

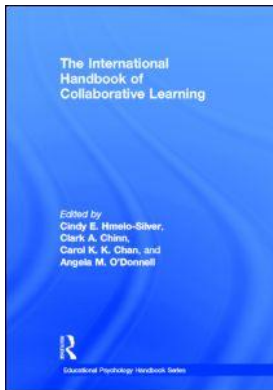
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COLLABORATIVE LEARNING FOR DIVERSE LEARNERS

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THE LEARNING CONTEXT

For over 40 years educators have advocated the inclusion of students with diverse learning needs in mainstream classes. The arguments in support of inclusion have various bases, from philosophical and social justice imperatives to claims about the academic and social benefits of including students with modest to very high special learning needs. While legislation, education policy, and rhetoric in support of inclusive education has become a global phenomenon, the claims of successful inclusion and positive outcomes for all those involved have fallen considerably short of the ideal (e.g., Curcic, 2009; Drudy & Kinsella, 2009; Melekoglu, Cakiroglu, & Malmgren, 2009).

The philosophical and moral arguments have not remained unchallenged (e.g., Cigman, 2007), and those claiming academic and social advantages as a result of inclusion have not been supported by unequivocal empirical data. Indeed, a comprehensive review of the literature would suggest that the assertions and claims of success made by advocates and disciples of inclusive education is far from a reality. In his encyclopedic review of 800 meta-analyses in education research, Hattie (2009) reported effect sizes for mainstreaming that ranged from 0.08 to 0.47 with a mean effect size of $d = 0.28$. To put this into perspective, Hattie found that the average effect size for educational interventions was 0.40 and has argued that effect sizes below that figure are more disadvantageous than advantageous in respect of student outcomes (Hattie, 2007).

If inclusive education has not been the success that one might have expected, why is this so? There have been many assertions, including persistent negative attitudes toward disability and difference among teachers and students, the lack of financial support for classroom adaptations, inadequate initial teacher education, and continuing professional development. One of the more important deficiencies that teachers assert is their lack of teaching-learning strategies needed to deal with the needs of students exhibiting learning and behavioral difficulties.

It is not within the scope of this contribution to argue for and against inclusive education. It is important, however, to address the last point raised in the preceding

paragraph. Humphrey (2009) argued that the teaching and learning strategies that are effective in mainstream classes for students performing according to the age norms are exactly the same as those that are effective with students with a range of special learning needs. Florian (2008) put this point in a slightly different way. She stated that regular education teachers are already adequately equipped to teach students with a diversity of skills and abilities typically found in mainstream classes. Florian's assertion would, therefore, suggest that peer-mediation as applied in regular education classes should be effective in supporting students with diverse learning needs.

If this is the case, how effective is peer-mediated learning in improving the knowledge, skills, and performance of students with diverse learning needs? This is the question we address in this chapter. Throughout, we use the term *peer-mediated learning* to describe the collection of teaching-learning strategies in which student peers work with and support each other.

PEER SUPPORT: CONCEPTUAL FRAMEWORKS

Mediated learning derives from Vygotsky's writings (e.g., Vygotsky, 1962, 1978). He emphasized the importance of social interaction during which an expert guides a novice through a task to ensure that the novice acquires the higher-level skills desired. Vygotsky has had a major and continuing impact upon the theory and practice of cognitive psychology and its applications to education. One of his primary assertions was the need to accelerate children's cognitive development through education. In other words, schools should not only provide experiences at an individual's current level of cognitive maturity but also should provide a social construction in which learning and cognitive development occurs. This milieu will be affected by the interactions that individuals have with others who are more or less skilled or more or less knowledgeable.

Like the literature and the anecdotal reports that relate to many (if not most) education innovations and technologies, the literature on peer-mediated learning provides a revealing lesson in contradiction. When asked, many classroom teachers at the primary/elementary and secondary levels will claim to use one or a range of peer-mediated learning strategies in their classrooms although most will confess that they do not adhere to the set procedures for any of the well-researched and documented programs. This may be a crucial factor when dealing with students with diverse abilities in any classroom, many of whom need structured learning experiences that build slowly and purposefully on their existing knowledge bases (see Mastropieri & Scruggs, 2001).

We take a step backward here to consider the conceptual frameworks that have guided peer-mediated learning. As others in this compendium have outlined the theory more fully than it is our intention here, we focus specifically on peer-mediated approaches that have been used commonly in inclusive education settings, namely, peer tutoring, peer collaboration, and cooperative learning. While each deals with the way in which students mediate each other's learning, each is different in its conceptual roots and implementation.

