Relationship between Participation in the Webinar and Students’ Behaviours and Engagement in Online Learning

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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ABSTRACT

A graduate level Flex Mode course “Introduction to Computers in Education” using online learning concept, which includes the discourse environment and the webinars, was investigated in the current study. Twenty one students enrolled in the course in fall 2010. Since the design of this course is new and in its experimental stage, this study explored how webinar participation predicts students’ behaviours and engagement in online learning, and the experiences and perspectives of students who take this course. Data retrieved from the course database show that webinar participation correlated significantly with the engagement construct (about reading and writing online). Results from the questionnaire suggest that students were satisfied with both the webinar and online discussion components of the course. Interview findings indicate that students credit the webinar with helping them feel more connected to their classmates. Implications for the design of online learning program will be discussed.
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CHAPTER ONE

Purpose and Background of the Study

This study intends to answer two major research questions: 1. How well does webinar participation predict students’ behaviours and engagement in online learning? 2. What are the experiences and perspectives of students who take a Flex Mode course that includes a webinar component? We anticipate that by exploring the effects of participation in the webinar, the research findings may help bridge the existing gap and provide insights about the course design, and develop a theoretical framework for the design of online learning program in general.

A graduate level Flex Mode course “Introduction to Computers in Education” was investigated in the current study. According to Woodruff (2011), Flex Mode courses combine synchronous, asynchronous and media components in the course delivery. Students can attend the synchronous sessions either onsite or online. Asynchronous components mean that students can, for example, watch the recorded online session and read postings online. Thus, Flex Mode courses offer students with high flexibility in the mode of participation. Research studies in the fields of online learning, knowledge building, and pedagogical practice have informed the design of the Flex Mode model (Woodruff, 2011). The Flex Mode course in the current study includes the discourse environment and the webinars. The discourse environment is a space where students learn online by reading journal articles and engaging in threaded discussions by writing and replying to the electronic notes. The webinars are held weekly over the Web and each lasts for about 45 minutes. Teachers and students can see and hear each other and engage in discussions in these synchronous sessions.
Thanks to technological advancement, online learning is increasing in popularity. This trend will most likely continue worldwide as the benefits of online learning have been repeatedly reported in the literature (e.g., Barbour & Reeves, 2009; Broussard Allred & Smallidge, 2010; Yoon, 2003), while the online delivery format can achieve instructional effectiveness similar to that achieved by the traditional face-to-face format (Ward, Peters, & Shelley, 2010). The commonly reported benefits of online learning include, for instance, increasing access to education, allowing educational choice, quickly providing up-to-date information, improving students’ outcomes and skills, and achieving administrative efficiency (Barbour & Reeves, 2009; Yoon, 2003).

Despite the many benefits associated with online learning, some challenges are found. For example, there is evidence that online learning is related to students’ feeling of isolation and dissatisfaction and high rates of attrition (Hyde & Murray, 2004; Ke, 2010; Power & Morven-Gould, 2011). Online learners need to be autonomous and make choices, for example, to set their own learning goals, manage time, and find resources (Kop, 2011). It takes time for learners to feel comfortable and confident at negotiating the Web and using different tools so as to engage in meaningful interaction (Kop, 2011). Although access to Internet and social software has increased rapidly, it does not imply that technology is always used to its best advantage (Williams, Karousou, & Mackness, 2011). The prevalence as well as the challenges of online learning deserve our attention.

According to Collis and Davies (1995), effective online education is the outcome of “a blend of technology, pedagogy, organization, strategy, and vision” (as cited in Yoon, 2003). Similarly, Kester, Kirschner and Corbalan (2007) mentioned that a powerful online learning environment is multi-medial, meaning that it utilizes written materials, sound, motion
real-time and stored form, and the environment is connected to resource-rich information and to others.

Since the course design is new and in its experimental stage, and there are limited research studies which directly investigate whether webinar participation affects students’ behaviours and engagement in online learning, mixed methods approach was adopted in order to utilize the strengths of both quantitative and qualitative methods to gain a more complete picture. This is one of the first studies in the field to explore how participation in the webinar predicts students’ behaviours and engagement in online learning.
CHAPTER TWO

Literature Review

2.1 Online Learning

Several terms can be used to refer to instruction and learning delivered via online methodologies. Apart from “online learning”, terms such as e-learning, virtual learning, technology-based learning and computer-based learning are some commonly used examples which focus on the learning technology and tools used (Yoon, 2003).

Thanks to technological advancement, online learning is increasing in popularity. In the United States, enrollments in online learning have continued to grow without signs of slowing; more than 4.6 million students took at least one online course during the fall 2008 term, which is a 17 percent increase over the previous year (Allen & Seaman, 2009). This trend will most likely continue worldwide as the benefits of online learning have been repeatedly reported in the literature (e.g., Barbour & Reeves, 2009; Broussard Allred & Smallidge, 2010; Yoon, 2003), while the online delivery format can achieve instructional effectiveness similar to that achieved by the traditional face-to-face format (Ward, Peters, & Shelley, 2010). The commonly reported benefits of online learning include, for instance, increasing access to education, allowing educational choice, quickly providing up-to-date information, improving students’ outcomes and skills, and achieving administrative efficiency (Barbour & Reeves, 2009; Yoon, 2003). In addition, using technology in education can support fundamental characteristics of learning, including active engagement, connections to real-world contexts, and frequent interaction and feedback (Roschelle, Pea, Hoadley, Gordin, & Means, 2000).
Learning through discussions has long been considered as fundamental in the experience of learning, but the potential benefits from discussions are threatened due to the increase number of students, and thus teachers are turning to alternative ways such as online learning to retain opportunities for learning through discussions (Ellis & Goodyear, 2010). Technology with videoconferencing function, which enables instantaneous connections between students, instructors and others, is rapidly evolving in online education (Burton & Kitchen, 2011). According to the report by Wainhouse Research, the educational and training sector of the Web conferencing market reached around $680 million in 2009, and is predicted to grow to over $1 billion by the end of 2014 (Tierney, 2010). Such technology carries great benefits to online learning, allowing real-time communication between speaker and audience, reaching new audience with geographical constraint, and archiving webcasts for retrospective use (Broussard Allred & Smallidge, 2010). A study which compared synchronous interactive online instruction (SIOI) format, face-to-face format, and asynchronous online learning, found that the mean student ratings for instructional effectiveness for both SIOI and face-to-face formats had similar results and were significantly higher than that obtained in asynchronous format (Ward et al., 2010). Also, synchronous software can supplement distance courses by allowing educators to build connections with and among students more efficiently (Schullo, Barron, Kromrey, Venable, Hohlfeld, & Hogarty, 2005). The course under investigation in this study uses online learning concept and consists of the webinars, a synchronous videoconferencing component.

Despite the many benefits associated with online learning, some challenges are found. For instance, there is evidence that online learning is related to students’ feeling of isolation and dissatisfaction and high rates of attrition (Hyde & Murray, 2004; Ke, 2010; Power &
Morven-Gould, 2011). Online learners need to be autonomous and make choices, for example, to set their own learning goals, manage time, and find resources (Kop, 2011). As these are often the instructors’ responsibility in a traditional classroom, some students may encounter difficulties in such kind of self-directed learning environment. Studies have consistently shown that only the intrinsically motivated people with independent orientations towards learning are typically found successful in online learning (Barbour & Reeves, 2009; Childress & Overbaugh, 2001), while these characteristics are mainly found in adult learners. Therefore, online learning may only be suitable to some learners, in particular the adult learners (Barbour & Reeves, 2009) with these characteristics. In addition, learners are required to possess some critical literacies, for instance, to be creative and flexible in order to learn in a complex online environment without much guidance (Kop, 2011). Thus, it takes time for learners to feel comfortable and confident at negotiating the Web and using different tools so as to engage in meaningful interaction (Kop, 2011). Although access to Internet and social software has increased rapidly, it does not imply that technology is always used to its best advantage (Williams, Karousou, & Mackness, 2011). The prevalence as well as the challenges of online learning deserve our attention. It is important to understand better what a good online learning environment is and investigate how to support students’ learning involving technology.

2.2 A Good Online Learning Environment

According to Collis and Davies (1995), effective online education is the outcome of “a blend of technology, pedagogy, organization, strategy, and vision” (as cited in Yoon, 2003). A variety of technologies, for example, pre-recorded video and audio, text-based chat, online references, and streamed video and audio, are available in nowadays online education (Yoon, 2003). As the interaction with instructional contents, instructors and fellow students are
managed through the interaction with technologies dimension; this is regarded as one of the critical dimensions in online learning (Yoon, 2003). Pedagogy is about the learning approaches and technologies, which should match the learning goals of programs. Some online programs use synchronous software for students to participate in group work and ask questions which can match the learning goals (e.g., to increase the learner-learner and learner-instructor interaction); whereas some programs use more than one medium (e.g., pre-recorded audio and slides) for the same instructional contents in order to address students’ preferred modes of learning (Yoon, 2003). The last three elements of effective online education (organization, strategy, and vision) can be captured by organizational support (Yoon, 2003). It is related to components such as institutional support, faculty support, and assessment and evaluation (Yoon, 2003). Similarly, Kester, Kirschner and Corbalan (2007) mentioned that a powerful online learning environment is multi-medial, meaning that it utilizes written materials, sound, motion in real-time and stored form, and the environment is connected to resource-rich information and to others. These perspectives are well supported as the literature has identified a wide range of factors, including support to students, interaction with faculty, feedback quality, meaningful contents, and evaluation and assessment as crucial for online education (Phipps & Merisotis, 2000, as cited in Yoon, 2003).

