THE EFFECTIVENESS OF RECIPROCAL PEER TUTORING IN SUPPORTING BLENDED LEARNING IN BOTH ONLINE AND OFFLINE MODES

Shamsiah Banu Mohamad Hanefar[1], Wong Ling Shing[2] and Chan Chang Tik[3]

INTI International University, Malaysia
([1]shamsiah.banu@newinti.edu.my; [2]lingshing.wong@newinti.edu.my; [3]changtik.chan@newinti.edu.my)

ABSTRACT

Millennium age education is moving out from traditional education (teacher-centered learning) to contemporary education which is moving towards Students-Centered Learning (SCL). One of the widely being discussed and practiced SCL by educators and students is Blended Learning (BL). This paper will look into the effectiveness of one of the BL approach which is Reciprocal Peer Tutoring (RPT). The study was done to measure the effectiveness of reciprocal peer tutoring in supporting blended learning in both online and offline modes and as well as to get the students' feedback on the usage of blended learning. The research was conducted in varies faculties in INTI International University, Nilai Campus for the period of one semester. The students were divided into two major groups; IT group and non-IT group. The study revealed that the majority of the students had a positive view in the usage of RPT in offline mode and in online mode even though the result showed that group without RPT scored slightly higher than with RPT group. The researchers believed that RPT could be a good tool to a better teaching and learning environment especially in today's Malaysian higher educational institution.

KEYWORDS

Student centered learning, Blended learning, Reciprocal peer tutoring, Online mode

INTRODUCTION

According to Kember (1997), there are two broad orientations in teaching which are the teacher centered or content oriented conception and the student centered or learning oriented conception. Kember (1997) further explained, in student-centred learning (SCL), the knowledge is constructed by students and that the lecturer is a facilitator of learning rather than a presenter of information.

In today's teaching and learning environment, one of the fast emerging SCL methods is blended learning (BL). Colis and Moonen (2001) in Rovai and Jordan (2004) said that, blended learning is a hybrid of traditional face-to-face and online learning so that instruction occurs both in the classroom and online, and where the online component becomes a natural extension of traditional classroom learning. Blended learning is thus a flexible approach to course design that supports the blending of different times and places for learning, offering some of the conveniences of fully online courses without the complete loss of face-to-face contact. The result is potentially a more robust educational experience than either traditional or fully online learning can offer.

Reciprocal peer tutoring (RPT) is something new for INTI educators as well as for the students themselves even though the term had been discussed many years back in 1990's. Greenwood (1991) defined RPT as a student mediated instructional procedure in which small learning groups work together on learning tasks. He believed that peer tutoring has been shown to increase significantly students' time spent in academic instruction and engagement and student outcome (1991). To add value to the RPT activities, students will also be engaged in online exercises.

The research was focused on the students' perspective on blended learning through RPT, as well as the significant effect of RPT in supporting blended learning.

Research Objectives

i. To measure the effectiveness of reciprocal peer tutoring in supporting blended learning in both online and offline modes.

ii. To get the students' feedback on the usage of blended learning in teaching the courses for the whole semester.

Research Questions

i. How effective is reciprocal peer tutoring in support of blended learning in both online and offline modes?

ii. What is the students' feedback on the usage of blended learning in teaching a course for a semester?

Research Framework
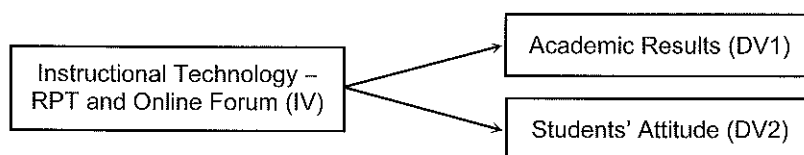
BLENDED LEARNING

One of the fastest emerging SCL methods is blended learning (BL). There are many definitions of blended learning. For example Kovaleski (2004) states that blended learning "combines traditional classroom sessions with e-learning and self-study" whilst Bershin (1994) offers "blended learning programs use many different forms of e-learning, perhaps complemented with instructor-led training and other live formats"

Graham, Allen and Ure (2003) in Korkmaz and Karakus (2009) argue that blended learning was developed for its potential advantages in offering a more effective education, convenience, and access to teaching-learning environments. On the other hand, advocators of the blended learning approach define blended learning simply as "maximizing the best of both worlds", or in other words, the chance to simultaneously benefit from the advantages of online environments and face-to-face learning environments (Morgan, 2002 in Korkmaz & Karakus, 2009).

