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## Different Degrees of Blending Benefit Students Differently: A Pilot Study

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# Chan, C.T. and Koh, Y.Y., INTI International University College, Malaysia Different Degrees of Blending Benefit Students Differently: A Pilot Study

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## ABSTRACT

We are constantly seeking for the best method to teach our students. Lecture style which is in existence for many years is still applicable to a certain extent. The birth of personal computer and Internet has resulted in wide spectrum of instructional strategies taking advantage of these two wonders. One of them is blended learning. The model used in this experiment has online and offline modes. For the online mode we used forum discussions to replace face-to-face instructions. Lecturers are introduced to various online activities that they can choose from in the forum discussions. One of the important aspects of blended learning is the integration of offline and online activities. The other aspect of the blended learning model is the offline mode or face-to-face teaching in the classroom. This experiment lasted for four weeks involving three lecturers and a total of 73 students. Each lecturer was given different degrees of blending in this experiment, that is, 25% online mode, 50% or 75% the highest online mode. For instance, in a 25% online mode students do not attend class for one week in a 4-week experiment. This study shows that students do view the new teaching method in a positive manner as many of them on average reported improvement in self study and time management skills. Whether different degrees of blending benefit students differently, this pilot study tends to show that there is no significant difference between the 25% and 75% groups in self study, attitude toward blended learning and forum participation.

**Keywords:** Blended Learning, Degree of Blending, Collaboration, Online Forum Discussions, Instructional Technology, Internet

## INTRODUCTION

What is blended learning? There are many definitions given to this term, the most common being blended learning combines face-to-face instruction with distance education delivery systems (Osguthorpe and Graham, 2003). Fox (2002) continued to define blended learning as "... the ability to combine elements of classroom training, live and self-paced e-learning, and advanced supportive learning services in a manner that provides a tailored learning ..." (p. 26). Yes, this is tailored in the sense that the face-to-face teaching (offline mode) is integrated with e-learning (online mode). It is through integration of the two modes of learning that gives the true meaning of the word blended. We cannot have the online mode and the offline mode being taught as two separate entities.

In higher education, blended learning is often referred to as the hybrid model. In the University of Wisconsin in Milwaukee, hybrid courses have significant portion of the learning activities moved online resulting in time traditionally spent in the classroom is reduced but not eliminated (Vaughan, 2007). Bourne, a professor of electrical and computer engineering agreed that within five years 80 to 90 percent of classes could sometime become hybrid (Young, 2002).

How much of blending is needed for it to be effective? Allen and Seaman (2003) agreed that blended courses integrate online modes of delivery into the regular classroom in such a way that at least 30% of the course is taught online. In this experiment the degree of blending ranges from 25% to 75%. Many students who have tried blended courses say the model fits their attention spans and their lifestyles and a meeting of 50/50 is nice (Sarah Hangen, reported by Young, 2002). There are, in fact, an enormous variety of face-to-face ratios to online time but majority of them ranges from 25% to 50% as reported by Aycock et al. (2002).

The research aims to explore the students and lecturers' perceptions at the different degree of blending, that is, 25% online mode, 50% and 75% the highest online mode.

## LITERATURE REVIEW

Blended learning has emerged as a preferred mode of delivery (Bersin, 2004; Eijl, Pilot, and Voogd, 2005; Tang and Byrne, 2007). According to Tang and Byrne 72% of academic leaders agree that blended courses held more promise than distance learning. In fact through their experiment, it is evident that students preferred the blended learning mode compared to the face-to-face mode and even distance learning. Garnham and Kaleta (2002) found that the principle reason that 80% of the students gave high level of satisfaction was the time flexibility provided by the blended mode. Time flexibility is defined as the ability to control the pace of one's learning, the convenience of scheduling coursework and a decrease in time spent in commuting. Spilka (2002) reported that through forum discussions students are required to extend their thinking much further than in face-to-face discussions. Consequently, they acquire high quality analysis and thinking resulting in more thoughtful, tactful, and sensitive reports or assignments. This experiment will attempt to explore the students and lecturers' perceptions at the different degree of blending.