The Flex Mode course under investigation in this study offers a multi-medial environment which enables connection to different sources of information and to others. In addition, several mediums and a variety of technologies are incorporated in this course to accommodate students’ preferred modes of learning and to enhance interactions.
2.3 The Webinars

The webinars are web-based real time interactive seminars (Stein, Shibata, Bautista, & Tokuda, 2010). According to the social-constructivist perspectives, technologies such as the webinars can maximize students’ and peers’ learning through collaborative activities and discussions (Shi, Mishra, & Bonk, 2004). The webinars’ successful applications can be found in many settings. For example, a webinar series targeted at woodland owners and forestry practitioners implemented in 2007 in the United States shows that the webinars make access to learning easier and can be used to reach audience effectively and efficiently (Broussard Allred & Smallidge, 2010). The webinars are becoming popular in education in recent years. They carry many benefits, such as enriching students’ online experiences, facilitating staff development (Grant, 2009), and supplementing the clinical thinking skills of medical students (Stein et al., 2010).

The Adobe Connect webinars adopted in this course are considered to be user-friendly and well-designed (Grant, 2009; Harris, Lykken, & Rose, 2010). For instance, students simply need to click on a link to reach the online meeting room, whereas those who do not have Internet access can listen to the webinars over the phone. Also, the webinars can be recorded. Thus, those who were unable to attend the webinars can watch them later. Besides that, there is a chat pod application in the webinars which allows students to interact with fellow students and instructors by chatting (typing) without disturbing the flow of discussion. Since perceived ease of use and perceived usefulness of the technology are factors related to users’ continuance intention (Lin, 2011), the characteristics of the webinars listed above may have positive influence on students’ behaviours and engagement in online learning.
2.4 Some of the Important Factors in Online Learning

2.4.1 Engagement

As online education is becoming popular and education has been inspired by constructivism and then the social perspectives of learning in recent years (e.g., Siemens, 2005; Vygotsky, 1978; Wenger, 1998), the participation in the online learning environment has received more attention. It is believed that enhancing online learners’ participation is essential (Couros, 2009; Hrastinski, 2009). According to constructivism, there are many ways to structure the world and the role of teachers is to support students in gaining experiences, rather than transferring “knowledge objects” to them (Hrastinski, 2009). Connectivism (Siemens, 2005) is one of the social perspectives of learning which is heavily influenced by social constructivism (Vygotsky, 1978). Connectivism particularly emphasizes the importance of non-human appliances, hardware and software, and network connections for learning (Couros, 2009). According to connectivism, knowledge is distributed across the Web, and people’s engagement with it constitutes learning (Kop, 2011). Learning can be enhanced by aggregation (e.g., access to and read a wide variety of resources); relation (e.g., after aggregation, learners reflect and relate it to earlier experiences); creation (e.g., learners create something on the Internet after reflection); and sharing (e.g., learners share their work with others on the network) (Kop, 2011). Social perspectives of learning stress the importance of engagement in learning, and the construction of knowledge and understanding is regarded as a fundamentally social activity (Hrastinski, 2009). Participation is believed to be a complex process which involves doing, talking, thinking, feeling, and belonging (Wenger, 1998). Learning and participation are inseparable and knowledge is developed through active engagement (Hrastinski, 2009). According to Wenger (1998), “engagement with the world is
social, even when it does not clearly involve interactions with others”. Engagement involves “mutual relationships established in the creation and pursuit of a joint enterprise” (Wenger, 1998). In the context of learning, engagement is “not just a matter of activity, but of community building, inventiveness, social energy, and emergent knowledgeability” (Wenger, 1998).

Apart from being closely related to online learning, research studies have shown that engagement also carries important advantages to students’ learning. For instance, students with high levels of engagement are found to enjoy the learning process, have high persistence in their work despite challenges and obstacles, and gain satisfaction from scholarly accomplishments (Schlecty, 1994, as cited in Mandernach, 2009). It is particularly useful to examine students’ engagement in online learning as the value and impact of enhancing students’ engagement may be even more pronounced due to the isolated nature of the online learning environment (Mandernach, 2009).

Based on the literature, engagement can include a wide range of variables. “Academic challenge, active / collaborative learning, student-faculty interaction, enriching education experiences, and a supportive learning environment” are all relevant to students’ engagement (Kenny, Kenny, & Dumont, 1995, as cited in Mandernach, 2009), and engagement rests upon their “willingness, need, desire and compulsion to participate in, and be successful in, the learning process” (Bomia, Beluzo, Demeester, Elander, Johnson, & Sheldon, 1997, as cited in Mandernach, 2009). According to Brett’s (2002) study about online engagement among mathematics teachers, “the mutual relationships (in Wenger’s definition of engagement) involve the connections among participants”. With reference to the recent related studies and learning theories, engagement in the current study involves connections among participants,
which is measured by the number of notes that they read and wrote in the discourse environment. In addition, the quality of the notes – whether the notes contributed to new ideas or discussed substantive content, and the number of students who viewed, replied, and recommended the note – was considered in the engagement construct.

2.4.2 Course Flexibility

Flexibility of an online learning course generally refers to “learners’ perception of the efficiency and effects of adopting e-learning in their working, learning, and commuting hours” (Sun et al., 2008). A considerable number of studies (e.g., Arbaugh & Duray, 2002; Kim, 2009; Sun et al., 2008) have shown that perceived flexibility of the delivery medium of an online learning program is significantly related to students’ perceived learning and satisfaction. For instance, courses in the online learning environment that provide learners with “the control over the pace and sequence of instruction” is considered motivating to the learners (Kim, 2009). However, the online format affects students’ persistence in a program differently (Ivankova & Stick, 2007). According to Ivankova and Stick (2007), students who managed to successfully finish a distributed doctoral program think that the asynchronous format has positive effects on their progress as it matches their preferred modes of learning, while others feel that the non-real time format and the focus on written versus oral communication adversely affects their persistence. The course in the current study is specially designed to include both the discourse environment and the webinars – focusing on both written and oral communication, and enabling students to have their own pace of learning (e.g., to watch the webinar later) and/or follow the schedule designed by the instructors (e.g., to attend the webinar once a week at a particular time). The high level of flexibility of this course may be more beneficial to students’ learning compared to other online courses. It
would be informative to explore students’ experiences and perspectives about such kind of course design, and examine how their webinar participation is related to their behaviours and engagement in online learning.

2.4.3 Interaction

Interaction in online learning often occurs through electronic discussions which are asynchronous, implying a time delay between interactions (Sargeant, Curran, Allen, Jarvis-Selinger, & Ho, 2006). The physical and often temporal separation of instructors and learners creates a phenomenon called “transactional distance” (Sargeant et al., 2006), which causes psychological and communication gap and possibilities for misunderstanding. In order to overcome the transactional distance, some instructional interventions and facilitators’ attention to a number of roles are required, including pedagogical (guiding learners through the learning process), social (creating a comfortable learning environment) and technical (resolving technical issues) (Sargeant et al., 2006). The important roles of instructors or facilitators will be further elaborated later.

Theories of learning have emphasized the importance of interaction for students’ engagement and academic achievement (Shi et al., 2004), and they contribute to understanding the significance of interaction. According to Sargeant et al. (2006), for instance, social learning theory suggests that learning occurs through interaction with and observation of others within a social context; and constructivist theory suggests that meaning and knowledge can be created from experiences, both individually and through interaction as a group.

Research studies have repeatedly reported that collaborative learning is crucial for the
success of online learning, and the interactions between students and instructors and student-to-student interactions can greatly enhance students’ learning (e.g., Campbell, Gibson, Hall, Richards, & Callery, 2008; Schullo et al., 2005; Shi et al., 2004; Ward et al., 2010). For example, the study by Campbell et al. (2008) shows the efficacy of the webinar and highlights the importance of designing online materials that promote interaction between students. It was found that being more active in online activities, such as reading postings and contributing to online discussion, is associated with higher assignment marks (Campbell et al., 2008). Also, online courses that provide “authentic and interactive learning activities” are motivating to students, but courses with a low degree of interactivity are found to be motivationally challenging (Kim, 2009). Thus, the inclusion of the webinar in the course may enhance students’ engagement and academic achievement by increasing interactions.