There are many benefits that could be gain by students in engaging themselves in blended learning. Some of the benefits that Tucker and Jones (2010) able to indentify from their study are:

- Students encouraged to become independent learners.
- Improved discipline of students.
- On-line material updated dynamically so as to address quickly the needs of students.
- Student monitoring much improved leading to greater student attention.
- Students became aware of the full range of on-line learning resources.
- Instilled a professional culture into the students.

Beside that a review of literature in the area of online and blended learning has confirmed that, there are so many factors that influence student's learning and play an important role in their teaching and learning process. One of them is how students feel socially in an online community (Caplas, 2006 in Jusoff & Khodabandelou, 2009).

If properly designed, blended learning environments might combine the power of online environments with that of classical face-to-face environments. For designing blended learning environments, Horton (2000) in Korkmaz and Karakus (2009) proposes certain methods such as online components that combine face-to-face and online elements for a particular course and familiarize students with face-to-face sessions, online courses defined by students in class and supported by the teacher again in class, and online presentation materials to be used by teachers for in-class presentations.

RECIPROCAL PEER TUTORING (RPT)

Looking into the method/tool to be used for the blended learning, the researchers had chosen RPT which was combined with online forum.

Reciprocal peer tutoring is a form of cooperative learning, which has been found to be an effective technique for increasing students' academic achievement (Sherman, 1991; Slavin, 1991). Conceptually, peer tutoring is similar to many activities ranging from the informal encounters of play to the most complex activities of cooperation in which people help each other and learn by doing so. This process transforms learning from a private to a social activity by involving learners in the responsibility for their own learning and that of others (Obiunu, 2008).

Research has shown that both tutors and tutees gain immensely from participating in reciprocal peer tutoring (Slavin, 1996; Forman, 1994; Griffin & Griffin, 1997). In this process, students function reciprocally as both tutor and tutee. This dual role is beneficial because it enables students to gain from both the preparation and the instruction in which tutors engage and from the instructions that tutees receive (Griffin & Griffin, 1997 in Obiunu, 2008). RPT is one collaborative approach where pairs of students interact to assist each other's academic achievement by one student adopting the role of tutor and the others the role of tutee. Recognizing the benefits gained by students from acting as tutors, reciprocal peer tutoring formalizes a process enabling both students in a peer tutoring pair to participate and experience the role of tutor as well as tutee. In this dual role as tutor and tutee, students benefit through the preparation and instruction in which tutors engage, as well as from instruction that tutees receive.

One of the advantages of peer support programmes is that it provides a non judgmental acceptance, care, support, and it provides opportunities to give and receive from others, and it also creates a non competitive empowering environment (Egbochuku & Obiunu, 2006). What this simply means is that these advantages encourage and creates the opportunity for peers to influence the development of attitudes and behaviours in ways that are positive.

RESEARCH METHODOLOGY

Research Design

The study employed quantitative research by using t-test to look into the significant relationship between RPT exercises with academic achievement. Meanwhile survey was done to get the feedback from the students on the usage and their attitudes towards blended learning.

Population and Sample of the Study

Total of 111 respondents from various faculties in INTI International University of Nilai Campus were involved in this study. The respondents were chosen from two major groups; the IT discipline (IT, Engineering and Science Faculties) and non-IT discipline (Languages, Business and Health Sciences Faculties).

Students were chosen randomly in some of the classes thought by the researchers and other lecturers from different faculties.

Measuring Instruments

Final examination, coursework (test/assignment/project) and questionnaire (students' feedback).

Procedure of the Research and Data Collection

Permission was sought from the deans of all the faculties involved to allow the researchers to use their students for the study. The lecturers and students involved were given a short training to understand the concept of blended learning and RPT.

Students involved chose their own group members. In this manner, academic good students will flop together and those who are academic weak will group among themselves. It is not a problem as far as blended learning is concerned. This is because in such grouping, the lecturers will know which one to give more attention when they are performing group activities. But some of the groups were with the combination of good and weak students.

Each group consisted of 4 students, as there were four members in a group, two of them became the tutors and the other two were the tutees.

Learning activities were planned for them. Each class activity throughout the semester was based on the learning outcomes stated in the respective course structure. For each session, question will be given based on previous lesson thought.

The small group discussion will last for 30 minutes follow by inter-group discussion and presentation in the remaining time. Presentation will be done by the tutees guided by the tutors. Marks were given for each presentation and at the end of the session; wrap up was done by the lecturer concerned.