In terms of content acquisition measures by the grade averages, there is no significance difference between the blended and the offline modes (Tang and Byrne, 2007). Other studies, however, reported an improvement in the learning outcomes for students (Twigg, 2003; Dziuban et al., 2005; Garnham and Kaleta, 2002), lower withdrawal rates and retention equivalent to that of face-to-face courses. Lecturers involved in blended learning reported that students wrote better papers, produced higher quality projects and were capable for more meaningful discussions on course materials (Vaughan, 2007). Aycock et al. (2002) concurred with Vaughan and suggested that this improvement is due to students being more engaged in their learning process. It is interesting to note that Sands (2002) claimed that blended courses become "de facto writing intensive courses" for the students due to the text-based nature of the online forum discussions and emails. Spilka (2002) went a step further in stating that blended learning increases the opportunities for self-directed learning and develops project and time management skills. It is not generally true for Asian students, in particular Thai students as reported by Prangpatanpon (1996). There is a lack of self-learning activities among these students because they are used to authoritarian practice, and are willing to accept what their lecturers said without questioning.

In this blended model, the Internet is used in the online mode together with the learning management system (LMS) to support teaching and learning. The Internet can improve the interaction of student-to-professor, student-to-student, student-to-material, and student-to-expert through the various Internet tools like email, bulletin boards, chats, listservs, and the Web (Wang, 2007). "Discussions are an important part of learning because they help students formulate and articulate ideas, learn the language of the subject matter, and become more comfortable with the art of discourse" (Lowry et al., 1994). Asynchronous online discussions using the bulletin/discussion board promote the development of cognitive and critical thinking skills (Wu and Hiltz, 2004) as well as facilitate student interaction with the course materials on a deeper level (Biesenbach-Lucas, 2003). Students appreciate the extra time to reflect on the course materials (Collins, 1996, 1997) and make deeper observations about questions and issues that are discussed (King, 2001). Unfortunately, according to Jones (2002) there is still some reluctance among university faculty to adopt internet technology in classroom teaching. The reasons

given are heavy workload, lack of training, caught in the dilemma as to whether to spend time on technology or research, and lukewarm support from the university administrators.

On the other hand, students are active users of internet in their daily life routine. Hence, it is imperative that internet is channelled as a useful resource to benefit students academically (Wang, 2007). Otherwise students will waste these valuable resources on non-academic activities which may distract them from their schoolwork (Matthews and Schrum, 2003). In this study, students have to serve the web in search of relevant online articles to support their discussions in the forum. Their lecturers will give them a helping hand whenever necessary.

## **METHODOLOGY**

This experiment lasted for four weeks involving three lecturers and a total of 73 students. All the three lecturers volunteered for the experiment. They were trained on how to host online forum discussions in a workshop where they played the roles of student and lecturer. This training is necessary as the lecturers have no experience in hosting online discussions.

In addition, each of them was required to set at least one online self-assessment exercise to support their students in the online mode of learning. They had allocated one hour per week for online consultation through chat-room. The students were given the option as to see their lecturers in the faculty room or login for online chat. This option is only available in the online mode.

Each lecturer was given different degrees of blending in this experiment, that is, 25% online mode, 50% or 75% the highest online mode. For instance, in a 25% online mode students do not attend class for one week in a 4-week experiment. This arrangement is more suitable for adult students but for undergraduates we prefer to run the online and offline modes together in the same week. That is, of the 12 contact hours (three hours per week) one hour is online and two hours offline per week for the first three weeks. In this manner, the students are not completely 'lost' in the online mode. The same arrangement of mixing the two modes per week was also used in the 50% and 75% blending.

Lecturers who participated in the experiment had to submit a teaching log spelling out in detail the topics they were teaching, the online and offline learning activities, how these activities were integrated, and assignment to cover the topics taught during the experiment. These learning activities were thoroughly checked through discussions with the lecturers to ensure integration and suggestions were given for improvement before the start of the experiment. Lecturers were also required to get ready the online assessment questions (at least five questions) as well as forum topics for online discussions.

On the first day of the experiment all the students were given hands-on experience in online forum discussions. They were briefed on the dos and don'ts of forum postings and the significance of the forum in blended learning as well as the roles they played in the new learning environment. They were asked to respond to the topics posted by their lecturers immediately after the briefing. Most importantly, they were reminded to respond to each other postings and not to the lecturers' postings only.

One week into the experiment, discussions were held with the lecturers to determine any technical hitches and to overcome any problems. Postings in the forum were checked for traffic and to a certain extent the quality of the postings. In the case of relatively low traffic, steps were taken to push up the volume. Lecturers had to ensure the forum was active. Monitoring of the postings was carried out asynchronously at the time convenient to them. The lecturers must bridge or integrate the two different modes of learning, that is, online and offline by continuing the forum discussions in the class.

