HOENNY CENTER
Developing partners. Discovering teachers.

Executive Summary of Research Related to Teaching by Elementary and Secondary School Students

Laurie Puchner, PhD
Hoenny Center for Research and Development in Teaching
and
Southern Illinois University Edwardsville
August 5, 2002

A. Research on teaching-related actions by K-12 students appears to support the following assertions:

- Tutoring of children by other children is beneficial for both the tutor and the tutee. Benefits to tutors appear to exceed benefits to tutees, although most studies show benefits to tutees as well. Benefits of being a tutor have been found for low-, average, and high-achieving students, and for students with various types of disabilities. The most frequently examined variables are academic achievement in math and reading. However, studies have also found benefits in the areas of motivation, self-concept, socialization skills, cooperative (as opposed to competitive) behavior in the classroom, attitudes towards tutees with disabilities, reduced absenteeism, and improved classroom behavior, indicating that affective benefits are likely as well. Participants in most studies were elementary and middle school students, but some evidence of benefits to high school students also exists.

  Relevant Sources:
  (Bar-Eli, Bar-Eli, Tenenbaum, & Forlin, 1998; Blake, Wang, Cartledge, & Gardner, 2000; Elbaum, Vaughn, & Hughes, 1999; Franca, Kerr, Reitz, & Lambert, 1990; Giesecke & Cartledge, 1993; Goodlad & Hirst, 1990; Grant, Murphy, Stafford, & Childers, 1997; Gumpel & Frank, 1999; Hansen, 1992; Jacobson, Thrope, & Fisher, 2001; Kamps, Kravitz, & Lopez, 1998; Kennedy, 1990; Kreuger & Braun, 1999; Labbo & Teale, 1990; Marious, 2000; Mathes & Babyak, 2001; Neuman & Roskos, 1991; Ponzio & Fisher, 1995; Ponzio & Peterson, 1999; Rekrut, 1994; Taylor, Hanson, Justice-Swanson, & Watts, 1997; Topping & Bamford, 1998; Zukowski, 1997)

- Cooperative learning, an instructional method which involves putting students in heterogeneous small groups to carry out tasks collaboratively, is effective in terms of student achievement and socialization. The achievement benefits appear to be true with tasks involving both lower- and higher-level cognition, and for low-, average-, and high-achieving students. A challenge in assessing the effectiveness of collaborative group work of all kinds is that implementation varies greatly, and effectiveness often depends on how and in what context cooperative learning is carried out.

Relevant Sources:
(Cohen, 1994; Davenport & Howe, 1999; Dori & Herscovitz, 1999; Hernandez Garduno, 2001; Matthews, 1992; Palincsar, Yvonne, Winn, & Stevens, 1991; Peklaj & Vodopivec, 1999; Qin, Johnson, & Johnson, 1995; Ramsay & Richards, 1997; Randall, 1999; Robinson, 1990, 1997; Ross & Smyth, 1995; Slavin, 1990a, 1990b, 1991, 1996; Sutherland, Wehby, & Gunter, 2000; Webb, Nemer, & Chizhik, 1998)

- Children who learn most in collaborative contexts (controlling for initial achievement) are those who provide detailed, elaborate, explanations to others. This is true in small group work and paired peer-tutoring contexts.
  Relevant Sources:
  (Cohen, 1994; Davenport & Howe, 1999; Fuchs et al., 1996; Webb, 1989, 1992)

- High achieving students are more likely to participate in small group work and also provide higher quality explanations in peer tutoring dyads and small groups than average- or low-achieving students.
  Relevant Sources:
  (Fuchs et al., 1996; Mulryan, 1994; O'Connor & Jenkins, 1996)

- Certain conditions increase the effectiveness of cooperative learning. One of these is the presence of group rewards, probably because this makes students want other students in their group to understand the material, motivating them to teach each other more effectively. The more effective teaching probably helps both the explainer and the child receiving the explanations.
  Relevant Sources:
  (Cohen, 1994; Slavin, 1996)

