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The Clash of the Paradigms: Tracking, Cooperative Learning, and the Demolition of the Zone of Proximal Development

This report describes the effect of cooperative learning in low-track and regular classrooms, using the dimensions of student alienation, academic self-esteem, willingness to cooperate, and academic supportiveness. The investigators examined the influence of student agency in choosing peers for the cooperative groups in a high school science classroom. Results indicate that the ability for low-track students to choose group mates can result in greater feelings of alienation, have no effect on bolstering a lower academic self-esteem, and reduce willingness to cooperate with peers. Regardless of stream, students did not feel academically supported by peers in the classroom. Recommendations for using cooperative learning and coping with educational reform are discussed.

Ce rapport décrit l'effet de l'apprentissage coopératif dans des salles de classe d'éducation spécialisée et des salles de classe régulières et ce, sous l'optique de la marginalisation des élèves, l'estime de soi sur le plan académique, la volonté de coopérer et le soutien académique. Les chercheurs ont examiné l'influence de l'action par les étudiants dans le choix de pairs pour les groupes coopératifs dans un cours de science à l'école secondaire. Les résultats indiquent que la capacité qu'ont les élèves de la voie éducation spécialisée à choisir des partenaires de groupe peut entrainer les effets suivants : augmentation du sentiment de marginalisation; aucun rehaussement du faible estime de soi sur le plan académique; et diminution de la volonté de collaborer avec les pairs. Les élèves dans les deux voies ne sentaient pas d'appui académique de la part de leurs pairs en classe. Nous discutons de recommandations pour l'emploi de l'apprentissage coopératif et pour la gestion de la réforme de l'enseignement.

Most educators and parents accept that the better the fit between student abilities and instruction, the better the learning outcomes (Hallinan, 2000). This belief is manifested in how schools are organized; elementary, middle, and high school are the three most common educational system structures. In these broad categories, classes are grouped by grade level, and in grade level, they may be grouped by achievement: high, medium, and low. In classes, students

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may also be grouped according to ability, interest, sex, role, ethnicity, and so forth (Lou et al., 1996). These organizational structures are intended to provide the best fit between what students bring to the learning environment and instruction. The move to organize schools according to these organizational structures reflects an inherent mental model about schools, which is the business efficiency model of education that emerged in the early part of the last century (Altenbaugh, 1987). Embedded in this model is the equation of achievement with "school productivity" and a concern for cost effectiveness, which in turn determines the allocation of resources, class size, and authorized instructional methods.

In an effort to maximize school productivity and student achievement, waves of educational change instituting a variety of revolutionary instructional strategies have swept through school systems at various times. Often one reform seems hardly implemented before another arrives to take its place (Bunting, 1999). Two common approaches used in schools to instruct and organize students are cooperative learning and tracking by ability level or patterns of achievement. Over the years, research in cooperative learning has consistently shown increases in academic achievement, increased motivation to learn, and the promotion of social equality (Lou et al., 1996). Research investigating the benefits of tracking by ability or achievement is largely inconclusive (Zimmer, 2003).

This project had two primary goals. The first focused on investigating the social effect of cooperative learning. Would this instructional method lessen feelings of alienation and increase academic self-esteem in tracked low-achieving classrooms? The second goal was focused on the effects of student choice over group composition and if this personal agency would lessen any feelings of alienation and increase academic self-esteem in tracked low-achieving classrooms. The intent of this study was to investigate the suitability of using cooperative learning with tracked low-achieving students. Throughout the article the terms *tracked* and *low-achieving* (LA) are used to refer to low-achieving students placed in tracked classes and *mainstream* or *regular achieving* (RA) are used to refer to students who are in regular classrooms receiving no special accommodations.

Review of the Literature

Tracking

Organizing students or classes for instruction on the basis of perceived ability is usually referred to as *tracking* or *streaming*. Tracking refers to a practice in which students are placed into separate curricular tracks, or streams, based on their record of achievement (Oakes, 1992). Ability grouping typically refers to the formation of small, homogeneous groups in which students of like ability are placed to work on tasks or assignments (Lou et al., 1996; Webb & Palinscar, 1996).

