SUGGESTIONS FOR FURTHER READING

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CHAPTER 5

Group Composition

INTRODUCTION AND LEARNING OBJECTIVES

Grouping students has become standard practice in many K–12 classrooms as teachers have realized that there are academic and social benefits that accrue to students from working with others, sharing ideas, discussing differences, and learning to deal with conflict in ways that are cognitively manageable and socially acceptable (Gillies, 2003a; Gillies & Ashman, 1998). Through social interaction with peers, students learn to challenge or accept the ideas of others and have their own ideas challenged or accepted in turn. It is by engaging in reciprocal dialogues that students are exposed to new ways of thinking and talking and constructing new understandings and learning (Mercer, Wegerif, & Dawes, 1999). Although teachers freely acknowledge the benefits of students dialoguing together on academic tasks, they often express concerns about the most appropriate ways to group students to ensure the discussions are productive and that learning will occur. These concerns have emerged, in part, from the pressure often exercised by adolescents who want more autonomy to work with their friends and teachers who may even feel that students will be rebellious if they are forced to work in groups that are not of their own choosing (Mitchell, Reilley, Bramwell, Solnosky, & Lilly, 2004). Pressure may also be exerted by parents of more able or gifted younger children who want them to be challenged by working with students of similar ability or aptitude (Cohen, 1994). Often these grouping practices run counter to teachers' own intuitive understandings of what works best for different students in different learning situations. The purpose of this chapter is to discuss the evidence emerging from the research on classroom grouping practices found to enhance socialization and self-concept; to promote thinking, problem solving, and learning; and to reconcile them with practices that can be readily implemented in classrooms.

When You Have Finished This Chapter You Will Know:

- The advantages and disadvantages of same- and mixed-ability groupings
- The conditions under which mixed- and same-gender groupings may be appropriate
- When and how friendship groups may be constructed and used
- How to deal with issues of status in small groups
- Ways of harnessing the potential of different interest groups
- Ways of using the computer to enhance small-group discussion and learning

HARNESSING THE POWER OF THE GROUP: PRODUCTIVE SMALL GROUPS

Case Study 5.1

Students' Perceptions of Mixed-Ability Groupings in Their Classroom

T: You've spent most of this term during social studies working together in your group. I was wondering if you could tell me a little about how things worked out for you, personally? (*children were directed to respond from their own perspective and not from what they thought the group might like to hear*)

S1: It was good. We all got on OK and we mostly helped each other. Do you agree with that? (S1. directs question to the group)

S2: Yep! We mostly got on OK. We had some times when we didn't do so well but we mostly did OK.

T: Can you tell me a bit about what you think made it work for you? (*T. probes to try and encourage the students to elaborate on this point*)

S1: I think when we had to work out the group rules that made it.

Ss: Yes.

S3: We knew what we had to do if we didn't agree.

S1: Also! Also! We are friends and we tried to do our best.

T: Were you friends before you worked in the group?

Ss: No . . . (all together) . . . not really . . .

S3: We didn't play together—he played handball and I like soccer.

S4: Yep! We didn't play with them (pointing to the two girls).

S2: No, 'cause we do other things. We (pointing to S1) played jump rope . . . we have our own friends.

T: What have you learnt from the tasks you had to do? (*T. has set tasks that the children were required to research, construct a group report, and present it to the class. Each task took about two weeks to complete*)

S2: We all had to do our jobs. We worked out what we had to do and we helped each other with it.

S3: Him (pointing to S4) and me worked together on the computer.

S2: Sometimes, he worked with me. (referring to S3)

T: Did you notice anything about the contributions you all made?

S1: Yes, we all had different things we did . . . he's (referring to S3) good at finding things on the computer . . . he's a good drawer (referring to S4 who is talented at presenting pictures and creating designs). . . .

T: I wonder. Did you have any times when group members didn't contribute or pull their weight?

S3: Not really because we all knew what we'd agreed to do and we stuck to our agreement.

S2: Sometimes, sometimes, we had to remind a person to do something . . . but not very often. Mostly they just did it.

Note: T = Teacher; S = Student

Case Study 5.1 provides a short extract of a discussion between a teacher (T) and group of Grade 6 students (S) who have been working together in class over the past term. The teacher is trying to gauge the children's perceptions of how the group experience worked for each of them and what she may need to do to enhance the experiences they had. It should be noted that this teacher had excellent rapport with her students, and the students were very forthcoming in their responses. The four-person group above consisted of two boys (S3, S4) and two girls (S1, S2) who worked together in a mixed-ability (high-, middle-, and low-ability) group.

It is also clear from the students' responses that they felt they worked "OK" together (Turn 2, 3) and that they had become friends as a result of their small-group experience (Turn 8). In response to the teacher's query about what they learned from their group experiences, the children acknowledged that they knew they had to contribute (Turn 15) and that they had to help each other. This requirement appeared to make the children more aware of the different

contributions each member could make to the group (Turn 19), with group members receiving public acknowledgment for being competent at using the computer or being a proficient drawer (Turn 19).

The extract above provides insights into the students' perceptions of how they cooperated. Although the extract captures only a small part of the dialogue that occurred, it is clear that the students had developed a concept of the group as a collective unit with their frequent use of *we* and *our*. It has been argued that when this concept of "group identity" has been established, it provides the momentum for members to work together, contribute to the collective effort, and promote each other's endeavors (Gillies & Ashman, 1996; Johnson & Johnson, 2000; Slavin, 1996). The notion that children work well together in mixed-ability groups is also evident in this group, with recognition being given to two of the members for their unique contributions that undoubtedly contributed to the status of the low-ability student (S4).

Ability Groupings

The observations described above are consistent with research on the benefits students derive from working in mixed-ability groups. In a meta-analysis of different grouping practices in classrooms, Lou et al. (1996) found that low-ability students learned significantly more in mixed-ability groups than in same-ability groups, medium-ability students learned significantly more in same-ability groups, and high-ability students learned equally well in either group combination (see Chapter 2 for a detailed discussion of ability groupings).

In a follow-up study, Webb, Nemer, Chizhik, and Sugrue (1998) also found that the ability composition of the group had an impact on student performance, with low-ability students benefiting from working in groups with students of medium- or above-average ability where they seemed to learn from the discussions that took place and were able to apply what they learned in follow-up testing. Contrary to previous findings that medium-ability students may participate less and learn less in mixed-ability groups, Webb et al. found that medium-ability students actively participating in the group discussions learned more, and it was this participation and, in particular, the explanations that students provided that contributed to their enhanced achievement scores. Interestingly, high-ability students generally performed better when they worked in same-ability groups than mixed-ability ones, although their performances did not suffer when they worked with low-ability students, and they were not disadvantaged by working with low-ability students. On balance, Webb et al. concluded that mixed-ability groups produce greater achievement than restricting high-ability students to same-ability groups, and that medium- and low-ability peers have much to gain from working with their high-ability peers.

