Educational Technology International
2005, Vol. 6, No. 2, 101-111

Effects of On-Line Community Assisted Small Group Peer Tutoring on University Students' Learning Strategies

Myongnam JUN* Wooyong EOM
Keimyung University
Korea

This study was to examine effects of On-Line Community Assisted Small Group Peer Tutoring(OCSPT) on university students' learning strategies. To achieve the purpose, twenty-eight university students were randomly selected. Fourteen students participated in OCSPT and they were divided into small groups consisted of 2 to 5. Students in experimental group participated in OCSPT for total thirty-four hours during sixteen weeks. There is no treatment for the other fourteen students in control group. To measure students' learning strategies, Motivated Strategies for Learning Questionnaire (MSLQ) shorts has been used. The result revealed that students in experimental group showed higher possession than control group in resource-management strategy($p<.05$). However, there were no significant difference between both groups in cognitive and motivative strategies.

Keywords : On-Line Community, Small Group Peer Tutoring, Learning Strategies, Motivation, Cognition, Resource Management

Introduction

Peer tutoring has been developed according to academic and social need of modern university students(Bruffree, 1978; Magolda & Rogers, 1987). Peers were taken to be students at a similar age and educational level(Goldschmid & Goldschmid, 1976). Peer tutoring is that people from similar social groups who are not professional teachers help

* Center for Teaching & Learning, Keimyung University
mjun@kmu.ac.kr

each other to learn, and learn themselves by teaching(Topping, 1996). In this perspective, peer tutoring is a kind of collaborative learning method.

Many educators and researchers have suggested that peer tutoring was useful to students' academic learning such as reading, writing, note taking skills etc. In addition, researchers suggested that the on-line community activity was useful to students' learning in higher education and they emphasized the importance of using on-line technology for small group(McLellan, 1997 Lou, 2004). Although many researchers have suggested that peer tutoring and on-line community in higher education could have positive effects on students' learning, the empirical research data was rare and a number of questions are still remain.

Accordingly, the purpose of this study was to examine the effects of on-line community and peer tutoring. To achieve the purpose, we developed a on-line peer tutoring system, called On-Line Community Assisted Small Group Peer Tutoring(OCSPT). This study was to examine how OCSPT works on university students' learning strategies empirically.

Theoretical Perspectives and Related Literature

In recent, peer tutoring has been encouraged in university education. Peer tutoring can be traced back in the age of ancient Greek. Today, it spreads over many universities in USA, Canada, and Australia etc. Theoretical frameworks for peer tutoring were based on the cognitive developmental theories, social psychological theories, and personal & professional development theories(Falchikov, 2001). Peer tutoring has been successful in a variety of curriculums and age groups. Several researches have been shown positive effects on academic achievement for both tutor and tutee participated in tutoring(Cohen, Kulik, & Kulik, 1982; Fantuzzo, Davis, & Ginsburg, 1995; Fantuzzo, Polite, & Grayson, 1990; Fantuzzo et al., 1992; Mathes et al., 2001). Peer tutoring is not only about teaching from the more able and experienced to the less able, but also about tutor benefits with learning by teaching(Topping, 1996; Keer et al., 2005).

Peer tutoring could improve reading, note taking, writing, knowledge acquisition, attitudes toward the subjects, non academic benefits, individualisation, interaction with a peer, immediate and specific feedback, individual learning, academic engagement, reinforcement, time on task etc.(Cohen, 1986; Greenwood & Delquadri, 1995; King-Sears

& Bradley, 1995; Utley & Mortweet, 1997; Falchikov, 2001; Keer, 2004).

Heron et al.(2003) suggested that most of the tutoring has occurred in school settings using class-wide peer tutoring, cross-age tutoring, one-to-one tutoring, home-based tutoring, and small-group tutoring. Clss-wide peer tutoring divides the entire class into student pairs. Cross-age tutoring mean the tutor-tutee dyads composed of different age or grade. In one-to-one tutoring, tutor-tutee dyads participate in the activities. Home-based tutoring means that parents serve as tutors who have trained. In small-group tutoring, several students are gathered on specific subject areas and rotate as tutor and tutee. It is common method of small-group tutoring among them in higher education.