- Reciprocal peer tutoring programs, which involve students being paired and in a structured manner taking turns acting as tutor and tutee, are effective in terms of academic achievement in subject areas of math, reading, spelling, and science. They have been researched most at the elementary level, but appear to be effective at both elementary and secondary levels. There are studies of the effects of these programs on a variety of student populations, including high-, average-, and low-achievers, students with disabilities, low-income students, and minority students, generally with positive results. Studies of these programs do not separate effects on tutor from effects on tutee because all students play both roles.
  Relevant Sources:
  (Arreaga-Mayer, 1998; Butler, 1999; DuPaul, Ervin, & Hook, 1998; Ezell, Hunsicker, & Quinque, 1997; Fantuzzo, King, & Heller, 1992; Fantuzzo, Polite, & Grayson, 1990; Fuchs, Fuchs, Mathes, & Simmons, 1997; Fuchs, Fuchs, & Thompson, 2001; Fuchs, Fuchs, & Yen, 2001; L. S. Fuchs et al., 1997; Fuchs, Fuchs, & Kazdan, 1999; Greenwood, Arreaga-Mayer, & Utley, 2001; Greenwood, Terry, Arreaga-Mayer, & Finney, 1992; Greenwood, Terry, Utley, Montagna, & Walker, 1993; Harper, Maheady, & Mallette, 1999; Maheady, Harper, & Mallette, 2001; Maheady, Mallette, & Harper, 1991; Marston, Deno, Kim, Kiment, & Rogers, 1995; Mastropieri et al., 2001; Mathes & Babyak, 2001; Mathes & Fuchs, 1994; Mathes, Torgesen, & Allor, 2001; Mortweet, Utley, & Walker, 1999; Utay & Utay, 1997; Utley, Mortweet, & Greenwood, 1997)

- Reciprocal teaching is an approach to improving reading comprehension which involves instruction and practice of the following four instructional support strategies: generating questions, summarizing, attempting to clarify confusing words or text

meaning, and predicting what might happen next. The strategies are taught and modeled by the teacher, with the students gradually taking over the role of facilitator and providing instructional support to each other. Reciprocal teaching has been studied at the elementary, middle and high school levels, and with high-, average-, and low-achieving students, and its effectiveness is well-documented.

Relevant Sources:
(King & Johnson, 1999; Lederer, 2000; Marston et al., 1995; Palincsar et al., 1991; Rosenshine & Meister, 1994; Rosenshine & Meister, 1996)

- When students are placed in groups or dyads together without structure or training they generally do not effectively help each other, and without guidance their collaborative skills do not improve with time. Problems include, for example, omission of low-achieving students from discussions, a tendency for children to use lecture to explain things to each other, and confused explanations.
  Relevant Sources:
  (Fuchs, Fuchs, Bentz, Phillips, & Hamlett, 1994; Fuchs, Fuchs, Kazdan, & Allen, 1999; Kohler & Greenwood, 1990; McMahon & Goatley, 1995; Webb, Troper, & Fall, 1995)

- The quality of student interaction in collaborative work can be improved via training. More specifically, when children in reciprocal peer tutoring, cooperative learning, and reciprocal teaching contexts are trained in skills such as giving explanations, asking higher-order questions, and helping behaviors, the interactions among students are enhanced and learning increases.
  Relevant Sources:
  (Barron & Foot, 1991; Bentz & Fuchs, 1996; Fuchs et al., 1994; L. S. Fuchs et al., 1997; Lynn. S. Fuchs et al., 1999; Gillies & Ashman, 2000; King, 1994; King & Rosenshine, 1993; King, Staffieri, & Adelgais, 1998; Nath & Ross, 2001; Palincsar & Herrenkohl, 1999; Staub & Hunt, 1993)