Lecturers carried out the normal classroom teaching in the offline mode but they must ensure this offline mode was well integrated with the online mode as it is spelled out in the teaching log. The

number of times a lecturer will meet up with the students in the class will depend on the degree of blending (25%, 50% or 75%) used in the experiment. A timetable to this effect had to be prepared before hand and distributed to the students. The importance of time management was explained to the students especially so during the online mode where they were completely 'free' on their own to plan their learning.

During online mode, students were informed to complete the assessment questions in the LMS. They were also encouraged to participate in the online discussions in order to collaborate and learn from their peers.

In the offline mode, the lecturers made use of the online discussion threads at the forum and summarized the discussions with the students in the class. The lecturers also clarified any students' doubts related to the topics.

An assignment was given to the students earlier before the experiment started as part of their coursework requirements. From the discussion forum, students were able to relate them to the assignment which was graded to determine the maturity of the students' responses in terms of in-depth discussions, wider spectrum of viewpoints and comprehension of the topics discussed.

At the end of the experiment, the students were given questionnaires to fill in the class and these feedbacks were collected back before the class was dismissed. They were told to give their honest opinions and there was no need for discussions.

The questionnaire survey consists of 15 items measuring 6 main factors, namely self study, flexibility, time management, attitude toward blended learning, forum participation and attitude toward forum discussions. The survey was distributed to 73 students who participated in the blended learning; 29 students were from the 25% degree blending learning group, 25 % were from the 50% blended learning group and 19 students were from the 75% blended learning group.

## **DATA ANALYSIS AND FINDINGS**

The analysis on the students' perception looks into students' involvement in the activities of blended learning, how they view on the integrity of the online into offline mode of learning, and the problems as well as benefits that have from the blended learning.

### **STUDENTS' PERCEPTION ON THE BLENDED LEARNING**

Students in general agree that one of the main benefits of blended learning is they have more flexibility in their study time. This response is particularly obvious among students in 50% and 75% blending, where a total of 56% and 52.6% of agreement were obtained respectively, as shown in Figure 1. For these groups of students, at least half of lecture time is conducted online; hence they have more flexibility selecting the best time to get online for more information. It is, however, to fully utilize this flexibility, students need a lot of self-learning process, including reading and searching internet for more information.

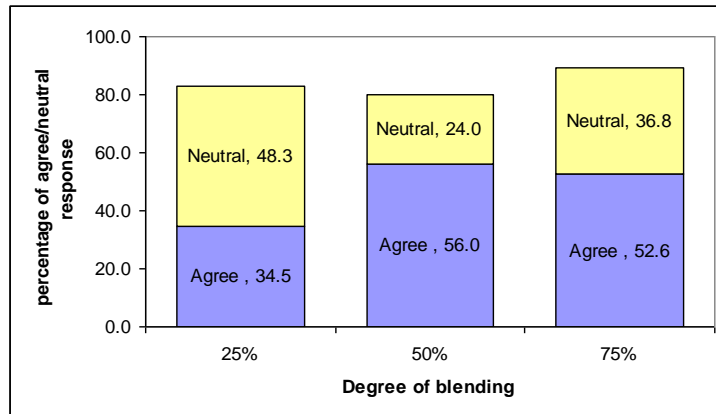


Figure 1: Percentage distribution on the students' perception on the flexibility of study time based on various degree of blending.

Notwithstanding the fact that most students agree to have more flexible time, some of them do not seem to fully utilize the flexibility given to them. The condition is particularly obvious in the 50% blending. One reason to this phenomenon is that students who are participating on the 50% blending also participated on the other experiment called transformative learning. Hence, they may be overworked, and spend relatively less time in carrying out the self study and internet resource browsing as directed. Looking on the 75% blended case, active participation from students are obtained, as more than two-third of the students have done self study and obtaining useful information from internet. One may say that it is natural for students nowadays to browse through the internet as part of their student work. This may be the case, but looking at the high degree of online mode, students are able to fully utilize the available online resources, and this is confirmed from the fact that they are doing more self study as well since the offline contact is not as much in comparison with other degrees of blending. Students who participated in the 25% blended learning also agree that blended learning has benefited them in terms of doing more self study and self learning as they spent more time on reading and learning. However, they had neutral perceptions on these items. This is perhaps 25% online mode is too low to see any impacts on the students. This perception is shared by the lecturer teaching them.