There are many reasons that interactive communications in online learning are beneficial to students’ learning. First, as some students in online learning courses will be distracted easily if there are not enough interactions between students and teachers, interaction is believed to be particularly important (Isaacs et al., 1995, as cited in Sun, Tsai, Finger, Chen, & Yeh, 2008). Second, according to constructivist theories on learning, interactive communication facilitated by technology can help students construct shared understanding, develop communication skills, and enhance students’ understanding of content and fundamental concepts (Kember, McNaught, Chong, Lam, & Cheng, 2010; Leidner & Jarvenpaa, 1995). In addition, interactions allow students to work together and ask for support. Most importantly, students’ feeling of isolation can be avoided as they can share their frustrations about the course with others (Ferguson, 2010).
However, technologies which enable interactive communications such as conferencing may make some students feel inadequate if they compare themselves with fellow students (Ferguson, 2010). Also, Ke (2010) found that conferencing is viewed as less effective in reinforcing a sense of community than threaded discussion forum, which in turn adversely affects students’ learning satisfaction and self-perceived depth of learning. Due to the diverse views about conferencing and insufficient literature in this field, it is important to examine the role of webinar participation in students’ online learning in the current study.

2.4.4 Instructors

In order to overcome the transactional distance of online learning, instructors need to have enhanced skills to engage learners in meaningful interaction (Sargeant et al., 2006). A qualitative study which explored instructor’s roles in enhancing online learning through interpersonal interaction found that creating a comfortable learning environment and enhancing the educational value of online discussions are crucial facilitation roles of instructors (Sargeant et al., 2006). Instructors’ thoughtful use of techniques that facilitate constructive interaction based on learners’ needs, and facilitate introductions and sharing experiences in a friendly and informative manner are some examples for overcoming the transactional distance of online learning (Sargeant et al., 2006).

2.4.4.1 Facilitation Techniques

Learning theories give insights about facilitation techniques for online learning. Behavioural theory of learning (Skinner, 1974, as cited in Sargeant et al., 2006) suggests that external factors in the environment shape learning and learning is manifested by observable behavioural change. As asynchronous discussions sometimes bring online users a sense of
disconnection with the course content and participants, and as frequent facilitator participation and feedback are found to be reinforcing to participants, facilitators are suggested to respond in a timely and supportive manner to participants’ comments in order to reinforce learners that their participation is important (Sargeant et al., 2006). Also, facilitators can ensure that the discussions are meaningful and relevant so as to reinforce the benefits of participation (Sargeant et al., 2006).

Social learning theory (Bandura, 1986, as cited in Sargeant et al., 2006) suggests that learning occurs through interaction with and observation of others within a social context. As online learning lacks the physical space for participants to interact with and observe each other, it is crucial for facilitators to create an online environment supportive of learning (Sargeant et al., 2006). Facilitators can, for instance, model ways of responding to electronic discussions and create a comfortable and nonthreatening online learning environment (Sargeant et al., 2006).

Humanist theory (Rogers, 1969, as cited in Sargeant et al., 2006) considers learning from the perspective of the personal potential for growth and includes both affective and cognitive dimensions of learning. Due to the transactional distance, creating an online learning environment supportive of personal growth can be particularly challenging (Sargeant et al., 2006). It was suggested that facilitators can encourage and recognize participants’ contributions, facilitate them to get to know each other, and ensure that their individual learning needs are met in the course (Sargeant et al., 2006).
2.4.5 Students’ Preferred Modes of learning

Information about students’ preferred modes of learning were collected in the interview in this study. It is speculated that the high flexibility of this Flex Mode course is beneficial to students’ learning as it can suit the preferred modes of learning of different students.

According to Zhang and Sternberg (2005), type i intellectual styles are characterized by “low degrees of structure, cognitive complexity, nonconformity, and autonomy”, whereas people with type ii intellectual styles prefer “structure, cognitive simplicity, conformity, and authority”. Falling into the classification of neither type i nor type ii, people with type iii intellectual styles are “realistic and investigative, social and enterprising” (as cited in Friedman, Elliot, & Haggerty, 2010). In the design of the interview, we made reference to the learning style scale adopted in Friedman et al.’s (2010) study which used the concepts by Zhang and Sternberg (2005, 2006). For example, participants were asked to select their preferences between instructor-centered approach and learner-centered approach.

In addition, the concept of field dependence and field independence (Childress & Overbaugh, 2001) was also considered in the interview. Field dependent learners have well-developed social skills, prefer teacher interaction and structure in their learning; whereas field independent learners are more socially independent, intrinsically motivated, and can provide their own structure for learning activities (Childress & Overbaugh, 2001). It was found that field independent learners scored significantly higher on the course final exam (Childress & Overbaugh, 2001). Similarly, studies have consistently indicated that those who are intrinsically motivated, have independent orientations towards learning and strong time
management skills (characteristics of field independent learners) are typically found successful in online learning (Barbour & Reeves, 2009).

2.4.6 Technical Difficulties

According to Edvardsson (1992) (as cited in Lin, 2011), negative critical incidents are “users’ encounters with services that do not proceed normally, and create friction, irritation and dissatisfaction”. Research studies have shown that negative critical incidents have direct and negative effects on users’ perceived ease of use and perceived usefulness, and an indirect effect on attitude and continuance intention (Chen, Lin, & Kinshuk, 2008; Lin, Chen, & Fang, 2010). Lin (2011) found that irrespective of the users’ prior e-learning experience, negative critical incident is the main determinant of the users’ intention to continue using the e-learning. Thus, rapidly identifying and resolving any technical difficulties arising with online learning are crucial.
CHAPTER THREE

Methodology

3.0 Introduction

In order to answer research question 1 (How well does webinar participation predict students’ behaviours and engagement in online learning?), quantitative data about students’ webinar participation and behaviours and engagement in online learning data (online duration in minutes, number of notes written and read, and the quality of the notes) were retrieved from the course database. To answer research question 2 (What are the experiences and perspectives of students who take a Flex Mode course that includes a webinar component?), satisfaction questionnaire and interviews were used for examining students’ experiences and perspectives about the course. The research questions and the corresponding data collection strategies are summarized in Table 1.

Table 1

Research Questions and the Corresponding Data Collection Strategies

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Corresponding Data Collection Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How well does webinar participation predict students’ behaviours and engagement in online learning?</td>
<td>Quantitative comparison of participation in webinar with online participation (online duration in minutes, number of notes written and read, and the quality of the notes). All retrieved from the course database.</td>
</tr>
<tr>
<td>2. What are the experiences and perspectives of students who take a Flex Mode course that includes a webinar component?</td>
<td>Satisfaction Questionnaire, Interviews.</td>
</tr>
</tbody>
</table>

3.1 Mixed Methods Approach

The current study adopted mixed methods approach, which involves the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Authors have increasingly recognized the advantages of mixing quantitative and qualitative methods in a single study (Creswell et al., 2003). This method can broaden understanding by incorporating both approaches, and one approach can help better understand, explain, or build on the results from the other approach (Creswell, 2009).

3.2 Sequential Explanatory Design

Sequential explanatory design which was adopted in this study is characterized by the collection and analysis of the quantitative data, followed by the collection and analysis of the qualitative data that builds on the results of the quantitative data (Creswell, 2009). The two methods are integrated during the interpretation phase of the study (Creswell et al., 2003). The purpose of this design is typically to use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study (Creswell et al., 2003).

In this study, the quantitative data will help identify the potential relationship between webinar participation and behaviours in online learning. Then, qualitative interview will be used to explain and explore the underlying factors related to the relationship tested in the first phase. Thus, the qualitative data and analysis will explain and refine the quantitative results in more depth. As there are two phases, the main challenge of using this design is the length of
time required in data collection (Creswell, 2009). We are aware of this challenge and therefore the schedule of different processes was designed carefully.

3.3 Participants

Twenty one postgraduate students who completed the Flex Mode course “Introduction to Computers in Education” in fall 2010 were included in this study.

3.4 Procedures

Students participated indirectly in the course database between September and December 2010 when they enrolled in the course. All the students who completed the course were invited online to participate in this study in July 2010. Four students who were able to be contacted and consented (see Appendix A) to participate were asked to fill in a satisfaction questionnaire, which was distributed online. After the completion of the satisfaction questionnaire, these students were further invited to participate in an individual interview which was conducted via Skype. One student agreed to participate in an individual interview in July 2010.

3.5 Collection of Data

3.5.1 Course Database

Quantitative data were gathered from the course database for examining students’ behaviours and engagement in online learning. Students’ total online duration (in minutes) in the discourse environment and the total number of notes written and read in the threaded discussion were retrieved. In order to reflect better the online learning behaviours, the quality
of the notes was also assessed, which was determined by whether the notes contributed to new ideas or discussed substantive content, and the number of students who viewed, replied, and recommended the note. As mentioned earlier, “engagement” in the current study involves connections among participants, which is the sum of the number of notes that students read and wrote in the discourse environment, and the note quality scores (contribution, replies, views and recommendation scores obtained from the notes).