Peer Tutoring

Peer tutoring has its roots in teacher-directed learning and the assumption that the most powerful influences on children's behavior at school are other children. This position is predicated on the assumption that peers can do what teachers do, that is, teach.

Interaction with others is seen as critical for the development of children's higher cognitive functions because capable adults and peers mediate children's environments by focusing attention on relevant information and providing the tools for problem solving, such as speech, learning artifacts (e.g., memory strategies), and ways of reasoning.

Children are introduced to new ways of reasoning and patterns of thought when they engage in dialogs with more competent others, so eventually, after repeated exposure to these experiences, a child's thinking and communication processes become internalized as part of his or her repertoire of cognitive skills. By interacting with others, children not only acquire new information but also new ways of thinking that are implicit in the interaction. Furthermore, learning supports (i.e., scaffolding) enable them to complete tasks that they could not do alone (Vygotsky, 1978).

Peer tutoring involves a more able peer (the tutor) working with a less-able peer (the tutee) to help the latter master specific information or tasks; an ideal situation in inclusive classrooms. The tutor is assumed to have greater competence and transmits this expertise to the tutee. The tutor is essentially a surrogate teacher who has control of the information to be imparted and the process(es) to be employed. The relationship between the tutor and the tutee is asymmetrical and the instruction process involves direct teaching, guided practice, feedback, and reteaching until mastery is obtained. This form of direct teaching has been shown to promote students' learning (see Rosenshine, 2009).

Peer Collaboration

Peer collaboration is a second form of peer-mediated learning. Collaboration facilitates the exploration of new ideas, the discovery of solutions, and creation of knowledge unrestrained by a knowledgeable expert who might impose a solution on the problem being addressed. This form of peer-based learning has its origin in Piaget's theory of cognitive growth (Piaget, 1950) with its emphasis on peer interaction. Piaget believed that interactions expose children to different points of view and give rise to a state of cognitive conflict as children are challenged to keep their own points of view in mind while taking account of others that are incompatible. This dilemma creates cognitive tension and disequilibrium, which if it is to be resolved, forces the child to decenter and consider what others have to say. Because individuals are strongly motivated to reconcile contradictions, they will reevaluate and restructure their own thinking on the basis of new the information. Interaction with others is a trigger to social and cognitive change.

Peer collaboration usually involves students of equal abilities actively exchanging ideas about a problem rather than one learning from the other. In this respect, peer collaboration involves symmetrical relationships that are high on equality and mutuality with each member working synchronously on the same part of the problem at the same time (Foot, Morgan, & Shute, 1990). Like peer tutoring, peer collaboration is based on the assumption that children can teach each other, albeit in a more informal manner and with no prescribed roles.

Early studies by Mugny and Doise (1978) and Doise and Mugny (1984) demonstrated the role of sociocognitive conflict in children's cognitive development. Specifically, children learn to coordinate their own actions with those of others to construct new cognitive understandings. Studies such as these have implications for how teachers might establish collaborative learning experiences in classrooms. Providing children with opportunities to explain their thinking processes, even when they are incorrect, enables

them to reflect on different perspectives and to revise their cognitions in the light of new information and ideas. Peers are a particularly compelling source of cognitive conflict because they speak to each other in ways that can be understood easily, they take feedback from each other seriously, and they are strongly motivated to reconcile differences (Damon, 1984).

Cooperative Learning

Cooperative learning is a third form of peer-mediated learning. Cooperative learning involves students working in small groups (3 to 4 members) to accomplish shared goals. Cooperative learning has many characteristics in common with peer tutoring and peer collaboration but differs in its operation as group members have specific behaviors, roles, and tasks to fulfill. Like peer collaboration, cooperative learning is based on an essentially symmetrical relationship so that no member is dominant and all are required to contribute to completing the task and assisting others to do likewise.

While Piaget's (1950) and Vygotsky's (1978) theories explain how children challenge and scaffold each other's learning when they cooperate, social interdependence theory (Deutsch, 1949) offers an explanation for the underlying psychological processes that motivate members to cooperate. Social interdependence theory is based on the premise that the way in which interdependence is structured determines how individuals interact, and the interaction pattern determines the outcomes of the situation. Positive interdependence exists when members perceive that they cannot succeed unless others do and they must coordinate their actions to ensure that this occurs. As group members realize that their success is dependent on the success of others, cohesiveness develops as a direct result of goal interdependence and the perceived interdependence of group members. Once this occurs, group members understand that their efforts are indispensable to the success of the group and if they want to succeed they must work together. This realization motivates cooperation (Johnson & Johnson, 2003).