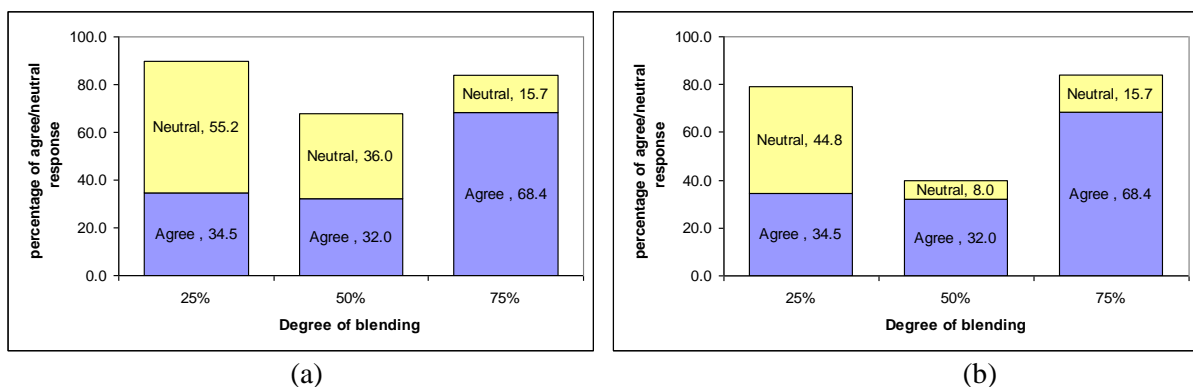


Figure 2: Percentage distribution on the students' perception on the (a) performing self study as directed by lecturer, and (b) searching internet for more readings based on various degree of blending.

Students' participation in the forum discussions and how the forum is integrated is another important component in the blended learning. From the analysis of the students' responses on the online forum discussion, only the 75% blending category shows the highest percentage in the active participation in the forum. The students who participated in the 75% blending also agree that there were many postings in the online forum that trigger the further discussion on the topics and the discussions were integrated in the class during the offline mode of teaching. The other batches of students (25% and

50% blending) do not seem to enjoy the forum, and this has been confirmed by the results that the most one-third of the student enjoyed the online forum discussion across the board. The reasons for this may include the uninteresting forum topics, students are not motivated or they are overworked. This is supported by the fact that students do not have any problems in making posting in the forum (41.4% and 80.0% agreement from 25% and 50% blending students, respectively). Nevertheless, looking on the percentage of agreement, this shows another interesting fact, students who are undergoing the 50% and 75% blending seems to be more familiar with the Learning Management System.

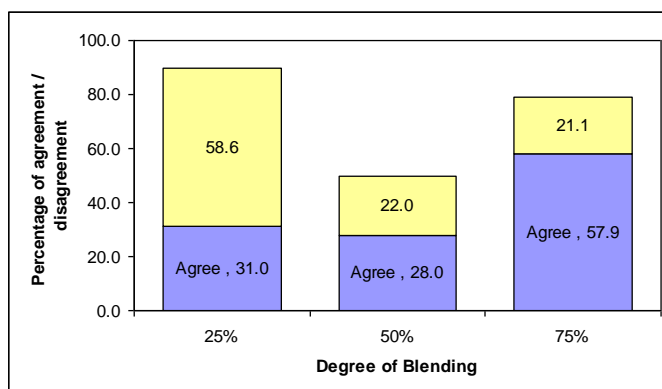


Figure 3: Percentage distribution on the how actively students participate in the online forum based on various degree of blending.

One other element in the online mode teaching is the self-assessment component, where students are asked to attempt the questions posted in the self assessment area to check their understandings of the topic. From the results the 75% blending students enjoy the online assessment, and felt this benefited them in their learning. On the other hand, 50% blending students has the least agreement on this.

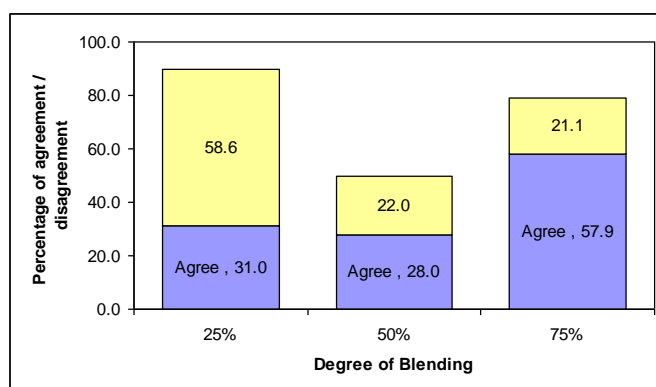


Figure 4: Percentage distribution on the how useful is the online assessment based on various degree of blending.