Quantitative data about webinar participation were also gathered from the course database. Students’ weekly webinar participation were classified into 4 categories: 1. Did not view and did not attend the webinar; 2. Only viewed the webinar (within 7 days after the webinar); 3. Only attended the webinar; 4. Both viewed (within 7 days after the webinar) and attended the webinar. Only the data which showed that the student viewed the webinar within 7 days were counted, because viewing it after 7 days would not affect their online learning behaviours (e.g., posting and reading notes) that week. Based on the weekly webinar participation data, the total number of times that the student did not view and did not attend the webinar, only viewed, only attended, and both viewed and attended the webinar during the 12 weeks were obtained.

3.5.2 Satisfaction Questionnaire

A satisfaction questionnaire was delivered online to gather students’ simple background information and their satisfaction towards different aspects of the course using a 10-point scale. The questionnaire can be found in Appendix B.
3.5.3 Interview

The interview followed a semi-structured protocol (see Appendix C). The interview centered around students’ online learning experiences, preferred modes of learning, the reasons for attending the webinar, viewing the webinar video and posting notes, and opinions and suggestions about the design of the course. It was conducted via Skype for about 25 minutes. The interview was audio-typed and transcribed.
CHAPTER FOUR

Results

4.0 Introduction

The data were from 21 students who enrolled in the Flex Mode course “Introduction to Computers in Education” over a 12-week period in fall 2010. Quantitative data were gathered from the course database for examining students’ webinar participation, and behaviours and engagement in online learning. Questionnaires were distributed online to gather information about students’ satisfaction towards different aspects of the course. In order to understand better about the experiences and perspectives of students who take a Flex Mode course that includes a webinar component, an interview was conducted online as well.

4.1 Results from the Course Database

Table 2 displays descriptive statistics for the variables of online learning behaviours obtained from the course database. The results revealed that the mean total number of notes read, written, and online duration (in minutes) were $M = 1345.14, SD = 657.93; M = 105.76, SD = 46.78; M = 2802.98, SD = 1397.75$ respectively. The distributions of all these scores were approximately normal. Due to the large ranges of data as indicated from the large standard deviations, the contribution, replies, views, and recommendation scores obtained from the notes written by students also had large ranges, with the mean $M = 81.95, SD = 37.05; M = 86.24, SD = 54.55; M = 1096.14, SD = 542.78; and M = 7.90, SD = 6.20$ respectively. The distributions of these scores were approximately normal, except slightly positively skewed distribution of recommendation scores, indicating that more scores were
located in the lower end of the distribution. The mean score of engagement was $M = 2723.14$, $SD = 1179.70$, and the distribution of scores was approximately normal.

As for webinar participation, students most often either only viewed or only attended the webinar. Over the 12-week period, the mean total number of times that students only viewed the webinar was $M = 3.81$, with 80 times in total for all 21 students; whereas the mean total number of times that students only attended the webinar was $M = 3.71$, with 78 times in total. The mean total number of times that students both viewed and attended the webinar was $M = 2.29$, with 48 times in total; whereas the mean total number of times that students did not view and did not attend the webinar was $M = 2.19$, with 46 times in total.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes read</td>
<td>1345.14</td>
<td>657.93</td>
<td>478 – 2439</td>
</tr>
<tr>
<td>Notes written</td>
<td>105.76</td>
<td>46.77</td>
<td>20 – 202</td>
</tr>
<tr>
<td>Online duration</td>
<td>2802.98</td>
<td>1397.75</td>
<td>503.45 – 5865.98</td>
</tr>
<tr>
<td>Contribution</td>
<td>81.95</td>
<td>37.05</td>
<td>10 – 168</td>
</tr>
<tr>
<td>Replies (by others)</td>
<td>86.24</td>
<td>54.55</td>
<td>6 – 195</td>
</tr>
<tr>
<td>Views (by others)</td>
<td>1096.14</td>
<td>542.78</td>
<td>111 – 2232</td>
</tr>
<tr>
<td>Recommendations (by others)</td>
<td>7.90</td>
<td>6.20</td>
<td>1 – 24</td>
</tr>
<tr>
<td>Engagement</td>
<td>2723.14</td>
<td>1179.70</td>
<td>870 – 4642</td>
</tr>
</tbody>
</table>

$N = 21$
Table 3

Correlations between Webinar Participation and the Variables of Online Learning Behaviours

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. “None” times</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. “Viewed” only times</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3. “Attended” only times</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4. “Both” times</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>5. Notes read</td>
<td>-.32</td>
<td>-.04</td>
<td>-.28</td>
<td>.56**</td>
</tr>
<tr>
<td>6. Notes written</td>
<td>-.34</td>
<td>-.13</td>
<td>-.01</td>
<td>.39^</td>
</tr>
<tr>
<td>7. Online duration</td>
<td>-.25</td>
<td>.06</td>
<td>-.12</td>
<td>.24</td>
</tr>
<tr>
<td>8. Contribution</td>
<td>-.30</td>
<td>-.14</td>
<td>-.01</td>
<td>.36</td>
</tr>
<tr>
<td>9. Replies (by others)</td>
<td>-.25</td>
<td>.11</td>
<td>-.22</td>
<td>.30</td>
</tr>
<tr>
<td>10. Views (by others)</td>
<td>-.36</td>
<td>-.09</td>
<td>-.09</td>
<td>.48*</td>
</tr>
<tr>
<td>11. Recommendations (by others)</td>
<td>-.09</td>
<td>-.45*</td>
<td>.10</td>
<td>.40^</td>
</tr>
<tr>
<td>12. Engagement</td>
<td>-.38</td>
<td>-.07</td>
<td>-.21</td>
<td>.56**</td>
</tr>
</tbody>
</table>

Note: “None” times = Number of times that students did not view and did not attend the webinar; “Viewed” only times = Number of times that students only viewed the webinar; “Attended” only times = Number of times that students only attended the webinar; “Both” times = Number of times that students both viewed and attended the webinar.

^p < .10, *p < .05, **p < .01.

Table 3 presents the Pearson correlations between the four webinar participation variables (number of times that students did not view and did not attend the webinar, only viewed, only attended, and both viewed and attended the webinar) and the eight online learning behaviours variables (number of notes read, number of notes written, online duration,
contribution score, number of replies, views and recommendations by others, and engagement scores). The total number of times that students did not view and did not attend the webinar had no statistically significant correlations with all the online learning behaviours variables. The total number of times that students only viewed the webinar was significantly correlated with the total recommendations by others, $r = -.45, p < .05, N = 21$, and had no significant correlations with the other online learning behaviours variables. The total number of times that students only attended the webinar had no statistically significant correlations with all the online learning behaviours variables. The total number of times that students both viewed and attended the webinar was significantly correlated with the total number of notes that students read, $r = .56, p < .01, N = 21$; the total number of views of notes by others, $r = .45, p < .05, N = 21$; and the engagement score, $r = .56, p < .01, N = 21$. In addition, the correlations between the total number of times that students both viewed and attended the webinar, and the total number of notes written, $r = .39, p < .10, N = 21$, as well as the total recommendations by others, $r = .40, p < .10, N = 21$, were marginally significant.
### Table 4

**Grouping of Students According to Webinar Participation**

<table>
<thead>
<tr>
<th>Student</th>
<th>“None” times</th>
<th>“Viewed” only</th>
<th>“Attended” only</th>
<th>“Both” times</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>Both</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>View</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>/</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>E</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>Both</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>3</td>
<td>Attend</td>
</tr>
<tr>
<td>G</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>Both</td>
</tr>
<tr>
<td>H</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>Attend</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>Attend</td>
</tr>
<tr>
<td>J</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>Attend</td>
</tr>
<tr>
<td>K</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>/</td>
</tr>
<tr>
<td>L</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>Attend</td>
</tr>
<tr>
<td>M</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>1</td>
<td>Attend</td>
</tr>
<tr>
<td>N</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>Attend</td>
</tr>
<tr>
<td>O</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>View</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>Q</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>View</td>
</tr>
<tr>
<td>R</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>/</td>
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<td>S</td>
<td>1</td>
<td>3</td>
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<td>4</td>
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</tr>
<tr>
<td>T</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>View</td>
</tr>
<tr>
<td>U</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>View</td>
</tr>
</tbody>
</table>
In order to perform subsequent comparison analysis, each student was categorized into one of the webinar attendance / view groups: “none group” \((N = 2)\), “view group” \((N = 5)\), “attend group” \((N = 7)\), and “both group” \((N = 3)\) respectively if the student did not view and did not attend the webinar, only viewed, only attended, and both viewed and attended the webinar 6 times or more over the 12-week period (see Table 3). 17 students were able to be categorized in this way.