Tracking students by ability can be accomplished in a class (within-class grouping) where students are placed together according to ability level, or between classes (between-class grouping) where students are placed in tracks or streams for some courses (Abrami et al., 1995). Tracking is particularly common in middle and high school, although some streaming of students has been done at the elementary level (Mehan, Villanueva, Hubbard, & Lintz,

1996). It has been reported that approximately 90% of schools with grades 7-9 employ some type of tracking of students on the basis of ability (Becker, 1987).

Historically, tracking was used as a way of grouping students to match instruction to ability level and thereby enhance learning. Philosophically, tracking reflects the instructional paradigm promoted by Gagné (1974, 1975, 1984, 1985; Gagné, Briggs, & Wager, 1988). Differences between individuals lie at the heart of Gagné's model. Differences in executive control processes, rates of learning, entry capabilities, readiness, and motivational expectancies determine whether learning will occur. The unique needs of each learner must be addressed in the conditions of learning. It is, therefore, more efficient if classrooms are organized so that students with the same or similar needs, levels of prior knowledge, and discourse comprehension are grouped together.

Although several possible models of tracking are used in schools, the underlying goal remains the same: to place students of similar abilities together so that they can be taught together (Oakes, 1992). Despite the wide array of models, three broad tracks are commonly found: (a) a high track, with honors courses and college preparatory classes that prepare students for advanced admission; (b) a general track that serves the group of students in the middle, who are neither gifted nor low-achieving; and (c) a low track, consisting of vocational courses and some low-level classes with simplified content of traditional academic classes such as consumer math (Loveless, 1998). Smith-Maddox and Wheelock (1995) reported,

> Since the 1920s most schools enrolling adolescents have offered a "tracked" curriculum—a sequence of academic classes that range from slow-paced remedial courses to rigorous academic ones and an array of electives or exploratory classes in the arts, vocational subjects, and physical education. (p. 222)

The benefits of tracking typically include additional teacher support and being with other students who are experiencing similar academic difficulties. By separating students along achievement or ability levels, administrators and teachers hope that students will not feel alienated, stand out, or be left behind in a heterogeneous class. In addition, many schools do not place low-achieving students full-time in tracked classes; rather, tracking is used only in some subjects such as math, science, English, and social studies. Students are in regular classes for other subjects (Loveless, 1998; Mitchell, Reilly, Bramwell, Solnosky, & Lilly, 2004). Supporters of tracking claim that it helps teachers and schools meet the diverse needs of students by streamlining instruction and tailoring the curriculum to meet the needs of students. It provides low-achieving students with extra attention, a slower pace, and reduced content that many require. It permits higher-achieving students to work with other high-achieving students and to be challenged by a faster pace with more demanding instruction. Finally, it allows teachers to supply varied materials and more support tailored to meet the needs of each group (Mills, 1998).

The negative implications of tracking are equally numerous. Oakes and her colleagues report that among other things, tracked students are at greater risk for dropping out, are open to more ridicule from peers, report more feelings of alienation, and fail classes at a higher rate (Oakes, 1983, 1986a, 1986b, 1986c, 1986d, 1987, 1988, 1992, 1995; Oakes & Guiton, 1995; Oakes & Lipton, 1992;

Oakes & Stuart Wells, 1998). In some instances, it was found that teachers exhibited less willingness to give the same attention to tracked or low-achieving students (Rosenbaum, 1999-2000). Oakes (1985) reported that in reality, students in lower-track classes received a different kind of educational experience from that of their peers in regular classes; the amount and type of material covered, as well as the quality of instruction, differed greatly between the low-tracked and regular classes. Research has also shown that low-tracked classrooms tend to have fewer resources (learning materials, computers, etc.), low-level curriculum and instructional approaches (characterized by rote learning strategies, repetitiveness, etc.), and less powerful learning environments (not engaging students in discussion, forcing students to work in homogeneous groups, less time spent on higher-order and critical thinking skills, and lower levels and less useful feedback, Oakes & Stuart Wells, 1998; Raudenbush, Rowan, & Cheong, 1993; Slavin, 1987; Slavin & Braddock, 1993).

On the other hand, not everyone believes that tracking is harmful to students. Indeed, some parents of high-ability students are among its strongest proponents. In one instance where tracking was eliminated, parents rebelled and forced the school to reimplement the tracking program (Fahey, 2000). Their rationale was based on the assumption that the achievement of the higher-ability students was harmed in heterogeneous classrooms.