B. Research on teaching actions of K-12 students does not appear to support the following common assumptions:

- *Cooperative learning and peer teaching are detrimental to the cognitive development of high ability students.*

  Many studies of reciprocal peer tutoring and cooperative learning have examined the case of high ability students, and benefits of these approaches for this group are well-documented. This appears logical, since, as stated above: 1) it is generally the explainers who learn most in these situations, and, 2) high ability students are more likely than medium and low ability kids to be explainers. Relatedly, one interesting study (Linchevski & Kutscher, 1998) examined whether heterogeneous grouping of students in math would avoid the increased gap between high- and low-ability students that occurs over time with ability grouping (tracking) in that subject. The researchers were also interested in determining whether the gap that occurs is due to the low-ability students doing worse with tracking than they would with heterogeneous grouping or to the high-ability children doing better with tracking than they would with heterogeneous grouping. The study found that the increased gap is avoided with heterogeneous

grouping. Importantly, they also found that the gap appears to occur because low-ability student do worse with ability grouping than they would with mixed-ability grouping rather than because homogeneous grouping is good for high-ability children. The researchers conclude that low and average-ability children do much better with mixed-ability grouping than with tracking while the loss for high-ability children in heterogeneous grouping is negligible.

Relevant Sources:

(Cohen, 1994; Davenport & Howe, 1999; Dori & Herscovitz, 1999; Fuchs, Fuchs, & Thompson, 2001; Fuchs, Fuchs, & Yen, 2001; L. S. Fuchs et al., 1997; Fuchs et al., 1996; Lynn. S. Fuchs et al., 1999; Hansen, 1992; Linchevski & Kutscher, 1998; Mathes & Babyak, 2001; Slavin, 1991, 1996; Webb, 1989, 1992)

- *Cooperative learning and peer teaching are detrimental to the development of students who are gifted.*

  Criticism of cooperative learning and peer teaching practices is found most often in the area of gifted education. Reasons provided for the above assertion include the argument that gifted students tend to prefer to work alone or with other students of their ability, and that involvement in cooperative learning keeps them from doing higher level work that they should be doing. There is some evidence that gifted students prefer working in homogeneous groups and in competitive rather than cooperative contexts. However, this area is not well-researched, and there is at this time no good evidence to support the assertion that peer tutoring and cooperative learning have a negative impact on the achievement or motivation of these children. Obviously, these methods should be carefully implemented with gifted students, as they should with all types of students.

  Relevant Sources:

  (Colangelo & Davis, 1997; Hernandez Garduno, 2001; Matthews, 1992; Ramsay & Richards, 1997; Randall, 1999; Robinson, 1990, 1997; Ross & Smyth, 1995; Slavin, 1990a, 1990b)

C. The following issues related to the teaching actions of K-12 students would be interesting to examine in the future:

- *What exactly is it about teaching others that leads to achievement and affective benefits in children?*

  It appears that providing explanations to others predicts learning, but why is that true, and are there other beneficial aspects of providing help to others? Several possible reasons for the benefits of teaching are cited in the literature, including the following: mental organization required to explain concepts and facts to others leads to increased learning; more frequent review of material leads to increased learning; generating questions for others leads students to think more about a topic; tutoring provides students with a meaningful use for the material which increases interest in the topic; tutoring leads to an increased understanding about the process of teaching, which leads students to empathize more with the teacher and hence to be more cooperative with and have a better attitude toward the teacher. Studies have examined some of these questions (c.f. Kennedy, 1990), but much remains to be learned.

Relevant Sources:
(Chan, Burtis, Scardamalia, & Bereiter, 1992; Chinn, O'Donnell, & Jinks, 2000; Goodlad & Hirst, 1990; Kennedy, 1990; Rosenshine & Meister, 1996; Slavin, 1996)

- *There are important types of teaching that differ from cooperative learning and peer tutoring that appear to be missing from the literature.*

  One of these is individual students teaching groups of younger students on a topic that the student has mastered (currently practiced on an annual basis as a special event at the elementary school attended by my children); another is individual students or groups of students giving teaching-like presentations to other students. Information on the extent to which such formats are used, why they are used, and benefits of these practices (if any) for the student "teachers" and their "students" would be helpful.