One-way ANOVAs were performed to compare the total number of notes read, notes written, online duration, contribution score, and the total number of replies, views, and recommendations of different webinar attendance / view groups. Only the one-way ANOVA which compared the total number of notes read of different webinar attendance / view groups had significant findings. The mean scores on the total number of notes read for participants in the “none group”, “view group”, “attend group”, and “both group” were \(M = 853.50, 1228.60, 1013.71\) and 2210 respectively. The Levene test for homogeneity of variance was used to examine whether there were serious violations of the assumption of homogeneity of variance across groups, and no significant violation was found: \(F(3, 13) = 1.52, p = .26\). The overall \(F\) for the one-way ANOVA was significant, \(F(3, 13) = 4.23, p < .05\). The effect size was \(SS_{\text{between}}/SS_{\text{within}} = .98\). In addition, all possible pairwise comparisons were made using the Tukey HSD test. It was found that participants in the “both group” had higher number of notes read than “attend group” by 1196.29, and the difference was statistically significant \((p < .05)\). The other five comparisons were not statistically significant.

The relationship between webinar participation and each of the variables of online learning behaviours was explored using standard multiple regression, meaning that all predictor variables were entered in one step. Only the regression using the total number of
notes read as the outcome variable showed marginally significant result. Results for this
standard multiple regression are summarized in Table 5. The overall regression with the three
predictors (“Viewed” only times was excluded) was marginally significant, $R^2 = .35$, $F(3, 17)
= 3.02, p = .06$, implying that 35% of the variance in the total number of notes read was
predictable from this set of three variables. To assess the contributions of individual
predictors, the t ratios for the individual regression slopes were examined. However, none of
the predictors were significantly predictive of the total number of notes read. The proportions
of variance uniquely explained by each of these predictors were as follows: $sr^2 = .01$ for
“None” times, $sr^2 = .03$ for “Attended” only times, and $sr^2 = .11$ for “Both” times. Thus, in
this sample and in the context of this set of predictors, “Both” times was the strongest
predictor of the total number of notes read. The analysis yields the following regression
equation:

\[
\text{Total Read} = 1369.80 – 38.63 \text{ None} – 35.82 \text{ Attend} + 84.44 \text{ Both}
\]

where Total Read is the number of notes read. None is the number of times that students did
not view and did not attend the webinar, Attend is the number of times that students only
attended the webinar, and Both is the number of times that students both attended and viewed
the webinar

In addition, scores on engagement were predicted from webinar participation using
multiple regression. Results for this standard multiple regression are summarized in Table 6.
The overall regression with the three predictors (“Viewed” only times was excluded) was
marginally significant, $R^2 = .34$, $F(3, 17) = 2.97, p = .06$, implying that 34% of the variance
in the engagement score was predictable from this set of three variables. To assess the
contributions of individual predictors, the t ratios for the individual regression slopes were
examined. However, none of the predictors were significantly predictive of the engagement score. The proportions of variance uniquely explained by each of these predictors were as follows: $sr^2 = .02$ for “None” times, $sr^2 = .01$ for “Attended” only times, and $sr^2 = .11$ for “Both” times. Thus, similar to the previous regression equation, “Both” times was the strongest predictor of the engagement score in this sample and in the context of this set of predictors. The analysis yields the following regression equation:

^ 

Engagement = 2749.63 – 92.40 None – 43.92 Attend + 148.34 Both

where Engagement is the sum of the number of notes that students read and wrote in the discourse environment, and the contribution, replies, views and recommendation scores obtained from the notes. None is the number of times that students did not view and did not attend the webinar, Attend is the number of times that students only attended the webinar, and Both is the number of times that students both attended and viewed the webinar.
Table 5

Results of Standard Multiple Regression to Predict Total Number of Notes Read from Webinar Participation ($N = 21$)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$F$</th>
<th>$sr^2_{unique}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1369.80</td>
<td>360.83</td>
<td>3.80</td>
<td>3.02</td>
<td>(3, 17)</td>
<td>.01</td>
</tr>
<tr>
<td>“None” times</td>
<td>-38.63</td>
<td>65.20</td>
<td>-.15</td>
<td>-.59</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>“Attended” only times</td>
<td>-35.82</td>
<td>43.19</td>
<td>-.19</td>
<td>-.83</td>
<td>.03</td>
<td>.11</td>
</tr>
<tr>
<td>“Both” times</td>
<td>84.44</td>
<td>49.15</td>
<td>.44</td>
<td>1.72</td>
<td>.11</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .35$, $R^2_{adj} = .23$

Note: “None” times = Number of times that students did not view and did not attend the webinar;
“Attended” only times = Number of times that students only attended the webinar;
“Both” times = Number of times that students both viewed and attended the webinar.

$p < .10$, *$p < .05$, **$p < .01$.

Table 6

Results of Standard Multiple Regression to Predict Engagement Score from Webinar Participation ($N = 21$)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$F$</th>
<th>$sr^2_{unique}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2749.63</td>
<td>649.01</td>
<td>4.24</td>
<td>2.97</td>
<td>(3, 17)</td>
<td>.02</td>
</tr>
<tr>
<td>“None” times</td>
<td>-92.40</td>
<td>117.27</td>
<td>-.19</td>
<td>-.79</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>“Attended” only times</td>
<td>-43.92</td>
<td>77.69</td>
<td>-.13</td>
<td>-.57</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>“Both” times</td>
<td>148.34</td>
<td>88.41</td>
<td>.43</td>
<td>1.68</td>
<td>.11</td>
<td></td>
</tr>
</tbody>
</table>

$R^2 = .34$, $R^2_{adj} = .23$

Note: “None” times = Number of times that students did not view and did not attend the webinar;
“Attended” only times = Number of times that students only attended the webinar;
“Both” times = Number of times that students both viewed and attended the webinar.

$p < .10$, *$p < .05$, **$p < .01$. 
Table 7

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 Satisfaction towards attending the webinars</td>
<td>7.63</td>
<td>1.08</td>
<td>6 – 9</td>
</tr>
<tr>
<td>Q2 Satisfaction towards viewing the recorded webinar videos</td>
<td>5.33</td>
<td>1.89</td>
<td>4 – 8</td>
</tr>
<tr>
<td>Q3 Satisfaction towards the discussion threads</td>
<td>7.38</td>
<td>1.08</td>
<td>6 – 9</td>
</tr>
<tr>
<td>Q4 Satisfaction towards the readings</td>
<td>7.88</td>
<td>1.60</td>
<td>5.5 – 10</td>
</tr>
<tr>
<td>Q5 Satisfaction towards using Knowledge eCommons software</td>
<td>8.88</td>
<td>1.14</td>
<td>7.5 – 10</td>
</tr>
<tr>
<td>Q6 Satisfaction towards instructors’ help/responses in the webinars</td>
<td>6.88</td>
<td>0.54</td>
<td>6 – 7.5</td>
</tr>
<tr>
<td>Q7 Satisfaction towards instructors’ help/responses in the discussion threads</td>
<td>6.38</td>
<td>1.19</td>
<td>5 – 8</td>
</tr>
<tr>
<td>Q8 Satisfaction with perceived interaction with others in the webinars</td>
<td>8.25</td>
<td>0.43</td>
<td>8 – 9</td>
</tr>
<tr>
<td>Q9 Satisfaction with perceived interaction with others in the discussion threads</td>
<td>8.38</td>
<td>1.19</td>
<td>7 – 10</td>
</tr>
<tr>
<td>Q10 Overall satisfaction towards the course</td>
<td>8.38</td>
<td>0.96</td>
<td>7.5 – 10</td>
</tr>
</tbody>
</table>

4.2 Results from the Satisfaction Questionnaire

Table 7 displays descriptive statistics for the items in the satisfaction questionnaire. The results revealed that the students ($N = 4$) who completed the satisfaction questionnaire were satisfied with the course and its many aspects, with all satisfaction results having a mean higher than 5 (1 = poor, 10 = excellent), and seven (out of ten) items were higher than 7. Students were most satisfied towards using Knowledge eCommons software ($M = 8.88$), followed by overall satisfaction towards the course and satisfaction towards perceived interaction with others in the discussion threads (both $M = 8.38$), and perceived interaction with others in the webinars ($M = 8.25$). Students were least satisfied towards watching the
recorded webinar videos ($M = 5.33$), followed by instructors’ help or responses in the discussion threads ($M = 6.38$) and in the webinars ($M = 6.88$).

Pearson correlation was performed between students’ overall satisfaction towards the course and the other items in the questionnaire. Students’ satisfaction with perceived interaction with others in the webinars was significantly correlated with their overall satisfaction towards the course, $r = .98$, $p < .05$, $N = 4$, and this was the only item in the questionnaire which correlated with students’ overall satisfaction towards the course.