Ability tracking is a controversial issue, and proponents on both sides of the argument point to research to bolster their claims that tracking is either good or bad depending on the position adopted. In one study, findings from 21 grade 8 science classes (445 students) showed that group ability composition had an effect on academic performance and that heterogeneous groups provided more of a benefit for below-average students than a detriment for high-ability students (Webb, Nemer, Chizhik, & Sugrue, 1998). In another study, an analysis of national data found that low-achieving students performed better academically in tracked classes when they were with other low-achieving students, yet performed better in non-tracked classes when they were with high-achieving students, but not normally achieving students (Zimmer, 2003). As the debates about tracking continue, it is nonetheless a standard part of many schools.

Cooperative Learning

A less controversial approach to organizing students in the classroom is cooperative learning. Lately, cooperative learning has been an integral instructional method for many teachers and the focus of numerous professional development seminars. Philosophically, cooperative learning is based on a theory of incentive structures and their relationships to goals. Cooperative incentive structures flourish when two or more individuals are rewarded based on their performance as a group rather than on individual performance alone (Graham & Weiner, 1996). Cooperative learning promotes students as active and social learning agents, and teachers take on an information-giving and content expert role.

Conceived as an antidote to tracking and as an alternate organizational structure for schools (Mehan et al., 1996), cooperative learning takes an antithetical approach to instruction and classroom organization. Rather than promoting homogeneity as tracking does, a key characteristic of cooperative learning is the use of groups that are heterogeneous in membership, repre-

senting a cross-section of the environment (Johnson, Johnson, & Holubec, 1992). Most cooperative learning approaches call on teachers to create groups and determine membership according to standards that maximize diversity of abilities, learning styles, sex, race, class, culture, or other relevant qualities (Cohen, 1984, 1994; Cohen & Lotan, 1995; Kagan & Kagan, 1994; Slavin, 1995) in order to promote achievement in terms of higher grades for all students. Teachers are encouraged to use heterogeneous groups as these promote the acceptance of diverse styles and points of view, maximize achievement in mixed ability classes, and produce benefits in socioemotional domains (Lou et al., 1996; Slavin, 1995; Slavin & Braddock, 1993).

The salience of heterogeneity points to the instructional paradigm underlying cooperative learning, that of the zone of proximal development (ZPD, Webb & Palincsar, 1996). The ZPD is the place where cognition is co-created and learning and cognitive developments are supported. It is defined as "the distance between the actual developmental level as determined by independent problem-solving and the level of potential development, determined through problem-solving under adult guidance or in collaboration with more capable peers" (Vygotsky, cited in Wertsch, 1985, p. 11). The ZPD is created in the interaction of the student and the other. Low-achieving students benefit from heterogeneous grouping because it provides them with the chance to work with more capable peers. These more capable students provide a scaffold (Wood, Bruner, & Ross, 1976) for low-achieving students, so that these students can learn effective learning and study strategies. In turn, the more capable students make gains in social-emotional areas, and are able to consolidate their knowledge by "teaching" it to others.

Social benefits of cooperative learning. Heterogeneous cooperative grouping is also seen as the antidote to the systematic alienation of minorities and women in math and science courses. It is recommended that groups be formed with mixed abilities that statistically reflect the overall gender and racial mix in a classroom, so that the majority may understand minority approaches (Oakes, Ormseth, & Camp, 1994). However, Slavin (1990) cautioned that too thin a distribution of minority students might actually be harmful, especially in nontraditional areas, because this may in effect be isolating for the minority students (i.e., being the only one in the group). Other research highlights the effects of student alienation on achievement scores that some groupings may produce (Johnson, 1997; Rosser, 1997). Not all groups demonstrate the underlying assumption of cooperative learning, that is, that students' voices are heard and valued simply because they are members of the group (Evans, 1996). Women, for example, are more likely to drop out of a group if they are the only woman, especially in nontraditional settings (Light, 1990). Etzkowitz, Kemelgov, Newschatty, Uzzi, and Alonzo (1994) argued for groupings of several women or people of color in cooperative learning groups in order to reduce isolation and spotlighting of their differece.

Research on the efficacy of cooperative learning suggests that it is a benefit to most students (Lou et al., 1996). Several studies have documented the benefits of cooperative learning including improved academic achievement, as well as improved social and emotional outcomes for students of all ages and

grades (Cohen, Manion, & Morrison, 1996; Cooper, 1999; Orlich, Harder, Callahan, & Gibson, 1998).