Numerous studies over the last four decades have attested to the benefits that students derive from working cooperatively together, as will be obvious from other contributions to this volume. Notable highlights within the literature are meta-analyses by Johnson, Maruyama, Johnson, Nelson, and Skon (1981), Johnson and Johnson (2003, Lou, Abrami, Spence et al. (1996), Lou, Abrami, and d'Apollonia (2001), and Slavin (1996).

FROM THEORY TO APPLICATION WITH SPECIAL STUDENT POPULATIONS

While peer tutoring, peer collaboration, and cooperative learning differ in the roles and the activities in which students are expected to engage, the extensive body of research on each approach draws attention to the benefits to students who are achieving according to grade expectations from the early years of school to college, and across different subject areas. And yet, despite the many positive reports of peer-mediated programs that one finds in the professional literature, including our own work (see e.g., Gillies, Ashman, & Terwell, 2008; Heron, Villareal, Yao, Christianson, & Heron, 2006; Maheady, Mallette, & Harper, 2006; Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003; Topping, 2005; Webb, 2009), there are many mixed messages in terms of the success, or lack of it. Large-scale research is also difficult to find and there is an abundance of reports

in which very small-group or small-sample studies predominate (e.g., Baker, Gersten, Dimino, & Griffiths, 2004; Mortweet et al., 1999; Wolford, Heward, & Alber, 2001).

While peer-mediated learning has received considerable attention in mainstream education contexts, there are still relatively few reports of effective use with students with diverse learning needs. Some writers have claimed that well-validated dyadic peer-mediated programs benefit students with and without learning disabilities (e.g., Fuchs, Fuchs, Yazdian, & Powell, 2002) but the evidence to support such claims is far from convincing (e.g., Fuchs, Fuchs, Mathes, & Simmons, 1997; Kuntz, McLaughlin, & Howard, 2001; Rohrbeck et al., 2003).

There are confounding issues in operation in special populations. For example, there are important prerequisite skills for effective and cooperative interactions between peers. So, a student who presents with severe challenging or aggressive behavior might benefit little from social interactions with students in the same classroom who are socially very adept. A student with a severe intellectual disability might not possess the skills needed to communicate with age-peers.

There are also methodological issues that have been raised in the literature. McMaster, Fuchs, and Fuchs (2002), for example, argued that inconsistencies in results might be (partly) attributable to the use of multicomponent interventions that might make it impossible to separate the influence of peer mediation from other aspects of the intervention. And drawing attention to their own program, McMaster, Fuchs, and Fuchs (2006) discussed limitations of the often-reported successful peer-assisted learning strategies (PALS) program. They stated that about 20% of low-achieving nondisabled students do not make expected achievement gains following PALS interventions and more than 50% of students with disabilities fail to show benefits when assessed on reading achievement tests. They drew attention to these students' low phonological competence, low socioeconomic background, low cognitive competence, and attention and behavior difficulties.

PEER MEDIATION AND DIVERSE LEARNING NEEDS

In this section we draw attention to the success (or otherwise) of peer-mediated learning approaches in classrooms that contain students who experience a range of learning challenges. We begin our discussion by focusing on students with learning difficulties where there are arguably more positive outcomes for peer-mediated interventions than in other special groups. We then consider students with emotional/behavior disorders, students with more serious learning difficulties, minority groups, and finally students with special gifts or talents.

Students with Learning Difficulties

Students with learning difficulties comprise a heterogeneous population. Commonly, members of this group experience difficulties with literacy and numeracy that are identified early in the individual's schooling and continue throughout their lives. These students often display difficulties with number and calculation or word recognition, and processing spoken and printed words.

Peer tutoring has a long history although it was not until the 1960s that empirical research began to emerge about the academic and social benefits that accrue to both tutor and tutees (e.g., Allen, 1976; Cloward, 1967; Damon, 1984; Shamir & Lazerovitz, 2007).

In a review of five meta-analyses of the effectiveness of peer tutoring, Lipsey and Wilson (1993) found that tutored students consistently showed improvements in achievement across primary/elementary, secondary, and special education contexts. Mean effect sizes ranged from 0.33 to 0.98 with effect sizes of 0.59 and 0.65 in two analyses using special education students as tutors and tutees. A recent large-scale study would seem to support these findings (see Kamps, Greenwood, Arreaga-Mayer, Veerkamp, & Bannister, 2008).

Kamps et al. (2008) examined the efficacy of class-wide peer tutoring (CWPT) in 52 Grade 6 to 8 classrooms in six urban schools. All students participated in CWPT and three or four of the lowest performing students from each class were also targeted for observation during classroom sessions. Seventy-five such students were observed over the 3 years of the study. The results showed the effectiveness of CWPT and an improvement in the activity level of students in peer tutoring sessions when compared to teacher-led sessions. While the analyses of learning achievements were conducted at the classroom level, an examination of the single-subject results showed strong effects for lower ability students.