For online discussion which was done through online forum, the same topic discussed earlier in the class through RPT was discussed again. Sometimes different related question will be posted. Each of them, need to answer the question posted by their lecturer as well as reply to their friends' posting.

The group leader will post the group responses to the forum for inter-group discussion where every student will participate as individual but in line with group understandings and responses.

Online discussion must be monitored closely and steps taken immediately to rectify any weaknesses identify at an early stage. Inactive students were reminded to participate and handle any technical problems the students may encounter. Some of the forum discussions were continued in the class (offline mode) in order to integrate the two different modes of learning. Marks were given for all the online discussions. The role of the lecturer is to facilitate and make sure the postings are correct academically. Online forum discussion is asynchronous and the one to two hours allocated can take place outside the normal timetable slot.

Towards the end of the semester each student's result based on the coursework (including RPT and online discussion) and final examination was recorded. Before the revision week (week 7), feedbacks on RPT and online discussion were given by all the students involved through a survey conducted by the lecturer concerned.

FINDINGS

RQ1: How effective is reciprocal peer tutoring in support of blended learning in both online and offline modes?

Through the t-test, for IT and Non-IT groups, there was a significant difference between groups using RPT with blended learning and groups without RPT ($t = -2.524$, $p < 0.05$). The mean values were 54.87 for RPT and 63.11 for without. The group without RPT scored higher.

For IT group only, the difference was not significant ($p > 0.05$) while for non-IT group only, the difference is significant ($t = -2.297$, $p < 0.05$), mean values 55.45 versus 64.25 for with RPT and without RPT respectively. Again the group without RPT scored higher.

RQ2: *What are the students' feedbacks on the usage of blended learning in teaching a course for a semester?*

Students' feedback (n = 111)

No.	Item	Agree (%)	Neutral (%)	Disagree (%)
1.	Easy to find my way in online content	67.6	25.2	7.2
2.	Online components effectively integrated	71.2	24.3	4.5
3.	Online references to website are useful	59.5	28.8	11.7
4.	Enjoy online learning	55.8	25.2	19.0
5.	Online components are valuable supplement	66.7	26.1	7.2
6.	Active in online discussion	63.1	27.0	9.9
7.	RPT helps me to understand the topic better	64.9	27.0	8.1
8.	RPT stimulates my thinking	57.7	36.0	6.3
9.	More confidence through RPT	54.1	31.5	14.4
10.	Interact more effectively through RPT	61.3	22.5	7.2
11.	QnA enhances my ability to undertake assessment	64.9	19.8	6.3
12.	Peer did not contribute significantly in discussion	28.8	42.4	28.8
13.	QnA too shallow and insignificant	49.54	23.44	26.1

STUDENTS' PERFORMANCE WITH RECIPROCAL PEER TUTORING

The findings indicated that the academic performance of the students with RPT, was slightly lower compared to students without RPT. In contrast, Uwameiye and Aduwa-Ogiegbaen (2006), in their study showed a significant difference between the academic achievement in the pretest and posttest of students taught with reciprocal peer tutoring method of teaching. This showed that different treatments which were given to the experimental group effected the positive changes on the students mean achievement scores in posttest achievement test. It was however noted that no treatment was given to the pre-test group before the test while treatment was given before the test in the case of the posttest.

In Uwameiye and Aduwa-Ogiegbaen (2006), the academic achievement was analysed with the same group of students in one particular subject while in our study the academic achievement was measured with different group of students from different faculties. This clearly indicates that there might be some other factors which caused this unexpected result of ours. First, students were from different level of studies which encompass of year 1, year 2 and year 3 students. Second, the nature and difficulty of the subjects taught varied significantly. Third, since this is the first time, RPT being introduced in all the faculties in INTI, some of the students might had have some difficulties to adapt to this new method/ tool of teaching which later on had hinder them to fully participate in the class discussion and presentation. Fourth, the lecturer involved might not fully understood on how RPT should be conducted which will lead to unclear monitoring and facilitation.

STUDENTS' PERSPECTIVE ON BLENDED LEARNING

However, the feedbacks gained from the same group of students as the above with a total number of 111 (for both IT and non-IT group), majority of the students showed a positive attitude over the blended learning, with and without RPT. The complete responses are stated in Table 1.

Table 1. Students' responses over the blended learning for both modes, with and without RPT (n = 111).