Catering for Students With Diverse Needs

Mixed-ability groups provide opportunities for teachers to include a range of students with diverse needs (e.g., second-language learners, at-risk students, students with learning difficulties) who clearly benefit from the opportunity of working with others (Miller & Harrington, 1990). Sharan (1990) and Slavin and Cooper (1999) reported that cross-ethnic relationships were enhanced and academic learning was promoted when students worked in cooperative groups, and that children identified more friends outside their own racial and ethnic group than peers who had not worked in cooperative groups. Slavin and Cooper argued that when students are assigned to cross-ethnic groups, they are sent a strong positive message regarding the importance of cross-ethnic interaction, and this, in conjunction with the equal-status roles assigned by working in such groups, permits students to learn about one another. Similarly, Putnam, Markovchick, Johnson, and Johnson (1996) reported that students with learning disabilities were more likely to be accepted by their peers when they had the opportunity of working with them in cooperative groups, and Cohen, Lotan, and Catanzarite (1990) and Cohen and Lotan (1995) found that the use of status treatments where teachers implemented strategies to enhance the status of low-status students (i.e., usually the less academically able) during cooperative learning was associated with higher rates of participation of these students, which, in turn, contributed to significant gains in their achievement.

Given the above findings, what are the implications for teachers who are looking to grouping students in their classes? The following summarizes the research evidence on grouping students:

- Mixed-ability groups promote achievement gains for low- and medium-ability students.
- High-ability students are not disadvantaged by working with lower-ability peers.
- Second-language learners acquire language skills more readily when they work with peers in mixed-ability groups.
- Cross-ethnic relations and learning are promoted in mixed-ability groups.
- Students with learning disabilities are likely to be accepted by their peers.
- Status and learning for low-status children can be enhanced in mixed-ability groups.

Practical Activity

Ideas for Establishing Mixed-Ability Groups

Elementary School

★ Teacher assigns young children to groups of three or four members, ensuring that children with different abilities or talents are included (i.e., artist, writer, humorist). The teacher would need to spend time with the children explaining what she means and actively identifying children who may have these abilities or talents. For example, comments such as the following may be appropriate: "Dana has a good sense of humor and I think he'd have some good ideas he could contribute to his group." Children discuss these attributes and use them to complete the task at hand (e.g., constructing a diorama to depict an interesting scene from a story the class has read; painting a picture with each child completing a section; participating in presenting a skit with each child responsible for part of the organizing—actor(s), director/coordinator, stage manager, costume manager).

★ Children are given colors (red, blue, yellow, green) and told to form a group, ensuring that each color is included in their group. Unbeknownst to the children, each color represents an ability level or a talent (e.g., red = high, blue = medium+, yellow = medium–, green = low). Children then complete the task they have been assigned.

★ Using the same colors (red, blue, yellow, green), the teacher structures the activity so that each student is required to perform a particular task (e.g., searching for specific information). Once they have located the information they were looking for, different colors pair up (e.g., red + green) to organize how they will present the information they have collected to the other pair in the group. This is one way of structuring peer support within the group to ensure that the less-able students receive scaffolding with the task.

★ Teacher assigns children to pairs so each pair consists of one above-average and one below-average student. Pairs join with another pair to make a group of four, thereby ensuring that there are two above-average and two below-average students in each group.

Middle School and High School

★ Teacher discusses the task with the students and informs them that they will be unable to complete it unless they include students who have different talents. For example, if the group is required to present a PowerPoint display to the class, students may need someone who is a technician (resolves difficulties with the computer, program materials), a researcher (conducts searches from different databases to locate information), manager (collects resources), and a presenter (responsible for organizing the group's presentation to the class). The recognition that different students have different talents provides status to those students and also makes others aware of the talents they can harness. It is recommended that the teacher, initially, constructs the groups to ensure that students with different talents are included. As the students become more aware of the different attributes of others, they can begin to exercise more control over the selection of members.

★ Students are given a line or lines of a limerick and are asked to find others with lines from the same limerick. This activity promotes a great deal of fun as they try to piece together the limerick and then present it to the larger class. This activity not only serves as an icebreaker, but it identifies the group's members. Students are often quite willing to accept this type of randomization in selecting members, whereas they may be reluctant to accept members the teacher identifies. The astute teacher, though, will see that each group consists of students with different talents or abilities by ensuring that lines from each limerick are given to students who reflect this diversity.

★ Each student is given one task to work on from a complement of three tasks that are required to be completed by the group. Students have to find the remaining members of the group to ensure that they can identify a theme/focus for their combined tasks. This is a reverse-order approach: Rather than identifying the subtasks, students have the subtasks and are required to identify the group's task. For example, the group task may be to investigate the packaging of cookies currently used by a company and make recommendations on future packaging, although they are not explicitly told that this is the group's task. Students may be assigned one of the following subtasks and asked to find other members of their group and then identify the overall task of their group from the individual tasks that they have been given: (a) the needs of the consumer when packaging cookies; (b) the expectations of the community for environmentally friendly packaging of cookies; and (c) ways to minimize the costs to the company of packaging its cookies.

Gender Groupings

As mentioned in Chapter 2, the research on the best gender groupings for students is still unclear, probably because the focus is often on the value of mixed-ability groups rather than trying to determine whether students work best in

gender-balanced or -imbalanced groups. In the extract above (Case Study 5.1), the students (2 boys and 2 girls) were quite willing to work together as is evident from S2's comment, "Sometimes, he (S3) worked with me" (helped her on the computer). Moreover, as a consequence of their group experience, the students in Case Study 5.1 had become friends, which they were not previously. These comments are similar to those reported by Lyle (1999) of elementary students' perceptions of their experiences in mixed-gender and -ability groups (designed to improve their literacy levels), with most children commenting on the value of sharing ideas and learning from others. Furthermore, many students indicated that they had made new friends as a result of their experiences.

Interestingly, in a study of help-seeking behaviors of children in naturalistic class settings in elementary school, Nelson-Le Gall and DeCooke (1987) found that they are often more likely to seek help from same-sex peers than cross-sex peers even though girls are often perceived as more academically competent by both boys and girls and more likeable as helpers than boys. These findings led the authors to propose that gender appears to influence students' choice of peer helpers in elementary classrooms.

The perspectives of preadolescents who worked in mixed- and same-gender dyads appears to be similar with Strough, Swenson, and Cheng's (2001) finding that students who worked in same-gender dyads on a creative writing task reported a greater sense of affiliation, influence, and enjoyment than students in mixed-gender ones, possibly because friendship bonds were greater in same-gender dyads. Moreover, Strough et al. found that the more students perceived that they were able to influence each other, the better their task performance, with fewer punctuation and capitalization errors. These findings led the authors to propose that the preference for working in same-gender dyads may be because the students were preadolescents and this age group often prefers to avoid mixed-gender relationships (Sroufe, Bennett, Engluns, Urban, & Schulman, 1993).