Cooperative Learning in Tracked Classrooms

Although cooperative learning has been promoted as a remedy for tracked schools, there are instances of school systems that use some form of tracking structure for their schools, yet promote through board-wide professional development programs the use of cooperative learning in the individual teacher's classroom. Currently, no published research has investigated the effect of cooperative learning strategies on students in tracked classrooms.

Although the established benefits of cooperative learning are numerous, theoretically, tracked students may not experience some of the most powerful benefits associated with this approach. Practically speaking, when used in homogeneous classrooms, the benefit of working with more capable peers, both socially and intellectually, is virtually eliminated, thereby weakening the foundation on which cooperative learning rests, the ZPD. Although there are disputes as to how homogeneous the tracked classroom really is (Cruikshank, 1995), the range of capability may not be diverse enough to establish meaningful ZPDs. This restricted pool may force students to work with peers of similar achievement or ability levels, resulting in unsatisfactory experiences in group work. Thus these students lose out on the opportunity to work and learn from their higher-achieving peers. This suggests that teachers and students live and work in environments that encompass competing and contradictory paradigms of learning and instruction.

Summary

As the debate about the effectiveness of tracking continues, it nevertheless remains a part of many schools and school districts as an accepted approach to teaching low-achieving students. As cooperative learning has shown positive learning outcomes in many areas (Lou et al., 1996), and the benefits of tracking are mixed, we sought to investigate if cooperative learning had a beneficial effect on low-achieving students (LA) in terms of the social dimensions of learning: preference for working in groups, belongingness, academic self-esteem, and support for peers. We were interested in the effect of student agency with regard to choosing their cooperative group members. Accordingly, we examined if tracked and mainstreamed students who controlled with whom they worked in cooperative learning triads reported greater belongingness, more support from their peers, greater self-esteem, and cooperativeness. Specifically, we sought answers to the following questions:

1. Does cooperative learning increase feelings of belongingness among students in tracked low-achieving classrooms?
2. Does controlling group composition increase feelings of belongingness in tracked low-achieving classrooms?
3. Does cooperative learning increase student academic self-esteem in tracked low-achieving classrooms?
4. Does controlling group composition increase academic self-esteem in tracked low-achieving classrooms?

5. Does cooperative learning increase the likelihood of students feeling cooperative toward classmates and supported by peers in tracked low-achieving classrooms?
6. Does controlling group composition increase the likelihood of students feeling cooperative toward classmates and supported by peers in tracked low-achieving classrooms?

Methods

Participants

Participants were 113 grades 10 and 11 students (47 girls and 56 boys, ranging in age from 14 to 18 years, M=15.73) who were enrolled in four science courses in a small high school (N=400) located just outside a large eastern Canadian city. Most of the participants (99.3%) were English-speaking Caucasians, so no analyses of ethnic differences are presented. Parental permission was required for students to participate. The same teacher taught all four classes using the same instructional strategy of cooperative learning.

Teacher Characteristics

The teacher (Tony) had been teaching science courses for 30 years and was certified to teach in his area. He had four science classes streamed according to achievement level: two low-achieving classes and two regular classes. The two regular classes were courses that are required to complete high school. Students unable to pass the regular science courses were not permitted to graduate. Tony used cooperative learning to facilitate student engagement with the material and to move toward a more student-centered environment. He was active in researching his own practice, and through his self-reflections began to question the efficacy of cooperative learning with some of his students.

School Characteristics

In this school, the tracking system was mixed. Students were tracked in science but may not have been tracked in other subjects. Tracking would occur by differentiating the course number: the higher the number (e.g., Math 536 versus Math 514), the more advanced was the track. Students were assigned to tracks for the express purpose of adjusting the curriculum to meet their needs. Placement into the tracked classes occurred in one of two ways: either failing one of the regular science classes the previous year or exhibiting a consistent pattern of low achievement across several school subjects. However, this school did not follow a rigid model of tracking. Students who passed the end-of-year exams could be reintegrated into the mainstream the following year. If they did not pass the course, they remained in the tracked class for another year. Finally, if they did not pass the course a second time, they were prevented from completing their high school leaving certificate.