### 4.3 Results from the Interview

#### 4.3.1 Course Flexibility

When asked about the preference between an online course which is provided on a set schedule and an online course which is available all the time, the student who attended the interview said that she prefers an online course to be on a set schedule, while agreeing that an online course which is always available is helpful for students who have time constraints.

“In some ways I prefer a set schedule. I like knowing the webinar was on Wednesday, between 6 and 7. I think that’s very important because I think that helps with time management, to know when you are supposed to be online. However, I do understand if you have time constraints or you have to be at work, then being able to get on whenever you can is certainly helpful. But me, personally though… I like knowing that the webinar was on Wednesday, I like having that sort of structure.”

#### 4.3.2 Interaction

The student had very positive feedbacks towards the webinars. To her, the webinar was the most important component which positively influenced her satisfaction towards the course. She mentioned that the webinar made the course interesting and dynamic, enhanced online
learning, and allowed participants to know each other and share dialogue which cannot be achieved by electronic posting. The student added that although reading articles and watching webinar videos are important, she likes the connection and being able to talk to others. The webinar, which enables people interacting, made the course much different from another online course without the webinar component that she attended in the winter session.

“When you are just posting online, you don’t really get a sense of who people are, and I think the webinar really allows an opportunity for people to really get to know each other a little bit better and have a chance to talk to each other.”

“I think questions that might not have come up in the posting, come up in the webinar, because you are in that conversation mode, or environment. And I like the connection. I like to be able to talk to other people.”

“Webinar to me is what sold the course for me. I think that really made the course interesting and dynamic, and I think motivating people to really participate. The webinar really was the most important part of this course.”

“I had signed up for online course in the winter session, and I could just tell from the way it was set up, that it was just going to be very laborious and monotonous, because they weren’t doing anything that had people interacting, which I think the webinar does.”

4.3.3 Instructors

When asked about how instructor is important and how the instructors motivated her to work hard in the course, the student mentioned that the instructors have to participate and facilitate, especially when there is a lack of conversation in the online learning environment or if students encountered difficulties.

“I think the instructors have to participate, I don’t think the instructor can just say, okay you read it, now, you just, you know, you drive the course, I think the instructor have to be a facilitator.”

According to her, if there is insufficient facilitation, the students will lose motivation and this is one of the reasons which cause some online learning courses ineffective.
“The instructors have to be the one that help to guide, especially if there’s a lack in the conversation… if people don’t understand the reading, the instructors have to come in and really take point… they have to participate, they have to facilitate. And if they take a back sheet and put it all on the students, then I don’t think the students are very motivated by that, and that’s why I think sometimes online courses can fail the students…”

4.3.4 Preferred Modes of Learning

The student who attended the interview has both field dependent and field independent characteristics. Her motivation in the course came from a wide range of external and internal sources. She likes some structures and guidance provided by the instructors, while at the same time she is intrinsically motivated in her learning, and she thought that the combination of instructor-centered approach and learner-centered approach is required in a course.

“The greatest motivation for me was…definitely classmates, and then instructor. It’s a bit of everything... I think the instructor is very important in any coursework… provide interesting material to read... Classmates, I think is critical because that’s really how you interact with people and I think you learn a lot from each other… Self-motivation is also critical… I want to take this course so that I can become a better teacher in my own school, so that motivates me.”

“The instructor, or the facilitator have to guide the students on the path… if there is a particular path that the instructor was expecting, but it wasn’t really getting the students motivated to talk and to learn from each other, then it has to be a learner-centered approach. The instructor has to take a step back, and allow that dialogue to happen. So for me, it has to be a combination of the two.”

4.3.5 Technical Difficulties

When asked about the suggestions for improving the webinar and the course, the student mentioned the connectivity problem in the webinars. She suggested using a better system and having more explicit instruction on how to talk to each other on the webinar.

“The biggest difficulty with the webinar is the connectivity, getting everybody on. I know which struggled a lot with getting people connected and sometimes the first five or ten minutes of the webinar was just about calling people… It’s more a technical difficulty
than an actual webinar difficulty. So I think they need to find a system that seems to work better... and more explicit instruction of getting a webinar etiquette, how to talk to each other on the webinar because people kind of cut each other off without meaning to, because maybe there is a time delay...”

4.3.6 Threaded Discussion

According to the student who attended the interview, since the webinar was only about 40 – 45 minutes, posting notes and reading others’ ideas are very important for her to know what people are thinking. Despite the usefulness of the threaded discussion, the student commented that it was the least satisfactory component in the course. Since there were too many notes written by students, it was cumbersome to read.

“The least satisfactory was the threaded discussion. It just gets so cumbersome. You know, because in a big class, I think we had 20 people in this course, and we were all leading... each week a group of students would ask questions for the reading. Some groups would ask 10 questions... it can be very hard to read everything, to answer 10 questions, or 10 plus questions, can be very cumbersome.”

The student suggested some specific ways of facilitation for improving the threaded discussion:

“A professor could say, okay, pick 1 article to answer the question... and that’s what you gonna really get involved with the discussion now, but you are reading just that area.”

“If there’s 1 article that was really interesting to you, then I think you should just answer the question to that article, and then really participate in that discussion, as opposed to be responsible for all 3 articles, I think it’s just too much, and I think you lose your concentration when you have to stretch yourself so thin.”

4.3.7 A Multi-Medial Online Learning Environment

When asked about how the webinar, threaded discussion, readings, and learning the technologies affected her satisfaction towards the course, the student expressed positive feedbacks to all of these components. She said that these were all useful and important to her,
and commented that the design of this course offered a great way to combine an in class environment and the online learning environment.

“The threaded discussion was very interesting, lots of ideas came out of there, but that become a bit cumbersome… but I think when you were able to have the time to read everything, I really found what people had to share was really important and really interesting.”

“The reading, overall, I thought, was very applicable…”

“I think what they were doing was effective, give us a tasting about different technology that can be helpful in the classroom.”

“I think this was a great way, combining an in class environment and therefore discussing with their colleagues, with fellow participants what was going on.”
CHAPTER FIVE

Discussion

5.1 The Importance of Engagement

According to the correlations between webinar participation and the variables of online learning behaviours, the total number of times that students both viewed and attended the webinar was significantly or marginally significantly correlated with several variables of online learning behaviours, such as the number of notes read ($r = .56, p < .01$), number of views by others ($r = .45, p < .05$), number of notes written ($r = .39, p < .10$), and number of recommendations by others ($r = .40, p < .10$). These findings are reasonable as students who both attended and viewed the webinar most often in the 12-week period very likely had high engagement in the course. According to the literature, students with high levels of engagement are found to, for instance, enjoy the learning process and have high persistence in their work despite challenges and obstacles (Schlecty, 1994, as cited in Mandernach, 2009). Thus, students with high engagement in the webinar as reflected by webinar participation in our study may have higher persistence and enjoyment in the online learning activities, such as reading more notes and posting more good notes. These results supported the literature that engagement is important for learning.

It is interesting to notice that the total number of times that students only viewed the webinar was significantly and negatively ($r = -.45, p < .05$) correlated with the total number of recommendations by others. This implies that the more the students only viewed the webinar, the less likely that their notes were recommended by others. A number of reasons may explain this finding. First, as these students only viewed the webinar, other students may
not know them so well compared to those who attended the webinar. Thus, other students may less likely recommend these students’ notes. Second, the students who only viewed the webinar may themselves be less engaged in the course and write less good notes. As a result, their notes were recommended less by others. Again, this shows the importance of engagement.

The one-way ANOVA results also revealed the importance of engagement. One-way ANOVAs were performed to compare the total number of notes read, notes written, online duration, contribution score, and the total number of replies, views, and recommendations of different webinar attendance / view groups. Only the one-way ANOVA which compared the total number of notes read of different webinar attendance / view groups had significant findings, showing that participants in the “both group” read significantly more notes than the “attend group”. Similar to the results from correlations statistics, this finding is reasonable as students who both attended and viewed the webinar most often should have higher engagement than those who only attended the webinar. With higher engagement as reflected by webinar participation, they may have higher persistence and enjoyment in online learning activities, including reading notes.

The regression analyses strengthened the idea about the relationship between students’ engagement in the webinar and online learning behaviours. It was found that 35% of the variance in the total number of notes read was predictable from the set of three variables of webinar participation. According to the signs in the regression equation, the total number of notes read could be positively predicted by the number of times that students both attended and viewed the webinar, but negatively predicted by “none” and “attend only”. Therefore, high engagement in the webinar as reflected by both viewing and attending the webinars
would have positive effects on students’ learning in the discourse environment as reflected by reading more notes. Furthermore, it was found that 34% of the variance in the engagement score (in the discourse environment) was predictable from the set of three variables of webinar participation. Similarly, the signs in the regression equation showed that students’ engagement in the discourse environment could be positively predicted by the number of times that students both attended and viewed the webinar, but negatively predicted by “none” and “attend only”. Again, this finding revealed the importance of engagement as high engagement in the webinar would have positive effects on students’ engagement in the discourse environment.