Yet, while both Nelson-Le Gall and DeCooke (1987) and Sroufe et al. (1993) observed an apparent preference for same-gender interactions among both elementary and preadolescent students, Webb (1991) argued that it was the composition of the group, rather than gender per se, that affected the interactions participants had with each other. In groups where there were more boys than girls, Webb found that the boys tended to interact with each other and ignore the girl. In contrast, in groups where there were more girls than boys, the girls spent more time trying to involve the boy in the discussions, to the detriment of interacting with each other. In both of these groups, boys outperformed girls even though boys and girls did not differ in ability. When groups were gender-balanced, however, boys and girls were equally interactive in the help they provided, and the differences in achievement that occurred in the gender-imbalanced groups did not occur in these groups.

Teachers' Perspectives on Grouping Students

Given the issues raised by the research on gender groupings and the requirement that students are often expected to work cooperatively in groups, interest lies in investigating teachers' perceptions of what works best when they group students. Teachers' perspectives are important because they have firsthand experience of different situations and can often provide invaluable insights that inform research.

In interviews of 21 teachers in elementary schools who reported using cooperative learning, Antil, Jenkins, Wayne, and Vadasy (1998) found that most preferred to use a range of strategies to form groups. These included forming *heterogeneous groups* (the most popular form of grouping), allowing students to select their group members, random assignment, and groups of convenience (i.e., students sitting next to each other). Interestingly, none of the teachers referred to ability groups when they discussed heterogeneous groupings. While most of the teachers indicated that they deliberately formed heterogeneous groups some of the time, at other times they used strategies that might or might not result in such groups. It appeared that once they had decided to form groups for different activities, they chose strategies rather than groupings that would allow them to do so with maximum efficiency.

Gillies and Boyle (2006), in interviews with 10 elementary teachers who had used cooperative learning in their classrooms, also found that most teachers reported that they used heterogeneous groups (i.e., usually mixed-gender and -ability groups) because of the benefits that children derived from interacting with others with different ideas and talents. Furthermore, many of the teachers believed that by working in heterogeneous groups students learn that others have strengths and weaknesses that can be used to make valuable contributions to the group.

In short, while the research on gender groupings still requires further investigation, the following key issues have been identified to date:

- Students often prefer working in gender-balanced groups.
- Adolescents do not like to work in mixed-gender dyads.
- Gender composition of groups influences students' interactions.
- Students are more interactive and obtain higher learning outcomes in gender-balanced groups.
- Teachers use a range of strategies in grouping students, and gender considerations is only one.
- Teachers often structure groups to include students with diverse talents and needs.

Friendship Groupings

One question frequently asked by teachers dealing with group composition is, "Should friends be allowed to work together?" This probably occurs because students often place a great deal of pressure on teachers to form groups with their friends as they work on tasks that they may have a common interest in completing. Certainly, there is evidence that friendship with one's peers is important as a context for social, emotional, and cognitive development. Newcomb and Bagwell (1995), in an extensive review of children's friendship relationships, reported that friendships are characterized by: a pattern of positive interactions, with friends often achieving greater productivity in task-oriented activities; friends encouraging problem-solving efforts through cooperation and better understanding of the other's needs and abilities; and friends being more likely to try to resolve conflicts because their management is critically important to the development and maintenance of any friendship. Similarly, Hartup and Stevens (1997), in a review of the research on friendships and adaptations across the lifespan, reported that friends are both cognitive and affective resources who foster self-esteem and a sense of well-being. They also help to socialize each other, especially with achieving age-related tasks such as learning to display and regulate their emotions, and they provide supportive and intimate relationships that are important for an individual's personal growth and development.

Given the benefits obtained from having close friendships, how does this information translate into classroom contexts where teachers need to make decisions about friendship groups? Certainly, there is evidence that students who know and like each other benefit most from working together as they tend to accept more responsibility for their learning and are more motivated to achieve their goals than students who are not friends (Abrami, Chambers, Poulsen, DeSimone, & Howden, 1995; Kagan & Kagan, 1994). Moreover, in some cooperative approaches (i.e., Group Investigation), students are able to select group members on the basis of friendship and compatibility; this appears to work well, with students in these groups attaining greater achievement gains than peers who work in whole-class settings. Yet while there is some merit in allowing students to choose their group members because it gives them more control over their learning environment, in reality there are some drawbacks.

In a study of high school students' preferences for teacher-selected or student-selected groupings in science, Mitchell et al. (2004) found that students' preferences for choosing their own group members actually declined over the period of the study. When this was investigated further through student interviews, the authors found that although students reported that they liked the autonomy of being able to choose who they would work with, many realized that friends may not always be ideal group members because of the conflict that can arise from being a good friend and being a good team member. Students reported that friends often tended to talk and socialize rather than work, and if the group task became demanding this created some tension, with many indicating that they were reluctant to challenge a friend who was not contributing to the group, although this seemed to be more of an issue for females than males. Male students tended to characterize themselves as being assertive and more willing to speak up and reprimand those who were not willing to do their share.

Interestingly, Strough et al. (2001) also reported that while greater friendship was beneficial for performance earlier in the task, it was detrimental to performance later in the task in terms of errors that the students made on their collaborative writing task. It appeared that students may have been more concerned with the social aspects of the task rather than the performance itself. Students acknowledged that they lacked skill in judging effective team members, that is, those who would work and those who would not, with many admitting that it was better for teachers to select group members because they had more experience in choosing groups.

Another concern that students expressed was the consequences of not selecting a friend for inclusion in a group. When students are allowed to choose group members, they often choose them on the basis of perceived social success, athletic prowess, or academic competency, so many low-status students may not be included or are selected only as a last resort (Cohen, 1994). This also appeared to occur in the Mitchell et al. (2004) study. In effect, when students choose their own group members, they often promote or reinforce status hierarchies that currently exist, and this led some low-ability students to question the value of group work.

In short, while there is quite extensive research on the importance friendships play in supporting an individual's social, emotional, and cognitive development and growth and there is some evidence that friends who work together are more likely to exercise greater autonomy and motivation with their work, there is also some evidence that friendship groups may not be as beneficial to some students as others. In this regard, teachers are encouraged to use their discretion when deciding to establish friendship groups in their classrooms, to ensure that friends who work together do so productively and that no student is left to feel rejected or abandoned when he or she is not included. The following summarizes the research to date:

- Friendships are important for social, emotional, and cognitive development and well-being.
- Students can be more motivated when they work with friends.

- Choosing group members can allow students to exercise more autonomy over their learning; this is important for adolescents.
- Friendship groups may promote and reinforce social hierarchies.
- Low-status students may not be selected for groups.
- Balance may be needed between teacher-selected and student-selected groups.

Practical Activity

Ideas for Establishing Friendship Groups

Elementary School

★ The teacher discusses with the children that, as a special treat (because of the very successful way students have worked in groups previously), she or he is going to allow them to work with their friends. However, the teacher will need to choose the friends, thereby ensuring that low-status children, who may be overlooked, will be included. If emphasis is given to the importance of working together and using every members' talents, most students will accept other group members.

★ The teacher may need to consider alternating how groups are formed, depending on the activity. For example, it may be appropriate for some activities (i.e., those that last only a few sessions) to allow students to choose who they will work with, while for others it may be more appropriate for the teacher to choose group members, particularly if the task is complex and extends over a number of weeks. When students know they will have some opportunities to choose their groups, they are often more willing to accept groups where members are selected by the teacher.