The small-group tutoring is not instructive type but collaborative type(Bruffee, 1993). In addition, Maheady & Sainato(1985) found that social behaviors could be improved through using the small group tutoring. Pilewskie(1995) designed the small group tutoring to enhance the percussion music skills of the eighth-grade students with developmental disabilities.

Zimmerman & Martinez-Pons(1986) and Jun(2003) found that students' achievement of learning is highly related to learning strategy. Therefore, if we could improve the students' learning strategy, the high academic achievements would be warranted. Learning strategy is broadly defined as behaviors or thoughts that facilitate learning(Weinstein & Mayer, 1986). On the other hand, McKeachie et al.(1986) and Pintrich(1988, 1991) have developed Motivated Strategies for Learning Questionnaire(MSLQ) for measuring students' learning strategy. The reliability and validity of MSLQ has been proven by many researches(Duncan et al., 2005).

Moreover, for students, on-line technologies have been more popular to academic life such as reading, composition and rhetoric etc.(Luke, 2000; Chandler-Olcott, et al., 2003). Newman, Griffin, & Cole(1989), Brown(1997), and McLellan(1997) reported that learning opportunities were made by the interactive processes, communication including the exchange of ideas within the supportive community context. McLoughlin(1999) indicated that the on-line environment was designed to replicate the essential features of a dynamic and active community where members support each other and have a common goal. On the other hand, Lou(2004) found that student learning with computers in small groups challenged a great deal of task, used more learning strategies, had more positive attitude toward small group learning based on meta-analysis about 198 independent findings from 71 studies with experimental or statistical controls. Therefore, it is expected that on-line

community assisted small group peer tutoring is helpful to university students' learning strategies.

Methodology

Subjects

Twenty eight university students from a large university in Korea participated in this study. Participants have divided randomly into experimental and controlled groups. Participants worked in small groups from three to five with the subject of coursework which they have selected. Participants in experimental group participated as tutor and tutee. In peer tutoring meeting, students have changed the role of tutor or tutee.

On-Line Community Assisted Small Group Peer Tutoring

'On-Line Community Assisted Small Group Peer Tutoring(OCSPT)' has been developed for this study. This system has been composed of orientation, seminar, on-off line community activities, presentation, and final reports. The contents of the respective contents are presented in Table 1. Orientation and seminar were for the education of peer tutoring.

The on-line communities are composed of asynchronous collaborative on-line activities with small group of three to five students. Asynchronous collaboration allowed tutees and tutors to participate at the same time, which was suitable for their working needs or the time zone in which they live. In addition, students could communicate with other students in small group using personal communication channel such as mobile-phones or MSN messenger etc.

Experimental Design

This experimental design was 'Pre-test and Post-test Control Group Design' developed by Campbell & Stanley(1963). Independent variable was 'On-Line Community Assisted Small Group Peer Tutoring(OCSPT)' and dependent variable was sub-strategies of learning

Table 1. Content of outline of OCSPT

Contents	Outline
Orientation	Introduction of peer tutoring -Visual presentation and discussion -The small group meeting of student tutees and tutors -Explanation about frequently asked questions -2 hours / a semester
Seminar	Understanding of small group peer tutoring activities -The explanation of learning partnership & exchanges -Peer tutoring tools, e. g., collaborative learning method, good questioning-answering, generation of solution ideas, formal or informal strategy for learning about working in small groups, etc. -4 hours / a semester
Peer Tutoring	On-off line community activities -30 hours / a semester(16 weeks) -students initiated collaborative peer tutoring; think share, dyadic essay confrontations etc. -managing, monitoring, and sustaining their peer activities -asynchronous & synchronous discussion using computer
Presentation of Tutoring Activities	Oral presentation & mutual evaluation - Visual presentation and discussion - Mutual peer evaluation
Final Reports of Peer tutoring	Written reports of peer tutoring with on-line community - Self-reported written reports and reading another reports

Figure 1. On-Line Community Assisted Peer Tutoring

strategies such as motivation, cognition, and resource management. The experimental group participated in OCSPT for total thirty-four hours of sixteen weeks. Students in control group received no treatment. It took eighteen weeks for OCSPT to implement including pre-test and post-test.