- *As mentioned in Part B, above, more research is needed to determine whether peer tutoring and cooperative learning are beneficial or detrimental to gifted students. If benefits exist, what are they and under what specific conditions do they occur?*

- *Some components of "leadership skills" appear to be very similar to effective teaching skills. It would be interesting to examine the extent to which these two areas overlap. Further, the apparent assumption that leadership skills' development is appropriate for gifted children only should also be examined.*

  There is a body of literature arguing for the development of "leadership skills" in K-12 students. Leadership skills are defined in various ways, including communication, problem-solving, collaboration, and stimulation of others' thinking, and they are most often discussed in relation to gifted students. (One article, for example, (Ross & Smyth, 1995), responds to the assertion that heterogeneous cooperative learning is harmful for gifted students by arguing that cooperative learning may give gifted students the opportunity to develop and be trained in leadership.)

  Relevant Sources:
  (Chan, 2000; Karnes & Stephens, 1999; Merriman, 1999; Myers & Slavin, 1990; Ross & Smyth, 1995)

- *Does being an effective peer teacher as an elementary or secondary school student predict effective teaching skills as an adult?*

- *If one's goal were to improve the quality of teachers in the profession, would it be more effective to develop teaching skills of all K-12 students or to try to identify and work with precocious child teachers in their classrooms? Does training children to teach peers or giving them opportunities to teach peers increase the likelihood that students will choose teaching as a profession?*

References

Arreaga-Mayer, C. (1998). Increasing active student responding and improving academic performance through classwide peer tutoring. *Intervention in School and Clinic, 34*(2), 89-94.

Bar-Eli, N., Bar-Eli, M., Tenenbaum, G., & Forlin, C. (1998). The tutoring process and its manifestation in the classroom behaviour of tutors and tutees. *British Educational Research Journal, 24*(3), 283-300.

Barron, A.-M., & Foot, H. (1991). Peer tutoring and tutor training. *Educational Research, 33*(3), 174-185.

Bentz, J. L., & Fuchs, L. S. (1996). Improving peers' helping behavior to students with learning disabilities during mathematics peer tutoring. *Learning Disabilities Quarterly, 19*, 202-215.

Blake, C., Wang, W., Cartledge, G., & Gardner, R. (2000). Middle school students with serious emotional disturbances serve as social skills trainers and reinforcers for peers with SED. *Behavioral Disorders, 25*(4), 280-298.

Butler, F., M. (1999). Reading partners: Students can help each other learn to read. *Education and Treatment of Children, 22*(4), 415-426.

Chan, C. K. K., Burtis, P. J., Scardamalia, M., & Bereiter, C. (1992). Constructive activity in learning from text. *American Educational Research Journal, 29*, 97-118.

Chan, D. W. (2000). Developing the creative leadership training program for gifted and talented students in Hong Kong. *Roeper Review, 22*(2), 94-97.

Chinn, C. A., O'Donnell, A. M., & Jinks, T. S. (2000). The structure of discourse in collaborative learning. *Journal of Experimental Education, 69*(1), 77-97.

Cohen, E. G. (1994). Restructuring the classroom: conditions for productive small groups. *Review of Educational Research, 64*(1), 1-35.

Colangelo, N., & Davis, G. A. (1997). Introduction and Overview. In N. Colangelo & G. A. Davis (Eds.), *Handbook of Gifted Education* (pp. 3-9). Boston: Allyn and Bacon.

Davenport, P., & Howe, C. (1999). Conceptual gain and successful problem-solving in primary school mathematics. *Educational Studies, 25*(1), 55-78.

Dori, Y. J., & Herscovitz, O. (1999). Question-posing capability as an alternative evaluation method: Analysis of an environmental case study. *Journal of Research in Science Teaching, 36*(4), 411-430.