★ Provide opportunities for students to work in groups where the teacher knows students have common interests and where friendships have developed (e.g., sport, reading, computer games). The teacher identifies these interests to the class and informs the children that they will be able to work with students who they know share these interests. For example, students who share an interest in the Harry Potter books may choose to work with classmates who also share this interest. While the task may involve students' reading different parts of a story, one group may decide to produce a diorama that depicts an aspect of it, while another may focus on a play that depicts an alternative idea to the one in the story. These can be fun activities that tap students' interests, they are highly motivating, and they provide group members with the opportunity of consolidating friendships.

Middle School

★ Teacher discusses a number of tasks (relevant to a theme) that students can work on in small groups. For example, tasks around a science theme of developing alternative energy sources may require students to work on identifying an alternative energy source (e.g., wind power, water, sunlight) and develop a model of a car or house that relies on this energy source to test out the viability of their energy source. Students are allowed to work with friends but are required to identify specific subtasks that they intend to complete in a given time. This requirement will ensure that the group continues to work productively together to meet the required goal.

★ Students can work with friends on a topic they have identified but, as above, must negotiate tasks and timelines with the class teacher after their initial meeting. Once again, this ensures that the group remains focused and on task.

★ Students can work with a friend but must also find two other members they have not worked with before to ensure that they are inclusive of all students. The task is set by the class teacher (to avoid conflict over choosing the topic) until members feel more comfortable with each other and are able to negotiate tasks among themselves.

High School

★ The teacher surveys the students to identify their interest areas. For example, these interests may include: sports, history, current events, movies, cars, and so on. Once these have been identified, the teacher may have to negotiate with the students to identify five or six common areas of interest. These interests will enable the teacher to identify group tasks that the students negotiate to complete. For example, under a common theme of "World Events Making History," students may choose to focus on key sporting events (e.g., the Olympics, specific athletes), historical events (e.g., the impact on African nations of the colonial past), current news events (e.g., recent initiative by peoples in the developing world to deal with the AIDS virus), movie releases (e.g., the issues around the production of the trilogy *Lord of the Rings*), and developments in the auto industry (e.g., the production of environmentally friendly new models of cars). Students agree to work with their friends on the selected group task.

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- ★ Students identify interests from a list provided by the teacher. In order to keep the task manageable, this list may need to have a limited number of possible options. Students who indicate that they have an interest in a specific topic have their names placed in a box and are randomly selected for inclusion in a group. While this will often ensure that students have an opportunity of working with some of their friends (mainly because friends often share similar interests), it also ensures that students who may not be selected are included in a group. Adolescents will see this as a very fair way of allocating students to groups.
- ★ Both the teacher and students share responsibility for selecting students for inclusion in different groups. The teacher may precede selecting students by stating, "I know that John has some special interest in this topic and I've seen how well he's worked on it in the past, so I'd like him to work with this group and share some of his ideas." (This public acknowledgment of John's special interest and talent must be true.) In this way, John can move into the group with his status enhanced because of the public recognition provided by his teacher.

Status

Case Study 5.2

Enhancing Mandy's Low Status in Her Group

Mandy was a quiet 10-year-old, Grade 5 student who was always on the periphery of any group. She had changed schools frequently because her mother and partner (not Mandy's father) were transitional workers who moved to find employment or cheap housing, often living in trailer parks. This meant that Mandy's schooling was erratic as she moved from school to school and sometimes missed school for weeks on end until her family had been able to secure housing. Consequently, Mandy had fallen behind with her schooling and was experiencing difficulties with reading and math. She was also very shy around the students in her class, preferring to observe them as they played together rather than try to join in their games. Her teacher at her current school was very concerned about Mandy's reluctance to join in with the other children, so she decided to establish some cooperative groups in her class that would ensure Mandy had the opportunity work with others. Mandy was a great collector of items—comic strips, pictures, ribbons, shells—and her teacher decided to put this to use by ensuring that she had the role of resource manager in her team. The teacher made sure that the children understood that this was something Mandy could do by making the following comment: "I'm going to get Mandy to be the resource manager in this group because I know she's good at collecting things, and you'll need someone who can do that—collect the pictures and materials you'll need to make the diorama." Comments like this ensured that Mandy was initially accepted in the group, and ongoing monitoring of the group's activities helped the teacher ensure that all students, including Mandy, had opportunities to participate in the task and contribute their ideas.

In Case Study 5.2, the teacher has recognized that Mandy is regarded as a low-status student by her peers because of her academic difficulties and has intervened to ensure that she is accepted as someone with a special skill that will help the group as they work on constructing their diorama. After observing Mandy's behavior and noting that she is a good collector, the teacher has publicly acknowledged the importance of this skill. Moreover, by assigning Mandy the role of resource manager, she has indicated to the group that Mandy's special skill is important for the task at hand. In doing so, the teacher has fulfilled the criteria that Cohen (1998) believes is important for assigning competency to a student:

1. The evaluation must be public.
2. The valuation must be truthful and specific, referring to particular intellectual abilities or skills.
3. The abilities or skills of the low-status student must be made relevant to the group task. (p. 21)

Because Mandy is a low-status student, it is highly likely that she might not have participated in her small-group activity unless her teacher had made an effort to raise her status by assigning a particular competency to her. Low-status children are often less talkative in groups, have difficulty accessing resources, and may even be excluded by other group members. In contrast, high-status students are often more talkative, have no difficulty accessing resources, and are often very successful at getting the group to agree with their

suggestions (Cohen, 1998). It is important that opportunities are created for low-status students to participate in groups, because research has consistently shown that those who talk more learn more (Cohen, Lotan, Scarloss, & Arellano, 1999).

By publicly stating that Mandy had a special skill that the group needed, her teacher created an expectation among other group members that Mandy would be someone they could value as they worked on completing their diorama. This was important because the group was working on a task that no member could complete alone, so it was critical that everyone, including Mandy, was able to contribute to its production. When students realize that they have valuable yet different skills or abilities that they can contribute and that they must interact if they are solve the problem at hand, differences in participation between high- and low-status students are likely to be reduced (Cohen, 1998).

Dealing with inequitable interactions among students during group work is a problem that must be addressed if low-status students are to fully participate in group activities. Cohen et al. (1990) proposed that there are a number of initiatives that teachers need to consider to address status issues for low-status children. These include the following:

- Training students in the interpersonal and small-group skills needed to promote cooperation in small-group settings. Learning to listen to others, providing opportunities for members to talk and share ideas, and assigning rotating roles to each member of the group will do much to solve the problem of access by low-status students to interaction.
- The curriculum materials need to be rich and stimulating and presented in such a way that they require different types of contributions from each group member. Cohen (1994) argues that when the task is open and discovery based so there is no single right answer, students are forced to interact about the process and discuss how to proceed, make decisions, and divide up both the task and how to manage the substantive content involved. In these circumstances, students tend to engage in more productive discussions as they work to resolve the problem at hand.
- Students need to understand that no single group member will be able to complete the task, because multiple abilities, talents, or skills are required. In this way, students learn that there are different ways to be "smart" and that all members have contributions to make.
- Teachers need to acknowledge publicly the contributions of low-status students. It's important that their contributions are genuine so that other students realize that they can provide a key component to completing the task and will interact with them.