Researchers have also targeted specific curriculum areas. Kunsch, Jitendra, and Sood (2007), for example, synthesized the effects of peer-mediated interventions on the mathematics performance of students with disabilities and those at risk of mathematics disabilities. Meta-analytic techniques were used to calculate the effect sizes in 17 studies. Effect sizes ranged from 0.44 to 1.77 for 12 of the studies while the remaining five showed no, or very modest improvement (-0.02 to 0.39). Peer-mediated interventions in regular and special education classrooms achieved mean effect size of 0.56 and 0.32 respectively. The data showed that students at-risk of mathematics disabilities improved most following intervention (mean effect size = 0.66) compared with students with identified learning disabilities (mean effect size = 0.21). A more recent study by Menesses and Gresham (2009) on students at risk of academic failure in mathematics also found large effect sizes ranging from 0.83 to 1.58 postintervention and at the follow-up 3 weeks after the completion of the study.

In reading, Palinscar and Brown built on earlier collaborative learning research to develop their popular Reciprocal Reading program. In a 1984 study, they found that when children with reading difficulties were taught the strategies that successful readers use to comprehend text (i.e., reciprocal teaching strategies), they demonstrated significant improvement over comparison with peers in the quality of summaries and questions they were able to generate, and obtained significantly higher scores on a follow-up comprehension test. Of importance, these results were maintained over time and generalized to classroom comprehension tests, to novel tasks that tapped the reciprocal teaching skills they had been taught, and led to improvements in standardized comprehension scores.

Since then, there have been many studies based on reciprocal teaching. Kelly, Moore, and Tuck (1994) showed significant improvements in students' comprehension scores that were not evident in their comparison peers on a standardized reading test and in daily comprehension tests after 20 days of instruction. Later, Alfassi (1998) investigated differences between reciprocal teaching methods (strategy instruction) and traditional methods of remedial reading (skill acquisition) in students attending remedial reading classes. The results showed that the students who participated in the reciprocal teaching classes obtained significantly higher postintervention scores on experimenter-designed

comprehension tests. Gajria, Jitendra, Sood, and Sacks (2007) found comparable results in a meta-analysis of 29 studies that focused on improving the comprehension of text by students with learning disabilities. Four studies used reciprocal teaching with effect sizes ranging from 0.39 to 1.21.

Positive outcomes have also been shown for collaborative strategic reading (CSR), also based on Palinscar and Brown's (1984) reciprocal teaching. Bryant et al. (2000), for example, used CSR as part of a multicomponent reading intervention with students with reading disabilities, low-achieving, and average-achieving students in Grade 6 classes. Only moderate effect sizes were found with a subgroup of students with severe reading difficulties showing no improvements as a result of the intervention. Klinger, Vaughn, Arguelles, Hughes, and Leftwich (2004) reported somewhat similar result in another CSR study. They found a low overall effect size of 0.19 although when compared by achievement level, low-achieving students and students with learning disability outperformed their peers in the control condition recording effect sizes of 0.51 and 0.38 respectively.

In summary, the effects of specific peer-mediated interventions on students with learning difficulties appears to be positive with many studies attesting to the benefits these students derive from such interventions. However, the results are less clear for students with severe or challenging behaviors who may not have the requisite social or intellectual skills needed to communicate with their peers to enable them to benefit from such interventions.

Students with Emotional and Behavioral Disorders

Students with these difficulties present with a range of characteristics, from what might be considered unacceptable behavior within a classroom (e.g., calling out, distracting others from their work) to those diagnosed with Asperger's syndrome, attention deficit hyperactivity disorder, and autism spectrum disorder (although we deal with this more explicitly below).

Social skills have often been a target of peer-mediated learning programs. At times, the affective outcomes have been considered as secondary consequences to academic skills. In other times, changes in social interactions have been the researchers' primary concern.

Peer-mediated learning, such as class-wide peer tutoring and cooperative learning, have been used to promote academic gains with students with emotional and behavior disorders in mainstream and special school settings (e.g., Bowman-Perrott, 2009; Bowman-Perrot, Greenwood, & Tapia, 2007). The results, however, have not been spectacular despite reviewers' optimistic conclusions. Ryan, Reid, and Epstein (2004), for example, examined 14 studies undertaken between 1982 and 2000. They found positive academic outcomes across all forms of peer-mediated interventions with overall high consumer satisfaction. They noted, however, that only eight studies were conducted in general education classrooms. While the reviewers were complimentary in their conclusions, an examination of their summary table prompts caution. The results for eight studies were uniformly positive. For three, there were mixed results showing gains and no gains, and in three studies there were marginal or no appreciable gains.

