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(Miller, Butler, & Lee,

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(Bloom, 1984; Byrd, 1990).

(Beirne- Smith, 1991; Kane & Alley, 1980; Pigott, Fantuzzo & Clement, 1986; Scott & Eickelman, 1992).

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(Lazerson, 1980; Lazerson, Foster, Brown, & Hummel, 1988),

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(Haisley, Tell, & Andrews, 1981; Sindelar, 1982).

(Beirne- Smith, 1991; Foster-Harrison, 1997; Fuchs, Fuchs, Phillips, & Bentz, 1994; Kamps, Barbeta, Leonard, & Delquadri, 1994; Locke, & Fuchs, 1995).

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(Fantuzzo et al., 1992).

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	M (SD)	M (SD)
	49.25(11.52)	48.50(10.64)
	67.50(12.72)	53.33( 9.25)
	67.1792	53.6542

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Piagott, Fantuzzo, & Clement(1986),  
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- (1994).
- Allen, V. L. (1976). The Helping Relationship and Socialization of children: some perspectives on tutoring. In V. L. Allen.(Ed.). *Children as Teachers*. 9-25. New York: Academic Press.
- Beirne-Smith, M. (1991). Peer tutoring in arithmetic for children with learning disabilities. *Exceptional children*, 57, 330-337.
- Bierman, K. L., & Furman, W. (1981). Effects of role and assignment rationale on attitudes formed during peer tutoring. *Journal of Educational psychology*, Fall, 73, 33-40.
- Bloom, B.S. (1984). The search for methods of group instruction as one-to-one tutoring. *Educational Leadership*, 41(8), 4-17.
- Bryant, B. R., & Rivera, D. P. (1997). Educational assessment of mathematics skills and abilities. *Journal of Learning Disabilities*, 30(1), 57-68
- Byrd, D. E. (1990). Peer tutoring with the learning disabled: A critical review. *Journal of Educational Research*, 84(2), 115-118.
- Carnine, D. (1997). Instruction design in mathematics for students with learning disabilities. *Journal of Learning Disability*. 30(2), 130-141.
- Cole, D. A., Vandercook, T., & Rynders, J. (1988). Comparison of two peer interaction programs : children with and without severe disability. *American Educational Research Journal*, 25(3), 415-439.
- Eiserman, W. D. (1988) Three Types of peer tutoring : Effects on the Attitudes of Students with learning disabilities and their regular class peers. *Journal of Learning Disabilities*, 21(4), 249-252.
- Fantuzzo, J. W., Polite, K., & Grayson, N. (1990). An evaluation of reciprocal peer tutoring across elementary school setting. *Journal of School Psychology*, 28, 309-324.
- Fantuzzo, J. W., King, J. A., & Heller, L. R. (1992). Effects of reciprocal peer tutoring on Mathematics and school adjustment: A Component analysis. *Journal of educational psychology*, 84(3), 331-339.
- Fantuzzo, J. W., Riggio, R. E., & Connelly, S., & Dimeff, L. A. (1989). Effects of reciprocal peer tutoring on academic achievement and psychological adjustment: A component analysis. *Journal of Educational Psychology*,