The above suggestions will do much to enhance the standing of low-status children and ensure that they have more equitable access to the group's resources, including other students.

Multiple Intelligences

Howard Gardner's (1983) theory of *multiple intelligences* (MI) has challenged the notion of what intelligence is and how it can be identified. Gardner proposes that intelligence cannot be reduced to a single construct, but rather, individuals have different types of intelligences that they use in different contexts that help them to solve problems or create products that are valued by the group, whether it be the small group in the classroom or the larger cultural group within which they live. Unfortunately, schools have traditionally had a fairly myopic perspective on what intelligence is and have traditionally emphasized scholastic intelligence, focusing on developing students linguistic, logical-mathematical, and spatial abilities and often neglected other intelligent behaviors such as the musical, kinesthetic, naturalistic, intrapersonal, and interpersonal abilities that are also needed in the modern world (Gardner, 1999).

The theory of MI has had an enormous impact on education, not only helping to change teachers' thinking about students' talents but also helping to bring about changes in the formal curriculum in how teachers teach and how students learn (Cuban, 2004). As a consequence, teachers are now more likely to recognize that children's potential can be developed in different ways and that they need to create different opportunities in class for children to learn using different intelligences (Hickey, 2004).

Given that MI recognizes that children learn, process information about their world, and express their understandings in different ways, what are the principles and practices that underpin an MI classroom? Hoerr (2004) believes an MI classroom is identified in the following ways:

- Everyone has a different profile of intelligence; we are all smart in different ways.
- Teachers use all students' intelligences to help them learn.
- The classroom is child-centered.
- Teachers help students create meaning in a constructivist way.
- Personal intelligences are valued: Who you are is more important than what you know.
- Teachers create curriculum—lessons, units, themes.

- Teachers create assessment tools—projects, exhibitions, presentations (PEP)—which incorporate MI.
- Teachers work with colleagues in using MI, developing collegiality. (p. 47)

In addition, Green and Tanner (2005) recommend that the following also be considered when designing courses based on MI theory:

- Create complex asks that appeal to several intelligences at once.
- Aim to incorporate as many intelligences as possible within a task or a series of tasks.
- Establish tasks so that children are required to use different intelligences and not only the ones they are more comfortable using.

In classrooms, teachers can use MI as a basis for establishing group activities where students work on complex tasks that require them to use a number of different intelligences. For example, students may be expected to produce a group report in which they demonstrate that they have used not only their linguistic, logical-mathematical, and spatial intelligences but also their musical, kinesthetic, naturalistic, intrapersonal, and interpersonal intelligences. Initially, this requirement will be quite challenging for students who have relied on the more traditional intelligences and not been encouraged to explore those others that have the potential to extend and enrich their learning. If teachers ensure that students are taught about MI and how to identify their strengths, students are more likely to be prepared to work on activities that extend these strengths while simultaneously accept being challenged by those intelligences they have traditionally avoided. In addition, students learn to recognize strengths in others and often seek to have students with diverse intelligences included in their groups as a way of extending their own learning. In short, MI can be used as a basis for constructing groups where all students' strengths are acknowledged and valued.

Interest Groupings

Another popular way of grouping students is through their interests in particular topics or events such as drama, sport, music, books, hobbies, computer games, and so on. While teachers of elementary students will periodically form ad hoc groups around students' interests, adolescents are very responsive to these types of grouping arrangements, possibly because they tend to be able

to work with others who have interests similar to their own, and this often enables them to develop more stable friendships over time. Moreover, because adolescents are particularly responsive to their peers, opportunities to work with them in formal or informal settings are often valued.

Teachers tend to form interest groups in class when students need to work together on specific projects or research topics. Interest groups may include students who are researching and using specific technologies to create an advertisement about a coming entertaining event. In these circumstances, students not only need to have an interest in the topic but are often required to have specific skills or abilities that they can contribute to the group. These skills or abilities may include an understanding of how to organize what needs to be done, conduct Web searches, use desktop publishing programs, understand how to use animation, and how to synthesize the parts to produce the advertisement.

Other interest groups may involve students' working in teams to produce a school musical or play. This type of group often involves teams within teams, where one team may be responsible for the lighting and stage production while others will represent the musicians, the actors and director, the wardrobe and costume management, and the sales and theater management teams. Students will often self-select into different teams on the basis of the contributions they perceive they can make so that someone with a flair for design may choose to be part of the wardrobe and costumes team while others may decide to contribute to the music team or the sales and theater management teams.

Typically, the interest groupings outlined above stay in place until the team has accomplished its goal, which may range from a period of a few weeks to some months. With elementary students, interest groups often last for only a session or a few sessions. While young students usually enjoy working with their friends, they often work better in groups that a have specific goal to achieve within a given time frame, usually a few weeks.

When establishing interest groups, teachers need to ensure that students understand the purpose of the group (i.e., what they are to achieve) as well as the group rules that need to operate to ensure that students manage their interpersonal relationships effectively. With elementary students, this will involve teachers' discussing with their students the rules they believe they will need to develop to be able to work together as a team; for high school students, this can be achieved through a process of collaborative negotiation. For large undertakings such as a theatrical production involving many students in multiple teams, the organizer (one or more teachers) will usually discuss expectations for the group at their initial meeting, with follow-up discussions occurring in the respective supporting teams (e.g., sales and theater management team). This

gives these students the autonomy to develop their own group rules (e.g., we all arrive on time), which are often more relevant to their specific circumstances. Periodically, too, students need to be encouraged to reflect on how their team is working—what they've accomplished and what they may need to do as well as how they are managing their interpersonal relationships (see Chapter 6 for a more detailed review). These reflections are very important as they often allow groups to discuss issues that are of concern and resolve them before they get out of hand.

Surveying Students' Interests

The Interest Inventory (see Figure 5.1) is designed to assist teachers to identify students with common interests for group activities. The inventory taps students' interests across home, school, and community contexts. Although this inventory has been designed for elementary students, the questions can be adapted for young adolescents (Note: The Interest Inventory can be used as part of a teacher interview session with individual students, or students can write their individual responses to the questions).

Computer Technology Groupings

Students regularly use computers to network with others, search for information, prepare and present reports, and fulfill the demands required in many schools today. Children are generally introduced to computers as a tool that they can use in kindergarten, and as they move through the grades, they are taught how this tool can be used to access and process information, provide tutorials, integrate and use different multimedia technologies, and facilitate computer-mediated communication (Abrami, 2001). Students are using computer technology (CT) at unprecedented rates to facilitate learning in various subjects as well as to acquire CT knowledge and skills to meet the challenges of this rapidly changing technological age. In fact, there is great enthusiasm for integrating CT in education, as teachers have realized the potential it holds for assisting learning. This enthusiasm for CT has also presented teachers with a dilemma: mainly, how to optimize its use given that few classes have sufficient technological resources to enable all students to have individual access to computers when required.