Measures

To measure the effectiveness of the OCSPT on students' learning strategies, the Korean version of MSLQ-shorts was used. Before and after the students participated in OCSPT, MSLQ-short was administered. Pintrich, McKeachie, Smith, Doljanac, Lin, Naveh-Benjamin, & Karabenick(1988), Pintrich, Smith, Garcia, & McKeachie(1991) developed MSLQ, which had three sub-scales, ‘motivation’, ‘cognitive strategy’, and ‘resource management’. The Cronbach’s α of MSLQ-short was .92 in the total scale, .86 in the subscale of motivation, .89 in cognitive strategies, .56 in resource management.

Results

Table 2 summarizes the descriptive statistics of pre-post test scores for experimental and control group on sub-strategies of MSLQ-short. In pre-test score, there was no significant difference between experiment and control group.

Table 2. Descriptive Statistics of MSLQ-short: Pre-Post test Results(n=28)

	Subscale Of MSLQ-short	Pre-test M	Pre-test SD	Post-test M	Post-test SD
Experimental group	Motivation	128.36	14.21	141.43	11.03
	Cognition	90.07	14.21	97.43	12.04
	Resource Management	43.21	6.60	44.07	5.18
Control group	Motivation	129.43	12.58	133.14	12.93
	Cognition	86.50	12.45	90.21	12.69
	Resource Management	39.14	4.83	39.21	4.59

The effectiveness of OCSPT on learning strategies was found in post-test score of MSLQ-shorts. One way ANOVA indicated that the resource management score of post-test

was statistically significant($F=6.889$, $p<.05$). However, the results showed no significant difference in motivation($F=3.324$, $p>.05$) and cognition($F=2.379$, $p>.05$) of post-test in MSLQ-shorts.

Discussion

The purpose of this study was to examine the effectiveness of OCSPT developed for university students, in prompting learning strategies such as motivation, cognition, and resource management. Twenty eight students were divided into experimental and control groups. We examined effects with the pre-test and post-test control group design developed by Campbell & Stanley(1963).

The result suggested that OCSPT promoted resource management learning strategy for these university students. This result was consistent with findings from Lepper et al.(1990), Fantuzzo et al.,(1992), which all showed that peer tutoring was effective learning method to apply to university students. In addition, this study was combined with studies by McLoughlin(1999), Lou(2004), which demonstrated the consistently positive results of using on-line community and small group on students' learning.

It is interesting to note that students responded that OCSPT could enhance the resource management strategy on university students' learning, which includes ‘Skills of Managing Study Time’', ‘Environment’, ‘Effort Regulation’, and ‘Seeking Help when Needed’ in MSLQ-short. This result might be due to the collaborative attribution of OCSPT that university students' interaction became the process of learning. Most of the on-line learning occurred traditionally in an individualistic environment. By the way OCLASGPT was collaborative structure.

It was disappointing to find that OCSPT did not promote the development of motivation and cognition for university students. These results were contradicted the findings of Corno(1994) and Karabenick & Knapp(1991), which showed that peer tutoring could change learning motivation, skills or attitudes. Furthermore, these results were conflicted with the positive increases shown for effect of on-line community on learning(Lally et al., 1999). This confounding result might be partially due to time constraint. This study has been implemented for 16 weeks but this period might be too short to enhance students' learning strategies. Research suggested that normal implementation time for peer learning in learning disabilities should be more than twenty five weeks(Calhoon & Fuchs, 2003).

In sum, identifying helpful methods for university students learning is critical to practice of higher education. Current study suggests that OCSPT might be a useful method to provide university students with resource management learning strategy.

Reference

Brown, A. (1997). Transforming schools in communities of thinking and learning about series matters. *American Psychologist, 52*(4), 399-413.

Bruffee, K. A. (1978). The Brooklyn Plan: Attaining intellectual growth through peer-group tutoring. *Liberal Education, 64*(4), 447-468.