5.2 The Importance of Course Flexibility

The student who attended the interview prefers the fixed webinar schedule designed by the instructor, while agreeing that it is helpful for students with time constraints if an online course allows them to online whenever they can. This shows that the high flexibility of this course, enabling students to follow their own pace of learning (e.g., to view the webinar video later) or follow the schedule assigned by instructors, is beneficial to students’ learning. This idea is consistent with the literature as perceived flexibility of the delivery medium of an online learning program is found to be significantly related to students’ perceived learning and satisfaction (e.g., Arbaugh & Duray, 2002; Kim, 2009; Sun et al., 2008).
5.3 The Importance of Interaction

The results from the questionnaire and the interview both supported the literature about the importance of interaction in the online learning environment. First, according to the results obtained from the questionnaire, students’ satisfaction with perceived interaction with others in the webinars was the only item which significantly correlated with the overall course satisfaction, and the positive correlation means that the more the students were satisfied with the perceived interaction with others in the webinars, the higher the overall course satisfaction. It is estimated that students’ perceived interaction with others in the webinars is a crucial factor which may have positively influenced the overall course satisfaction. The interview findings strengthened the idea that the interaction provided by the webinars is crucial in this online course. For example, the student mentioned that the webinar made the course interesting and dynamic which could not be achieved by electronic posting only. This idea is well supported as studies have repeatedly reported that interaction is crucial especially due to the transactional distance nature of online learning (e.g., Schullo et al., 2005; Shi et al., 2004; Ward et al., 2010). In addition, according to the student who attended the interview, the inclusion of the webinar made this course much different from another online course that she attended in the winter session. She could feel from the course design that the one in the winter session was going to be laborious and monotonous as it did not allow interaction. This finding is in line with Kim’s (2009) study in showing that “authentic and interactive learning activities” are motivating to students, while students find courses with a low degree of interactivity motivationally challenging.

Although some studies have found that conferencing let some people feel inadequate if they compare themselves with others (Ferguson, 2010), and conferencing was viewed as less
effective in reinforcing a sense of community than threaded discussion forum (Ke, 2010), the current study did not have such adverse results. Instead, the findings from the interview showed that the discussion threads can have adverse effects on students’ satisfaction due to the huge number of notes, while the webinar has important positive effects on students’ learning and satisfaction.

5.4 The Importance of Instructors’ Facilitation

The student mentioned that the instructors have to participate and facilitate especially when there is a lack of conversation in the online learning environment, or if students encountered difficulties. Otherwise, students will not be motivated, and according to her, this is one of the reasons which cause some online learning courses ineffective. This finding is consistent with the concepts in the theories of learning and the literature about the importance of having sufficient and timely instructors’ participation and facilitation in order to overcome the transactional distance of online learning (Sargeant et al., 2006). In addition, the student’s suggestions for improving the threaded discussion by narrowing down the number of articles and postings students required to read also showed the importance of instructors’ thoughtful use of techniques to facilitate online learning.

5.5 The Importance of Accommodating Students’ Preferred Modes of Learning

Interview findings showed that it is desirable to have high flexibility in an online course and for instructors to adopt flexible teaching approaches to accommodate the diverse preferred modes of learning among a group of students. For example, the student in the interview likes some structures and guidance provided by the instructors, while at the same time she is intrinsically motivated in her learning. Also, she thought that the combination of
instructor-centered approach and learner-centered approach is required in the course. Thus, it seems ideal to have high flexibility, such as the Flex Mode model adopted in this course, so as to accommodate students’ preferred modes of learning.

5.6 The Importance of Addressing Technical Difficulties

The student mentioned a few times in the interview about the connectivity problem in the webinars and the time delay issue which sometimes made students cut each other off. From her responses, we can understand that addressing the technical difficulties of the webinar is crucial for enhancing students’ satisfaction to similar courses in the future. This finding is well supported by the literature as negative critical incidents are found to have direct and negative effects on students’ perceived ease of use, perceived usefulness, and quality attributes cumulative satisfaction (Chen, Lin, & Kinshuk, 2008; Lin, Chen, & Fang, 2010).

5.7 The Strength of a Multi-Medial Online Learning Environment

The combined results from the satisfaction questionnaire and the interview revealed the strength of a multi-medial online learning environment. The mean score of the overall course satisfaction was high from the questionnaires ($M = 8.38$), with all satisfaction results having a mean score higher than 5 on a 10-point scale (1 = poor, 10 = excellent), and seven (out of ten) items were higher than 7. Also, throughout the interview, the student had positive feedback generally to all the components in the course. She commented that the course design was a great way to combine an “in class environment” (e.g., the webinar which allows interaction) and an online learning environment. These results are consistent with the literature in showing the advantages of adopting a multi-medial online learning environment. According to Kester et al. (2007), a powerful online learning environment is multi-medial, utilizes written
materials and sound in real-time and stored form, and the environment is connected to resource-rich information and to others. The findings supported the idea that incorporating several mediums and a variety of technologies in an online course design is beneficial to students’ learning.

5.8 Implications

5.8.1 Positive Aspects of the Course

Based on the findings from the course database, questionnaire and interview, there are several implications for the design of this online learning course. First, the overall satisfactory results obtained from the questionnaire and the interview showed that the course was mostly successful. The students had average to high satisfaction to all the components in this course, and the student who attended the interview found all the components useful and important. These results reflected the strength of a multi-medial online learning environment. Second, students were very satisfied with the Knowledge eCommons software \( M = 8.88 \), which was the item with the highest satisfaction score in the questionnaire, implying that the Knowledge eCommons software adopted was suitable and effective in this course. Third, the combined results from the questionnaire and interview revealed that students had high satisfaction towards perceived interaction with others in the discussion threads as well as the webinars, with the mean scores \( M = 8.38 \) and \( M = 8.25 \) respectively on a 10-point scale. These reflected that this course was particularly successful in helping students interact with each other.
5.8.2 Aspects of the Course that Require Improvement

Among all the items in the questionnaire, the score of satisfaction towards watching the webinar videos was the lowest, with $M = 5.33$ on a 10-point scale. It may be due to the technical problems in the webinars. The student also mentioned several times the technical problems encountered in the webinars throughout the interview, implying that resolving this issue is of great importance for improving students’ satisfaction to similar courses in the future. Thus, as what the student suggested in the interview, a better system and more explicit instruction on how to talk to each other on the webinar may be required. In addition, according to the results from the questionnaire, the students generally were not highly satisfied towards instructors’ help or responses in the discussion threads and in the webinars, with mean scores $M = 6.38$ and $M = 6.88$ respectively on a 10-point scale. The student in the interview also mentioned that the instructors may need to participate and facilitate more. Therefore, more facilitation by instructors may be required.

5.8.3 Implications for the Online Courses In General

The correlations, ANOVAs and regression analyses all showed the importance of encouraging students’ engagement in the webinars. For example, students who mainly attended and viewed the webinars read significantly more notes than those who mainly only attended the webinars; the number of times that students only viewed the webinars was negatively correlated to the number of recommendations by others; and the set of webinar participation variables could predict 35% of the variance in the total number of notes read according to the regression analyses. These results showed that webinar participation can predict (although marginally significant) or positively influence students’ online learning
behaviours, such as reading more notes and writing more good notes. Thus, encouraging students to view the webinars in addition to attending them seems essential.

Since the total number of notes read was the only variable in the one-way ANOVAs which showed significant results, and was the only variable in the regression analyses which could be predicted (although marginally significant) by webinar participation, it is possible that the number of notes read by students is the best indicator among our online learning behaviours variables which was related to and could be predicted by webinar participation. Instructors and people who are responsible for designing online courses may need to pay attention especially to the number of notes read by students during course evaluation.

Overall, the findings are in line with the literature by showing that an online course with high level of flexibility, sufficient interaction opportunities, and offered in a multi-medial learning environment are preferred. Moreover, it would be desirable for instructors to provide appropriate facilitation, accommodate students’ preferred modes of learning, and address any technical difficulties that arise with online learning. If the above factors can be considered during the establishment of an online course and the appropriate measures can be made by instructors, students will probably have high engagement, enjoyment and fulfilment in the learning processes. Furthermore, it can help overcome the transactional distance in the online learning environment and enhance students’ learning.

5.9 Limitations and Future Directions

One important limitation of the present study was the small sample size and it only investigated findings from an online course offered by one University in Canada. Therefore, the extent to which these findings can be generalized to other online learning courses is
limited. In addition, as there was only one student who attended the individual interview, we cannot examine how students’ preferred modes of learning may have affected the relationship between webinar participation and behaviours and engagement in online learning. Future research studies should include larger and more diverse samples to improve the external validity, and test how preferred modes of learning may influence the relationship between other variables.