Many teachers have dealt with limited access by grouping students around a computer console as they work on specific tasks, and while research indicates that students learn more effectively in small-group settings than when they

Interest Inventory

1. What do you like to do after class?

2. What do you like to do on the weekends?

3. Do you play any sports or have any hobbies? Can you tell me about them?

4. Do you have any favorite movie stars or sports figures that you admire? Tell me about them and why you admire them.

5. If you could have three wishes granted, what would they be? How would they make your life different?

(Continued)

(Continued)

6. What are your favorite movies?

7. How much do you like to read? (very much, quite a lot, not much, not at all)

8. Have you read any books lately? If you have, can you tell me about them?

9. What are some other things you read (newspapers, comics, magazines)?

10. What do you like to do in class (projects, math, reading, science, computer studies)? Tell me about the activities you really like working on.

Figure 5.1 Interest Inventory

work individually or in traditional whole-class settings on non–computer-based tasks (Sharan, 1990; Slavin, 1996), how this transfers to CT groups is less clear. Moreover, students often use a range of CT, from tutoring programs that are designed to help them learn basic information through to those that encourage students to investigate and explore topics. In addition, students learn to use programs that range from processing information to those that enable computer-mediated communication such as e-mail, computer conferencing, and computer networking. Given the ubiquitous use of CT and the plethora of programs available, questions are often raised about how to enhance student interaction and collaboration while they work together on computer-generated tasks.

In a meta-analysis of 122 studies in which students worked either in small groups with CT or individually with CT, Lou, Abrami, and d'Apollonia (2001) found that students who worked in small groups learned more, interacted more effectively, used more appropriate strategies with the task, persevered longer, had greater task success, and exhibited more positive attitudes for small-group work and toward their class peers than students who learned individually. Furthermore, students who worked in small groups generally produced better group products than individual products, and they also gained more individual knowledge than students learning with CT by themselves. Interestingly, Lou et al. (2001) found that students learned significantly more in their groups when they used tutorial or basic recall and practice programs than when they worked on exploratory or discovery-based tasks. Abrami (2001) proposed that these types of programs may allow students, particularly students from low socioeconomic areas, low-status students, and students with special learning needs, some control over the pace of instruction, so they can practice more difficult material without continually having to revise that which they have already mastered and that this helps to keep them motivated as they learn.

In an evaluation of a computer-assisted tutoring program for at-risk readers, Chambers, Abrami, McWhaw, and Therrien (2001) noted that when students perceive they can be active in regulating their own learning, they are often motivated to achieve more. Moreover, students learned more when these programs were used in subjects such as computer learning, social sciences, and social studies than in mathematics, science, and language arts, and they learned more in groups when they worked on closed tasks with immediate feedback than when they worked on open ones. This is not surprising because when feedback is immediate, students often learn faster, enjoy their classes more, and have more positive attitudes to computers (Abrami, 2001).

The results of Lou et al.'s (2001) meta-analysis led the authors to propose that the effects of small-group learning were significantly enhanced when students had previously worked in groups or had been trained to work in

groups, cooperative learning strategies were employed to promote peer interaction, groups were small (i.e., two members), basic tutoring programs were used, and students were relatively low or relatively high in ability. Low-ability students benefit from receiving explanations that help them to correct any misunderstandings and to acquire appropriate learning strategies, while high-ability students benefit from giving explanations, which forces them to cognitively reorganize their own understandings and explain them in such a way that they can be more easily understood. In so doing, they often develop more elaborate cognitive understandings of the material than they held previously (Webb, 1991; Webb & Palincsar, 1996).

Given these findings, what are the implications for teachers who want to use CT in their classroom curricula as a tool to promote student dialogue and enhance learning? Abrami (2001) maintains that CT should not be used just to promote the acquisition of basic skills and information, although research indicates that students can learn effectively when it does (Chambers et al., 2001), but rather it should also be used to assist students to engage in the more meaningful construction of knowledge.

Activities such as student-initiated projects, explorative investigations, and problem-solving tasks where students work collaboratively with others to discuss ideas, challenge each other's perspective, and resolve differences are more likely to promote higher-order thinking and reasoning and the construction of new understandings and learning than tasks that require only basic recall and practice (Mercer, Wegerif, & Dawes, 1999).

Promoting Student Talk

In a study of CT and students' talk, Mercer, Fernandez, Dawes, Wegerif, and Sams (2003) noted that the software used needs to be designed to promote discussion (i.e., it does not include basic recall and drill activities) and students need to be taught the ground rules for exploratory talk.

Software design that was beneficial for promoting discussion in groups included the following features:

- Complex activities that require joint discussion and reflection
- Problems and choices that are embedded in a motivating narrative (i.e., story)
- A clear purpose for the activity that students understand
- On-screen prompts that remind participants to talk together and make predictions, proposals, and reasons clear
- Decision making that is reflective rather than rapid
- Responses that require simple keystrokes rather than extensive typing

The ground rules that promote exploratory talk in groups include the following:

- The group shares all relevant information.
- The group seeks to reach agreement.
- The group accepts responsibility for its decisions.
- Reasons for their responses are provided.
- Challenges are expected.
- Alternatives are discussed before a decision is made.
- Group members encourage each other to speak and share ideas.

When students work with CT that promotes discussion and they understand the rules for exploratory talk, Mercer et al. (2003) found that they exhibit more of the following features in their interactions with each other:

- They ask each other more task-focused questions.
- They provide more reasons for their statements.
- They consider other options before making a decision.
- They seek opinions from other group members.
- They seek to reach consensus as they work through different stages of the activity.

Case Study 5.3 provides an example of a cooperative, complex CT task for middle school students.

Case Study 5.3

Preparing a PowerPoint Presentation on Nicotine

The students in Grade 6 had been researching the effects of nicotine on the body as part of a unit of work on healthy living and healthy bodies. They had collated key information into 5–6 topic paragraphs that members of their group had composed together. The key points their teacher had asked them to research were

What is nicotine?

Analyze how nicotine affects your body.

Identify what the body does to process nicotine.

Identify other groups of people affected by nicotine exposure and analyze the consequences.

Explain why nicotine is a drug.

Find some interesting facts about nicotine use.

