of what students already knew. Furthermore, students thought that they felt more involved in learning process through exam. In general, students found that online exams are beneficial in terms of learning. Sample declarations of students about online exams are given as follows.

*".. in online exam, it is hard to ensure if my responses are correct. When we had hesitation we discussed on the topics. Furthermore, discussions led us to research about debates. We also asked help of some experts from different departments. We get insights from these experts. The process was useful for us."*

*"…we were seven colleagues who joined this program in my hospital. We prepared for the exam all together. We had opportunity to talk about questions related to difficult issues. And we reviewed the content together. "*

*"… I reviewed the content to check if my friends' responses are correct or not. "*

When it comes to flexibility of online exams, students expressed conveniences of flexible exam. Convenience comes from the time and place flexibility, less anxiety and self-control. Frequencies of these conveniences are shown in Table 5. High frequencies of time and place flexibility are predictable. Benefits of possibility of taking exam when they feel ready may be related with low-level anxiety about exam. Sample statements from interviews are given as follows:

*"...It gives convenience to be able to take the exam when I feel ready. It gives less exam anxiety."*

*"…I am very busy at work and I often have night duty. Hence, it is nice for me to be able to take exam anytime during the week. It is privilege for me..."*

It is remarkable that students from case 1 thought exam flexibility provides more sharing possibility. However, students from case 2 did not mention about sharing. The first case has more chance to exchange information than the second case. It may be related to sharing question by earlier exam taker. Hence, duration of exam availability may affect the information exchange. In case 1, students had more chance to share questions of exam and to discuss on questions. Students thought that they were engaged with content thanks to information exchange.

## DISCUSSION

This study aimed to reveal the effects of online exams on students' engagement in online learning environment. Time flexibility of online exams was also examined. Results could be interpreted in three different aspects:

Firstly, online exams support students to study on course topics. Students reviewed the course readings, studied on the course materials and had some communications with peers or experts owing to online exams. Students thought that they reflected on what they had known thanks to exam (Bennett and Stowell, 2010). In this context, it is possible to say that online exams are effective instructional activities to promote students to act.

The second main result of the study is that online exams promoted social interaction. Most of the students preferred to prepare for the exam with peers or experts even in online environment. Student reviewed course content together and explained the topic to each other but they are tending to have face-to-face or phone communications. Students must be able to discuss with their teachers and other students in order to learn, because this is the real foundation of academic teaching (Moore and Thompson, 1990; Morris et al., 1999).

Thirdly, time flexibility of online exams reduces exam anxiety (Sambell et al., 1999; Ozden et al., 2004) and gives more freedom. It allows students to attend the exam at convenient time and place. The students who had an opportunity to attend exams any time in the exam week, felt free on their study plan. Students took exams when they were mentally ready for the exam. Furthermore, online testing allows students to take their exam at any time of day that better coincides with their preferred sleep/wake cycle, resulting in better exam performance (Hartley and Nicholls, 2008). Distance learning environments provide opportunities for online learners to learn at their convenient time and location with other online learners and wide range of online resources (Xu and Wang, 2006). Online exam is inevitable part of online education as an appropriate solution.

Finally, online exams have an instructional role beyond the quality of assessment. Hence, instructional role should be considered when designing online learning environment. For example, practice questions should be provided to have students more engaged before online exams. Moreover, provoking practice questions also may encourage students' collaborations. Students may also be provided some tools or worksheets to facilitate having collaborations. In low weighted online exams, communications between online students should not be seen as a problem, even if it occurs during the exam. Strength of this qualitative study is the examination of online exams in two cases based on the theory of motivational effect and constructivism. Flexibility of exams was also investigated deeply via interviews. Cases have similar properties in terms of structure, system and students background but the main limitation of the study is that, cases were different from each other in terms of syllabus, number and working conditions of students. In future study, online exams can be examined with an experimental study to see real effects. In addition, change on students' engagement can be researched as number of online exams increases. Engagements for online exams can be observed and compared to final achievement in future studies. Also, flexibility of exams can be investigated in a study with control and treatment groups.

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