DuPaul, G. J., Ervin, R. A., & Hook, C. L. (1998). Peer tutoring for children with attention deficit hyperactivity disorder: Effects on classroom behavior and academic performance. *Journal of Applied Behavior Analysis, 31*(4), 579-592.

Elbaum, B. E., Vaughn, S., & Hughes, M. T. (1999). Grouping practices and reading outcomes for students with disabilities. *Exceptional Children, 65*(3), 399-415.

Ezell, H. K., Hunsicker, S. A., & Quinque, M. M. (1997). Comparison of two strategies for teaching reading comprehension skills. *Education and Treatment of Children, 20*(4), 365-382.

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

Franca, V. M., Kerr, M. M., Reitz, A. L., & Lambert, D. (1990). Peer tutoring among behaviorally disordered students: Academic and social benefits to tutor and tutee. *Education and Treatment of Children, 13*(2), 109-128.

Fuchs, D., Fuchs, L. S., Mathes, P. G., & Simmons, D. C. (1997). Peer-assisted learning strategies: Making classrooms more responsive to diversity. *American Educational Research Journal, 34*(1), 174-206.

Fuchs, D., Fuchs, L. S., & Thompson, A. (2001). Peer-assisted learning strategies in reading: Extensions for kindergarten, first grade, and high school. *Remedial and Special Education, 22*(1), 15-21.

Fuchs, D., Fuchs, L. S., & Yen, L. (2001). Developing first-grade reading fluency through peer mediation. *Teaching Exceptional Children, 34*(2), 90-93.

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 training and experience. *American Educational Research Journal, 34*(1), 75-103.

Fuchs, L. S., Fuchs, D., Hamlett, C. L., Phillips, N. B., Karns, K., & Dutka, S. (1997). Enhancing Students' helping behavior during peer-mediated instruction with conceptual mathematical explanations. *The Elementary School Journal, 97*(3).

Fuchs, L. S., Fuchs, D., Karns, K., Hamlett, C. L., Dutka, S., & Katzaroff, M. (1996). The relation between student ability and the quality and effectiveness of explanations. *American Educational Research Journal, 33*(3), 631-664.

Fuchs, L. S., Fuchs, D., & Kazdan, S. (1999). Effects of peer-assisted learning strategies on high school students with serious reading problems. *Remedial and Special Education, 20*(5), 309-318.

Fuchs, L. S., Fuchs, D., Kazdan, S., & Allen, S. (1999). Effects of Peer-assisted learning strategies in reading with and without training in elaborated help giving. *The Elementary School Journal, 99*(3), 201-219.

Giesecke, D., & Cartledge, G. (1993). Low-achieving students as successful cross-age tutors. *Preventing School Failure, 37*(3), 34-43.

Gillies, R. M., & Ashman, A. F. (2000). The effects of cooperative learning on students with learning difficulties in the lower elementary school. *The Journal of Special Education, 34*(1), 19-27.

Goodlad, S., & Hirst, B. (Eds.). (1990). *Explorations in peer tutoring*. Oxford, England: Basil Blackwell, Ltd.

Grant, T., Murphy, A., Stafford, B., & Childers, P. B. (1997). Peer tutors and students work with formative assessment. *Clearing House, 71*(2), 103-105.

Greenwood, C. R., Arreaga-Mayer, C., & Utley, C. A. (2001). Classwide peer tutoring learning management system: Applications with elementary-level English language learners. *Remedial and Special Education, 22*(1).

Greenwood, C. R., Terry, B., Arreaga-Mayer, C., & Finney, R. (1992). The Classwide Peer Tutoring Program: Implementation factors moderating students' achievement. *Journal of Applied Behavior Analysis, 25*(1).