Sutherland, Wehby, and Gunter (2000) reported similar findings to those of Ryan et al. (2004) in a review of eight cooperative learning studies and Spencer (2006) reported comparable results. Spencer reviewed 38 peer-tutoring studies undertaken between

1972 and 2002 and examined data according to grade levels. Many of the studies undertaken in elementary classrooms showed positive outcomes for participants in reading, language, and mathematics. She reported mixed findings on attitude measures although there were increases in positive social interactions between students with and without a disability. In contrast, studies undertaken in the middle years and senior years of schooling were not as positive. Despite the variability of outcomes, Spencer concluded on a positive note, stating that there is an emerging body of evidence to suggest that students with emotional or behavior disorders may benefit from peer tutoring.

Comments that we made earlier about the importance of prerequisite social skills were also raised by Hodges, Riccomini, Buford, and Herbst (2006) in their report of peer-mediated interventions with students with emotional or behavior disorders. They stated that peer-mediated instruction might be beneficial for these students in social and academic areas but because of the difficulties that many of these students have in interpersonal relationships, it would seem imperative that researchers include specific training on interpersonal skills to enable them to work effectively in dyads or small groups. They cautioned that the lack of research related to academic achievement would suggest that replication and systematic collection of student performance data would be necessary to validate intervention outcomes.

Research by Cohen and her colleagues is relevant here (Cohen, Lotan, Abram, Scarloss, & Schultz, 2006; Cohen, Lotan, Scarloss, & Arellano, 1999). In a series of studies, these investigators documented the success of Complex Instruction in addressing issues of social and academic competence in diverse classrooms; that is, classrooms with students with a range of learning, linguistic, and social needs. Cohen et al. argued that low status is often assigned to students in classes because they are perceived as not having the social or academic competencies of their peers. To overcome this problem, she advocated two strategies: (a) the multiple-abilities treatment and (b) the assignment of competence to low-status peers. Both strategies require the teacher to publicly recognize the wealth of intellectual abilities that are valued in daily life in the classroom and the importance of positively evaluating the competencies of low-status students.

Results of their work indicate that the interventions increased participation by low-status students in peer group discussions and the quality of the group products produced. While these results provide teachers with an instructional approach to ensuring that students with low status are included in peer group work, Cohen, Lotan, Abram, et al. cautioned that groups need to be structured to ensure that students are able to participate and all “students must be trained in the skills for harmonious and helpful discourse” (2006, p. 1066) if small-group work is to succeed.

Students with Low Incidence Disabilities

This a heterogeneous group of individuals including those with moderate intellectual disability, acquired brain injury, physical, and sensory impairments. Young people with autism spectrum disorder (ASD) would also fall within this classification, recognizing that some display serious social and emotional disturbances. Consistent with comments in the previous section, not all attempts to improve academic and social outcomes via peer-mediated learning have been successful (e.g., Brinton, Fujiki, & Higbee, 1998; Brinton, Fujiki, Montague, & Hanton, 2000).

Many studies involving students with severe impairments or disabilities have focused on social and emotional outcomes rather than academic outcomes (e.g., Liberman,

Dunn, van der Mars, & McCubbin, 2000; Morgan, Whorton, & Turtle, 1999; McDonnell, Mathot-Buckner, Thorson, & Fister, 2001; Ryan & Paterna, 1997). Most studies of peer-mediated learning with students with intellectual disability have been conducted in special classes or other special education settings. Few have been undertaken in general education classrooms (see Mortweet et al., 1999). One such study by Jacques, Wilton, and Townsend (1998) examined the effects of interactions between 24 students with mild intellectual disability and their nondisabled peers in the context of cooperative learning. All of the students were in regular education settings although half had attended special education classes prior to the intervention. The nondisabled students in the experimental condition demonstrated significant increases in their social acceptance of the children with a disability immediately after the program using a sociometric procedure. There were no changes in social acceptance in the control setting. Jacques et al. noted that teacher ratings of the experimental group's social adjustment were not significantly different from those of the control group immediately after the intervention, or at the 5-week follow up.

In a later study, Piercy, Wilton, and Townsend (2002) again implemented a cooperative learning program to improve the social acceptance of children with moderate to severe intellectual disabilities. The children interacted over 10 weeks in three experimental conditions (cooperative learning, social-contact, and no classroom contact). At the completion of the program, the students without a disability in the cooperative learning groups rated the students with disability more positively on peer acceptance, popularity, and social-distance than children who participated in the two control group settings.