No.	Item	Agree	Neutral	Disagree
1.	Easy to find my way in online content	67.7%	25.2%	7.2%
2.	Online components effectively integrated	71.2%	24.3%	4.5%
3.	Online references to websites are useful	59.5%	28.8%	11.7%
4.	Enjoy online learning	55.8%	25.2%	18.0%
5.	Online components are valuable supplement	66.7%	26.1%	7.2%
6.	Active in online discussion	63.1%	27.0%	9.9%

These positive responses towards the blended learning are well expected. According to Gutteriez (2006), the combination of face to face instruction and communication technology in a blended learning situation create a myriad of educational possibilities that reflect its pedagogical richness. The access to knowledge that blended learning creates for traditional courses combining educational technology delivery methods is one of its main assets. Gutterriez (2006) further stated that to have a technological medium to support course activities and assignments in a blended learning course allow more personal control of students' goals and instructor learning objectives.

In Lim *et al.* (2006) study, their findings revealed that the blended delivery format seems to provide clearer instructions to learners rather than using the online delivery format/face to face alone.

Blended learning in which a campus course is partly delivered online could also improve retention though enabling students to learn more deeply (Fox & MacKeogh, 2003) as time spent attending lectures is replaced by accessing online content and collaborative learning between peers.

STUDENTS' PERSPECTIVE ON RECIPROCAL PEER TUTORING

From Table 2, we can clearly see that majority of the students agreed that RPT brought positive impact to their life as a student and peer which help them to understand the topic taught better, stimulates their thinking, gives them confidence, enables them to interact actively in the classroom and enhances their ability to undertake the related assessment.

Table 2. Students' responses over the RPT method.

No.	Item	Agree	Neutral	Disagree
1.	RPT helps me to understand the topic better	64.90	27.00	8.10
2.	RPT stimulates my thinking	57.70	36.00	6.30
3.	More confidence through RPT	54.10	31.50	14.40
4.	Interact more effectively through RPT	61.30	22.50	7.20
5.	QnA enhances my ability to undertake assessment	64.90	19.80	6.30
6.	Peer did not contribute significantly in discussion	28.80	42.40	28.80
7.	QnA too shallow and insignificant	49.54	23.44	26.10

Griffin and Griffin (1997) found that students who used RPT generally reported that RPT improved their understanding of course content. The students believed RPT to be an effective technique for learning difficult course content.

This is in line with Fantuzzo *et al.* (1989) view which stated that reciprocal peer tutoring strategy resulted in greater improvements in cognitive gains, lower levels of subject distress, and higher course satisfaction than students who received an attention or participated in an independent unstructured learning format.

Looking into item 6, majority of the students had a neutral respond towards the significant of peer contribution in discussion. Since students chose their own group members, there might be a mixture of good students and weak students. Sometimes the weak students might not be able to be a good tutor to teach other students who are better than them or as a tutee to understand well the guidance given by other good students.

This is supported by Smith *et al.* (2011) as stated in their study, for weak students, the RPT mode is only slightly more effective than the instructor-explanation mode. One likely reason for this difference is that weaker students are less inclined to regard their peers as learning resources. Several lines of support for this idea come from a previous study in which behaviors and motivation levels of weakly genetics students were measured (Knight & Smith, 2010). Observations of these students revealed that they were more likely than good students to ask an instructor rather than peers for help when working on group activities. Weaker students in this study also studied outside of class significantly less than did good students, consistent with lower levels of motivation. These factors may combine to generate an environment in which the weaker students are less inclined to participate in peer discussion, and thus do not benefit as much as other groups (Smith *et al.*, 2011).

For item 7, majority of the students agreed that the question and answer session was shallow and insignificant. As per the monitoring in one of the class involved by researchers themselves, the lecturer had given a short question without much explanation on the question asked. The responsibilities of the tutors were to clarify personally with the lecturer and later on need to explain to the tutees. Tutees will find and discuss the answer based on the explanation of the tutors. Some of the answers presented were not up to the expectation of the lecturer.

Experienced tutors were reported to use more appropriate tutoring behaviours that prompted explanations from tutees and asked appropriately challenging questions, rather than just giving explanations (Fuchs *et al.*, 1994 in Thurston *et al.*, 2009). It was concluded that enhanced tutoring was possible because of deeper metacognitive awareness of the problem. Spontaneous (untrained) tutoring behaviours can tend to be primitive (e.g. Person & Graesser, 1999 in Thurston *et al.*, 2009), often characterized by questioning limited both in frequency and level of cognitive demand, coupled with infrequent correction of errors and the giving of positive feedback when not appropriate. These statements strongly supporting the unexpected result of item 7.