The tracked classes received no additional resources from the school or district, and the only accommodation the teacher was able to make was delivering instruction at a slower pace. However, rather than just implementing one instructional method, the teacher attempted to raise the classroom intellectual goals and expectations by placing students in cooperative learning groups and having them solve problems and work together on lab assignments. Tony thought that this classroom organizational structure would make the work more meaningful for students and at the same time permit them to question

each other, to seek clarifications when needed, and to engage in higher-level discussions with peers. In all four classes, the teacher had a full-time lab assistant working with him.

Measures

The Classroom Climate Instrument (CLI, Johnson, Johnson, & Anderson, 1983) was used to measure attitudes toward group work. The CLI is a 5-point scale ranging from 1 = *Completely False* to 5 = *Completely True*. The CLI consists of several subscales that measure students' attitudes on cooperativeness, feelings of alienation, academic self-esteem, academic support, goal and resource interdependence, external motivation, cohesion, grading practices, independent learning, competitive learning, controversy, and valuing homogeneity and heterogeneity. Typical questions include, "In this class, other students like to help me learn," "I like to work with others in this class," and "I often get discouraged in school." Reported reliability coefficients range from .61 to .83 across all subscales.

Design

The study used a two by two, pretest posttest, non-equivalent control group design. The design permitted us empirically to test the questions asked in the study and to compare tracked low-achieving students with mainstreamed students on the dependent measures.

Procedure

The study was conducted from late January to mid-March. Students were told that the teacher was interested in learning about their preferences about group work and how these attitudes affected their learning. In January, following the Christmas break, before beginning instruction, we administered the CLI to all students in a separate classroom. Before administration of the survey, we told the students that this was not a test and that there were no right or wrong answers. We also told them that the purpose of the survey was to find out what they thought about the instructional approaches used and that this was their chance to express their thoughts and feelings. We assured the students that their responses would be kept confidential and that their teacher would be shown only aggregated data. We also told them that completing the survey was voluntary and that they could skip any question that they did not wish to answer or could stop at any time. No student stopped, and all questionnaires were completed. Students were required to put their names on a cover sheet that was removed after an identifying code was assigned. Once the students had completed the CLI, they returned to their classroom and were either assigned to a group by the teacher or were permitted to choose their own group mates depending on the class. Students in one low-achieving class were allowed to choose their group mates whereas the teacher assigned students in the other low-achieving class to a group. The same grouping method was followed for the two regular classes.

The duration of the study was approximately eight weeks, and it was divided into two lab modules. Each lab was approximately three and a half weeks in length, with three one-week units in each lab. Groups were composed of three students, and each student was assigned a specific task role: experimenter, recorder, or materials coordinator. Students were in these coopera-

tive learning groups for three units of instruction (i.e., one lab), and after each unit was completed (normally one week), they had to change roles in the group. This ensured that all students had the opportunity to work in all roles. Interdependence and individual accountability were built into the structure of the labs by providing group marks for each unit, and students were marked on individual quizzes at the end of the first and second lab. Group marks and individual quiz scores were added together to arrive at a total achievement score for each student, which was reflected on the student's report card.

At the end of the first lab, students were required to change groups. In classes where students chose their group mates, at the teacher's request, the only criterion was that at least one person had to change to a new group or all three could change. Although only one person was required to change groups, all members were still required to choose (i.e., who stays and who goes?). In the teacher-controlled groups, the teacher assigned students to new groupings and all three members changed. When all the students were in the newly formed groups, they followed the same procedure for group work concerning task roles. At the end of the second lab, the CLI was administered again, using the same procedure as outlined above.

Results

In this section, we report the results of the statistical tests carried out. The results are presented in order of research question.

Alienation

It will be recalled that low-achieving students placed into tracked classrooms report a greater sense of alienation from school and their peers (Oakes, 1985). To test this, pretest scores on alienation were submitted to an analysis of covariance (ANCOVA) to determine pretest differences among the streams (low-track vs. regular track). The significant Wilkes lambda .895 $F(1,106)=6.23$, $p<.003$ $\eta^2=.105$, substantiated that initial group differences were present. Students in the low-achieving track were higher in reported feelings of alienation (M=3.1) than students in the regular track (M=2.5). These incoming differences, therefore, invalidate the use of ANCOVA, because the covariates (pretest scores) were not statistically independent of treatment (stream). Thus repeated-measures mixed analysis of variance (ANOVA) procedures were used to examine the effects of stream (tracked low-achieving vs. regular classroom) and group (teacher-controlled groupings vs. student-controlled groupings) on alienation. To address the possible violations of the sphericity assumption in the repeated measures mixed ANOVAs, Greenhouse-Geisser-corrected degrees of freedom were used in all F-tests involving main effects and interactions.