Today, the students are in the computer laboratory, and their task is to prepare a series of PowerPoint slides (no more than 6 slides) that can be used to convey the key findings from their research to other groups in their class. They have 45 minutes to discuss and prepare their slide presentation. Prior to commencing the activity, the teacher reminded the students of the ground rules for working together (sharing ideas, everyone contributes, every group member has an opportunity to use the computer, with each person typing out at least one slide, decisions are made by the group, and disagreements are resolved democratically). She also reminded them of the criteria that the class had previously negotiated that would be used to evaluate their presentations. The criteria required that they cover the key content points (listed above) as well as presentation points that were allocated to the PowerPoint display. These criteria included

Ensuring it was eye catching

Appropriate use of font size except when using headings

Appropriate use of pictures and diagrams

Appropriate use of sound effects

Effective use of colors

Logical sequence in the slide presentation

Appropriate background

In addition, other aspects that would be considered were

Correct spelling

Appropriate use of simple and complex sentences

Appropriate use of paragraphs

Correct punctuation usage

At the completion of the preparation period, each group gave a 10-minute PowerPoint presentation of its research on nicotine. Each presentation was followed by a short question-and-answer session to allow students to clarify any issues raised. This was followed by the teacher helping the class to critique the presentation on the basis of the criteria listed above. Students categorized their comments according to whether they believed the criteria were

Still developing

Were developed

Were highly developed

This feedback from their peers gave students the opportunity to reflect on each presentation and provide reasons to justify the comments they made. Because the feedback was constructive, the students in each group accepted it positively and commented on aspects of their presentation that they believed they would do differently next time.

The students in Case Study 5.3 worked in groups of three around a computer console. The teacher believed that this was an ideal group size because it ensured that the conversation would be multidirectional rather than unidirectional, as can occur when students work in pairs where one student may adopt the role of the tutor while the other becomes the tutee (Gillies & Ashman, 1998). Dialoguing was important because the task was complex (Cohen, 1994) and students had to be prepared to exchange ideas and information, discuss alternatives, and resolve differences and reach agreement in order to be able to complete it. Furthermore, by restricting the group to three members, all members had access to the keyboard; this was important because all were required to participate in composing the PowerPoint slides for their presentation. Further, the teacher had deliberately structured the groups so that each had students with a range of diverse talents, and while many students had overlapping talents such as special multimedia skills, visual design skills, and oral presentation skills, all students knew that they were expected to help each other to fulfill a variety of roles as they worked together.

Observations of the students as they worked in their groups confirmed that they were task-focused and their discussions were animated. Follow-up interviews with the students on their CT activity revealed that they enjoyed discussing their ideas, and they thought others in their groups did some "great

things" because they knew how to incorporate different multimedia designs or sound bites into their slides and taught others how to do this. All reported that the task was highly motivating, and they were keen to do another one like it. When asked how they made decisions and resolved disagreements, most either said that they did not experience any conflict, or when they did they discussed it among themselves and "it worked out OK."

Practical Activity

Ideas for Establishing Computer Groupings

Elementary School

★ Students are going to design a Web page that conveys a key message about the dangers of too much exposure to the sun. The activity has been designed so that students are required to do some preliminary research on the importance of the sun in our lives (photosynthesis and its effect on plants and humans), the damage caused by the sun's rays on the human skin, particularly for Caucasians, and the adverse effects of skin melanomas (skin cancers).

★ Students work in groups of 3–4 students to develop an advertising logo for a cookie company they have become part owners of. This is a special cookie company because it can be owned only by children, who must guard its secrets from adults so the magic recipes are never divulged. The cookie company sells a variety of magical cookies but only children can taste the "magic" in them. To adults, they taste like ordinary cookies. The group's task is to develop a logo for these magical cookies conveying the scrumptiousness, delectableness, and succulence of the product to potential consumers through the integration of various multimedia. The logo will be judged on the extent it is able to convey the "magical qualities" by the incorporation of relevant design, text, visual imaging, video, and sound effects.

High School

The following task is complex and extends over two school terms. It involves a number of smaller subtasks that must be completed in order to complete the large task: designing a Web site for a client. Although the task was originally prepared for Grade 12 students, it is possible to pare it back so that younger high school students can do parts of it over varying periods of time.

Students are required to undertake the development of a Web site for their client, Fairyland. The students are to work in groups of three and provide a prototype that covers the following areas of the existing Fairyland site: home, rides, attractions, and guest information. One member of the group will take primary responsibility for the redesign of the home page and the rides page, another will take responsibility for the redesign of the attractions page, and the final member of the team will redesign the guest information page. Even though each member has a task he or she is primarily responsible for, it is expected that they will discuss the proposed redesign with each other before submitting all the component parts on a CD to the client. A final presentation to the class will be required from each group. Note: Each group is operating under the assumption that they are an organization delivering a product to the client, so the presentation of their work needs to reflect a professional attitude. The task consists of three parts:

Part A: Define and Plan a Solution to the Problem. This will involve a number of smaller tasks, including interviewing the client to determine his or her expectations for the redevelopment of the Fairyland site; detailing the aims and objectives of the project; identifying any modifications that may be needed to ensure the project is manageable; indicating the purpose of developing the Web site for the client; and providing a guesstimate of the expected costs of the project, detailing all work time allocated to it. Once this is completed, the group is to provide the client with a conceptualization of what the Web site will look like, a comprehensive description of the project, a storyboard that conceptually illustrates the nature of the intended Web site, a rationale for why the proposed Web format is better than other possible formats, a contract containing specific details of what the group will do to bring the project to fruition, and an invoice to be presented to the client for costs incurred. Members of each group are to discuss the above tasks, decide on how to proceed, consult regularly about their progress, and ensure that all group members are involved in the decisions that are made.

Part B: Implement and Test the Solution to the Problem. This involves a number of small tasks, including: creating the basic Web structure (the basis of the prototype that will be presented); designing the graphic elements that will be inserted into the site; designing the text elements that will be added to each page; designing or morphing the photographic elements that will be used; and developing the actual Web site by bringing together all the graphic, textual, and photographic

(Continued)

(Continued)

elements and incorporating them into the basic Web structure that the group designed earlier. In addition, the group needs to develop a detailed user's guide to the Web site. To ensure that the group has completed the implementation stage successfully, the Web site needs to be tested to make sure that any individual can use it without becoming confused. This will require that the group arranges for two individuals who are not familiar with the Web site to test it. This task will involve the group's developing a questionnaire that asks the testers to focus on each element of the site requiring testing. The testers need to provide feedback, and the group needs to demonstrate how that feedback has been incorporated into the finished product. Once again, members of each group are to discuss the tasks before deciding on how to proceed. This includes making sure that everyone is expected to contribute to the final product.

Part C: Evaluate the Solution. This involves the group's making judgments, supported by data and logical arguments, about the process of developing the Web site, the actual Web site, and the cost dimension of the project. This will involve evaluating the process (e.g., *How well do you feel you managed? What aspects did you complete successfully? How could you have improved your work?*) as well as the Web site itself (e.g., *How well does the finished product satisfy the aims and objectives established in the planning stage? What criteria can you use to judge the success of the Web site? Explain the positive aspects of your Web site and explain how it could be improved.*). In addition, the group will be required to evaluate the cost structure outlined at the start in relation to the final account prepared at the conclusion of the project.