Greenwood, C. R., Terry, B., Utley, C. A., Montagna, D., & Walker, D. (1993). Achievement, placement and services: Middle school benefits of classwide peer tutoring used at the elementary level. *School Psychology Review, 22*(3), 497-516.

Gumpel, T. P., & Frank, R. (1999). An expansion of the peer-tutoring paradigm: cross-age peer tutoring of social skills among socially rejected boys. *Journal of Applied Behavior Analysis, 32*(1), 115-118.

Hansen, I. (1992). Should we use bright children as untrained, unpaid teacher aides? *Childhood Education*, 308-309.

Harper, G. F., Maheady, L., & Mallette, B. (1999). Peer tutoring and the minority child with disabilities. *Preventing School Failure, 43*(2), 45-51.

Hernandez Garduno, E. L. (2001). The influence of cooperative problem solving on gender differences in achievement, self-efficacy, and attitudes toward mathematics in gifted students. *Gifted Child Quarterly, 45*(4), 268-282.

Jacobson, J., Thrope, L., & Fisher, D. (2001). Cross-age tutoring: A literacy improvement approach for struggling adolescent readers. *Journal of Adolescent & Adult Literacy, 44*(6), 528-536.

Kamps, D. M., Kravitz, T., & Lopez, A. G. (1998). What do the peers think? Social validity of peer-mediated programs. *Education and Treatment of Children, 21*(2), 107-134.

Karnes, F. A., & Stephens, K., R. (1999). Planning for the future: leadership education in the schools. *Educational Horizons, 77*(2), 89-94.

Kennedy, M. (1990). Controlled evaluation of the effects of peer tutoring on the tutors: Are the 'learning by teaching' theories viable? In S. Goodlad & B. Hirst (Eds.), *Explorations in Peer Tutoring* (pp. 58-72). Oxford, England: Basil Blackwell, Ltd.

King, A. (1994). Guiding knowledge construction in the classroom: Effects of teaching children how to question and how to explain. *American Educational Research Journal, 30*, 338-368.

King, A., & Rosenshine, B. (1993). Effects of guided cooperative questioning on children's knowledge construction. *Journal of Experimental Education, 61*, 127-148.

King, A., Staffieri, A., & Adelgais, A. (1998). Mutual peer tutoring: Effects of structuring tutorial interaction to scaffold peer learning. *Journal of Educational Psychology, 80*(1), 134-152.

King, C. M., & Johnson, L. M. (1999). Constructing meaning via reciprocal teaching. *Reading Research and Instruction, 38*(3), 169-186.

Kohler, F. W., & Greenwood, C. R. (1990). Effects of collatoral peer supportive behaviors within the classwide peer tutoring program. *Journal of Applied Behavior Analysis, 23*, 307-322.

Kreuger, E., & Braun, B. (1999). Books and buddies: Peers tutoring peers. *Reading Teacher, 52*(4), 410-414.

Labbo, L. D., & Teale, W. H. (1990). Cross-age reading: A strategy for helping poor readers. *The Reading Teacher, 43*, 362-369.

Lederer, J., M. (2000). Reciprocal teaching of social studies in inclusive elementary classrooms. *Journal of Learning Disabilities, 33*(1), 91-106.

Linchevski, L., & Kutscher, B. (1998). Tell me with whom you're learning, and I'll tell you how much you've learned: Mixed-ability versus same-ability grouping in mathematics. *Journal for Research in Mathematics Education, 29*(5), 533-554.

Maheady, L., Harper, G. F., & Mallette, B. (2001). Peer-mediated instruction and interventions and students with mild disabilities. *Remedial and Special Education, 22*(1), 4-14.

Maheady, L., Mallette, B., & Harper, G. F. (1991). Peer-mediated instruction: A review of potential applications for special education. *Reading, Writing, and Learning Disabilities International, 7*, 75-103.

Marious, S. E., Jr. (2000). Mix and match: The effects of cross-age tutoring on literacy. *Reading Improvement, 37*(3), 126-130.