A two-way ANOVA for stream (tracked low-achieving vs. mainstream) and time (pretest/posttest) showed a main effect for stream $F(1, 111)$ 39.75 $p<.001$, $\eta^2=.264$, and a within-subjects main effect for time F(1, 111) 6.59 $p<.012$, $\eta^2=.056$. The interaction was nonsignificant ($p>.10$). Pairwise comparisons revealed that the largest shift in reported feelings of alienation, that is, students who reported feeling less alienated, occurred in the students in the regular classroom (M=2.5 pretest, M=2.3 posttest) versus the low-achieving students (M=3.1 pretest, M=3.0 posttest). The partial eta square for stream was quite

strong, accounting for 26.4% of the variance between tracked and non-tracked students. These findings support earlier research that demonstrates that students placed in classrooms described as the low track report greater feelings of alienation (Brophy, 1988; Oakes & Lipton, 1992; Smith-Maddox & Wheelock, 1995). It remains unknown if having control over with whom one works will lessen feelings of alienation reported by low-tracked students.

To test if agency regarding the group selection process (teacher-controlled groups vs. student-controlled groups) would reduce reported feelings of alienation a 2 (teacher-controlled groupings vs. student-controlled groupings) x 2 (pretest/posttest) repeated-measures ANOVA of group selection method on reported feelings of alienation yielded a statistically significant main effect for group $F(1, 111)$ 9.47 $p<.003$, $\eta^2=.079$. Overall, students in teacher-controlled groupings reported fewer feelings of alienation ($M=2.6$) than students in student-controlled groupings ($M=2.9$). Moreover, students in low-tracked classrooms reported stronger feelings of alienation in student-controlled groupings than low-tracked students in teacher-controlled groupings ($M=3.1$ vs. $M=2.8$, $p<.01$). The partial eta square of 7.9% suggests that control of the grouping method does have an effect on feelings of alienation in that agency with regards to selecting work mates may in fact exacerbate the already present feelings of alienation for low-track students. As well, having a teacher assign groups may serve to lessen reported feelings of alienation. These results support earlier research that suggests that students in low-tracked environments are disadvantaged in terms of their feelings of belongingness. Cooperative learning did not seem to diminish these feelings significantly. As well, permitting students to choose with whom to work did not reduce patterns of alienation.

Academic Self-Esteem

To test if students in the two streams differed on the sense of academic self-esteem, their pretest and posttest scores were analyzed for differences. Pretest scores revealed mean differences on academic self-esteem (tracked $M=3.13$; regular $M= 3.63$) indicating a lower sense of academic self-esteem for tracked students $F(1,95)=32.86$, $p<.001$, $\eta^2=.25.7$. On posttest, both streams indicated minor shifts in reported feelings of academic self-esteem (tracked $M=3.18$; regular $M=3.67$), and the differences were still significant $F(1, 95)=29.50$, $p<.001$, $\eta^2=.23.7$. The results indicate that students in tracked classrooms did report lower feelings of academic self-esteem and that time in a tracked classroom did not ameliorate these feelings.

Despite this, do low tracked students benefit from control of group composition? To test whether having agency over the group selection method (teacher-controlled groups vs. student-controlled groups) would affect academic self-esteem in tracked classrooms, a univariate ANCOVA on academic self-esteem was conducted with pretest scores on the same measure and stream acting as the covariates. The analysis indicated no difference in reported levels of academic self-esteem between student-controlled groups ($M=3.38$) or teacher-controlled groups ($M=3.46$), $F(1, 93)=.27$, $p>.8$, $\eta^2=.00$. These results suggest that having control of choosing group mates had little effect on low-tracked students' academic self-esteem.