One infrequently addressed issue is students' perceptions of peer-mediated learning. Koh, Tan, Wang, Ee, and Liu (2007) interviewed 13- to 14-year old Singaporean students with low ability to gain an understanding of the students' views about the effectiveness of group project work. They found that while students appreciated some of the benefits of group work, they did not view group work as a high priority and tended to put less effort into those activities. Students also reported that they received little training in the skills required for group work and perceived the teacher, rather than themselves, as being in control of the process and outcomes.

A number of studies have also been conducted on the effectiveness of peer-mediated learning with students with ASD. The usual focus of attention has been either social acceptance by peers or the development of social, cooperative behavior in the student with ASD. Weiss and Harris (2001), for example, discussed the importance of the placement of socially competent students with peers displaying autistic behavior, the training of peers to manage autistic behavior, and the initiation of interactions with autistic students. Other social skills of importance to the success of cooperative learning activities include answering questions, turn-taking, and looking at others when they speak. Weiss and Harris argued that proximity alone does not bring about enduring social change or the generalization of social skills beyond the training context.

Other writers have expressed similar views to Weiss and Harris (e.g., Downs & Smith, 2004; Harrower & Dunlap, 2001). Harrower and Dunlap, for example, drew attention to investigations in which class-wide peer tutoring and cooperative learning models were used successfully. In these, they referred to improvement in targeted academic skills and engagement. There were also increased interactions between children with ASD and their classmates who learned to cue and prompt the students successfully to facilitate

achievement in the target areas. While these approaches may seem to work effectively in inclusive classrooms, Harrower and Dunlap cautioned that increasing the rate of social interaction among children with disability through peer-mediation might not always lead to enduring changes outside of the program settings, echoing comments made by Cook and Semmel (1999).

Additional issues have been raised about peer-mediated interventions with students with ASD. Chan et al. (2009), for example, argued that there is potential for exaggerating target students' deficits when they are paired with typically developing peers, in particular the potential for adverse effects on students who might miss learning important academic skills while they were involved in peer-teaching. Chan et al. also drew attention to the lack of fidelity in classroom/teacher-managed interventions, and the need to evaluate the classroom environment carefully to support peer-mediated interventions.

The Chan et al. (2009) review highlights concerns that are common to peer-mediated intervention studies with special student populations. Of the 42 studies, 34 had no more than three participants, and only two studies had more than 15 participants. Many of the studies did not measure the fidelity of the intervention. It is perhaps of greatest concern that the reviewers concluded their paper with the comment, "This review and others...indicate that PMI is supported by a solid research base" (p. 887). From our point of view, this is a considerable exaggeration.

Students with Minority Group Background

Every country has its minority groups. These include the indigenous inhabitants, ethnic minorities that have resulted from immigration, and more recently through refugee programs. Most cultural knowledge is mediated by relationships that exist within a community. In indigenous societies, this often occurs between youths and elders. But in all cultural contexts, there is a need for someone to translate social and cultural knowledge so that it can be internalized by the learner. Children must learn cultural standards, mores, values, and traditions and integrate this knowledge into their own thinking and behavior. In other words, they must transform external stimuli into internal codes that are consistent with their own knowledge by changing and modifying the original ideas and applying their unique cognitive character to them.

The commitment to social connectedness and cooperative learning are often listed among the learning styles that are characteristic of indigenous cultures and in multicultural societies. Watkins (2002) focused on these issues in African American communities in the United States. Watkins found that 2- to 5-year-olds were able to distinguish between the relative utility of teachers and peers. Contrary to what one might expect, they commonly approached teachers for social help and peers for academic help. Older children and youths are often more successful in mediating learning for their peers than are adults. One important reason for this is their use of language that expresses commonly held values, attitudes, beliefs, and shared life experiences. Young people are also often observed to employ a form of apprenticeship with each other that involves coaching, modeling, and observational learning. This behavior can be seen readily at any skateboard park.

It is not surprising that peer-mediated learning is seen as a valuable teaching tool in schools where there is broad cultural diversity (e.g., McDuffie, Mastropieri, & Scruggs, 2009) as the outcomes might benefit students from the nondominant culture. In their meta-analysis, Rohrbeck et al. (2003) reported that these students benefited more in

terms of academic outcomes from peer-assisted learning (PAL) interventions than students from the dominant culture. They suggested that PAL (conceptually similar to peer collaboration) might establish links between home and school, thereby providing continuity in the learning process. For vulnerable students, Rohrbeck et al. suggested that the messages about academic achievement might be communicated across family, school, and peer group boundaries. The one complication here is the degree to which the results of collaboration endure beyond any intervention. Samaha and De Lisi (2000) have provided a useful example of this.