In addition, one of the ideas on blended learning is to trigger students to learn how to learn. This is important when one learns on his own. Here one should know how to start the process of learning without the lecturer and keep motivating himself to explore new knowledge. In this regard, 75% and 50% blending students do not have many problems on this, as only 31.6% and 28% of students respectively disagree to the fact that they have problem on study without the guidance of lecturer. The 25% blending students are relatively better in this sense that 41% of the students feel that they can handle the subject without lecturer.

To manage the study without a lecturer’s full guidance, students not only should have the ability to learn how to learn but to have a good time management skills. This is particular important when the

degree of blending is high, as students meet the lecturer for the least amount of time, and most of the study process is up to students themselves. One question asked in the survey is to see if students have improved the ability on time management. Students on the higher degree of blending should show better ability on time management. The results shows the similar way, that 63.2 % of students from 75 % blending admit that they have improved time management skills, which shows that students who undergo the higher degree of blending need to manage their time better to ensure balance performance in the subject. On the other hand, students who went through the 25 % blending also agree that they have improved time management skills. The hypothesis that students of 50 % blending should stand between these extremes, but this will need to be confirmed with more analyses.

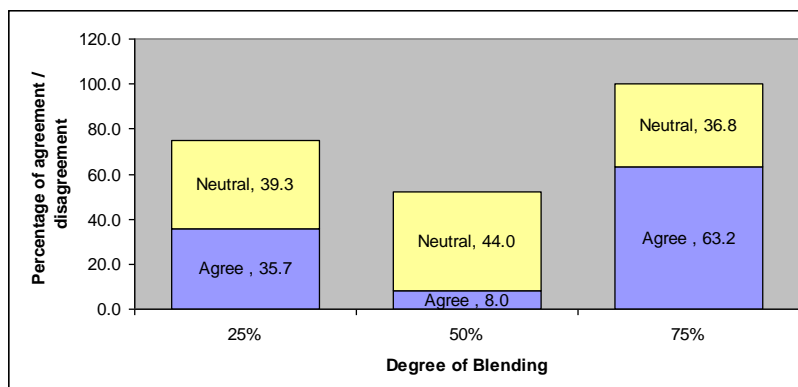


Figure 5: Percentage distribution on the improvement on time management based on various degree of blending.

Further analysis uses ANOVA to compare the differences in the students' views on blended learning. The comparisons are made between the 25%, 50% and 75% blended learning groups.

Table 1.0 ANNOVA Table

Students' views	Degree of blending	N	Mean	F-value	Sig.
Self Study	25%	29	3.29	6.617	0.002
	50%	25	2.80		
	75%	19	3.54		
Flexibility	25%	29	3.31	0.321	0.727
	50%	25	3.52		
	75%	19	3.47		
Time Management	25%	29	3.31	7.241	0.001
	50%	25	2.44		
	75%	19	3.63		
Attitude toward Blended Learning	25%	29	3.05	14.153	0.000
	50%	25	2.16		
	75%	19	3.42		
Forum Participation	25%	29	3.24	5.365	0.007
	50%	25	2.80		
	75%	19	3.47		
Attitude toward Forum Discussion	25%	29	3.18	0.456	0.636
	50%	25	3.22		
	75%	19	3.37		

Based on Table 1.0, it shows that there is a significant difference between the different groups of students' view on self study ( $F = 6.617$ ,  $p < 0.05$ ), time management ( $F = 7.241$ ,  $p < 0.05$ ), attitude toward blended learning ( $F = 14.153$ ,  $p < 0.05$ ) and forum participation ( $F = 5.365$ ,  $p < 0.05$ ). The results



also show that there is no difference in students' view on flexibility and attitude toward forum discussions.

A post hoc analysis using Bonferroni is carried out to determine the differences between the groups of students in their views on self study, time management, attitude toward blended learning and forum participation.

Based on results from Bonferroni, there is a significant difference between the views of 25% blended learning group with 50% blended learning group. Students from the 25% blended group believe that they have done more self study as a result of blended learning. Students from the 75% blended learning group are also different from the 50% blended learning group and reported that they have also done more self study when compared to the 50% blended learning group. There is no significant difference in the opinions on self study between the 25% and 75% group of students.

The post hoc analysis shows that there is a significant difference between students from the 25% group who reported that they have improved their time management when compared to the 50% group. There is also a significant difference between the 75% and 25% groups and the students from the 75% group have stronger view that blended learning has improved their time management when compared to the 50% group.