- 81(2), 173-177.
- Fantuzzo, J. W., Davis, G. Y., & Ginsburg, M. D. (1995). Effects of parent involvement in isolation or in Combination with peer tutoring on student. Self-Concept and Mathematics achievement *Journal of Educational Psychology*, 87(2), 272-281.
- Fantuzzo, J. W., Polite, K., & Grayson, N. (1990). An evaluation of school-based reciprocal peer tutoring across elementary school setting. *Journal of school Psychology*, 28, 309-324.
- Foster-Harrison, E. S. (1997). Peer Tutoring For K-12 Success. ERIC Document reproduction Service no. ED 408 283.
- Fowler, J. W., & Peterson, P. L. (1981). Increasing reading persistence and altering attributional style of learned helplessness in child. *Journal of Educational Psychology*, 73, 251-260.
- Fuchs, L. S., Fuchs, D. & Bentz, J., Phillips, N. B. & Hamlett, C. L. (1994). The nature of student interactions during peer tutoring with and without prior training. *American Educational Research Journal*, 31(1), 75-103.
- Fulton, L., Leroy, C., Pinckney, M. L., & Weekley, T. (1994). Peer education partners : A program for learning and working together. *Teaching Exceptional children*, 26, 6-11.
- Gaustad, J. (1993). Peer and Cross-Age Tutoring. ERIC Document reproduction Service no. ED 354 608.
- Ginsburg, H. P. (1997). Mathematics Learning Disabilities: a view from developmental psychology. *Journal of Learning Disabilities*, 30(1), 20-33.
- Goodlad, S., & Hirst, B. (1990). *Explorations in Peer Tutoring*. Blackwell Education.
- Gresham, F. M. (1984) Social skills and self-efficacy for Exceptional children. *Exceptional children*, 51, 253-261.
- Griffin, M. M., Griffin, B. W. (1995). An investigation of the effects of reciprocal peer tutoring on achievement, self-efficacy and test anxiety. ERIC Document Reproduction Service no. ED 383 756.
- Griffin, B. W., & Griffin, M. M. (1997). The effects of reciprocal peer tutoring on graduate student' achievement, test anxiety and academic self-efficacy. *The Journal of Experimental Education*, 65(3), 197-209.
- Haisley, F. B., Tell, C. A., & Andrews, J. A. (1981). Peer as tutors in the mainstream: Trained "teachers" of handicapped adolescents. *Journal of Learning Disabilities*, 14, 224-226.
- Houck, C. (1994). *Learning disabilities* (3th ed). Englewood Cliffs, NJ: Prentice-Hall.
- Johnson, D. W. & Johnson, R. T. (1986). Mainstreaming and cooperative learning strategies. *Exceptional children*, 52(6), 553-561.
- Johnson, D. W., & Johnson, R. T. (1989). Cooperative learning in mathematics education. In P. R., Trafton & A. P. Shulte (Eds.), *New Directions for Elementary School Mathematics*. The National Council of Teachers of Mathematics, INC.
- Kamps, D. M., Barbetta, P. M. Leonard, B. R., & Delquadri, J. (1994). Class-wide peer tutoring : An integration strategy to improve reading skills and promote peer interactions among students with autism and general education peers. *Journal of Applied Behavior Analysis*, 27(1), 49-61.
- Kane, B. J., & Alley, G. R. (1980). A peer-tutored, instructional management program in computational mathematics for incarcerated. learning disabled juvenile delinquents. *Journal of Learning Disabilities*, 13(3), 39-42.
- Land, W. A. (1984). Peer Tutoring: Student Achievement and Self-Concept as Reviewed in Selected Literature. ERIC Document