Marston, D., Deno, S. L., Kim, D., Kiment, K., & Rogers, D. (1995). Comparison of reading intervention approaches for students with mild disabilities. *Exceptional Children, 62*(1), 20-37.

Mastropieri, M. A., Scruggs, T., Mohler, L., Beranek, M., Spencer, V., Boon, R. T., & Talbott, E. (2001). Can middle school students with serious reading difficulties help each other and learn anything? *Learning Disabilities Research & Practice, 16*(1), 18-27.

Mathes, P. G., & Babyak, A. E. (2001). The effects of peer-assisted literacy strategies for first-grade readers with and without additional mini-skills lessons. *Learning Disabilities Research & Practice, 16*(1), 28-44.

Mathes, P. G., & Fuchs, L. S. (1994). The efficacy of peer tutoring in reading for students with mild disabilities: A best-evidence synthesis. *School Psychology Review, 23*(1), 59080.

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*(2), 371-410.

Matthews, M. (1992). Gifted students talk about cooperative learning. *Educational Leadership*, 48-50.

McMahon, S. L., & Goatley, V. J. (1995). Fifth graders helping peers discuss texts in student-led groups. *The Journal of Educational Research, 89*(1), 23-33.

Merriman, J. E. (1999). Leadership Conference. *Gifted Child Today Magazine, 22*(5), 18-27.

Mortweet, S. L., Utley, C. A., & Walker, D. (1999). Classwide peer tutoring: Teaching students with mild mental retardation in inclusive classrooms. *Exceptional Children, 65*(4), 524-536.

Mulryan, C., M. (1994). Perceptions of Intermediate students' cooperative small-group work in mathematics. *Journal of Educational Research, 87*(5), 280-290.

Myers, M. R., & Slavin, M. J. (1990). Emergence and maintenance of leadership among gifted students in group problem solving. *Roeper Review, 12*(4), 256-261.

Nath, L. R., & Ross, S. M. (2001). The influence of a peer-tutoring training model for implementing cooperative groupings with elementary students. *Educational Technology Research and Development, 49*(2), 41-56.

Neuman, S. B., & Roskos, K. (1991). Peers as literacy informants: A description of young children's literacy conversations in play. *Early Childhood Research Quarterly, 6*, 233-248.

O'Connor, R. E., & Jenkins, J. R. (1996). Cooperative learning as an inclusion strategy: The experience of special education students. *Exceptionality, 6*, 29-52.

Palincsar, A. S., & Herrenkohl, L. R. (1999). Designing collaborative contexts: Lessons from three research programs. In A. O'Donnell & A. King (Eds.), *Cognitive perspectives on peer learning* (pp. 151-177). Mahwah, N.J.: Erlbaum.

Palincsar, A. S., Yvonne, M. D., Winn, J. A., & Stevens, D. D. (1991). Examining the context of strategy instruction. *Remedial and Special Education, 12*(3), 43-53.

Peklaj, C., & Vodopivec, B. (1999). Effects of cooperative versus individualistic learning on cognitive, affective, metacognitive and social processes in students. *European Journal of Psychology of Education, 14*(3), 359-373.

Ponzio, R., & Fisher, C. (1995). Introducing prospective teachers to contemporary views of teaching and learning science: The science and youth project. In M. J. O'Hair & S. J. Odell (Eds.), *Educating Teachers for Leadership and Change* (3 ed., pp. 257-284). Thousand Oaks, CA: Corwin Press.

Ponzio, R. C., & Peterson, K., D. (1999). Adolescents as effective instructors of child science: Participant perceptions. *Journal of Research and Development in Education, 33*(1), 36-46.

Qin, Z., Johnson, D. W., & Johnson, R. T. (1995). Cooperative versus competitive efforts and problem solving. *Review of Educational Research, 65*(2), 129-143.

Ramsay, S. G., & Richards, H. C. (1997). Cooperative learning environments: Effects on academic attitudes of gifted students. *Gifted Child Quarterly, 41*(4), 160-168.