Samaha and De Lisi (2000) worked with Hispanic and African American Grade 7 students (nearly 78% were Hispanic). One group worked independently while others worked in mixed- or same-sex small groups on nonverbal reasoning tasks that required the selection of correct answers and the generation of explanations for their solutions. The mixed-sex groups outperformed other groups although the quality of judgments declined significantly across all groups at the posttest when compared with their performance during the experimental phase. Samaha and De Lisi argued that peer interactions appeared to be beneficial at the time of the collaboration although there was little generalization of learning when the participants were later required to work on their own. Despite this, the quality of explanations made by the collaborating students did not decline as much as their peers. The authors cautioned, however, that their study involved only one class period and dealt with abstract problem solving rather than typical curriculum tasks.

Gifted and Talented Students

Giftedness refers to above average performance in one or more domains of human natural abilities, such as intellectual, creative, socioaffective, or sensorimotor. Talent is reflected in above-average performance on systematically developed skills in one or more areas of human endeavor, such as technical, artistic, interpersonal, or athletic capability.

Usually, we think of diverse learners as those with learning difficulties, forgetting that at least some gifted and talented students find school a very lonely, frustrating, and discouraging place (Ashman & Merrotsy, 2009). There has been debate in the professional literature over the advantages and disadvantages of peer-mediated learning activities for students who are gifted and talented. Some writers have argued that peer-mediated learning fails to take the needs of these students into consideration, especially their need for flexibility, variety, curiosity, and independent discovery learning (Gallagher & Gallagher, 1994; Robinson, 1991). There have been several studies that have produced mixed outcomes in terms of these students' achievements, attitudes toward the curriculum and learning, self-efficacy, and learning style (e.g., Coleman & Gallagher, 1995; Neber, Finsterwald, & Urban, 2001; Robinson, 2003). Robertson considered that the role often given to gifted students as the "explainer" and the teacher's helper constitutes exploitation of brighter students, echoing views expressed by Ross and Smyth (1995).

Understandably, supporters of peer-mediated learning do not believe that the interactions and experiences of the brighter students that occur in mixed ability groups are exploitive, and even those who are critical of mixed ability grouping, express at least some support for peer-mediated learning. Melser (1999), for example, found that Grade 4 and 5 gifted students gained in self-esteem in heterogeneous groups and lost self-esteem in homogeneous groups although, in both contexts they gained in the targeted

academic area, reading. Contrary affective and academic results were reported by Shepard and Kavevsky (1999) and Ramsay and Richards (1997) who claimed that gifted students were less positive about cooperative learning than their average-ability peers although it appeared as though their attitude toward school subjects was unaffected. More recently, Garduno (2001) found that Grade 7 and 8 gifted students made some limited academic gains in cooperative learning settings but lost motivation when they were required to explain content and processes to their peers. Overall, participants had a more positive attitude toward mathematics in whole-group, competitive settings than in cooperative settings.

Individual differences among students may account for equivocal results across peer-mediation studies that involve gifted and high-achieving students. In their cluster and factor analytic study, Feldhusen, Dai, and Clinkenbeard (2000) differentiated students into five relatively homogeneous groups. Some gifted students presented a desire to outperform their peers while others viewed competition as an energizing agent within the classroom learning context. Feldhusen et al. noted that gifted students generally were not negative about competitive or cooperative learning conditions. They were able to discriminate between situations in which each was an appropriate learning context and self-aware of their own preferred learning style.

In their meta-analysis of cooperative learning studies involving gifted students, Neber et al. (2001) concluded that cooperative learning approaches can result in small to medium learning gains for gifted and high-achieving students, notably in the low and middle grades. They claimed that there were few studies available that had the methodological precision to enable more robust conclusions to be made about peer-mediated learning, and cooperative learning in particular. Specifically, they stated that there are some studies in which gifted students have been advantaged in mixed ability settings while other researchers have reported gains for these students in homogeneous groups of gifted or high-achieving students only. One of the complications it seems, is the lack of detail in the description of research methods in terms of the accurate application of cooperative learning, and in particular the explicit requirement for goal-interdependency among work group members.