Willingness to Cooperate

Students' willingness to cooperate with other students was measured through a 2 (group: student-controlled/teacher-controlled) x 2 (stream: low-achieving/regular achieving) univariate ANCOVA. Unlike the alienation and self-esteem factors, there were no significant pretest differences on the cooperative learning measure; thus ANCOVA is the appropriate measure in this instance. The pretest results acted as a control in the following analysis. The test revealed a significant stream by group interaction on willingness to cooperate $F(1, 108)=4.09$, $p<.04$, $\eta^2=.037$. Students in the low-track stream that controlled the group selection process reported less overall willingness to cooperate (adjusted mean=3.33) than low-tracked students in teacher-assigned groups (adjusted mean=3.48). However, the opposite was true for students in the mainstreamed classes. Mainstreamed students who controlled the group member assignment reported greater feelings of cooperation (adjusted mean=3.68) than students in the teacher-assigned groups (adjusted mean=3.46). The results should be interpreted with caution as these measures were derived from intact groups on one assigned variable (Stream) and the effect size accounts for only 3.7% of the variance. Nevertheless, the results present some interesting challenges for teachers in differentially matching control of group composition with students in tracked classrooms.

Student Academic Support

Students placed in low-achieving tracked classrooms form a homogeneous grouping, and therefore are forced to work with similar others when placed in cooperative groups. We wished to see if students felt that they had greater support from their peers (who might be conceived as being more understanding of the challenges they face) if they controlled with whom they worked rather than the teacher controlling with whom they worked. To explore this issue, we conducted a 2 (group: student-controlled/teacher-controlled) x 2 (stream: low-achieving/regular achieving) ANCOVA to test whether students who chose their group mates felt more support from their peers than if the teacher selected the peers with whom they worked. The pretest results acted as a control. The results were nonsignificant for both group selection method and stream. Although nonsignificant, it is important to mention that students generally perceived low levels of support from their peers. All means were below the midpoint of the scale, which indicated that students were not supporting each other academically in this cooperative learning structure (M=2.8 teacher-selected grouping versus M=2.7 student-selected grouping; M=2.77 tracked versus M=2.89 mainstreamed). Although no significant differences existed, the results suggest that more needs to be done to get students explicitly and concretely to support one another, particularly when they are required to work in groups.

Discussion

Overall, the results of this study support earlier research that low-achieving students who are placed in homogeneous classrooms are placed at a greater academic and personal disadvantage by virtue of their placement in these environments, and their academic self-esteem is negatively affected. The objectives of this study were to investigate the effects of using cooperative learning

in tracked classrooms, and the effects that handing control over to students over group member composition may have on various measures for low-tracked students. Generally, research indicates that cooperative learning promotes achievement, improves attitudes toward learning, and increases persistence (Abrami et al., 1995; Hecht, Allen, Klammer, & Kelly, 2002; Johnson & Johnson, 1991; Lou et al., 1996; Slavin, 1983; Springer, Donovan, & Stanne, 1999; Webb & Palinscar, 1996). The present study found that low-tracked students had a greater sense of alienation and lower levels of academic self-esteem than their peers in the mainstream classrooms. As well, low-track students, although initially as willing to cooperate with others as their peers in mainstreamed classes, experienced a decrease in this attitude if forced to choose their own group mates. It was also disconcerting to find that generally, all students reported low levels of academic support, a cornerstone of cooperative learning, from their peers. We question the efficacy of placing low-tracked students into groups where the "teaching" and explaining is left to the students.

Controlling Group Composition in Cooperative Learning

Cooperative learning requires the teacher to transfer initiative and responsibility for learning to the student. However, this can create problems for the teacher who has a class of low-achievers (Brophy, 1988; Slavin, 1983). Giving students control over with whom they work may also exacerbate this problem. Earlier research has shown that low-achievers and those who are alienated may not benefit from cooperative learning (Brophy) because it jeopardizes their social connections (Mitchell et al., 2004), and tracking in this context reduces the positive academic benefits associated with peer effects and in effect demolishes the instructional foundation on which cooperative learning rests, the ZPD. Low-tracked students in this investigation were compromised in terms of their feelings of connectedness, academic self-esteem, and willingness to work cooperatively. These dimensions are not just related to school adjustment and success: they are qualities, attitudes, and skills that are related to the world outside the classroom.

Limitations

Many methods are used to track students in school, and thus the sample in this investigation may not be representative of other tracked students because the criteria employed in this school for determining track may be different for other schools or school districts. Thus the results should be interpreted in the light of the method used for tracking in this school.

Recommendations

Our interpretations of the data are tied to the scope and validity of the Classroom Life Scale (Johnson et al., 1983). Other studies of classroom life or climate should investigate the role of self-concept and self-efficacy and peer effects in tracked low-achieving classrooms. When looking at factors such as academic self-esteem, future researchers should attempt to disentangle school effects (e.g., achievement, tracking, grouping practices, etc.) from societal or socializing effects (e.g., neighborhood characteristics, SES, familial influences, etc.). As well, we have five broad recommendations for using cooperative learning with low-achieving student placed into tracked classrooms.