Bruffee, K. A. (1993). *Collaborative learning. Higher education, interdependence, and the authority of knowledge.* Baltimore and London: The Johns Hopkins University Press.

Calhoon, M. B., & Fuchs, L. S. (2003). The effects of peer assisted learning strategies and curriculum-based measurement on the mathematics performance of secondary students with disabilities. *Remedial and Special Education, 24*(4), 235-245.

Campbell, D., & Stanley, J. (1963). *Experimental and quasi-experimental designs for research*. Chicago, IL: Rand McNally.

Chandler-Olcott, K., & Mahar, D. (2003). "Tech-savviness" meets multiliteracies: Exploring adolescent girls' technology-mediated literacy practices. *Reading Research Quarterly, 38*(3), 356-385.

Cohen, J. (1986). Theoretical considerations of peer tutoring. *Psychology in the Schools, 23*, 175-186.

Cohen, P. A., Kulik, J. A., & Kulik, C. C. (1982). Educational outcomes of tutoring. *American Educational Research Journal, 19*, 237-248.

Corno, L. (1994). Student volition and education: Outcomes, influences, and practices. In B. J. Zimmerman & D. H. Shunk (Eds.), *Self-regulation of learning and performance* (pp. 229-254). Hillsdale, NJ: Lawrence Erlbaum.

Duncan, T. G., & McKeachie, W. J. (2005). The making of the motivated strategies for learning questionnaire. *Educational Psychologist, 40*(2), 117-128.

Falchikov, N. (2001). *Learning together: Peer tutoring in higher education.* London: Routledge Falmer.

Fantuzzo, J. W., Davis, G. Y., & Ginsburg, M. D. (1995). Effects of parent involvement in isolation or in combination with peer tutoring on self-concept and mathematics

achievement. *Journal of Educational Psychology*, *87*, 272-281.

Fantuzzo, J. W., Polite, K., & Grayson, N. (1990). An evaluation of reciprocal peer tutoring across elementary school settings. *The Journal of School Psychology, 28*, 309-323.

Fantuzzo. J. W., King, J. A., & Heller, L. R. (1992). Effects of reciprocal peer tutoring on mathematics and school adjustment. *Journal of Educational Psychology, 84*, 331-339.

Goldschmid, B., & Goldschmid, M. L. (1976). Peer teaching in higher education: A review. *Higher Education, 5*, 9-33.

Greenwood, C. R., & Delquadri, J. C. (1995). Classwide peer tutoring and the prevention of school failure. *Preventing School Failure*, *39*, 21-25.

Heron, T. E., Welsch, R. G., Goddard, Y. L. (2003). Applications of tutoring systems in specialized subject areas. *Remedial and Special Education, 24*(5), 288-300.

Jun, M. (2003). The analyses on learning strategy and performance of university students with high academic achievement. *The Korean Journal of Educational Psychology, 17*(4), 69-89.

Karabenick, S. A., & Knapp, J. R. (1991). Relationship of academic help seeking to the use of learning strategies and other instrumental achievement behavior in college students. *Journal of Educational Psychology, 83*(2), 221-230.

Keer, H. V., & Verhaegje. J. P. (2005). Effects of explicit reading strategies instruction and peer tutoring on second and fifth graders' reading comprehension and self-efficacy perceptions. *The Journal of Experimental Education, 73*(4), 291-329.

Keer, H. V. (2004). Fostering reading comprehension in fifth grade by explicit instruction in reading strategies and peer tutoring. *British Journal of Educational Psychology, 74*, 37-70.

King-Sears, M. E., & Bradley, D. F. (1995). Classwide peer tutoring. *Preventing School Failure, 40*, 29-36.

Lally, V., & Barrett, E. (1999). Building a learning community on-line: Towards socio-academic interaction. *Research Papers in Education, 124*(2), 147-163.

Lepper, M. R., Aspinwall, L. G., Mumme, D. L., & Chabay, R. W. (1990). Self-perception and social perception processes in tutoring: Subtle control strategies of expert tutors. In J. M. Olson & P. Zanna (Eds). *Self-inference processes: The Ontario symposium* (pp. 217-247).. Hillsdale, NJ: Lawrence Erlbaum Associates.