Randall, V. (1999). Cooperative learning: Abused and overused? *Gifted Child Today Magazine, 22*(2), 14-16.

Rekrut, M. D. (1994). Peer and cross-age tutoring: The lessons of research. *Journal of Reading, 37*(5), 356-362.

Robinson, A. (1990). Cooperation or exploitation? The argument against cooperative learning for talented students. *Journal for the Education of the Gifted, 14*, 9-17.

Robinson, A. (1997). Cooperative learning for talented students: Emergent issues and implications. In N. Colangelo & G. A. Davis (Eds.), *Handbook of Gifted Education* (2nd ed., pp. 243-252). Boston: Allyn and Bacon.

Rosenshine, B., & Meister, C. (1994). Reciprocal teaching: A review of the research. *Review of Educational Research, 64*(4), 479-530.

Rosenshine, B., & Meister, C. C. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research, 66*(2), 181-221.

Ross, J. A., & Smyth, E. (1995). Differentiating cooperative learning to meet the needs of gifted learners: A case for transformational leadership. *Journal for the Education of the Gifted, 19*(1), 63-82.

Slavin, R. E. (1990a). Ability grouping, cooperative learning and the gifted. *Journal for the Education of the Gifted, 14*, 3-8.

Slavin, R. E. (1990b). Response to Robinson: Cooperative learning and the gifted: Who benefits? *Journal for the Education of the Gifted, 14*, 28-30.

Slavin, R. E. (1991). Synthesis of research on cooperative learning. *Educational Leadership*, 71-82.

Slavin, R. E. (1996). Research on Cooperative Learning and Achievement: What we know, what we need to know. *Contemporary Educational Psychology, 21*, 43-69.

Staub, D., & Hunt, P. (1993). The effects of social interaction training on high school peer tutors of schoolmates with severe disabilities. *Exceptional Children, 60*(1), 41-57.

Sutherland, K. S., Wehby, J. H., & Gunter, P. L. (2000). The effectiveness of cooperative learning with students with emotional and behavioral disorders: A literature review. *Behavioral Disorders, 25*(3), 225-238.

Taylor, B. M., Hanson, B. E., Justice-Swanson, K., & Watts, S. M. (1997). Helping struggling readers: Linking small-group intervention with cross-age tutoring. *Reading Teacher, 51*(3), 196-209.

Topping, K., & Bamford, J. (1998). *Parental Involvement and Peer Tutoring in Mathematics and Science*. London: David Fulton Publishers.

Utay, C. M., & Utay, J. M. (1997). Peer-assisted learning: the effects of cooperative learning and cross-age peer tutoring with word processing on writing skills of students with learning disabilities. *Journal of Computing in Childhood Education, 8*(2-3), 165-185.

Utley, C. A., Mortweet, S. L., & Greenwood, C. R. (1997). Peer-mediated instruction and interventions. *Focus on Exceptional Children, 29*(5), 1-23.

Webb, N. M. (1989). Peer interaction and learning in small groups. *International Journal of Educational Research, 13*, 21-39.

Webb, N. M. (1992). Testing a theoretical model of student interaction and learning in small groups. In R. Hertz-Lazarowitz & N. Miller (Eds.), *Interaction in cooperative groups: The theoretical anatomy of group learning* (pp. 102-119). New York: Cambridge University Press.

Webb, N. M., Nemer, K. M., & Chizhik, A. W. (1998). Equity issues in collaborative group assessment: Group composition and performance. *American Educational Research Journal, 35*(4), 607-651.

Webb, N. M., Troper, J., & Fall, J. R. (1995). Constructive activity and learning in collaborative small groups. *Journal of Educational Psychology, 87*, 406-423.

Zukowski, V. (1997). Teeter-totters and tandem bikes: A glimpse into the world of cross-age tutors. *Teaching & Change, 5*(1), 71-91.