BRINGING IT ALL TOGETHER: UNDERSTANDING THE RESEARCH

There is no doubt that students are more productive and learn more when they work cooperatively together in groups than when they work in whole-class settings (Sharan & Shaulov, 1990) or in unstructured groups (Gillies, 2003a, 2003b), and this includes students from different ethnic backgrounds and students with second-language needs (Shachar & Sharan, 1994). Moreover, the benefits attributed to cooperative learning experiences can be extended to students with multiple severe disabilities who successfully learned to acquire basic communication and motor skills in cooperative groups and were able to generalize these skills to follow-up sessions in different cooperative groups (Hunt, Staub, Alwell, & Goetz, 1994), as well as to students with learning disabilities who work cooperatively with peers (Saenz, Fuchs, & Fuchs, 2005). Furthermore, male students with learning disabilities were more likely to be accepted by high-, medium-, and low-status same-sex peers in school environments that have an inclusive and cooperative ethos than in schools where this ethos was not apparent (Plata & Trusty, 2005).

The apparent success of cooperative group work for students from kindergarten to college level and the key role interaction plays in the learning that occurs have helped focus attention on the types of grouping practices that facilitate student discussion. Identifying these grouping practices is crucial to understanding how they influence student interaction and learning.

In Chapter 4, I outlined the importance of helping interactions, such as giving explanations on students' learning during cooperative group work. The conditions that must exist for help giving to be effective included ensuring that it was sufficiently detailed, relevant to the student's need for help, and timely and the student requesting the help had the opportunity to apply it to the problem at hand (Webb & Mastergeorge, 2003). Establishing the conditions for helping to be effective are critical to understanding how students can be taught to provide assistance and help to each other as they participate in different small cooperative groups.

Teachers group students in different ways depending on circumstances, the children's attributes, and the type of outcome they want to achieve (i.e., improved status, improved cross-ethnic relationships, enhanced interactions). Although some research clearly indicates that certain types of grouping practices are more advantageous for particular students, research on other grouping practices is less clear and warrants further investigation. For example, research into ability groupings has indicated that low- and medium-ability students benefit from mixed-ability groupings while high-ability students generally work better with their high-ability peers although they are not disadvantaged by interacting with low-ability peers, and that high-ability students can benefit from reorganizing their own understandings in order to explain them in more easily understood ways to low-ability students (Lou et al., 1996; Webb, 1991; Webb & Palincsar, 1996). Hence, for the purpose of enhancing student interaction and promoting socialization and learning, the class teacher may choose to construct mixed-ability groups for one or both of these purposes (Johnson & Johnson, 2002).

Similarly, research indicates that students (especially adolescents) prefer to work in same-gender groups; however, it also indicates that the discourse in gender-balanced groups is likely to be more inclusive of all students (both males and females) than it is in gender-imbalanced groups. Teachers might therefore decide that this grouping practice may be more appropriate for the

task at hand (Webb, 1991). Again, while gender-imbalanced groupings appear to have merits, the small number of studies that have examined gender groupings limits the recommendations that can be made.

Other types of groupings that teachers frequently use include friendship and interest groupings, and while these groupings can be highly motivating because students are either working with their friends or working with others who have similar interests, teachers report that they use them only for specific purposes (e.g., to produce a play) as they tend not to group students regularly on this basis. One of the problems with these types of groups is that they may reinforce status hierarchies that already exist, which tends to exclude low-status students (Cohen et al., 1999).

CT groupings are often formed for the purpose of completing a task where access to a computer console is required. While research indicates that group activities involving CT are often very motivating because students can be active in the learning process, group composition is rarely discussed apart from suggesting that groups should be limited to two or three students to ensure ready access to the keyboard and mouse.

CHAPTER SUMMARY

The research on grouping practices suggests

- Students learn more in mixed-ability groups of high-, medium-, and low-ability students.
- High-ability students' performances are not affected by working with low-ability peers.
- Students with diverse needs (i.e., second-language learners, those with learning difficulties or with disabilities) benefit from working in mixed-ability groups.
- Cross-ethnic relations and learning are enhanced in mixed-ability groups.
- Gender composition of groups influences interactions.
- Adolescents prefer to work in same-gender groups.
- Teachers use diverse strategies to group students, including friendship, status, multiple intelligences, interests, and computer technology groups.
- Low-status children benefit from structured cooperative learning activities.
- Teachers need to use their discretion when establishing friendship or interest groups in their classrooms.
- CT groupings are highly motivating for students.

ACTIVITIES

1. Interview two teachers who regularly use cooperative learning in their classrooms about their grouping practices. How do they group students? Do students self-select or does the teacher select students for different groups? How do they ensure all students are included? Do they notice any differences in the ways male and female students interact in groups and, if so, what are the differences? How do they deal with status problems in groups? When you have finished your interviews, construct a matrix of what the research has indicated about different grouping arrangements and see if you can match the information you've obtained from your interviews with what you have noted from the research. This activity will help you to make links between research and practice.

Matrix of Grouping Practices

Types of Groups	*Teachers' Reports on What They Do When Grouping Students*
Ability	
Gender	
Friendship	
Interest	
Computer technology	

2. Construct a list of status-busting strategies that teachers can use to ensure all students are able to contribute to groups. The following is an example of such a status-busting activity: Groups are each required to construct a geometric object; however, students in each group have been assigned one "handicap" that they must learn to manage. For example, one student may not be allowed to use his or her hands, while another is blindfolded and cannot see, and so on. In order to complete the activity, the students must talk to each other and provide directions to help those who cannot see work to construct the object. The purpose of the activity is not only to teach students that everyone can contribute, but to help them empathize with the difficulties some students confront in their daily lives. Students generally have fun as they work on constructing the object; however, teachers need to debrief the groups at the end to ensure that they have captured the purpose of the activity and to find out how it affected them.

SUGGESTIONS FOR FURTHER READING

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CHAPTER 6

Assessing Small-Group Learning

INTRODUCTION AND LEARNING OBJECTIVES

Assessment plays a key role in educational accountability. Being able to assess the outcomes of students' learning is very important, and probably more so for such pedagogical practices as cooperative learning where responsibility for learning is devolved to the group and where teachers act as facilitators of learning rather than instructors of knowledge. With this approach to learning, teachers need to be able to assess how students are managing the learning process (process learning) as well as what they are achieving (outcomes of learning) if they are to make changes to how they teach and how students learn. This is particularly important given the accountability requirements of the No Child Left Behind (NCLB) Act of 2001 that requires schools to close the gap between high- and low-performing students not only overall but also between minority and nonminority students and between disadvantaged students and their more advantaged peers (Kim & Sunderman, 2005; see also discussion in Chapter 1 of this volume). While the research on the academic and social benefits of cooperative learning is unequivocal for students, generally, and specifically for those in minority groups such as second-language learners, the ethnically diverse, and students with special learning needs (Cohen, 1994; Johnson & Johnson, 2002; Putnam, Markovchick, Johnson, & Johnson, 1996; Sharan, 1990; Slavin & Cooper, 1999), effective assessment practices require that these benefits be documented so teachers can communicate them to parents, students, and reporting authorities. Moreover, by doing so, teachers are able to reflect on their own teaching practices and determine what they may need to adjust or change to promote improvement in students' learning. This is important because research clearly indicates that teachers become committed to new practices after they have actively engaged in using