Another limitation was the time gap between the end of the course and the data collection. Since students finished the course in December 2010, while the data collection using questionnaire and interview was in July 2011, the time delay may reduce the accuracy of students’ memory, which in turn affects the data accuracy. Future studies should conduct the data collection as soon as possible after the end of the course.

Besides that, since the number of notes read by students seems to be the best indicator among our online learning behaviours variables which was related to and could be predicted by webinar participation, future research studies may investigate the relationship between webinar participation and number of notes read in greater detail.

Since there are inadequate research studies which directly examine webinar participation and behaviours and engagement in online learning, more well-designed research studies which adopt mixed methods approach are required in this field. Although there are some limitations, this study demonstrated the strengths of utilizing both quantitative and qualitative methods to gain a general picture.
5.10 Conclusion

A graduate level Flex Mode course “Introduction to Computers in Education” using online learning concept, which includes the discourse environment and the webinars, was investigated. This study explored how webinar participation predicts students’ behaviours and engagement in online learning, and the experiences and perspectives of students who take a Flex Mode course that includes a webinar component. Findings from the course database, satisfaction questionnaire and interview are in line with the literature by showing that an online course with high level of flexibility, sufficient interaction opportunities, and offered in a multi-medial learning environment are preferred. Moreover, it would be desirable for instructors to provide appropriate facilitation, accommodate students’ preferred modes of learning, and address any technical difficulties that arise with online learning. If the above factors can be considered during the establishment of an online course and the appropriate measures can be made by instructors, students will probably have high engagement, enjoyment and fulfilment in the learning processes. Furthermore, it can help overcome the transactional distance in the online learning environment and enhance students’ learning. Although there are limitations in the current study, this is one of the first studies in the field which provided several important implications for improving this course and for the design of online courses in general. As online learning is becoming increasingly popular, more well-designed research studies which adopt mixed methods approach are required to investigate webinar participation and behaviours and engagement in online learning in the future.


Woodruff, E. (2011). Flex Mode Courses, OISE. Teaching at UofT. Retrieved September 6, 2011, from
Appendix A

Informed Consent Form

Relationship between Participation in the Webinar and Students’ Behaviours and Engagement in Online Learning

You are being invited to participate in a research study about how webinar participation affects behaviours and satisfaction in online learning. This study is being conducted by Agnes Wong, a masters’ student, and supervised by Dr. Earl Woodruff, a professor, in the department of Human Development and Applied Psychology, at the Ontario Institute for Studies in Education (OISE) at the University of Toronto. This study is being conducted as part of a thesis requirement toward my masters’ degree. My request to conduct this project has been approved by The University of Toronto Ethics Review Board.

Participant Selection
You were selected as a possible participant in this study because you have attended the “Introduction to Computers in Education” course in fall 2010. Any student who agrees to participate will be asked to fill in a satisfaction questionnaire, which will be distributed online. After the completion of the questionnaire, you will be invited to participate in an individual interview. Any student who agrees to participate in the interview will be included.

Research Questions
How well does participation in the webinar predict students’ behaviours and satisfaction in online learning? What are the crucial factors which influence students’ behaviours and satisfaction in online learning? Research tends to show that the more the learners perceive interaction with others, the higher the satisfaction. However, due to lack of literature, how participation in the webinar may exactly affect students’ behaviours and satisfaction in online learning is not well understood, and thus more research is required. We anticipate that by exploring the effects of participation in the webinar, the research findings may help bridge the existing gap and provide insights about the course design, and develop a theoretical framework for the design of online learning program in general.
Data Collection

I would like to collect data in the following ways:

1. Quantitative data will be gathered from the course database for examining students’ online learning behaviours. The number of notes written and read by students, online duration, and webinar participation record will be gathered. The investigator was approved by the course instructor Dr. Woodruff that she can log into the course database. If the students do not consent to allow the researchers access the course database, the data of those students will not be included in the analysis.

2. Participants will be asked to complete an online questionnaire to gather simple background information and their satisfaction to the course. It will take about 5 minutes to complete. The only personal data that would be asked for by the researcher is the students’ names. If he/she is a teacher at school, the grades and subjects being taught will also be asked.

3. Following the questionnaire, I will interview participants about i) their satisfaction towards the course, ii) their preferred modes of learning and iii) their suggestions for improvement. It will take about 20 minutes. All interviews will be audio-taped.

There are no known risks if you decide to participate in this research study and there are no costs to you as you participate in this study.

Study Participants & Confidentiality

During this study, I will know the identity of the participants but will store their information under a pseudonym. This alias will be used for the research and will not be traceable to the participants. For the duration of the study, I will collect and maintain all digital files in a secure password protected folder and all hardcopies will be stored in a secure private location. If the results of this research are submitted for article publication, it will be done in a manner that keeps the identity of the participants confidential. If specific data is to be published, it will be under the unidentifiable pseudonym, but no personal information will be disclosed. At the completion of the research process, records/files will be destroyed and participants may request a summary of the results of this study.
No one will be able to identify the participants or their responses, and no one will know who participated in the study, unless they have given permission to identify themselves. Only my research supervisor and I will be able to view the information that is collected.

If text information has archival value, then it will be stored under the participants’ pseudonyms, without any connection to their actual identities. All video or audio files will be erased.

By signing the attached consent form, you are voluntarily agreeing to participate in this study. Even after signing the consent form, you are free to decline to answer any particular question for any reason or to withdraw from the entire study without explanation.

If you have any questions about the study, please contact Dr. Earl Woodruff (earl.woodruff@utoronto.ca, 416-978-1068) and the Office of Research Ethics (ethics.review@utoronto.ca, 416-946-3273).

If you decide to participate in this study, please sign the attached consent form and email it to me at skagnes.wong@utoronto.ca.

Thanks,

Agnes Wong
Declaration of Consent

I (name) ________________________________ agree to participate in the research study that Agnes Wong is conducting regarding how webinar participation affects behaviours and satisfaction in online learning. The study will be conducted from April 2011 to August 2011.

I agree to:

- complete a satisfaction questionnaire
- attend an interview about the satisfaction towards the course, preferred mode of learning, and suggestions for improvement

I understand that Agnes will need to:

- interview participants about the satisfaction towards the course
- analyze patterns of participation in the webinar, discussion threads, online duration, and satisfaction

I also understand that, in order to maintain my confidentiality:

- digital files will be maintained in a secure password folder and hardcopies stored in a secure private location
- all data that could identify me will be destroyed at the completion of the research process
- if I request, Agnes will provide me with a summary of the results of this study when the project is completed

__________________________________    ________________________
Signature          Date
Appendix B

Satisfaction Questionnaire

Please put an “x” under the number of your answer.

1. Your satisfaction towards attending the webinars
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

2. Your satisfaction towards watching the recorded webinar videos
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

3. Your satisfaction toward the discussion threads
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

4. Your satisfaction toward the readings
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

5. Your satisfaction toward using Knowledge eCommons software
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

6. Your satisfaction toward the instructors’ help/responses in the webinars
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

7. Your satisfaction toward the instructors’ help/responses in the discussion threads
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

8. Your satisfaction with your perceived interaction with others in the webinars
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

9. Your satisfaction with your perceived interaction with others in the discussion threads
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)

10. Overall, how would you rate your satisfaction towards this course
   (poor) 1    2    3    4    5    6    7    8    9    10 (excellent)
Please spend a few more seconds to answer the following questions about yourself.

Grades taught:

Subjects taught:

Experience with computers (None, limited, some, a lot, extensive):

Experience with online learning course (None, limited, some, a lot, extensive):
Appendix C

Interview Guide

About yourself / online course

1. Have you taken any online course before?
2. Is it your compulsory or elective course? Why did you take this elective course?
3. How do you feel about the online courses in general?
4. Do you prefer to be alone or with others? Why?
5. How do you think about your time management skills?

Keeping your experience in this course “Introduction to Computers in Education” in mind

1. Do you prefer an online course with course structure designed by instructors or to structure your own learning (e.g., watch webinar video and read articles at a particular time)? Why?
2. Do you prefer an online course which is provided on a set schedule or which is available 24 hours a day, 7 days a week?
3. Which of the following was the greatest motivator for you in this course? Please elaborate.
   A. The instructor / the grade
   B. The classmates
   C. Self-motivation
   D. Others
4. Do you think an online course which uses instructor-centered approach (i.e. instructors take the sole leadership) or learner-centered approach better suits your learning more? Why?
5. What are the reasons for you to attend the webinar? What are the reasons for you to watch the webinar video?
6. Is attending the webinar important for you? Why? What are your suggestions for
improving the webinar?

7. What are the reasons for you to post notes on the discourse environment?

8. Is posting notes important for you? Is reading notes important for you? What are your suggestions for improving the discourse environment?

9. How each of the following affects your satisfaction towards this course?

   A. The webinar
   B. Threaded discussion
   C. Readings
   D. Learning the technologies
   E. Others

10. What are your suggestions to this course so that the future students may have increased satisfaction?