- reproduction Service no. ED 252 302.
- Lazerson, D. B. (1980). I must be good if I can teach!. peer tutoring with aggressive and withdrawn children. *Journal of Learning Disabilities*, 13(3), 43-48.
- Lazerson, D. B., Foster, H. L., Brown, S. I., & Hummel, J. W. (1988). The effectiveness of cross-age tutoring with truant junior high school students with learning disabilities. *Journal of Learning Disabilities*, 21, 253-255.
- Lerner, J. (1993). *Learning disabilities: theories, diagnosis, and teaching strategies* (6th ed). Boston, Mass.: Houghton Mifflin.
- Lerner, J. (2000). *Learning disabilities : theories, diagnosis, and teaching strategies* (8th ed). Boston, Mass.: Houghton Mifflin.
- Locke, W. R., & Fuchs, L. S. (1995). Effects of peer-mediated reading instruction on the on-task behavior and social interaction of children with behavior disorders. *Journal of Emotional and Behavioral Disorders*, 3, 92-99.
- Margalit, M., & Zak, I. (1984). Anxiety and self concept of Learning disabled children. *Journal of Learning Disabilities*. 17, 537-539.
- Mercer, C. D., & Mercer, A. R. (1998). *Teaching students with learning problems* (5th ed.). Columbus, Ohio: Merrill.
- Miller, S., Butler, F., & Lee, K. (1998). Validated practices for teaching mathematics to students with learning disabilities: A review of the literature. *Focus on exceptional children*, 31(1), 1-24.
- Miller, S. P., & Mercer, C. D. (1997). Educational aspects of mathematics disabilities. *Journal of Learning Disabilities*. 30(1), 47-56.
- Montague, M., & Applegate, B. (1993). Middle school students mathematical problem solving: an analysis of think-aloud protocols. *Learning disability Quarterly*, 16, 19-30.
- Noonan, M. J., & Hemphill, N. J. (1988). Comprehensive curricular for integrating severely disabled and nondisabled student . In Meyen, E. L., Vergason, G. V., & Whelan, R. J. (Ed). *Effective instructional strategies for exceptional children*. Love Publishing Co. Denver, 141-156.
- Pigott, H. E., Fantuzzo, J. W., & Clement, P. W. (1986). The effects of reciprocal peer tutoring and group contingencies on the academic performance of elementary school children. *Journal of Applied Behavior Analysis*, 19(1), 93-98.
- Revicki, D. A. (1982). The relationship between self-concept and achievement: An Investigation of reciprocal effects. ERIC Document Reproduction Service no. ED 219 440.
- Rivera, D. P. (1997). Mathematics education and students with learning Disabilities: Introduction to the special series. *Journal of Learning Disabilities* 30(1), 2-19.
- Scher. M. E. (1990). Self-concept: reaching the affective child. ERIC Document reproduction Service no. ED 335 594.
- Scott, K., & Eickelman, P. C. (1992). Power through peer tutoring. In Colorado Council for Learning Disabilities. Research in the classroom. Fifth annual report of research projects conducted by educators in their classrooms. ERIC Document reproduction Service no. ED 347 765.
- Scruggs, T. E., & Osguthorpe, R. T. (1985). Tutoring interventions within special education setting : A comparison of cross-age and peer tutoring. ERIC Document Reproduction Service no. ED 258 419.
- Scruggs, T. E., Mastropieri, M. A., & Richter, L. (1985). Peer tutoring with behaviorally Disordered students: social and academic benefits. *Behavioral Disorders*, 283-294.
- Silver, C. H., Pennett, H. D., Black, J. L., Fair, G.

- W., Balise. (1999). Stability of arithmetic disability subtypes. *Journal of Learning disability*, 32(2), 108-119.
- Sindelar, P. T.(1982). The effects of Cross-aged tutoring on the comprehension skills of remedial reading students. *Journal of Special Education*, 16(2), 199-206.
- Utley, C. A., Mortweet, S. L., & Greenwood, C. R. (1997) Peer-mediated instruction and interventions. *Focus on Exceptional children*, 29(5), 1-23.
- Ysseldyke, J. E. Algozzine, B., & Thurlow. M. L. (1992). *Critical issues in special education*. Boston : Houghton Mifflin company.
- Zentall, S. S., & Ferkis, M. M. (1993). Mathematical problem solving for youth with ADHD, with and without learning disabilities. *Learning Disability Quarterly*, 16, 6-17.

## ABSTRACT

# The effect of reciprocal peer tutoring on mathematics achievement and self-concept of students with math disabilities

Lee, Gyu Moungh · Park, Eunhye

(In Hun Elementary School · Ewha Womans University)

This study was conducted to examine the effect of the reciprocal peer tutoring on mathematics achievement and self-concept of students with math disabilities. Twenty-four students with math disabilities were selected from 4th and 5th grade, and they were divided into experimental group and control group. In the experimental group, the subjects were trained to learn reciprocal peer tutoring techniques for 4 sessions and used the reciprocal peer tutoring for 20 session. The experiment was conducted 3 sessions a week and each session lasted 40 minutes. For the control group, the traditional instruction method was used. Pre-test and post-test was

implemented using mathematics achievement test which was developed by the researchers. and the self-concept inventory developed by No(1984). The data were analyzed by ANCOVA(analysis of covariance).

The result showed significant difference between the experimental and control group in both mathematics achievement and self-concept. This result indicates that reciprocal peer tutoring can facilitate the improvement of mathematics achievement and self-concept of students with math disabilities.

This result implies that reciprocal peer tutoring would be a useful instructional method for students with math disabilities.

Keywords : Mathematics disability, Learning disability, Peer tutoring, Reciprocal peer tutoring, Self concept, Mathematics achievement