1. Teachers cannot rely solely on the method of cooperative learning if their students are placed into low tracks. More active intervention by teachers is required including: supplying probing questions, assisting with developing task outlines, questioning and clarifying understanding, random assignment of students to groups, and more directive teaching either with the whole class or with small groups. Using the framework of the ZPD as a foundation to course design, the teacher may have to conceptualize herself or himself as the most experienced member of the culture, and therefore should be more explicit in scaffolding students when necessary.
2. More training for students in group collaboration skills is needed. Students do not always have the teamwork skills that are required for working collaboratively. Such skills, for example, listening and questioning effectively, compromising with and encouraging others, effective resolution of conflicts, evaluating and accepting responsibility, valuing diversity of opinions and capabilities, checking for understanding, and contributing or soliciting ideas, are modifiable and should be the target of direct instruction if these are not part of the students' repertoire. As well, training in specialized skills linked to the course content for a select team of students should be incorporated into the teacher's course plans. In this example, training of peer lab assistants could have helped to bridge some of the small gaps in everyday lab situations. A structured peer teaching format has been used successfully in language classes (Martin, 2000), multimedia computer labs (Bamford et al., 1999), remedial reading classes (Palincsar & Brown, 1988), and for composition tasks (Duran & Monereo, 2005). In addition, metacognitive strategies such how to develop and work from outlines and outlining concrete steps to ensure greater group participation could be the goal of direct instruction. Teaching metacognitive strategies has been shown to be successful with low-achieving or at-risk students (Lidgus & Vassos, 1996; Wong, 1989).
3. Teachers need to be able to move from a standard model of cooperative learning where student-centered work is the main focus to a mixture of teacher-directed and student-centered work. Tracked LA students may need to receive instruction that is more active or supervision that is more directive from their teachers: "Students achieve more in classes where they spend most of their time being taught or supervised by their teachers rather than working on their own or not working at all" (Brophy, 1988, p. 242). This more directive approach need not be the only instructional goal, however. A more teacher-centered approach can be the starting place for teachers who slowly scaffold the skills necessary for students to be able to learn cooperatively from each other on their own. More attention by the teacher to the contextual factors that may influence how methods are applied and received needs to be part of the overall course design and delivery.
4. Beliefs that teachers hold about the nature of knowledge and the process of knowledge acquisition have a powerful role in determining the design and outcome of instructional strategies such as collaborative learning

arrangements in class (Palincsar, 1988). Unless researchers and educational change agents attend to such beliefs and the educational and cultural practices that are shaped by them, they will not be successful in their attempts to implement educational reform. In this particular context the clash between the organizational structure of tracking low-achieving students and the instructional structure of cooperative learning, relying on the ZPD, and one teacher's desire to adhere to what he learned in his training seminar were at odds, and served to undermine the ultimate effectiveness of instruction. Professional development, therefore, must also build in flexibility of approaches that can capitalize on the teacher's expertise. In other words, we should not in professional development training programs privilege method over a mindful engagement with teachers and their learning about new methods of practice. The teacher engaged in the investigation because he intuitively knew that something was not working right.

5. School administrators, from governmental directors of educational policy and curriculum down to school principals, must confront the inherent structural and/or instructional inconsistencies that sweeping waves of contradictory educational reforms have left behind. Rather than being dictated from the top (Mehan et al., 1996), educational change initiatives must include classroom teachers who engage and collaborate with the system change agents in a normative-reeducative processes (Chin & Benne, 1976) not only to explore beliefs and practices espoused by school personnel, but to examine their relation to the beliefs that drive normative practice in today's schools (Palincsar, 1988).

Low-achieving tracked students working in cooperative groups are placed at a disadvantage because they are relegated to environments with fewer resources and to working with students of similar capabilities. One thing is certain in these classrooms: students all share one thing in common, that is, they are low-achieving. When using cooperative learning with these students, it becomes the academic weak leading the academic weak. Without the benefits of working with more capable peers, these practices can work to foster alienation, lower academic self-esteem, and destroy willingness to cooperate and support others. This will not only ensure that these students never break away from the low-achieving track in school, but may well reinforce a low track in their life course trajectory.

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