More recently, Patrick, Bangel, Jeon, and Townsend (2005) took a slightly different approach to the debate about the efficacy of peer-mediated learning for gifted and talented students. They claimed that the discussion about whether peer-mediation (cooperative learning in this case) is beneficial to high-achieving students should concentrate on the process of task-related interactions. Rather than viewing cooperative learning as a single approach, there should be a more substantive analysis of the similarities and differences in the nature and type of the dialogues that are promoted by different cooperative learning approaches. They concluded that the types of task and the cognitive and interactive processes are important. Formats that emphasize transmission of factual information seem most likely to engender concerns when gifted students' are placed in mixed ability groups because of differences in learning speed between average and gifted students. In contrast, there appear to be benefits for both average and gifted students when higher order thinking and comprehension is required, when students are expected to explain and justify their ideas and reasons.

At this point, it appears that there are situations in which the intellectual needs of gifted students can be accommodated in peer-mediated learning. Patrick et al. (2005),

however, have warned that mixed ability grouping and collaborative learning approached do not inevitably benefit those students.

THE FUTURE OF PEER-MEDIATION AND INCLUSION

The evidence we have presented above suggests that we might have some distance to go to validate the claim that peer-mediated learning is successful in bringing about academic gains and social benefits to students with diverse learning needs. The lessons to be learned from the literature in regard to these students parallels those derived from the large body of literature on peer-mediated learning. Kavale (2007) and Hattie (2009) have not been overly enthusiastic about the outcomes of peer-mediated learning research. Kavale quoted mean effect sizes for peer mediation as 0.64, for peer tutoring as 0.62, and cooperative learning as 0.40. Hattie found mean effect sizes for cooperative learning as 0.41 and for peer tutoring as 0.55, both of these being in his zone of desirable effects. Notwithstanding this, the studies we have presented above show very large variations in effect sizes, from near zero to a very substantial 1.77.

There are many reasons for these outcome variations, not the least important is the lack of systematic application of well-researched interventions, to which Chan et al. (2009) referred as the lack of fidelity in teacher-managed interventions. Walker et al. (1998) had already made similar comments. They stated that many teachers seem to rely upon a somewhat unsystematic assortment of activities, unplanned curricula, and conceptually incompatible interventions in their teaching and classroom management.

Rohrbeck et al. (2003) appear to take Walker et al. (1998) to heart when they stated that at-risk students generally receive instruction marked by poor use of instructional time, lower expectations, and less opportunity for learning. However, they still went on to conclude that there is strong evidence for the effectiveness of PAL interventions with these vulnerable students. Comments by Antil, Jenkins, Wayne, and Vadsy (1998) add to this point. They conducted follow-up interviews with 21 teachers involved in their study who reported using some form of cooperative learning. Only one of those interviewed said that they used the five fundamental components (i.e., positive interdependence, individual accountability, promotive interaction, group processing, and development of small group social skills). Five others reported using positive interdependence and individual accountability. And while one might casually pass judgment on teacher adaptations of well-researched programs, the recommendations offered by researchers to guide the implementation of peer-mediated strategies are often vague and unhelpful. Mortweet et al. (1999), for example, suggested that successful inclusive environments for students with special learning needs should be designed to maximize academic achievement through teacher-directed group activities, high levels of student engagement, student-teacher interactions, appropriate pacing of lessons, questioning and feedback, and the structured use of peers. These are all sensible ideas, but lacking in practical application.

We conclude by referring to comments found at the conclusion of many journal contributions, that peer-mediated learning in any of its high profile forms has the potential to improve the learning outcomes and social skills of students with diverse learning needs. Patrick et al. (2005) take this point further. They stated that students with special learning needs might benefit from peer-mediating learning experiences but it is not

inevitable that they will if placed in such a learning context, and it is certain that peer mediation is not necessarily the most efficient or effective learning strategy for all.

There are lessons to be learned from an analysis of the peer-mediated learning literature as it relates to students with special needs. First, peer-mediation approaches must be applied with fidelity. All of the well-known approaches have been tested persistently over the years and their success requires accurate and authentic application of the processes. Second, careful consideration must be given to the characteristics of the students involved. In a class of 25 students there are 25 personalities, 25 learning histories, and arguably 25 preferred approaches to learning. It is not unreasonable to suggest that peer-mediation will be appealing in every learning situation or with every student peer. Third, we echo the sentiments of several meta-analysts that a larger body of research is warranted to unravel the constellation of issues that contribute to successful outcomes for students with diverse learning needs.

Over many years, we have advocated strongly for the use of peer-mediated learning in primary/elementary through the secondary years of schooling. We recognize that teachers are skilled practitioners and, like Florian (2008) we believe that they are suitably prepared to teach students with a diversity of skills and abilities typically found in mainstream classes. It is also our view that some do not recognize the importance of preparing students for cooperative and collaborative learning activities. If students do not possess the necessary prerequisite skills, including social and interactive skills, then peer-mediated learning is bound to be less successful than desired.

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