CONCLUSION AND RECOMMENDATION

Even though blended learning with RPT and online mode is being used widely in many higher educational institutions which has proven to improve students' performance and receiving a positive feedback, in INTI it's still something new and students as well as lecturers are quite reluctant to adapt to this method. According to Chan (2010) advancement demands that we move forward, otherwise we will left behind. If moving ahead means progress for all parties involved, that is, students, lecturers and institution management, then we should welcome it. This form of blended learning as well as other form needs to be exposed widely. More training and workshop should be given to both the lecturers as the instructors as well as the students. The management of the institution should also play a vital role to materialize the success of blended learning. Including RPT with online discussion.

REFERENCES

Bershin, J. (1994). *The blended book of learning*. San Francisco: Pfeiffer.

Chan, C.K. (2010). Podcast and reciprocal peer tutoring in support of teaching and learning. *International Journal of Instructional Technology and Distance Learning*, 7(7).

Egbochuku, E.O. & Obiunu, J.J. (2006). The effects of reciprocal peer counseling in the enhancement of self-concept among adolescents. *Education*, 126(3).

Fantuzzo, J.W., Dimeff, L.A. & Fox, S.L. (1989). Reciprocal peer tutoring: A multimodal assessment of effectiveness with college students. *Teaching of Psychology Journal*, 16, 133-135.

Forman, E. (1994). Peer collaboration as situated activity: Examples from research on scientific problem solving. In H.C. Foot, C.J. Howe, A. Anderson, A.K. Tolmie & D.A. Warden (Eds.), *Group and interactive learning*. Southampton & Boston: Computational Mechanics.

Fox, S. & MacKeogh, K. (2003). Can eLearning promote higher-order learning without tutor overload?, *Open Learning*, 18(2), 121-134.

Greenwood, C.R. (1991). Longitudinal analysis of time, engagement, and achievement in at-risk versus nonrisk students. *Exceptional Children*, 57, 521-534.

Griffin B.W. & Griffin M.M. (1997). The effects of reciprocal peer tutoring on graduated students achievement, test anxiety and academic self-efficacy. *The Journal of Experimental Education*, 65(3), 197-209.

Kamaruzaman, J. & Rouhollah, K. (2009). Preliminary study on the role of social presence in blended learning environment in higher education. *Education Studies*, November.

Kember, D. (1997). A reconceptualisation of the research into university academics conceptions of teaching. *Learning and Instruction*, 7(3), 255-275.

Korkmaz, O. & Karakus, U. (2009). The impact of blended learning model on student attitudes towards Geography course and their critical thinking dispositions and levels. *The Turkish Online Journal of Educational Technology*, 8(4), Article 5.

Kovaleski, D. (2004). Blended learning in focus. *Corporate Meetings & Incentives*, 23, 35-36.

Lim, D.H., Morris, M.L. & Kupritz, V.W. (2006). Online vs blended learning: Differences in instructional outcomes and learner satisfaction. *Education Resources Information Center*, February.

Mortera-Gutiérrez, F. (2006). Faculty best practices using blended learning in e-learning and face to face instruction. *International Journal on ELearning*, 5, 3; ProQuest Education Journals pg. 313.

Obiunu, J.J. (2008). The effects of reciprocal peer tutoring on the enhancement of career decision making process among secondary school adolescents. *Educational Research and Review*, 3(7), 236-241.

Rovai, A.P. & Jordan, H.M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning*, August.

Sherman, L.W. (1991). *Cooperative learning in post-secondary education: Implication from social psychology for active learning experiences.* Paper presented at the Annual Meeting of the American Educational Research Association, Chicago IL.

Slavin, R.E. (1991). Synthesis of research on cooperative learning. *Educational Leadership*, 48.

Slavin, R.E. (1996). Research on cooperative learning and achievement: What we know, what we need to know. *Contemporary Educational Psychology*, 21.

Smith, M.K. *et al.* (2010). Combining peer discussion with instructor explanation increases student learning from in-class concept questions. *CBE Life Science Education*, 2011.

Thurston *et al.* (2009). International on-line reciprocal peer tutoring to promote modern language development in primary schools. *Computers & Education*, 53, 462–47.

Tucker, D. & Jones L.D. (2010). Technology enhanced learning: Utilizing a virtual learning environment to facilitate blended learning. *Science and Information Technology*, 7.

Uwameiye, R. & Aduwa-ogiegbaen, S.E.O. (2006). Effect of reciprocal peer tutoring on the academic achievement of students in introductory technology. *International Journal of Instructional Technology and Distance Learning*, 3(6).