Lou, Y. (2004). Understanding process and affective factors in small group versus individual learning with technology. *Journal of Educational Computing Research,*

31(4), 337-369.

Luke, C. (2000). Cyber-schooling and technological change: Multiliteracies for new times. In B. Cope & M. Kalantzis (Eds.). *Multiliteraces: Literacy learning and the design of social futures.* New York: Routledge.

Magolda, M. B., & Rogers, J. L. (1987). Peer tutoring: Collaborating to enhance intellectual development. *The College Student Journal*, *21*, 288-296.

Maheady, L., & Sainato, D. M. (1985). The effects of peer tutoring upon the social status and social interaction patterns of high and low status elementary school students. *Education and Treatment of Children*, *8*, 51-65.

Maheady, L., Harper, G. F., Mallette, B., and Winstanley, N. (1991). Training and implementation requirements associated with the use of a classwide peer tutoring system. *Education and Treatment of Children, 14,* 177-198.

Mathes, P. G., Torgesen, J. K., & Allor, J. H. (2001). The effects of peer-assisted literacy strategies for first-grade readers with and without additional computer-assisted instruction in phonological awareness. *American Educational Research Journal, 38,* 371-410.

McKeachie, W. J., Pintrich, P. R., Lin, Y., & Smith, D. A. F. (1986). *Teaching and learning in the college classroom: A review of the research literature.* Ann Arbor, MI: The University of Michigan.

McLellan, H. (1997). Creating critical communities via the Web. In Khan, B. H. (ed.). *Web-based instruction* (pp. 185-191). Englewood Cliffs, NJ: Educational Technology Publications.

McLoughlin, C. (1999). Culturally responsive technology use: developing an on-line community of learners. *British Journal of Educational Technology*, *30*(3), 231-243.

Newman, D., Griffin, P., & Cole, M. (1989). *The construction zone: Working for cognitive change in school.* London: Routledge.

Pilewskie, A. A. (1995*). Effects of peer tutoring on the percussion instrument performance of a student with moderate developmental disabilities*. Unpublished master's thesis. The Ohio State University, Columbus, OH.

Pintrich, P. R. (1988). A process-oriented view of student motivation. *New directions for instructional research. 57*, 65-79.

Pintrich, P. R., McKeachie, W. J., Smith, D. A. F., Doljanac, R., Lin, Y., Naveh-Benjamin, M., Crooks, T., & Karabenick, S. (1988). *Motivated strategies for learning questionnaire* (MSLQ-Revised 1/21/88). National Center for Research to Improve Postsecondary

Teaching and Learning. The University of Michigan(Winter). Research Reports funded by Grant Number OERI-86-0010 from the Office of Educational Research and Improvement(OERI).

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W J. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire(MSLQ). *Educational and Psychological Measurement*, *93*(53), 801-816.

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1991). *A manual for the use of the motivated strategies for learning questionnaire(MSLQ).* Ann Arbor. MI: The University of Michigan. National Center for Research to Improve Post Secondary Teaching and Learning.

Topping, K. J. (1996). The effectiveness of peer tutoring in further and higher education: A topology and review of the literature. *Higher Education*, *32*, 321-345.

Utley, C. A., & Mortweet, S. L. (1997). Peer-mediated instruction and interventions. *Focus on Exceptional Children*, *29*, 69-92.

Weinstein, C. E., & Mayer, R. E. (1986). The teaching of learning strategies. In Wittrock, M. C. (Ed.). *Handbook of Research on Teaching(3rd ed.)* (pp. 315-327). New York: Macmillan.

Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, *23*, 614-628.

Myongnam JUN, Ph.D.
Research Professor, Center for Teaching & Learning, Keimyung University
E-mail: mjun@kmu.ac.kr
Homepage: http://kctl.kmu.ac.kr

Wooyong EOM, Ph.D.
Assistant Professor, Dept. of Education & Director, Center for Teaching & Learning, Keimyung University
E-mail: weom@kmu.ac.kr
Homepage: http://teacher.kmu.ac.kr/eom/