The results from Bonferroni show that there is a significant difference between students from both the 25% and 75% group with the 50% group in terms of their attitude toward blended learning. Similar to previous results on time management and self study, the 25% and 75% groups have more positive attitude toward blended learning in terms of participating in blended learning courses and recommending it to their friends in the future. There is no significant difference between the 25% and 75% group in terms of their attitude toward blended learning.

Forum is one of the main tools used in the blended learning teaching. The result shows that there is a significant difference between students from both the 25% and 75% group with the 50% group. The result also shows that students from the 25% and 75% groups have more positive view on forum participation when compared to the 50% group. There is no significant difference between the 25% and 75% group in terms of their view on forum participation.

## **DISCUSSIONS**

Students agree one of the main benefits of blended learning is they have more flexibility in their study time. An important aspect of blended learning is that students should be able to learn independently and spend more time doing self study. In this experiment, students from the 75% group have positive perceptions in this aspect.

Based on the results, students from the 25% group agree that blending learning has benefited them in terms of doing more self study and self learning as they spent more time reading and learning. However, they had neutral perceptions on most items on blended learning. Probably, 25% online mode is too low to see any impacts on the students. This perception is shared by the lecturer teaching them.

When compared to the 25% group, the 50% group seems to disagree with most items in the survey. The students in general agree that blended learning allows them more flexibility in study time. However, many of them disagree with the forum activities such as the topics discussed in the forum being continued in the class. The students were also less active in online discussions. One possible explanation is that this group of students was also involved in another experiment called transformative learning. Hence, they may be over-worked.

The results of the 75% online mode seem to reveal that the students view blended learning more positively when compared to the other two groups. They agree with more items in the survey. For

example, students agree that they do more self study and learning as shown in results whereby they used internet search for reading, spent more time doing reading and learning, and agree that they have improved their time management skills. The students were active in the forum discussions.

When the three groups are cross examined there is no significant difference between the 25% group and the 75% group in terms of self study, attitude toward blended learning and forum participation. These findings will be further studied to determine whether they are suitable lower and upper boundaries for effective implementation of blended learning.

## **CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH**

Based on the results, it shows that blended learning do bring benefits to students. Overall, the blended learning experiment shows that students do view the new teaching method in a positive manner as many of them on average reported improvement in self study and time management skills.

Whether different degrees of blending benefit students differently, this pilot study tends to show that there is no significant difference between the 25% and 75% groups in self study, attitude toward blended learning and forum participation. More studies are needed to re-affirm the findings and also to set the relationship between the 50% group with the rest. Currently, this experiment is replicated in Malaysia and Pakistan under a longer duration of 8 weeks.

As the 50% group also participated in another experiment their data may interfere with the findings of the research and hence contributed to the study limitation.

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## **Appendix**

### **Blended Learning Experiment**

#### **Student Questionnaire**

Faculty: .....

Thank you for your participation in the blended learning experiment. Your contributions will go a long way in improving the quality of teaching and learning at INTI-UC.

Please give us your opinions to the items listed below. There is no right or wrong answer just your honest view.

*Please tick one option.*

SA – strongly agree    A – agree    N – neutral    D – disagree    SD – strongly disagree

<b>Item</b>	<b>SA</b>	<b>A</b>	<b>N</b>	<b>D</b>	<b>SD</b>
1. I participated actively in online forum discussions.					
2. I carried out self-reading as recommended by my lecturer.					
3. There were many postings in the forum.					
4. I searched the Internet for online articles to read.					
5. Forum discussions were continued in the classroom.					
6. I did not know how to post my responses to the forum.					
7. I enjoyed online forum discussions with my friends.					
<b>Item</b>	<b>SA</b>	<b>A</b>	<b>N</b>	<b>D</b>	<b>SD</b>
8. Self-assessment questions are useful aid in understanding the lesson taught.					
9. I used the chat-room for online consultations.					
10. Flexibility of when and where to study is great.					
11. I spent more time learning and reading.					
12. Blended learning helps to improve my time management skills.					
13. I do not know how to study without my lecturer in the classroom.					

14. I will recommend blended learning to my friends.					
15. I will consider taking a course taught in blended mode in a coming semester.					

16. How often do you participate in online forum discussions?

- Once per week
- Twice per week
- Three times per week
- At least four times per week

17. Choose the degree of blending you prefer (tick one option only):

- 25% online mode
- 50% online mode
- 75% online mode

18. Other comments: .....

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